A & A GAME ENGINEERING PRODUCT SUPPORT

Product Support sheets come in the following types:

- Clarifications these are more general clarifications about game play in response to questions from players.
- Corrections and Amendments these include corrections to errors in game data, typing errors, and mistakes in game play that have come to light. These may come in two alternatives:
 - applicable to the most recent edition.
 - applicable to previous editions. These items will all have been incorporated into the latest edition on sale.
- New Rules These rules will have been developed in response to requests from players. They may also have been developed from House Rules (see below).
- House Rules and player suggestions. House rules that are tested and work well may be incorporated into the basic rules if the author(s) approve.

The content of the sheets follows the same order as the rules in the book and the first sheet shows a summary of these sections and indicates those that are affected by the current sheet.

IRON AND FIRE

ADDITIONAL RULES FOR USE WITH IRON AND FIRE EDITION 2.2 ONWARDS

DATE: 21 JANUARY 2015

Revised 24 April 2016

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This document has been revised in 2016 as the author is planning to produce some rules specifically for the Lissa Campaign.

We have retained some the data tables for shore defences that are applicable for use with Iron and Fire.

- 1. AMERICAN CIVIL WAR CAMPAIGN RULES
 - ⇒ 1.1 Playing Areas and Scales
 - ⇒ 1.2 Characters
 - ⇒ 1.3 Order of Play
 - ⇒ 1.4 American Civil War Bibliography
- 2. GUNNERY TABLES FOR SHORE DEFENCES

1—AMERICAN CIVIL WAR CAMPAIGN RULES

The following rules give some rough guidelines and rules for more general multi player campaigns. They should be read in conjunction with the Red River Blues solo campaign system also available as a separate download sheet. Only the bare bones of the campaign are presented - experience suggests that campaign organisers will tailor the rules to suit their own preferences. In addition I would suggest that anyone organising a campaign should examine as many of the references as possible, particularly memoirs of serving officers, as these often act as a ready source of random events and unusual missions or circumstances for players to deal with. The American Civil War abounds with stories of warships evacuating parties of distressed civilians, transporting 'ladies of the night', surviving fire and flood, encountering dynamite 'accidentally' left in piles of captured coal - the list of unusual, embarrassing and downright dangerous happenings is almost endless! As with most things in life, the more effort that goes into this stage of the campaign the more you and your players will be rewarded.

1.1 – Playing Areas and Scales

The conventional campaign is staged on a hex map, using a scale of 5 miles to one hex, and a time scale of 2 hours per turn. The area covered by the playing area should be mapped out by the umpire in advance, or based on historical topography. In particular the umpire should note the location of strong currents, shallows, fords and crossing points, and other items of interest. Sides with 'local knowledge' can be given an advantage by having accurately laid out maps, with their less knowledgeable opponents having maps lacking in detail. Union commanders often planned campaigns on the Western rivers using maps taken from newspapers and journals, whilst charts of the islets and inlets on the Eastern Seaboard were notoriously unreliable. The South, in contrast, was generally well endowed with local boatmen who had grown up on the water and who had unrivalled local knowledge.

1.2 Characters

State of origin

Roll D20 on the table opposite. This can be particularly interesting, particularly where a character was born in a state which is now on the opposing side (opportunities for role playing here, with smear campaigns against those whose background is not as loyal as it could be!).

1.3 – Order of Play

Each turn the players run through the following sequence:

- 1 Refuel and rearm
- 2 Conduct repairs
- 3 Write messages, deciding on method of transmittal
- 4 Telegraphic Transfer 1
- 5 Random event resolution
- 6 Plot movement.
- 7 Execute Movement
- 8 Check for opposing forces in same hex
- 9 Resolve engagements
- 10 Telegraphic Transfer 2
- 11 Written message reception

These phases are discussed in detail below.

Roll	Union	Confederate		
1 – 2	Maine	Texas		
3 – 4	Massachusetts	Louisiana		
5 – 6	New Jersey	Mississippi		
7 –8	New England	Alabama		
9	New England	Arkansas		
10	Delaware	Georgia		
11	Virginia	Florida		
12	Pennsylvania	Florida		
13	Vermont	South Carolina		
14	Ohio	South Carolina		
15	Missouri	North Carolina		
16	Maryland	North Carolina		
17	Florida	Virginia		
18	South Carolina	Virginia		
19	Virginia	Tennessee		
20	North Carolina	Maryland		

Phase 1 - Refuel and Rearming

At the start of the turn players decide whether any of their ships will be refuelling and rearming. Vessels that are doing so must spend that turn at anchor or alongside, and may not move.

All ships use at least 1 point of fuel per turn, unless their boilers are cold. Fuel usage depends on ship size, speed and efficiency of the engines. Refer to the table below to determine fuel usage and typical bunker capacity

Cold Idle Up to ½ speed		Over ½ Speed	Inefficiency Bonus	Bunker Capacity*		
0	1	1	2	+1	30/40	
0	1	1	2	+1	40/75	
0	1	2	3	+1	50/100	
0	1	2	3	+2	60/110	
0	2	2	4	+2	80/120	
	0 0 0	0 1 0 1 0 1	0 1 1 1 0 1 0 1 2 0 1 2	0 1 1 2 3 0 1 2 3	0 1 1 2 +1 0 1 2 +1 0 1 2 3 +1 0 1 2 3 +2	

It will be noted that ocean going ships have proportionally larger bunkers since they were expected to transit greater distances without refuelling. This refers to their maximum capacity - once engaged in operations on the rivers the amount of ready fuel was likely to drop, and so it would be quite realistic to start a riverine campaign with an ocean going vessel's bunkers at 50 to 60% capacity. Transports can carry a number of fuel points equal to their original SP multiplied by 5.

Limitations also exist for ammunition. At the start of the game it is assumed that each gun has 20 to 30 turns worth of ammunition available for each gun. A 'turns worth' (hereafter referred to as a 'round') may be a single 15" shell, or several smaller shells, but represents the amount of ammunition expended in a single game turn. Transports can carry a number of rounds of ammunition equal to their original SP multiplied by 5, but the type and number of

rounds for each type must be specified before the start of the campaign. Space allocated to ammunition storage cannot be used for the carriage of extra fuel.

Players may set up fuel and ammunition depots in their territory. As for ammunition carried on transports the number of rounds for each calibre of gun should be noted. Ammunition and fuel at depots is of course available to the opposition if those depots are captured.

Scavenging of fuel and ammunition from shore batteries, towns or captured ships takes at least one turn to complete, during which the forces involved are immobile. The umpire must determine the local availability of fuel and ammunition (the former depending on the degree of habitation, local woods, etc., the latter usually depending on the presence of enemy batteries or ammunition dumps). In general scavenging should offer up 1d10 fuel points within a particular hex on the first turn it is scavenged, with 1d6 on subsequent turns. Umpires should allow two or more d10 rolls in inhabited areas, but are also free to designate areas as 'sparse', allowing no scavenging rolls at all.

Phase 2 – Undergoing Repairs

Repairable damage is limited to 50% of any damage inflicted (e.g. if a ship suffers 10 damage points in an engagement, 5 will be repairable. The remaining 5 points is permanently lost, or at least within the confines of the campaign - more permanent repairs would require the services of a dockyard).

Repairs may be conducted if the vessel is hove to. A minimum of three campaign turns must be spent on repairs for progress to be made. A group of three concurrent campaign turns spent making repairs is referred to as a Repair Turn. Each Repair Turn allows:

- SP and BP damage up to 5% of the ship's original points values to be reinstated (or 10% if the vessel is at a dockyard or repair facility.
- Repair rolls to be made for guns and other damage, up to a maximum of 1 roll per 20 original SP or part (e.g. a ship with 25 SP can make 2 rolls).

"Other damage" includes knocked out guns, damaged boilers, funnels, paddle wheels etc. Some damage may be irreparable, other damage may be found to be irreparable as repairs progress. Burst guns and boilers that were penetrated (Critical hits 4 and 16) cannot be repaired by the ship's crew. Repairs to these items requires the services of a dockyard (see below) For other items, roll on the table below, with the numbers shown indicating the scores required for success:

Item	Repairs by Ships Crew	Repairs at a Repair Facility
Guns	1	1-2
Boiler	1	1-3
Boiler valves	1-2	1-4
Other items	1-2	1-3
Items for which repair rolls are shown on the critical hit table	to be fixed following the	,

On a roll of 10 the damaged item is found to be irreparable, requiring the services of a dockyard as for burst guns and penetrated boilers, otherwise the item has not been repaired during that repair turn. Note that it is possible for an item to be declared irreparable after more than one attempt to fix it.

Ships may be docked to allow permanent repairs. This requires the services of a dockyard (which may or may not be available, at the discretion of the umpire). Repairs to guns and critical hits are conducted as above (ignoring the effects of a roll of 10) but hull damage is repaired at the rate of 1% of original SP and BP per day. Note that in this case there is no rounding involved - the ship is left in dock for a number of days, on completion of which the proportion of damage repaired is calculated.

For example, a ship that suffered 45% damage could be returned to service in near-perfect order after 45 days. If a ship is in dock for more than a month it can be assumed that all guns and critical hits have been repaired, to save excessive die rolling.

Phase 3 – Write Messages, deciding on method of transmittal

All communication with other players or remote commands is via written orders and reports. These may be as long or as brief as the players wish. Having concocted their reports they must declare how the message is to be delivered. Options are by despatch boat, mounted courier, pigeon, or by telegraph. The telegraph has its own phase; the others are discussed below.

Despatch Boat

The message is allocated to a particular vessel, and is delivered to the recipient in the Message Receipt phase of the turn in which the vessel reaches them.

Pigeon Post

Pigeons can carry short messages (allow no more than 30 words) back to prepositioned Headquarters which must be located in advance, and which must have been established for some time. Flight time is 1 turn per three hexes. Pigeons were, however, vulnerable to snipers, troops looking for lunch, or the local wildlife - roll a d6 per pigeon despatched. On a roll of 5 or 6 the pigeon has been intercepted, and the message is lost. Note that the supply of pigeons will be limited - say no more than 5 per flotilla, if they are available at all.

Mounted Couriers

Mounted couriers travel at a speed of three hexes per turn. There is a chance they will be intercepted by enemy patrols, get lost or are otherwise delayed. Roll a d6 per message:

Roll	Effect
1-3	Message arrives OK
4	Courier intercepted and message lost if enemy patrols are active, otherwise delayed 1 turn
5	Courier gets lost - delayed 1 turn until message is delivered
6	Courier gets lost - delayed 1d6 turns until message is delivered

Phase 4 - Telegraphic Transfer 1

Telegraphic transfer may be used if the wires are available. The umpire should plot the location of wire stations and the routes of the wires themselves. The use of the telegraph may allow multiple messages to be passed, such as queries and replies, but again, delays may be caused. For each message passed along a particular wire, roll a d6. On a roll of 1-5 the message is passed immediately to the recipient, but on a 6+ the message is delayed and is not passed until the start of Phase 10, telegraphic Transfer 2. One is added to the die for each message passed.

Phase 5 - Random Event Resolution

Before the start of play the umpire should generate a random event table. This should be tailored to the specific conditions of the campaign, but Table 11 of the solo campaign rules could be used as is. Rolls for random events should be made once per day for each flotilla.

Phase 6 – Plot Movement.

Movement of each flotilla or individual vessel is plotted on the campaign map. Orders should be accompanied by a note on the fuel used by each vessel and the available fuel remaining after movement.

Phase 7 – Execute Movement.

Movement orders are passed to the umpire who plots the moves on the map.

Phase 8 – Check for opposing forces in same hex.

If the movement of a ship or flotilla takes a vessel into a hex occupied by enemy forces, whether on land or afloat, the umpire should check for the possibility of an encounter. These will usually be automatic unless there is some element of restricted visibility, for example a vessel attempting to pass a battery at night or in fog.

Phase 9 - Resolve Engagements.

Any encounters that lead to combat are transferred to the tabletop and the resulting action fought to a conclusion. Particularly long actions may allow the movement of reinforcements to assist on subsequent campaign turns.

Phase 10 - Telegraphic Transfer 2.

Any telegraphic messages that were waiting to be delivered from Phase 4 are delivered now.

Phase 11 - Written Message Reception.

Written messages that reach their destination are handed to the recipients now. Note that if a message was intercepted or otherwise lost neither the recipient nor the sender are informed of the fact until the game is concluded.

1.4 American Civil War Bibliography

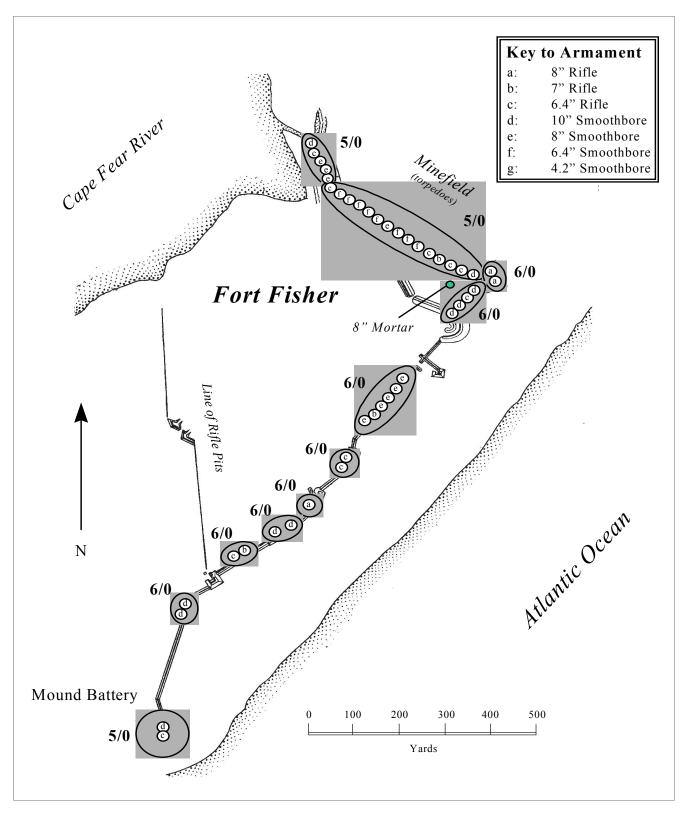
This list of titles also appears in the Blue Steel Grey Thunder supplement and in the 3rd Edition of the Main Rule Set.

- Amadon, George F. *Rise of the Ironclads*. Pictorial Histories Publishing, 1988.
- Anderson, Bern. By Sea and By River: The Naval History of the Civil War. Da Capo, 1989.
- Baxter, James Phinney III. *The Introduction of the Ironclad Warship*. Harvard University Press, 1933.
- Bearss, Edwin C. *The Fall of Fort Henry*. Eastern National Park and Monument Association, 1989.
- Bearss, Edwin C. *Hardluck Ironclad*. Louisiana State University Press, 1966. Revised edition, 1980.
- Bearss, Edwin C. River of Lost Opportunities: The Civil War on the James River 1861-1862. H.E. Howard, 1995.
- Bradford, James C. (ed.) Captains of the Old Steam Navy: Makers of the American Naval Tradition 1840-1880. United States Naval Institute, 1986.
- Bradford, Ned (ed.) *Battles and Leaders of the Civil War*. New York: Fairfax Press, 1956.
- Browning, Robert M., Jr. From Cape Charles to Cape Fear: The North Atlantic Blockading Squadron in the Civil War. University of Alabama Press, 1993.
- Bulloch, James D. *The Secret Service of the Confederate States in Europe*. Reprint by Thomas Yoseloff, 1959.
- Burton, E. Milby. *The Siege of Charleston 1861-1865*. University of South Carolina Press, 1970.
- Campbell, R. Thomas. *Gray Thunder: Exploits of the Confederate States Navy*. Burd Street Press, 1996.
- Campbell, R. Thomas. *Southern Thunder: Exploits of the Confederate States Navy*. Burd Street Press, 1996.
- Campbell, R. Thomas. Southern Fire: Exploits of the Confederate States Navy. Burd Street Press, 1997.
- Canney, Donald L. The Old Steam Navy, Volume 1: Frigates, Sloops and Gunboats, 1815-1885. Naval Institute Press, 1990.
- Canney, Donald L. The Old Steam Navy, Volume 2: The Ironclads, 1842-1885. Naval Institute Press, 1993.
- Carse, Robert. Blockade: The Civil War at Sea. Rinehart & Co., 1958.
- Chaitin, Peter M. *The Coastal War: Chesapeake to Rio Grande*. Time-Life Books, 1984.
- Chesneau, Roger. Conway's All the World's Fighting Ships 1860-1905. Conway Maritime Press, 1979.
- Coombe, Jack D. *Thunder Along the Mississippi*. Sarpedon, 1996.
- Cooney, David M. A Chronology of the U.S. Navy 1775-1965. Franklin Watts, 1965.
- Coski, John M. Capital Navy: The Men, Ships and Operations of the James River Squadron. Savas Woodbury, 1996.
- Davis, George B., et. al. *The Official Military Atlas of the Civil War* Gramercy Books, 1983.
- Davis, William C. *Duel Between the First Ironclads*. Doubleday, 1975.

- Donovan, Frank R. *Ironclads of the Civil War*. American Heritage Publishing, 1964.
- Durkin, Joseph T. Confederate Navy Chief: Stephen R. Mallory. University of South Carolina Press, 1987
- Edmonds, David C. *The Guns of Port Hudson*. Acadiana Press, 1983.
- Elliott, Robert G. Ironclad of the Roanoke: Gilbert Elliott's Albemarle. White Mane, 1994.
- Fowler, William M., Jr. *Under Two Flags: The American Navy in the Civil War*. Avon Books, 1990.
- Gibbons, Tony. Warships and Naval Battles of the U.S. Civil War. Dragon's World, 1989.
- Gosnell, H. Allen. Guns on the Western Waters. Louisiana State University Press, 1993.
- Greene, J & Massignani, A. Ironclads at War. Combined Publishing, 1998
- Hearn, Chester G. *Mobile Bay and the Mobile Campaign*. McFarland & Co., 1993.
- Hearn, Chester G. *The Capture of New Orleans*, *1862*. Louisiana State University Press, 1995.
- Hoehling, A.A. Naval Incidents of the Civil War. John F. Blair, 1989.
- Hoehling, A.A. Thunder at Hampton Roads. Prentice Hall, 1976.
- Hunter, Louis C. Steamboats on the Western Rivers. Dover Books, 1993.
- Jones, Virgil Carrington. *The Civil War at Sea (3 vols)*. Broadfoot Publishing, 1990.
- Korn, Jerry. War on the Mississippi: Grant's Vicksburg Campaign. Time-Life Books, 1985.
- Luraghi, Raimondo. *A History of the Confederate Navy*. Chatham Publishing, London, 1996.
- Macartney, Clarence Edward. Mr. Lincoln's Admirals. Funk & Wagnalls, 1956.
- MacBride, Robert. Civil War Ironclads: The Dawn of Naval Armor. Chilton Books, 1962.
- Mahan, Alfred T. *The Gulf and Inland Waters*. Broadfoot Publishing, 1989.
- Massignani, Allesandro and Greene, Jack: *Ironclads at War*. Combined Publishing, 1998
- Merrill, James M. Du Pont: *The Making of an Admiral*. Dodd, Meade & Co., 1986.
- Merrill, James M. The Rebel Shore. Little, Brown, 1957.
- Miller, Edward M. USS Monitor: The Ship That Launched a Modern Navy. Leeward Publications, 1978.
- Miller, Edward Stokes. Civil War Sea Battles. Combined Books, 1995.
- Miller, Francis Trevelyan (ed.) *The Photographic History of the Civil War: VI The Navies*. Thomas Yoseloff, 1957.
- Milligan, John D. *Gunboats Down the Mississippi*. United States Naval Institute, 1965.
- Moebs, Thomas Truxtun. *Confederate States Navy Research Guide*. Moebs Publishing Company, 1991.

- Mokin, Arthur. *Ironclad: The Monitor & the Merrimack*. Presidio Press, 1991.
- Musicant, Ivan. Divided Waters: The Naval History of the Civil War. Harper Collins, 1995.
- Naval History Division, U.S. Navy. Civil War Naval Chronology 1861-1865. U.S. Government Printing Office, 1971.
- Page, Dave. Ships versus Shore. Rutledge Hill Press, 1994.
- Parker, William Harwar. *Recollections of a Naval Officer 1841-1865*. Naval Institute Press, 1985.
- Perry, Milton F. *Infernal Machines; The Story of Confederate Submarine and Mine Warfare.* Louisiana State University Press, 1985
- Porter, David D. *The Naval History of the Civil War*. Castle Books, 1984.
- Pratt, Fletcher. Civil War on Western Waters. Henry Holt, 1956.
- Pratt, Fletcher. *The Monitor and the Merrimac and Other Naval Battles*. Random House, 1951.
- Reed, Rowena. *Combined Operations in the Civil War*. University of Nebraska Press, 1993.
- Roske, Ralph J. and Charles Van Doren. *Lincoln's Commando: The Biography of Cdr. William B. Cushing, USN* Naval Institute Press, 1995.
- Rye, Scott. Men & Ships of the Civil War. Longmeadow Press, 1995
- Scharf, J. Thomas. *History of the Confederate States Navy*. Fairfax Press, New York, 1977.
- Silverton, Paul H. Warships of the Civil War Navies. Naval Institute Press, 1989.
- Soley, James Russell. *The Blockade and the Cruisers*. Broadfoot Publishing, 1989.
- Spencer, Warren F. *The Confederate Navy in Europe*. University of Alabama Press, 1983.
- Stern, Philip Van Doren. *The Confederate Navy: A Pictorial History*. Da Capo Press, 1992.
- Still, William N., Jr. *Iron Afloat: The Story of the Confederate Armorclads*. University of South Carolina, 1985.
- Time-Life Books. *The Blockade: Runners and Raiders*. Time-Life Books, 1983.
- Trotter, William R. *Ironclads and Columbiads: The Civil War in North Carolina:* John F. Blair, 1989.
- Tucker, Spencer. Arming the Fleet: U.S. Navy Ordnance in the Muzzle-Loading Era. Naval Institute Press, 1989.
- Walke, Henry. Naval Scenes and Reminiscences of the Civil War in the United States. F.R. Reed & Company, 1877.
- Werlich, David P. Admiral of the Amazon: John Randolph Tucker. University Press of Virginia, 1990.
- West, Richard S., Jr. Gideon Welles: *Lincoln's Navy Department*. Bobbs-Merrill Company, 1943.
- Wideman, John C. Civil War Chronicles: Naval Warfare -Courage and Combat on the Water. Metro Books, 1997
- Williams, Edward F., III. *Confederate Victories at Fort Pillow*. Nathan Bedford Forrest Trail Committee, 1984.

A TYPICAL FORTRESS



Fort Fisher, depicted in the diagram above, was an earthwork fort on the Cape Fear River, near Wilmington. The fort has been divided into 11 sections, each shown as a shaded oval. The Armour Thickness of each section is shown as two numbers, e.g. 6/0.

This means the battery has an AT of 6 when under fire from direct fire weapons, but an AT of 0 overhead (all the guns were mounted *en barbette*).

2 – GUNNERY TABLES FOR SHORE DEFENCES

The capabilities and characteristics of the shore-based guns are somewhat distinct from the more modern pieces used on ships.

Which Edition of the Rules?

If you are using an edition prior to the 3rd Edition, you should use the two Gunnery Tables 1 and 3 for shore defences below.

If you are using the 3rd Edition of the Rules please use the table at the bottom of the page (which is also labelled 3rd Edition). The effective values in the table below are the same as those above, but in the 3rd Edition the way you roll to hit is reversed so that the scores shown are the minimum required.

Gunnery Table 1 - Hitting the Target

Summery I work I I I I I I I I I I I I I I I I I I I										
Mortars	0"- 5"	5"- 10"	10"- 15"	15"- 20"	20"- 25"	25"- 30"	30"- 40"	40"- 50"		
30pdr Mortar		see main rules for details of mortars								
60pdr mortar		see main rules for details of mortals								
Howitzers										
7pdr Field Howitzer	8	7	5							
10pdr Howitzer	8	8	6	Special rules up to 60"						
30pdr Howitzer	8	8	6							
Rifles										
7pdr shell gun	8	7	5	3	_	_	_	_		
12pdr RBL	8	8	6	5	3	1	_	_		
24pdr RBL	8	8	7	6	4	2	_	_		
30pdr RML	8	8	7	6	5	3	_	_		
Smoothbores										
6pdr	8	7	5	3	_	_	_	_		
12pdr SBM	8	8	6	3	1	_	_	_		
18pdr SB	8	8	6	3	1	_	_	_		
24pdr ML	8	8	6	4	2	_	_	_		
48pdr SBM	8	8	6	4	2	_	_	_		

Gunnery Table 3 - Penetration

	011 1011 1011 0011 0011 1011								_	
Mortars	0"- 5"	5"- 10"	10"- 15"	15"- 20"	20"- 25"	25"- 30"	30"- 40"	40"- 50"	Damage Value	
30pdr		gas main rules for details of morters								
60pdr		see main rules for details of mortars								
Howitzers										
7pdr Field Howitzer	2	2	2	2	2	2	2	2	1/1	
10pdr	2	2	2	2	2	2	2	2	1/1	
30pdr	2	2	2	2	2	2	2	2	1/2	
Rifles	Rifles									
7pdr shell	1	1	0	0	_	_	_	_	1/1	
12pdr RBL	1	1	1	0	0	0	_	_	1/2	
24pdr RBL	5	4	4	4	3	3	_	_	2/3	
30pdr RML	5	5	5	4	4	3	_	—	2/4	
Smoothbore	es									
6pdr	3	3	2	1	_	_	_	_	1/1	
12pdr SBM	3	3	2	2	1	_	_	_	1/2	
18pdr SB	4	4	3	3	2		_		2/3	
24pdr ML	4	4	4	3	3		_		3/5	
48pdr SBM	5	4	4	3	3	_	_	_	2/5	

Gunnery Table — Shore Defences – 3rd Edition									
Mortars	5"	10"	15"	20"	25"	30"	40"	50"	DR
30pdr	see main rules for details of morters								5
60pdr	see main rules for details of mortars							10	
Howitzers	5"	10"	15"	5" 20" 25" 30" 40" 50"					
7pdr Field Howitzer	3+/2	4+/2	6+/2	Special to 60"/ Pen 2					
10pdr Howitzer	3+/2	3+/2	5+/2						
30pdr Howitzer	3+/2	3+/2	5+/2						
Rifles	5"	10"	15"	20"	25"	30"	40"	50"	DR
7pdr shell gun	3+/1	4+/1	6+/0	8+/0	_	_	_	_	1/1
12pdr RBL	3+/1	3+/1	5+/1	6+/0	8+/0	10+/0	_	_	1/2
24pdr RBL	3+/5	3+/4	4+/4	5+/4	7+/3	9+/3			2/3
30pdr RML	3+/5	3+/5	4+/5	5+/4	6+/4	8+/3			2/4
Smoothbores	5"	10"	15"	20"	25"	30"	40"	50"	DR
6pdr	3+/3	4+/3	6+/2	8+/1	_	_	_	_	1/1
12pdr SBM	3+/3	3+/3	5+/2	8+/1	10+/1	_	_	_	1/2
18pdr SB	3+/4	3+/4	5+/3	8+/3	10+/2	_	_	_	2/3
24pdr ML	3+/4	3+/4	5+/4	7+/3	9+/3	_	_	_	3/5
48pdr SBM	3+/5	3+/4	5+/4	7+/3	9+/3	_	_	_	2/5