

# An Alternative Tactical System for the Pre-Dreadnought Era

by Karl Laskas

This is a set of tactical rules for use in simulating pre-dreadnought battles (those taking place before 1906) from the GREAT WAR AT SEA series. The intent is to generate more of the visual effect and color of pre-dreadnought battles and reduce the casualty rate to accord more closely with historical results while maintaining most of the simplicity of the original rules.

Use of these rules requires either a large blank hex map, or, better yet, several smaller blank hex maps that mate together. Blank hexsheets can be printed using certain shareware software utilities. Various other naval games also contain such maps.

Each hex represents 1000 yards, and a turn represents approximately 10 minutes. Units may not be stacked. This system requires the use of ten-sided (d10) dice. A roll of 0 is treated as zero (not as ten as it is in some games).

Before play, designate one ship in each fleet as its flagship. The flagship plays an important role in command and control as discussed below. If a named leader is available, he is aboard the flagship.

This system uses new speed ratings for the ships involved. These speed ratings represent the number of movement points (MPs) a ship may move per turn. Before play, the players should choose either the historical or quick-play mechanic for determining ship speed (as described in section 4.4). That choice will depend on the level of complexity and bookkeeping the players are willing to accept. The first allows for more historical accuracy, but at a somewhat greater cost in complexity. The second allows for quicker play. The first option require reference to the speed rating charts for 1904-1905 and 1898 that are included below. To compute new speed ratings for ships from other games, simply do the following: Take the maximum speed in knots for a particular ship, divide by three, and round fractions UP. Thus, a ship with a speed of 22 knots can move eight hexes per turn.

Most of the game mechanics in this system are separable. If you don't like the random events or the command/control mechanic or the damage control mechanic, feel free to play only with the elements that you desire. The combat mechanics (the hit, damage, and critical hit tables) should be treated as an integral whole, though.

## TURN SEQUENCE

1. Initiative Phase.
2. The non-initiative player moves.
  - a. Ships affected by a FIRE result the previous turn roll on the Command/Control Table to see if their movement is restricted.
  - b. Move flagship.
  - c. Move any ships that began their turn in line astern formation behind the flagship.
  - d. Move ships that began their turn within four hexes of the flagship's starting hex.
  - e. Any ships that did not move in step a, b, c or d above roll on the Command/Control Table to see if their movement is restricted.
3. Initiative player moves. (Repeat sequence.)
4. Resolve fire combat.
  - a. The initiative player resolves gunnery fire for all ships within command/control range of his flagship.
  - b. The non-initiative player resolves gunnery fire for all ships within command/control range of his flagship.
  - c. Combat results from steps a and b take effect simultaneously.
  - d. The initiative player resolves gunnery fire for all ships not within command/control range of his flagship.
  - e. The non-initiative player resolves gunnery fire for all ships within command/control range of his flagship.
  - f. Combat results from steps d and e take effect.
  - g. Ships carrying torpedos may launch them.
5. Damage Control phase.

### 3.0 Initiative Phase

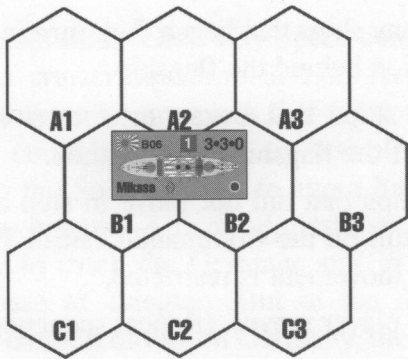
Each player rolls one d10 for initiative. Add two to the result if the player's fleet includes a named leader. In case of a tie, roll again.

*Optional:* If either player rolls a natural 0, that player rolls on the random event table (see below).

## 4.0 Movement

**4.1** Ships must be pointed to face a hexside. When they move, they must move forward in one of two ways:

- The bow of the ship must move into the hex directly in front of the ship, after which the ship may pivot 60 degrees to the left or right at a cost of an additional 1 MP; or
- The entire ship may be shifted one hex row to the left or one hex row to the right, after which it **MUST** move into the hex directly in front of the ship. This entire maneuver costs 2 MPs.



*Example:* At a cost of 1 MP, *Mikasa* may move into hexes B3/B2, whereupon it has the option to spend an additional 1 MP to pivot its stern into hex A2 or hex C2. Alternatively, it can shift over into hexes C2/C1 (or A2/A1) whereupon it must steam forward into hex C3/C2 (or A3/A2).

**4.2** Each ship has a speed rating given in MPs. That speed rating may decrease as a result of damage sustained in combat.

**4.3** The maximum number of hexes a player may move a ship each turn cannot be greater than the **LESSER** of (a) its speed rating (see 4.4) or (b) the speed of the ship directly in front of it, if it is in a line astern formation.

**4.4 Speed Ratings.** Depending on the level of complexity and/or bookkeeping players are willing to accept, players may employ one of following methods for determining the speed ratings of ships:

- *Chart Method:* This is the default method for determining speed ratings. Consult the Speed Ratings Chart to determine the maximum speed for the flagship and any ship not in line astern behind the flagship (collectively, the “independent ships”).
- *Counter Method:* Use the following conversion chart for pre-dreadnought battles:

Printed Speed	New Speed
2+	9
2	8
1+	7
1	6
1 slow	5

*Caution:* Use of this chart ignores some tactically important distinctions between ship designs. It also tends to lessen the ability of a weaker but quicker side to escape.

**4.5** On the first turn of a battle, each independent ship may move a number of hexes between 1 and its maximum speed. Record the number of hexes moved by each independent ship. On each turn, an independent ship may move 2 hexes less or two hexes more than it did the previous turn. (However, a ship may not move more hexes than the maximum speed given in the speed rating charts, nor less than one hex.)

*Optional:* If players find that it is too burdensome to record turn-to-turn speed levels for each ship, they may omit this bit of record-keeping and instead move their ships any number of hexes from 1 to the ship’s maximum speed rating as determined according to one of the two methods above. However, this omission will give players an ahistorical degree of control over the movements of their ships, which required time to slow down or speed up.

**4.6** Capital ships must remain at least 2 hexes (one intervening hex) from enemy capital ships, unless closer movement is required by virtue of rule 4.1. Otherwise, capital ships must move so as to be at least 2 hexes from an enemy capital ship. Smaller ships are not subject to this restriction.

## 5.0 Command and Control

**5.1** Some ships must roll on the command/control table to determine whether it may move as desired, or whether it is restricted in its movements.

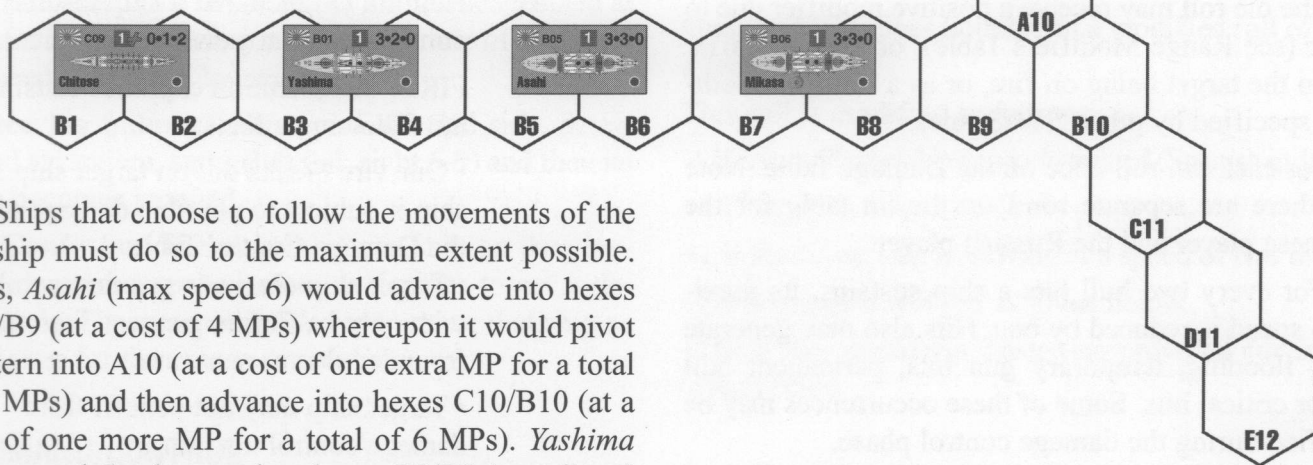
**5.11** A flagship may always move as desired without rolling on the command/control table.

**5.12** A ship that begins its movement within four hexes of the flagship may move as desired without rolling on the command/control table.

**5.13** A ship that begins its movement more than 4 hexes from the flagship must roll on the command/control

table UNLESS (a) it is in line astern formation behind the flagship, (b) it conforms its movements to the maximum extent possible to those of the flagship, and (c) all ships in front of it in the line astern also conform their movements to the maximum extent possible to those of the flagship.

*Example: Mikasa* moves to hexes B10/B9, then pivots its stern into hex A10, then moves into hexes E10/D10. *Asahi* and *Yashima* began movement within four hexes of *Mikasa*, so they may move as desired without rolling on the command/control table. *Chitose* begins movement more than four hexes from the flagship. Therefore, *Chitose* will have to roll on the command/control table unless it AND *Asahi* and *Yashima* choose to follow the movements of the flagship.



**5.2** Ships that choose to follow the movements of the flagship must do so to the maximum extent possible. Thus, *Asahi* (max speed 6) would advance into hexes B10/B9 (at a cost of 4 MPs) whereupon it would pivot its stern into A10 (at a cost of one extra MP for a total of 5 MPs) and then advance into hexes C10/B10 (at a cost of one more MP for a total of 6 MPs). *Yashima* (max speed 6) advances into hexes B9/B8 (spending 5 MPs, which it may do so under Rule 4.21, which allows ships to move one MP less than their maximum speed). *Chitose*, although it has a maximum speed of 8, must either roll on the command/control table or maintain the line astern formation. If it maintains the line astern, it is required by Rule 4.2 to move at a speed equal to that of the ship directly in front of it in the line astern (*Yashima*). It therefore moves at speed 5 (the amount of MPs expended by *Yashima*) and advances into hexes B7/B6. These movement rules will occasionally produce situations in which a gap of a single hex will appear in a line astern formation when the flagship has executed a turn. A single one-hex gap does not break the line astern formation. However, a gap caused by the sinking or slowing of a ship in the line astern formation WILL break the line astern formation. Common sense should apply.

**5.3** Other ships must roll on the Command/ Control Table to see if they may move as desired or if they must make unforeseen movements beyond the control of the player.

**5.4** All ships that suffered a FIRE result last turn (indicated by an \* on the Damage Table) also roll on the Command/Control Table, but do so with a +2 modifier.

## 6.0 Gunnery Combat

**6.1** The number of gunnery factors each ship has may be adjusted due to:

- directing fire through a ship's 60 degree arcs surrounding the bow and stern of the firing ship;
- damage to guns (although such damage may be repairable); or

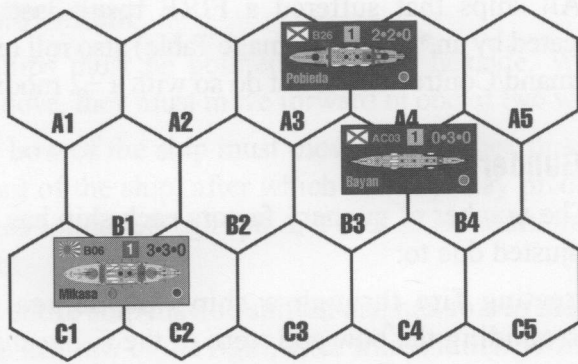
- the effect of a FIRE result (indicated by an \* on the Damage Table), the results of which apply to the turn after the turn in which the FIRE result is achieved.

**6.2** Ships firing through the 60 degree arc emanating from the ship's bow or stern have all gunnery factors reduced by half, fractions rounded down.

*Example: Bayan* is in *Mikasa*'s 60 degree arc, while *Pobieda* is in *Mikasa*'s 120 degree arc. If *Mikasa* fires at *Bayan*, assuming *Mikasa* has suffered no damage to guns to that point, it will fire a maximum of one primary and one secondary gun factor (3 factors /2 = 1.5 rounded down to 1) at *Bayan*. If it fires at *Pobieda*, it can fire three primary and three secondary gun factors.

**6.3** Ships that suffer a FIRE result (indicated by an \* on the Damage Table) fire with only half their gunnery factors (rounded down) on the turn following the turn on which they suffered that result.

**6.4** Ships may also have their gunnery factors reduced by damage to guns (as specified on the Damage Table)



## CHARTS AND TABLES

The terms used in the charts below have the following meanings:

- JA** Japanese Guns
- RU** Russian Guns
- US** United States Guns (also use for British)
- SP** Spanish Guns
- T** Torpedo

**Dud** Shell fails to explode. No damage.

**MF** Misfire. One firing gun explodes and is destroyed.

**P or S** A Primary or Secondary Gun is disabled but may be repaired via damage control.

**H** Hull hit. (Remember: a ship loses 1 point of speed for every 2 hull hits.)

**\*** FIRE. Ammunition explodes causing the following effects:

- One fire breaks out on target ship and ship is subject to possible damage on the Damage Control Table.

- Target ship conducts gunnery combat with only half of its gunnery factors (rounded down) next turn.

- Target ship may not benefit from damage control next turn.

- Target ship must roll with a +2 die roll modifier on the Command/Control Table next turn (only).

**FL** Flooding. Ascertain and record what side of the target ship was hit.

- Reduce ship speed permanently by 1.

- Ship will sink later if it takes another FL result on the same side that it was previously hit.

- Ship will sink if it rolls a 9 on the damage control table.

- Ship may remedy flooding by counter flooding through damage control, but counterflooding will reduce speed by 1 MP.

**EVADED** Target ship evades torpedo at last second.

**DIW** Dead in Water. Speed reduced to zero, but may be restored to 1 via damage control.

or due to specific scenario rules.

**6.5** Primary gun factors may not be fired at TB or DD class ships.

**6.6** Ships roll one d10 for each of their gunnery factors. A modified result of 9 or more generates a hit.

**6.7** The die roll may receive a positive modifier due to range (see Range Modifiers Table), or a +1 modifier due to the target being on fire, or as a result of modifiers specified by other GWaS rules.

**6.8** For each hit, roll once on the Damage Table. Note that there are separate rows on the hit table for the Japanese player and the Russian player.

**6.9** For every two hull hits a ship sustains, its maximum speed is reduced by one. Hits also may generate fires, flooding, temporary gun hits, permanent hull hits or critical hits. Some of these occurrences may be rectified during the damage control phase.

## 7.0 Torpedo Combat

**7.1** Torpedoes may be fired at a range of one hex in 1898, or one to two hexes in 1904.

**7.2** Torpedo attacks hit on a modified die roll of 9 or more. The die roll is modified by +1 if its target is a capital ship, or by +1 if the range to the target is one hex.

**7.3** Torpedo hits are resolved using the T row of the Damage Table.

## 8.0 Damage Control

**8.1** During the Damage Control phase, each player rolls on the Damage Control Table for any ship that has suffered a gun hit, a FIRE result, or flooding.

**8.2** If a ship suffered a FIRE result during the turn just concluded, none of the beneficial results (results 0-4 on the Damage Control Table) will apply to that ship.

## RANDOM EVENTS

These occur when a player rolls a 0 when rolling for initiative.

**0-1: Ammunition Report.** The player's admiral is told falsely that his ammunition supply is dangerously low. He must attempt to pull the fleet out of gunnery range for the next two turns. If this random event is rolled a second time by the same player, the ammunition shortage is true, and the player must break off the combat immediately or surrender.

**2-4: Phantom Torpedo Boat.** Two of the player's ships within a four hex radius (chosen by the opposing player) mistake a stray merchant ship for a torpedo boat. The mistaken ships must fire all of their secondary and tertiary guns at the phantom torpedo boat this turn.

**5-6: Bad coal.** One of the player's ships determined at random has begun using an inferior grade of coal, and its speed is reduced by one.

**7: Steering failure.** One ship of affected side, determined at random, turns (left 0-4, right 5-9) and then its helm becomes jammed.

**8-9: Confusion.** The captain of one ship on the player's side misinterprets orders or decides to act independently. The opposing player may move that ship as he desires for the next two turns.

## COMMAND/CONTROL

Die Roll	Result
0-6	Move vessel as desired.
7	Vessel must (and may only) turn into its left arc.
8	Vessel must (and may only) turn into its right arc.
9	Opponent may move vessel as desired.

Add 2 to the result if ship suffered a "FIRE" (\*) result this turn.

## DAMAGE CONTROL

Die Roll	Result
0-2	Do one of following at player's option: <ul style="list-style-type: none"> <li>• Repair rudder or helm damage.</li> <li>• Counterflood.</li> <li>• Restore speed to 1 if ship was dead in water.</li> </ul>

- Repair one gun to operational status

- 3-4 One fire extinguished.
- 5 Ammunition low: reduce gunnery factors by half.
- 6-8 Each fire causes one hull hit.
- 9 Flooded ship sinks.

+1 if the ship is currently on fire.

-1 if the ship neither fired nor was damaged during the last turn.

All favorable damage control results (0-4) are ignored if ship suffered a "FIRE" (\*) result this turn.

## TO HIT ROLLS

Guns and torpedoes both hit on a modified roll of 9 on a ten-sided die.

This roll is modified as follows:

-1 if crew of firing ship is poorly trained (Spanish in 1898).

+1 if targeted ship is on fire.

+1 if the firing ship is moving at a speed of less than 2.

+DRM range modifiers as given below.

+DRM any modifiers otherwise provided for in the GWaS rules.

## RANGE TABLE FOR SPANISH-AMERICAN WAR

	Primary	Secondary	Tertiary	Torpedo
1	+1	+2	+2	0
2-3	+1	+2	+1	-
4-5	+2	+1	-	-
6-7	0	-	-	-

## RANGE TABLE FOR RUSSO-JAPANESE WAR

	Primary	Secondary	Tertiary	Torpedo
1	+1	+2	+2	+1
2	+1	+2	+2	0
3-4	+1	+2	+1	-
5-8	+2	+1	-	-
9-12	+1	-	-	-

## DAMAGE TABLE

(See table at bottom of page.)

Roll one die for each hit

+1 if firing unit was hit more than once during the turn (+1 max).

+1 if target is especially flammable (Spanish in 1898; Russian Baltic fleet in 1904-1905).

## CRITICAL HIT TABLE

**0: BRIDGE.** Leader killed. For next two turns: (A) ship is out of command/control; if flagship, all friendly ships are out of command/control; (B) ship moves in straight line in direction to which it currently points; (C) no benefits from damage control are possible.

**1: RUDDER.** Ship must turn in circles either left (0-5) or to the right (6-9) unless repaired.

**2: FUNNEL.** 1 Hull, -2 Speed.

**3: PRIMARY GUNS.** Half of the remaining primary guns (rounded up) are permanently lost.

**4: SECONDARY GUNS.** Half of the secondary guns (rounded up) are permanently lost.

**5: WATERLINE.** 2H, FL.

**6: HELM.** Ship may not turn until helm is repaired.

**7: HULL.** 3H

**8: BOILER.** 1H, DIW.

**9: MAGAZINE.** Ship explodes.

## NEW SPEED RATINGS

### Russian

B06 Peresviet: 6	B15 Kniaz Suvarov: 6
B10 Slava: 6	B16 Prokhor: 6
B11 Tsesarevitch: 5	B17 Vladimir: 6
B12 Borodino: 6	B18 Alexander II: 5
B13 Alexander III: 6	B19 Nikolai I: 5
B14 Orel: 6	B20 Navarin: 5

B21 Sissoi Veliki: 5	C08 Aurora: 6
B22 Petropavlovsk: 6	C09 Diana: 6
B23 Poltava: 6	C10 Variag: 8
B24 Sevastopol: 6	C11 Izumrud: 8
B25 Osliba: 6	C12 Jemtchug: 8
B26 Pobieda: 6	ML01 Amur: 6
B27 Retvisan: 6	ML02 Yenisei: 6
CD01 Admiral Ushakov: 5	GB06 Grozyashchi: 5
CD02 Admiral Seniavin: 5	GB07 Gremyashchi: 5
CD03 General-Admiral Apraxin: 5	GB08 Otvanji: 5
AC00 Pamiat Azova: 5	GB09 Khabri: 5
AC01 Rurik: 6	GB10 Djigt: 5
AC02 Vladimir Monomakh: 5	GB11 Razboinik: 5
AC03 Bayan: 7	GB12 Sivuch: 5
AC04 Dmitri Donskoi: 7	GB13 Bobr: 5
AC05 Rossia: 7	GB14 Korietz: 5
AC06 Gromoboi: 7	GB15 Mandjur: 5
AC07 Admiral Nakhimov: 7	GB16 Almaz: 8
C01 Svetlana: 7	BS01 Rus: 5
C02 Pallada: 7	DD36-DD52 Puilki and Boiki class destroyers: 9
C03 Askold: 8	TB04-TB16 Sungari and 214 class torpedo boats: 6
C04 Novik: 8	TB17-TB19 Kazarski class torpedo boats: 8
C05 Boyarin: 8	AMC1-AMC6: 8
C06 Bogatyr: 8	
C07 Oleg: 8	

### Japanese

B01 Yahima: 6	B05 Asahi: 6
B02 Fuji: 6	B06 Mikasa: 6
B03 Shikishima: 6	B07 Kashima: 6
B04 Hatsuse: 6	B08 Katori: 6

	0	1	2	3	4	5	6-7	8	9
<b>JA</b>	NE	MF	S	S*	P*	P*	H	H, FL	CRITICAL HIT
<b>RU</b>	NE	Dud	Dud	Dud	S*	P*	H	H, FL	CRITICAL HIT
<b>US</b>	NE	Dud	H	S	S*	P*	H	H, FL	CRITICAL HIT
<b>SP</b>	NE	MF	Dud	Dud	S	P*	H	H, FL	CRITICAL HIT
<b>T</b>	Dud	Dud	H	H*	H, FL	2H*	2H, FL	2H, DIW	3H*

B09 Yamato: 6	C11 Tsushima: 7	C06 Olympia: 7	AMC04 Yale: 8
B10 Musashi: 6	C12 Niitaka: 7	C07 Cincinnati: 7	GB00 Bancroft: 6
CD01 Chin Yen: 5	C13 Otowa: 7	C08 Raleigh: 7	GB01 Yorktown: 6
CD02 Hei Yen: 4	C14 Sai Yen: 5	C09 Montgomery: 6	GB02 Petrel: 6
AC01 Asama: 7	C15 Chiyoda: 5	C10 Detroit: 6	GB03 Concord: 6
AC02 Tokiwa: 7	C16 Itsukushima: 5	C11 Marblehead: 6	GB04 Bennington: 6
AC03 Yakumo: 7	C17 Hashidate: 5	C12 Columbia: 7	GB05 Machias: 6
AC04 Adzuma: 7	C18 Matsushima: 5	C13 Minneapolis: 7	GB06 Castine: 6
AC05 Idzumo: 7	C19 Tatsuta: 7	C14 Denver: 6	GB07 Nashville: 6
AC06 Iwate: 7	C20 Miyako: 7	C15 Des Moines: 6	GB08 Wilmington: 6
AC07 Kasuga: 7	C21 Chihaya: 6	C16 Chattanooga: 6	GB09 Helena: 6
AC08 Nisshin: 7	GB01 Fuso: 5	C17 Galveston: 6	GB10 Annapolis: 6
C01 Naniwa: 6	GB02 Kaimon: 5	C18 Tacoma: 6	GB11 Vicksburg: 6
C02 Takachiho: 6	GB03 Tenryu: 5	C19 Cleveland: 6	GB12 Newport: 6
C03 Akitsushima: 6	GB04 Yaeyama: 6	PC01 Atlanta: 5	GB13 Princeton: 6
C04 Yoshino: 8	GB05 Takao: 5	PC02 Boston: 5	GB14 Wheeling: 6
C06 Suma: 7	GB06 Oshima: 5	PC03 Chicago: 5	GB15 Marietta: 6
C07 Akashi: 7	GB07 Idzumi: 6	PC04 New Orleans: 7	GB16 Topeka: 6
C08 Takasago: 8	GB08 Tsukushi: 5	PC05 Albany: 7	GB17 Isla de Luzon: 5
C09 Chitose: 8	AMC: 8	AR01 Katahdin: 5	GB18 Isla de Cuba: 5
C10 Kasagi: 8		DC01 Vesuvius: 7	GB23 Don Juan de Austria: 5
All Japanese destroyers and torpedo boats: 10		CS01 Chester: 8	RC01 McCulloch: 7
<b>United States</b>		CS02 Birmingham: 8	Foote-class torpedo boats: 8
B00 Maine: 6	B16 New Jersey: 7	CS03 Salem: 8	Bainbridge-class Destroyers: 8
B01 Indiana: 5	B17 Rhode Island: 7	AMC01 St. Louis: 8	
B02 Massachusetts: 6	CD00 Texas: 6	AMC02 St. Paul: 8	
B03 Oregon: 6	CD02 Puritan: 4	AMC03 Harvard: 8	
B04 Iowa: 6	CD03 Amphitrite: 4	<b>Spanish</b>	
B05 Kearsarge: 6	CD04 Modadnock: 4	B01 Pelayo: 6	AC07 Emperador Carlos V: 7
B06 Kentucky: 6	CD05 Terror: 4	AC01 Infanta Maria Teresa: 7	AC08 Cristóbal Colón: 7
B07 Illinois: 6	CD06 Miantonomoh: 4	AC02 Vizcaya: 7	AC09 Blas de Lezo: 7
B08 Alabama: 6	CD07 Monterey: 5	AC03 Almirante Oquendo: 7	C01 Aragon: 5
B09 Wisconsin: 6	AC01 New York: 7	AC04 Princesa de Asturias: 7	C02 Navarra: 5
B10 Maine II: 6	AC03 Brooklyn: 7	AC05 Cardenal Cisneros: 7	C03 Castilla: 5
B11 Missouri: 6	C01 Newark: 7	AC06 Cataluña: 7	C04 Alfonso XII: 6
B12 Ohio: 6	C02 Charleston: 7		C05 Reina Cristina: 6
B13 Virginia: 7	C03 Baltimore: 7		C06 Reina Mercedes: 6
B14 Nebraska: 7	C04 Philadelphia: 7		
B15 Georgia: 7	C05 San Francisco: 7		

C07 Alfonso XIII: 7	CD01 Numancia: 4
C08 Lepanto: 7	CD02 Vitoria: 4
C12 Velasco: 5	AMC01 Patriota: 8
C13 Infanta Isabel: 5	AMC02 Rapido: 8
C14 Isabel II: 5	GB01 Marques el Duero: 6
C15 Don Juan de Austria: 5	GB02 General Concha: 6
C16 Don Antonio Uloa: 5	GB03 Mallaganes: 6
C17 Conde del Venadito: 5	GB04 General Lezo: 6
C18 Isla de Luzon: 6	GB05 El Cano: 6
C19 Isla de Cuba: 6	GB06 Alvarado: 6
C20 Marques de Ensenada: 6	Furor-class destroyers: 8
C21 Rio de la Plata: 7	Azor-class torpedo boats: 8
PC01 Estramadura: 7	Temerario-class torpedo gunboats: 7
PC02 Reina Regente: 7	

### German

IC01 Kaiser: 6	C03 Prinzess Wilhelm: 7
C01 Kaiserin Augusta: 8	C04 Comoran: 6
C02 Irene: 7	GB01 Panther: 6

## DESIGN NOTES

I'd like to thank Russ Stolins, Robert Holzer, and Gary Valenza for their helpful comments in review of these rules.

My reasons for choosing the particular scale may be worth mentioning. First, I made the decision that I wanted to use the printed Great War at Sea gunnery factors for ease of play. Next I made the decision that I wanted to use a d10 for combat resolution. Using a d10 allows for more nuanced combat results, and d10 dice are readily available. Using a d10 system, even a very bad navy will have a significant chance of having a salvo hit in a 10-minute turn. By luck more than by design, the hit probabilities actually work out to be historically accurate (at least as far as my research indicates). Also, the use of 1000 meter hexes ensures the existence of what game designers call "the illusion of movement" while not giving the gamer the sense that he is commanding aircraft rather than ships. Use of 1000 meter hexes, coupled with the game's command rules, forces fleets to adopt historically-accurate formations.

The scale in these rules creates some distortion of the map, however, which may offend purists. Since the

Great War at Sea counters are double-sized, a capital ship will appear many times larger than its actual length. In reality, 2 or 3 pre-dreadnought battleships could fit comfortably lengthwise in this space while maintaining historical buffers between ships. Purists may wish to rectify this by halving the scale and doubling gunnery ranges and speeds proportionally. However, this option requires a substantially larger amount of space and likewise increases playing time, due to the need to count hexes for range purposes.

## DAMAGE

My research on this war indicates that there was a substantial difference in the effects of Japanese and Russian munitions in combat. The shell failure rates may seem high, but actually are in line with historical performance. The Japanese had a major problem with shells bursting when fired, thereby destroying the firing gun. The problem was extremely bad at the Battle of the Yellow Sea, but also noticeable at Tsushima. I have averaged the statistical frequency between the two battles, and rounded down in favor of the Tsushima result. The Russians had a very high dud percentage in both battles. Again, I have averaged the performance from both battles, and rounded up in favor of the Tsushima result, to get the 30% dud rate the Russians face. Also, the Japanese mix of munitions produced more fires than did the Russian mix, while the Russians concentrated more on armor-penetrating ammunition.

One reviewer suggests that the reason for a higher percentage of Russian fires was the extent to which certain Russian ships were packed with coal. In battles where the Russian ships traveled long distances to arrive (notably Tsushima), the Russian ships were laden with larger amounts of coal and consequently burned more easily. In contrast, the frequency of Russian fires may have been less at battles where they traveled shorter distances. If you subscribe to this theory, change the Japanese S\* result on a roll of 3 to a simple S result.

—Karl Laskas