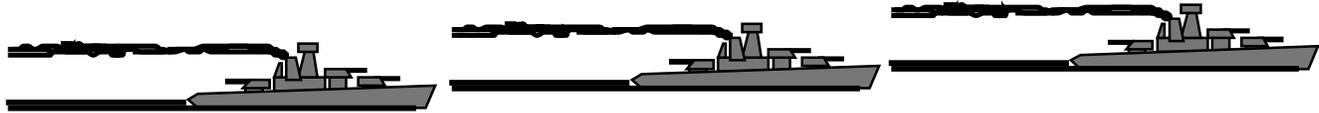


# TASK FORCE 144



The Official Newsletter of Model Warship Combat, Inc.

[www.mwci.org](http://www.mwci.org)

Summer – 2007



## CALENDAR OF MWC EVENTS

**July 15-20, 2007**

**MWC National Championship  
H & H Ranch, Houston, TX**

**Site Host:** Brian Lamb, 281- 480-2051  
[iunrais@gmail.com](mailto:iunrais@gmail.com)

Sanctioned. \$140. CO2, Mon., Tue,  
Thu. noon meals prov.

**Motel:**

Ramada Inn Houston, \$62/night + 15%  
tax. 218-821-1304, mention "MWC" or  
"Model Warship Combat, Inc." to get  
rate.

**Aug 17-19, 2007**

**The Ice Breaker**

Lake Susan Pond,  
Chanhassen, MN

Contact: Bob Hoernemann, see BOD  
page. Sanctioned.

**Aug 31 – Sept 3, 2007**

**The Fray**

Ritter Springs Park,  
Springfield, MO

Contact: Kevin Bray, 479-721-7055  
[kevin.bray@cox.net](mailto:kevin.bray@cox.net) Sanctioned

**Sept 15-16, 2007**

**Fall Furious Fight**

White Elementary Park,  
East Lansing, MI

Contact: Mark Roe, 248-435-0680  
[mark.roe@meritorwabco.com](mailto:mark.roe@meritorwabco.com)  
Sanctioned

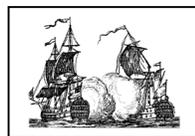


Warm greetings are often exchanged under the docks of Ritter Springs Park. Steve Reynold's I-Boat and Bob Hoernemann's Warspite say 'hi!'

Photo supplied by Bob Hoernemann

## The Fray 2007

**By Bob Hoernemann**



Every year the Fray is the second best battle in our hobby, after NATS. Years past it has been held in Kevin Bray's custom pond in his back yard. Since Kevin lost his pond last year the event was moved to Ritter Springs in Missouri. This pond has lots of history in it as the past site of Swampy's regional battles. Many ships have battled and sunk in the mucky water near the docks. This would be the tenth Fray that Kevin has hosted and it was a good one.

Most captains arrived at the hotel Friday afternoon and evening. Chris Grossaint was at the pond in the morning to see the park ranger cutting the grass and weeds for our battle. Peter, Ben and I pulled into town around 1:30pm thinking we could get a battle in that afternoon, but the park work did not allow it. Randy, Kevin and Brian Bray were at the hotel when we finally made it through the half hour of traffic coming into town. If you ever go to the Fray and go south on Hwy 13 turn at the road to the pond (Farm road 94) and take the first left. This road follows to highway into town and will save you a lot of time. We saw several people with trucks leave the highway and drive through the ditch to get out of the traffic. Our



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minivan would not make it so we had to wait it out.

We had our traditional captain's dinner Friday night (All you can eat ribs) and went to work getting ships ready to battle Saturday. There was a large car show in town that gave us something to look at and caused a lot of hotel headaches. Kevin Kaminski came to the hotel with a very old Swampy wood hull Lutzow. He bought it and built it in college many years ago. It was so old that the gun system was still set up to take Freon. He intended to watch the battles and take photos of ships so he could finish his up. Peter, Ben, Tom and I had nothing else to do after dinner so we went to work getting his ship ready. Tom cut up some shower pan armor, Peter cut out the old Freon tank and patched the hole, Ben got the radio box fixed up and put air hose in for the guns, I took apart the guns and tried to get them working again. There were several old rusted bbs that came out of the guns. After cleaning and playing around with the springless pistons the guns fired once again. Things looked good for him to battle Saturday.

Saturday morning we arrived at the pond around 8am, set up tents, tables and started getting ships on the water. We held a captains meeting to

select Admirals and fleets. Since no one wanted to step up and volunteer to be an Admiral I, being the CD, selected Randy (He was pointing at another captain) and Tom Palmer. We split up fleets to be Flag::

Brain L (Nagato),  
Chris Grossaint (Washington),  
Bart Purvis (NC),  
Bob Hoernemann (Warspite),  
Ryan Thomson (VDT),  
Tom Palmer (Nashville) and  
Ben Radenbaugh (Glorie)

No Flag::

Kevin Hovis (Missouri),  
Chris Pearce (Bismarck),  
Kevin Bray (Big Mammie),  
Peter Ellison (Sharnhorst),  
Randy Stiponovich (Tiger),  
Steve Reynolds (I-Boat),  
Brian Bray (Portland),  
Caleb (The Bike).

The two Lutzows had broken down with a bad drive gear (Trystan Thompson) and a bad speed controller (Kevin K). Battle was called and the flag ships moved in for a first sortie massacre. Caleb went down quickly with an unseaworthy sink. The Bike had a bad pump switch that I thought I had fixed last weekend. Peter was the next to go down after the Nagato and Washington sandwiched his Scharny. Peter had followed the Bismarck into



Warspite takes a series of sterns from the Scharnhorst while the Bismarck gives an even exchange.

Photo supplied by Bob Hoernemann

the fur ball and did not make it out. The battle moved between the docks in an old fashioned hug and slug death match, with the Warspite, Nagato and Washington shooting up the I-Boat and Bismarck. The I-Boat ran out of battery power and sank next to the docks. The Bismarck was having pump priming problems and sank a few minutes later. With most of the bbs spent the Flag Fleet used up the rest chasing the few remaining

The Nagato made a good bow to bow pass on the I-Boat driving Steve into the Warspite's stern guns. Trent commented after the battle that the starboard side looked like someone took a chainsaw to it. The I-Boat moved off to play with the VDT and they traded sidemounts. The Washington and Nagato spent the last half of the sortie chasing the Tiger and Massachusetts around. The Warspite hung around the VDT

I-Boat (sink)	62-9-21
Portland (sink)	18-2-5
The Bike (sink)	0-0-0
Flag	
Nagato	13-1-10
Washington	25-3-1
NC	43-6-8
Warspite	19-1-5
VDT	27-6-10
Nashville	4-0-0
Glorie	0-0-0



The CD gives the captains the site ground rules and the latest baseball scores.

Photo supplied by Bob Hoernemann

No Flag ships.

All of the sunk ships, except for The Bike patched what was needed and came back out for the next sortie. The No Flag fleet was in better working order this sortie.

The Glorie was all over the pond causing problems for the No Flags. Ben backed in and sterned the I-Boat as it was shooting at the VDT. Then he backed into the Sharny for half a magazine of shots, following he made a pass at the Massachusetts and for good measure, even though he was out of bbs, made several passes at the Mighty Mo.

making sure no one came to finish her off. Later she joined in with the Nagato to chase the Massachusetts, but Kevin turned and left them trying not to run into each other. The Portland went out of control and sank close to the far shore. It was a long walk through the mucky water for Kevin to get the ship.

The fleet scores were Flag 11,225, No Flag 3.435. Ship scores were: No Flag

Missouri	32-6-6
Bismarck (sink)	52-12-29
Massachusetts	34-1-1
Sharny (sink)	40-5-1
Tiger	12-2-9

Kevin Hovis brought his electronic speed trap and we spent time going through it to test it and our ships. I took the Warspite through it in reverse several times at warp speed and at normal speed. The clouds started to look black and the rain started to fall. It rained just long enough for everyone to patch before the next battle. Then the sun peaked out from behind the clouds for beautiful battling weather.

The afternoon battle saw the Bike coming back to the No Flags after the pump switch was changed. Maggie Grossaint was added to the No Flags with the Fiji. Trystan

Thomson took over the VDT. Kevin H. changed to the Flag fleet. Chris G. did not battle due to a broken rudder. As the battle started the Tiger was able to back in and stern gun the Nagato. The Warspite returned the favor with a stern gun pass on the Bismarck. Bart got his NC stuck in a bad place, between the stern guns of the Massachusetts and Tiger. Then Bart got into a worse place between the haymakers of the Bismarck and I-Boat. Bart did not last much longer, getting a few sterns into the Massachusetts before sinking.

While Hovis was pulling out Bart's ship I noticed that I was missing a rudder, no wonder I was not turning that well. I had got hung up in the speed trap a few times and bent up one prop and must have broken off the rudder too. I later found the rudder floating by the speed trap. I called five out of

control and the wolves moved in. The Nagato hung by helping protect me and I hid under the dock. The Massachusetts pulled in with his sidemount on my haymaker side and we traded shots. The Bismarck also backed in with stern guns and worked over my starboard side. The I-Boat made a pass and then Massachusetts came back. Kevin and I traded bow sidemounts this time as we backed up to the docks. Kevin left and the Bismarck got behind me and ate stern guns. More sidemount passes from the Bismarck, Massachusetts and I-Boat left me wondering where all my fleet mates went. Then suddenly it stopped, everyone left and the Warspite got a chance to sit by the dock pumping out.

The Bismarck went to go play with the Nagato and then had pump priming problems again and sank. The Massachusetts spent the last of

his bbs on the VDT then The Bike sank again, the new pump switch needs to be on to pump out the water.

I borrowed a rudder from Randy for the second sortie and was back in business. The I-Boat and Massachusetts came after me to start the sortie. I got my haymaker into the I-Boat and Kevin tripled me. I did not have my battery placed in the ship correctly and was listing really bad the whole sortie. Peter sank next to shore from a few large holes at the waterline. The Missouri and Nagato got the Fiji in a cruiser sandwich but she was able to get away, picking on little girls is not very nice. Trystan took the VDT to tangle with the Massachusetts and got a few good shots in. Kevin Bray was try to help Brian out and drove himself into the weeds next to shore. Ben and Missouri came in with stern guns and I tried to bring a sidemount in but got caught in the weeds too. The rest of



The big ships played while the cruisers nipped on the outskirts.

Photo supplied by Bob Hoernemann

the sortie turned into a chase with the fast ships. The slow ships were out of bbs or too hurt to join in.

Scores were Flag 8620 No Flag 6780. Ships scores were No Flag:

Bismarck (sink)	49-9-14
Massachusetts	49-3-5
Sharny (sink)	19-1-4
Tiger	15-10-13
I-Boat	42-2-23
Portland	1-0-0
Fiji	17-5-4
The Bike (sink)	0-0-0
Flag	
Missouri	32-3-10
Nagato	26-0-13
NC (sink)	47-7-16
Warspite	34-1-19
VDT	20-3-8
Nashville	14-2-3
Glorie	0-0-0

There was still daylight so we rounded up ships for a cruiser battle. It was the USA versus the French and Germans: For the USA it was the Bike (Bob H), Portland (Kevin B.) Nashville (Tom). The French and Germans: had Sharny (Peter w/ no sidemount), Glorie (Ben), Surrender

Monkey III (Randy).

While the USA should have just picked on the Sharny, scored tons of points and ran away we played with only bad strategy. We lost Kevin to a blown hose just as battle started and Tom decided to back up right behind both Frogs. Ben and Randy used most of their bbs while Tom froze in place trying to pick forward or reverse. The rest of the sortie was standard cruiser battle stuff.

The second sortie started with Kevin again losing CO2. This time Tom stayed away from the Frogs, for awhile. He got behind them again later in the battle and they worked over his other side. We did not officially count the ships but we do know that Tom took a ton of damage. I also gave Ben his first three holes of the day.

Peter and I had some major boat repair to do so we ordered pizza. It was getting really dark out and the car guys heard hail might be coming. We watched most of them put towels and tarps over their cars to try and protect them. We had just got the stuff in our room when it started to

pour. Then the power went out, but just for a few seconds. I rebuilt my rudder and then Peter and I worked on his guns. They were not hitting very hard and were not consistent. He had a lot of leaks in the guns that we fixed. When they were all done his triples were hitting so hard we wondered if the people next door could hear them. The first guy to chase Peter would be in for a little surprise tomorrow.

Sunday had an 80% chance of rain in the forecast. But we managed to make it through both battles without getting wet. The fleets changed a little from Saturday. Hovis left to work on his pond; Bart said his goodbyes and drove home. Kevin K. had his Lutzow on the water with a speed controller he borrowed from Trent. Before battle it stopped working, not sure why. It was the same speed controller that Trent had in his Roma. We tried to find the cursed ground wire in Kevin's boat, this had fixed Trent's last year. Kevin K. took over The Bike and joined the No Flags. Trystan had his Graf Spee fixed and



The No Flag Fleet tries to make the Warspite dizzy.

Photo supplied by Bob Hoernemann



The Graf Spee learns what a battleship's guns can do to a cruiser.

Photo supplied by Bob Hoernemann

joined the Flags.

Peter got his chance to use stern guns right away as Washington and Nagato came after him at the start of battle. He turned inside of Washington and let the bbs fly. The guns cracked and Chris backed off to a safer side chase. But the Nagato was able to get her sidemonts on the Sharny until Peter turned and ran right into the Bismarck. The Tiger,

I-Boat and Massachusetts tangled with Warspite and Nagato in-between the docks. Nagato went on five leaving Warspite and Bismarck the only ships with guns on the water.

Warspite was already pumping pretty hard when running. I should have called five at the same time as Brian L. did. But I had a few bbs left and wanted to use them. I got a few

into the Bismarck and called five. I drove in circles under the docks and had a few laughs as the Bismarck hit some post and could not get his guns on me. Chris only had bbs left in his haymaker. This gun is not too hard to run away from, but Chris was relentless knowing that he was killing my batteries for the next sortie. With 30 seconds left on my five I hit a tire on the dock then got



The I-Boat takes a different angle.

Photo supplied by Bob Hoernemann

stuck under a cross brace. Bismarck was right on top of me and put the last of her haymaker bbs in me. It was over pretty fast as I sank next to the dock. I patched up 31 belows on the port side and came back for the second sortie.

In the second sortie I knew I should use my bbs and get off the water quickly, but I did not. I took on the Tiger, I-boat and Massachusetts by myself. I was able to get a few haymaker shots into the I-Boat and got the bow sidemount on target too. Steve sank after the Washington finished her off with some prop wash. I knew my batteries were getting low; my solenoids would no longer fire. I called five and the Massachusetts came in to pepper me with the last of his sterns and sidemounts. I sank again in the middle of the docks. The Bismarck was chasing the crippled Nagato and ran Brian into the dock. Brian hit a cross brace

hard, listed his ship over to port and sank under the dock. The Washington started chasing the Tiger and Massachusetts. When he called five the Tiger and Bismarck started chasing him. They soon found something better to play with and started chasing the Graf Spee. At some point in the battle Maggie's Fiji went down at the far end of the pond.

It was a smashing victory for the No Flag fleet. Scores were Flag 13395 No Flag 6230. Ship's scores were No Flag:

Bismarck (sink)	50-4-13
Massachusetts	33-3-7
Sharny	28-0-7
Tiger	24-6-14
I-Boat (sink)	22-9-31
Portland	1-0-0
Flag	
Nagato (sink)	75-15-34
Washington	43-2-19
Warspite (sink x2)	69-16-58
Graf Spee	40-5-11
Nashville	37-0-1

Glorie	1-1-1
Fiji (sink)	6-0-0
The Bike	0-0-0.

After the battle Susan Bray was kind enough to do our lunch run again. She also was a big help with crowd control as people walked on the paths by the pond. She has put up with us staying at her house during the past Fray's, watched some of our kids while we battled and is still helping us out now that we've moved. If only she could patch and fill CO2 bottles.

For the afternoon battle Caleb took The Bike back for the No Flag fleet, Kevin K started the drive back home. Tom had dropped his transmitter in the water and was out for this battle. Battle started with the same basic set up. Warspite and Nagato went stern to stern with Tiger, I-Boat and the Massachusetts.

This set up changed when Caleb went out of control. I drove over to



The bear and the clown soak in the shots and spray of another busy battle day.

Photo supplied by Bob Hoernemann

make sure there were some holes in him so this sink would not be an unseaworthy one. I tossed a few haymaker bbs and some sterns at him and he sank. Brian Bray was the next to go out of control. I got a few bow sidemounts into him and Ben got a few stern guns on his port side. The Nagato was getting his starboard sidemount on the Sharny. Peter turned and got rammed by the Fiji who got rammed by the Nagato. The hit on the Sharny was not very hard but made a large hole in her side, she did not make it very far before she sank.

The battle moved to the right as the two fleet's battleships slugged it out. The Nagato got the best of the I-Boat then got stern gunned by the Tiger. The Washington chased down the I-Boat and Steve called for help from Kevin. This brought everyone over to the left side of the pond and the slug fest continued. All heads turned to look at the magazine explosion happening in the I-Boat, "There is something wrong with our bloody ships today". Steve had blown an air line and the Warspite came in for the kill. But the Massachusetts came to the rescue and moved me away before I could get any shots at Steve. The Nagato and Washington were not driven off and swarmed in to finish the job. Once again the I-Boat sank next to shore. The battle quickly wound down and Chris G was trying to coach Maggie in for some stern shots. He lost track of his ship and backed himself under, opps.

Scores were Flag 13395 No Flag 6230. Ships scores were No Flag:

Bismarck	38-4-4
Massachusetts	86-3-12
Sharny	34-3-11
Tiger	29-5-8
I-Boat (sink)	40-9-28
Portland (sink)	7-0-2
The Bike (sink)	20-1-1

Flag:

Nagato	29-2-5
Washington	6-5-10
Warspite	39-7-21

Graf Spee	5-0-1
Glorie	6-0-1
Fiji	13-0-4

Sunday night we all went out to BW3s for dinner. Then we walked to the ice cream place down the street. The greasy food and beer got the better of some captains the next day.

Monday saw us lose Steve R to a drive home. Chris P took over The Bike as he needed a smaller ship. The fleets were close to the same sides as before. Just as we were getting set up for the battle the Fiji did a reverse dive and sank. Tom pulled her out of the water and she joined the battle. Peter was the center of attention and was quickly put down under a smothering fire of sidemounts from the three Flag battleships. The loss of the I-Boat and Bismarck put the No Flag fleet at a battleship deficit. The Flag ships ran them around the pond trading sidemounts as they could. Brian Bray's Portland sank at the far shore just at the end of battle.

For the second sortie, just as we were getting ships on the water we decided to trade the Warspite for the Glorie. This paired the Warspite and Massachusetts together to do some major slugging. We found a friend to play with in the Nagato and worked her over from dock to dock. After a long listing struggle she finally slipped beneath the waves. After I got the Nagato out of the water I took the Warspite over to shoot The Bike. Chris, Brian and Maggie were on the other dock and I did not think Chris was watching his ship. He looked to be helping Maggie get some shots in on the other cruisers. After putting a few bbs into The Bike I called five and started to chase Maggie's Fiji around.

I thought I'd be a nice guy and let her get some shots at me, a little practice for her. She was doing a great job staying away from me and turning at just the right time to fire

her stern guns. From the other dock I told her she was getting some great shots in. Then I noticed that my pump was picking up and pulled away from the practice session. The Washington came over and Chris asked if I was on five or not. I told him I was and he chased me around the dock. He was out of port side guns so I tried to stay over there. We were bumping around and the waves and prop wash were getting in the holes Maggie opened in my bow. A little too much pushing did me in and I sank. Sunk by a father and daughter team goofing around, opps. But I felt good that Maggie had done some damage she could talk about on the way home. A little coaching from Chris P goes a long way I guess. She almost fought as if Chris were driving the ship for her.

No official scores were counted, but I did count up 42 belows on the Nagato. The awards for the weekend were handed out and the good byes were said ending another great Fray event.

Best of Class went to:

Class 1-3	Ben R.
Class 4:	Randy S.
Class 5:	Peter E.
Class 6:	Brian L.
Best of Scale:	Randy S.
Most Feared:	Bob H.

The total fleet scores for the proud Flag and No Flag nations were Flag 34,540 No Flag 28,240.

Steve Reynolds took the most damage 9,935, just beating me by 550 points.

A BIG thanks to Kevin for hosting a great event, to the captains that made the drive to play together and also to Susan Bray for being a great hostess.



# From the Basement of the President... Weldwood and Other Matters

by Randy Stiponovich

There has been some discussion about Weldwood-prepped skin and whether it has "self-sealing" properties. Smurf Naval Yard was directed by the President to conduct a test to determine the truth of the matter.

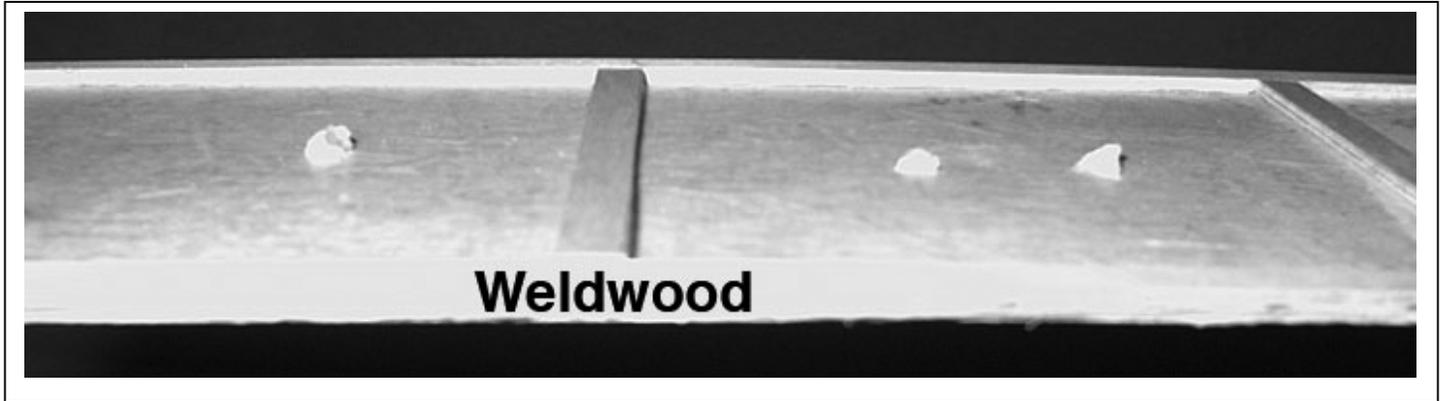
The test piece will be available at Nats for examination by anyone who's interested. Also, we will soak the test piece for the length of an average sortie and shoot some more holes in it to determine if the Weldwood becomes self-sealing when it gets wet.

This leads me to a larger issue. We spend countless hours and lots of money building our boats only to see them shot at and sunk. We welcome this, of course, because that's the

ourselves and especially to the new members to openly discuss and, if necessary, challenge anything we suspect of being illegal.

We are all gentlemen and we strive to conduct such dialogues in a mature, sportsmanlike manner. That should continue as an example to the new members and the youngsters coming into the hobby.

I'll get off the pulpit now and conclude by saying that this year's Nats will be terrific, ... and I'll be

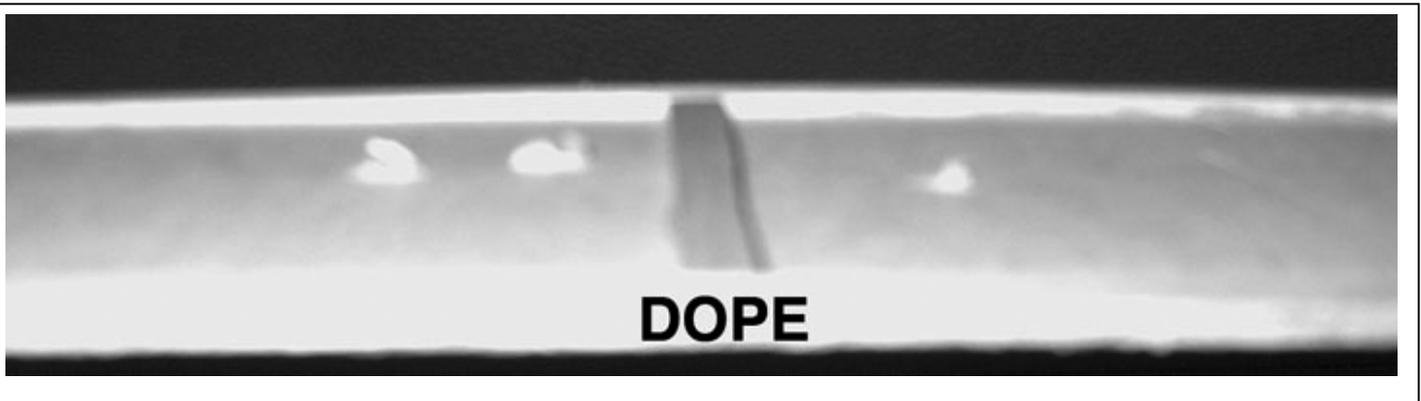


Half of a 17"x 4" section of Bud Nosen 1/32 balsa was prepped with 50/50 Weldwood. The other half was prepped with 50/50 Sig nitrate dope. Three layers of silkspan and one coat of primer were used on the

name of the game. However, there is always the concern that a boat will show up at Nats with a technology or a liberal interpretation of the construction rules that will give it an unfair advantage. We owe it to

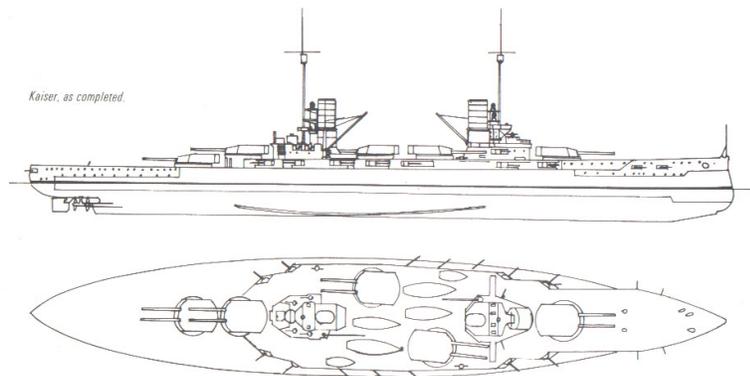
lurking under the bridge waiting for Wade.

Randy



entire section.

At the Fray we shot 3 holes in each side using the same gun at point blank range. The results were only slightly different. My opinion was that 2 of the Weldwood holes showed a little more chad than the dope side. Other captains who viewed the result were of the opinion that the holes were virtually the same.



In an email written on the member's list on 4/12/07, Kevin Hovis announced that he had partial success in creating a laser speed trap for testing the speed of our warships. In that email he thanked Chris Kessler for helping him with the basic setup of the device. Here is an article that Chris sent TF144 at that time that describes Chris's setup.

## Laser Speed Traps by Chris Kessler



In the weeks leading up to NATS 2005, which I was unable to attend, there was quite a bit of chatter on the email list about speed testing and specifically ships speeding while in reverse. Now I haven't heard much about it since NATS so its probably safe to assume that if it is a problem it isn't the largest problem that the club faces. However during this discussion someone threw out the idea of building a speed trap that used lasers or some other high tech device to find the speeds that ships were traveling, the theory being that it could work on a shorter distance and hence make speed in reverse measuring possible.

Well for those of you that know how I go about things you can probably already tell that this "Laser Speed Trap" had planted a seed in my mind and that once that happens I normally do something about it. Hence I decided that building a speed trap that used lasers couldn't possibly be that hard so I would go ahead and build one. Plus its hard to say no to a good project that contains lasers. Now I love the internet, I've found all sorts of useful and handy information there and so I felt confident that I could easily find plans for such a device, guess again buddy. So the plan fell dormant for a month or so. However it was always in the back of my mind, I was just on

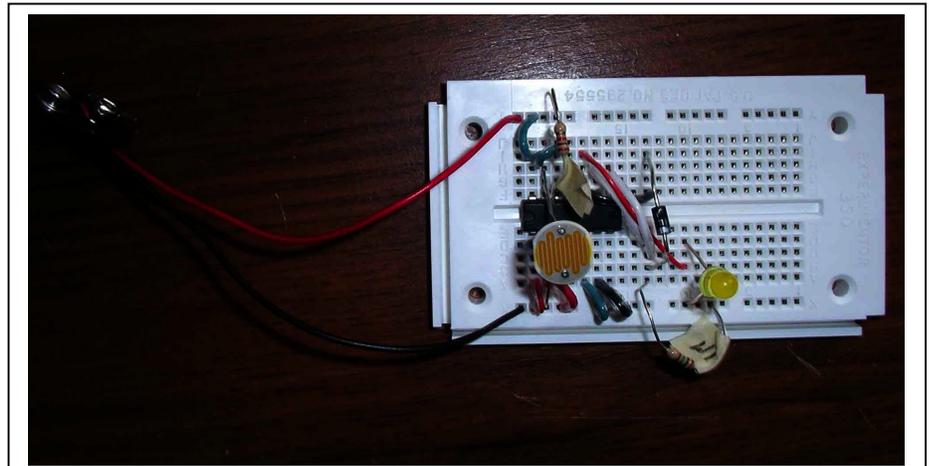


Figure 1

photos by Chris Kessler

the lookout for something that could help me along the path. The problem being two fold, how do you build a circuit that uses the presence or absence of light to flip a switch and then how do you build a timing device that's accurate and precise that can be flipped by the aforementioned switch?

One day I was at the local book store and with my technical nature I happened to the computer/tech section, you know that section that has books on every programming language ever written (except FORTRAN which we all know is extremely useful for such things as FORMula TRANslations, go figure). While I was skimming titles one by the name of "Electronic Circuits for the EVIL GENIUS" caught my eye. Now through my knowledge of James Bond films and various video games I know that a common evil genius trap includes the hero tripping a laser beam and then a cage or gas or 100 mindless zombies are released to trap the hero. This had to be the tome of knowledge that I sought, opening it up and checking out the table of contents yielded the goods, sure enough there was a section entitled "Create a Light-Sensitive Switch", bingo. I flipped to the page and lo and behold there were two versions, one for detecting light and one for detecting dark. I quickly bought the book.

My knowledge of circuits comes from some experimenting as a kid, building a R/C warship and my intro to circuits class that all engineers have to take. None of these dealt with anything more complex than the capacitor, so when it comes to transistors and IC chips I was clueless. Luckily this book has a good intro that teaches you all you need to know about the different types of transistors and how they are used as well as about 100 other random things. A trip to Radio Shack and I had the basic set of goodies to begin having fun with electricity, or so I thought. I ended up ordering the needed IC chips and about 40 other random parts that I thought would be fun from an online store I found. Once I got the needed parts I set about putting the circuit together on a breadboard for testing. I put an LED in the circuit that would turn on when the photo resistor went dark (a ship breaking the laser beam) I got this to work pretty easily but I still needed some sort of timing device. See **Figure 1**.

I thought building a stopwatch type device would be nice and simple however I couldn't find directions on how to do it or a kit or anything. Since I'd rather not redesign the wheel so to speak, coming up with my own design was out of the question, for now anyway. I went to the best general supply store I know of, Wal-Mart, you can have a lot of

fun with things you can buy at Wal-Mart, such as a one gallon bucket of lard but that's a story for another time and place. They happen to sell inexpensive stopwatches which makes ripping them apart quite affordable. I have a habit of breaking things when I rip them apart, and yes I "accidentally" destroyed the first stopwatch and had to get another. Now I had the guts of a stopwatch with wires soldered to the contacts that the buttons normally went to. The only problem was the stopwatch runs on 1.5 volts while the detection circuitry runs off the best battery ever for diabolical circuitry, the 9v. Relays were the answer and while I had never actually built a circuit with one I knew a little about them and they proved to be very easy to use and work quite well.

Next I redrew the circuit that I was going to build since the original version only had one detector and I needed two. I also decide that putting in a nice little box would make it look a little nicer and possibly survive a little longer. Once the right enclosure and circuit board was found I assembled the circuit. It wasn't pretty. See **Figures 2 and 3**.

After mounting the guts of the stopwatch in the box, I drilled 2

holes for the sensor leads to exit from as well as mounting holes for the buttons on the stopwatch. The stopwatch remained fully functional and was usable as a handheld stopwatch if the sensors were disconnected. See **Figure 4**.

To get the 9v battery that powers the detection circuit to fit in the box I had to cut up the battery connectors.

If I were to do this again I'd make sure there is plenty of room, the little box I used is packed to its guts. I also added an on/off switch for the detection circuitry so I don't have to keep removing the battery all the time to turn it off.

To build the sensors I mounted the photo resistors in those little black film canisters you get when

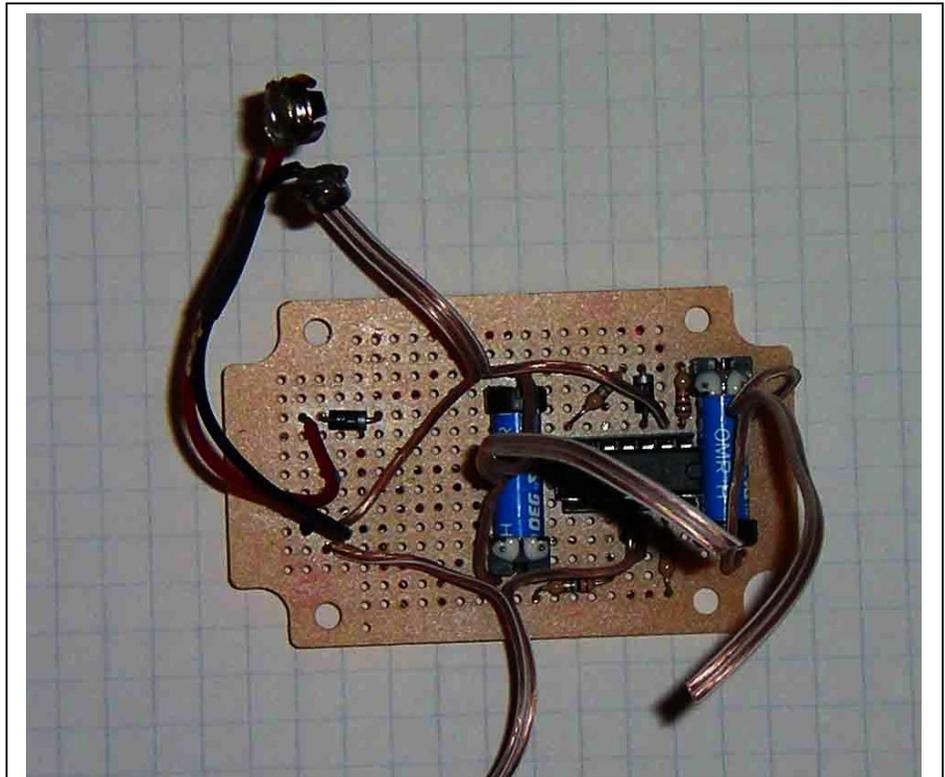


Figure 2

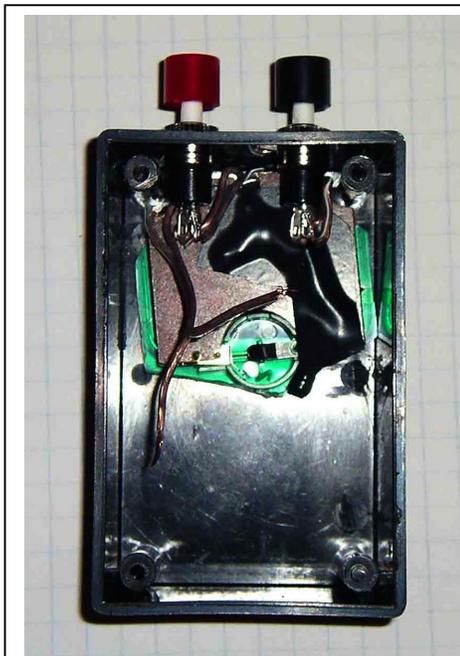


Figure 4.

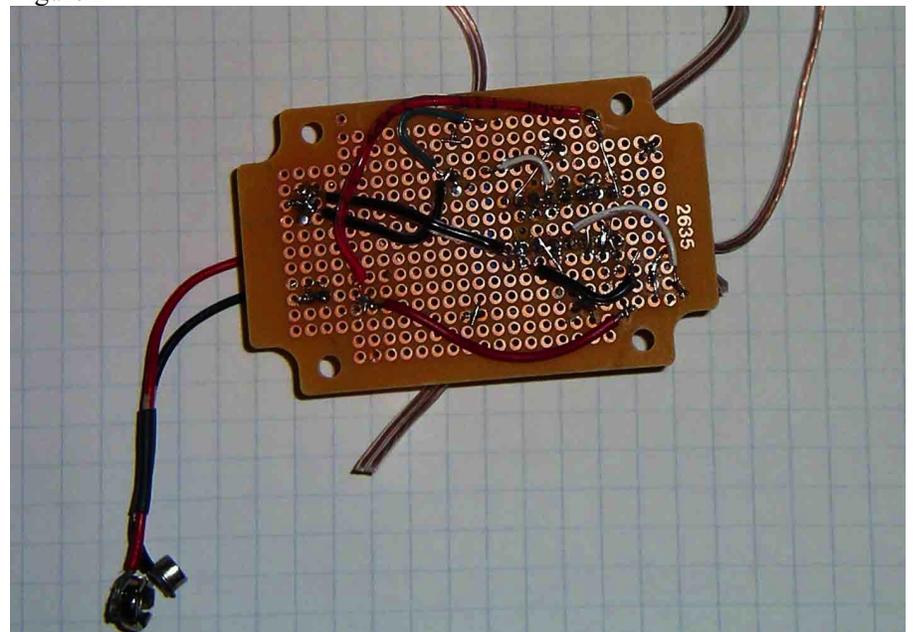


Figure 3

you buy film, actually I cut the side off of them so that they would lay flat and not roll around and glued them to a sheet of plastic I had sitting around. This was then mounted to a small piece of plywood which was mounted to another larger piece of plywood using 4 bolts with washers as spacers so that the height of the platform can be easily changed if needed. On the bottom piece of plywood holes were drilled and using PVC fittings I attached a PVC pipe to the platform. The PVC pipe was used to create an underwater support system to try and keep the laser directly aimed at the center of the sensor even with the small waves and wakes that the system might experience in use. See **Figure 5**.

Since all the lakes around me are currently frozen solid I have been unable to test how good this system works. The lasers are mounted on the other side of the platform using Velcro since it is easily adjustable and waterproof. The sensors are then connected to the timer box using approx. 10 feet of wire however this is adjustable since its all done with quick disconnects. I set this up in my living room and after adjusting the lasers properly the system worked exactly as designed. See **Figure 6**.

This is actually a pretty easy system to build, easily within the reach of anyone able to build an RC Warship. However since I hope people will try to build systems based off this design or using the same general ideas I'd like to share a few areas where I think there is room for improvement. First I think building a timing device would be better than using a stripped down stopwatch, cutting up a stopwatch is a pain to do if you want it to still work when you are done with it. Also the stop watch displays down to hundredths of seconds. Using the current method of someone timing a boat I would argue that a hundredth of a second is much shorter than the error incurred by factors such as

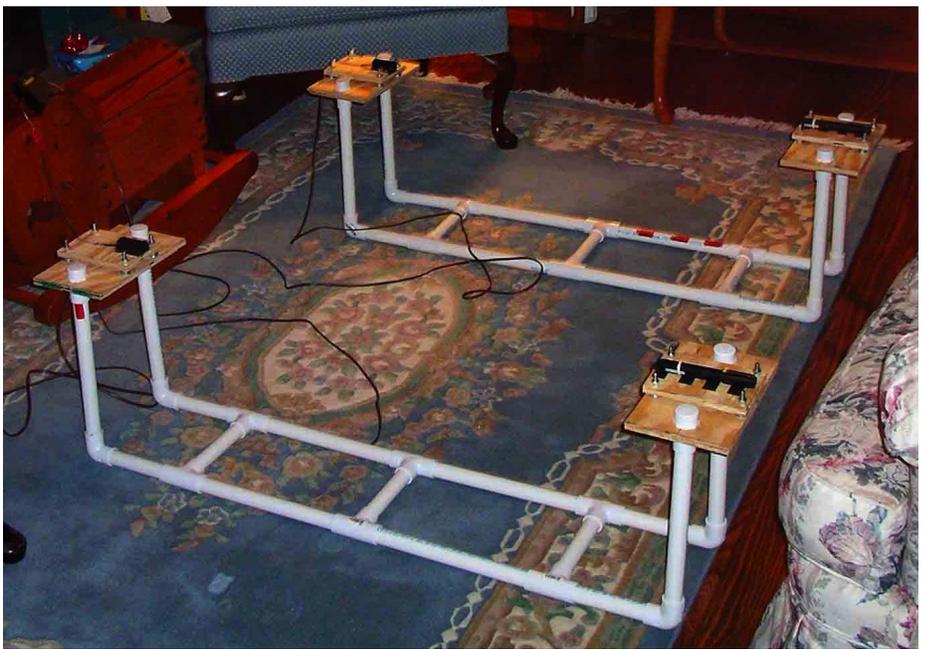


Figure 5



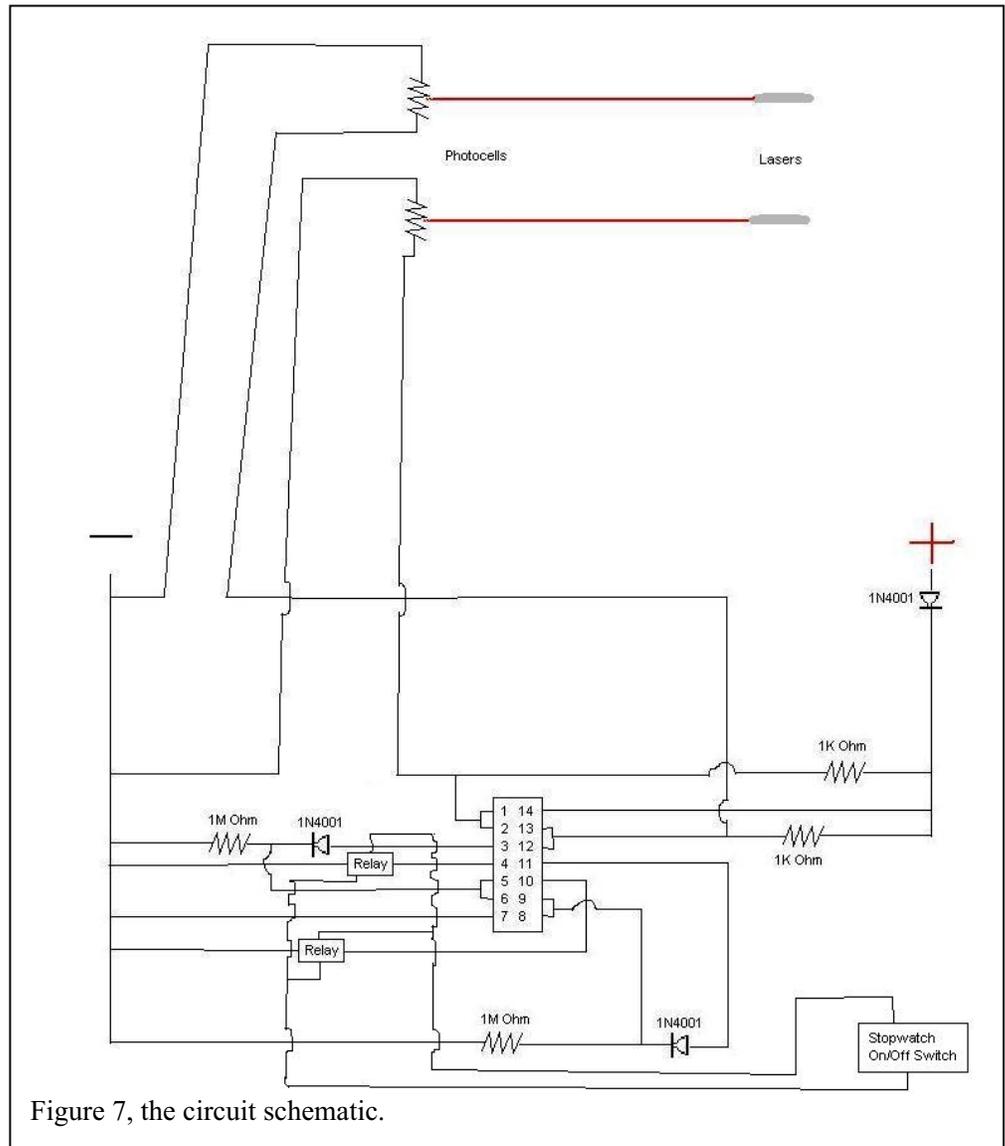
Figure 6

reaction time, or an error due to the distance stakes being a total of a few inches off. Hence in our current methods the average stopwatch is more than accurate enough for our

timing. However if you were to bring the distance down to ten feet like this system does you'll get times of 2.31 seconds, (equal to 23.1 seconds) so while you lose the

hundredths digit I would argue that this time is closer to the correct time than one obtained using the current method. If the distance between gates was reduced to a foot then times on a stopwatch would be 0.23 sec(23 sec) which isn't accurate enough for our application as depending on how/if the stopwatch rounds you could have a 23 sec ship going 23.4 sec and a 24 sec ship going 24.6 sec and think they were going 23 and 24 sec respectively. This would be bad. So a homemade stopwatch like device that could be hooked into this system which could use at least thousandths of seconds would be needed, possibly even smaller increments. The circuitry would have to be redone since in the circuit I used, if one sensor is tripped tripping the other sensor does nothing. A ship must fully clear the first sensor before the tripping the second sensor for the system to work.

As for the cost of this whole system I can't give an accurate number since the funding was obscured due to the "black" nature of this project. The real answer is you can probably put this all together for less than \$50 depending on what you have lying around and how good you are it improvising. Figure a stopwatch is \$5. If you can find some cheap laser pointers that's another \$5-\$10 a pop, add in the electronics, actually VERY cheap the IC chip used I was 25 cents. I ended up buying a whole bunch (~40) of random electronic components (ICs, LED displays, bunch of other stuff) and the total with shipping was around \$18. Really the most expensive thing was the mounting hardware and the PVC frame, add some odds



and ends such as wires and other random parts and pieces and you could probably put together a system as nice or better than mine for around

\$50-\$80.

Considering the amount we spend on boats and travel and all the other fun that goes along with this

Circuitry Parts List:

Item	Qty	??
IC 4011	1	Quad 2-input NAND Gate IC
1N4001	3	Diode
1K Resistor	2	Value affects response time, experiment if needed
1M Resistor	2	
Large Photo Resistor	2	
Reed Relay	2	SPST 12VDC

Part Suppliers:

Radio Shack (resistors, relays, etc)

Futurlec [www.futurlec.com](http://www.futurlec.com)

(IC chip Part # CD4011)

hobby , the cost seems pretty reasonable to me, especially as not everyone needs something like this. In fact I don't know if there really is a need for something like this in the hobby or if it is just a perceived need but at the same time I don't really care either. In the end it was just another challenge for me and I had a fun time building it and solving the design problems that I encountered. Projects like this are a fun way to learn and really it uses lasers, how cool is that?

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**Extra: Here's the 4/12/07 email from Kevin Hovis on his LST:**

All,  
Partial success! I think many of the problems I had with my original speed trap tested last spring are solved. First off, thanks to Chris Kessler for the basic set-up, Thanks to Rob Stalnaker for suggesting a PLC chip. Thanks to Peter Ellison and Wrenno Wynne (big gun battler) for turning me onto the PICAXE PLC chip! First off, I made a new frame for the trap lasers and sensors using two 6ft floating wooden platforms tied together with 18" spacing and a steel frame as opposed to the PVC I used last year. After cross bracing the frame, it is EXTREMELY rigid. This should eliminate problems from wave action. I just need to add floatation and do actual testing in the water. The real exciting part is the PICAXE chip and its versatility. I ordered the chip and a project board along with USB connection to my laptop. I got the stuff early this week. After looking over the literature and visiting the user's forum suggested by Wrenno, I found that the chip will sense from the light dependent resistors I was using from Chris' original circuit design. I decided to test to see how the chip will do that using the lasers. Worked REAL well. After writing a simple BASIC program for the chip to sense a beam break, trip a relay and wait for the

other beam to break before tripping the relay again and ignoring any breaks of the first beam, I tested this last night. Worked extremely well! So for now my plan is to hook the relay to the start/stop switch of the hacked-up hand timer used in Chris' original system for raw timing. Then do live on the water testing. Again the PICAXE is extremely versatile.

It can drive 7 segment LED or LCD displays. It can read timing data from other chips, and it can send data to a connected PC. What this could lead to in the future, who knows! I hope to have the initial working version for use and testing at the Fray, and then at Nats. More detail in a future TF-144....

Kevin H.



“For years my life was meaningless and without purpose. Then everything changed when Fluegel told me about model warship combat.”

# MODEL WARSHIP COMBAT, INC

## 2007 National Competition Entry Form

Each person attending the MWC Nationals MUST be a current member in good standing of the MWC. Applications received before May 15 qualify for the 'Early Bird' prize drawing (applications received after May 15 will be assessed a \$10 'late fee'). **No NATS applications can be accepted after July 1!**

In the space provided below, please list any alternative channels you could move to in order to ease frequency usage.

Additional t-shirts and banquet dinner plates are also available.

*(For radio channels, please remember that Allies use even numbered channels and Axis are to use odd.)*

Captain: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Fleet (circle): Allied Axis Shirt Size (circle): S M L XL XXL XXXL

Primary Ship Name: \_\_\_\_\_ Ship Class: \_\_\_\_\_

Secondary Ship Name: \_\_\_\_\_ Ship Class: \_\_\_\_\_

Radio Channel: \_\_\_\_\_ Alternative Channels(s): \_\_\_\_\_

Captain: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Fleet (circle): Allied Axis Shirt Size (circle): S M L XL XXL XXXL

Primary Ship Name: \_\_\_\_\_ Ship Class: \_\_\_\_\_

Secondary Ship Name: \_\_\_\_\_ Ship Class: \_\_\_\_\_

Radio Channel: \_\_\_\_\_ Alternative Channels(s): \_\_\_\_\_

Captain: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Fleet (circle): Allied Axis Shirt Size (circle): S M L XL XXL XXXL

Primary Ship Name: \_\_\_\_\_ Ship Class: \_\_\_\_\_

Secondary Ship Name: \_\_\_\_\_ Ship Class: \_\_\_\_\_

Radio Channel: \_\_\_\_\_ Alternative Channels(s): \_\_\_\_\_

Primary Entry Fee\*: \$ \_\_\_\_\_ (# Primary Captains x \$140)

Please make checks payable to:

Secondary Entry Fee\*: \$ \_\_\_\_\_ (# Junior Secondary Captains x \$110)

Model Warship Combat, Inc

Extra T-shirts: \$ \_\_\_\_\_ (# shirts x \$15) List Sizes: \_\_\_\_\_

Additional Banquets: \$ \_\_\_\_\_ (\$25 each guest: Includes tour of USS Texas)

Total Fee Enclosed: \$ \_\_\_\_\_

Mail check and payment to:

**Brian Lamb**  
**1511 Redway Ln**  
**Houston, TX 77062**

\*includes banquet on the USS Texas and one T-shirt!

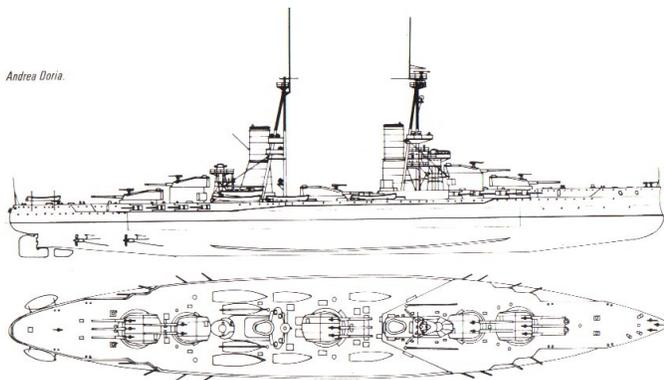
Don't forget to also sign-up on the MWCI webpage! ([www.modelwarshipcombat.org/eventlist.shtml](http://www.modelwarshipcombat.org/eventlist.shtml))



“Radio Hoernemann and tell him that when he lays smoke it’s supposed to go in the enemies’ eyes.”

## **TASK FORCE 144**

1486 Oakdale Ave.  
West St. Paul, MN 55118



*We fight, get beat, rise, and fight again - Major General Nathaniel Greene, 22 June 1781,  
on the campaign in the Carolinas.*