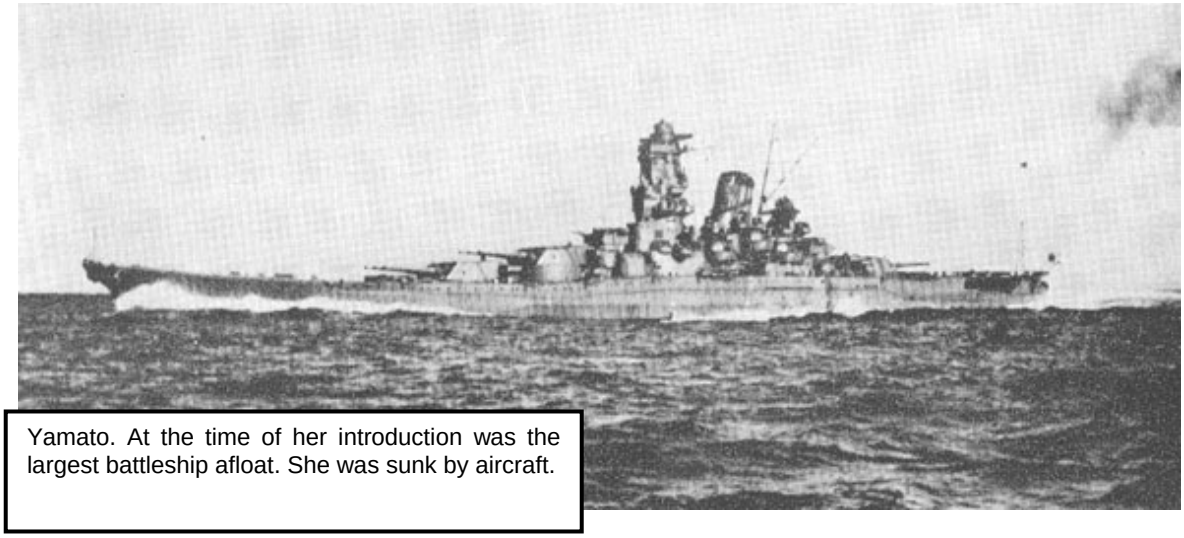
World War 2 Naval
Fast Play Rules

Design Notes

This set of rules has been developed to give a reasonably historical result for a large fleet action in three hours of playing time. During WW2, there were few actions involving classical fleet battles as had occurred in WW1. Where the possibility did exist, there seems to have been a lack of political will to do so. This has made true comparisons very difficult. However, there were several landmark developments that can assist us. The Tosa experiments caused a major rethink about the type and placement of armour protection on capital ships. Greater emphasis began to be put on torpedo protection and anti-flooding measures. It suddenly became obvious to the major naval powers their WW1 fleets had become dangerously obsolete by 1930. The 1935 Washington Naval Treaty limiting the tonnage of new capital ships, resulted in Britain, Germany and to a lesser extent Japan designing capital ships light on protection and gun power. The 'pocket battleship' Deutchland is a well-known example. With 11inch guns and an armour base of 4 inches, she was only suitable for convoy raiding. The British KGV class suffered from the same design limitations. 14" guns and smaller engines were incorporated into the design to reduce overall tonnage. This made them slow fuel guzzlers without the punch of their American counterparts. The Rodney and Nelson had their stern section literally redesigned out of existence in order to accommodate the provisions of the treaty. Essentially, European and Japanese capital ship design became a matter of political expedience, rather than military requirement.



Yamato. At the time of her introduction was the largest battleship afloat. She was sunk by aircraft.

The entry of air power into the naval battle was a long and protracted event. By 1930, naval aviation had been firmly established in the major fleets of the world, due largely to the availability of reliable engines and a whole new group of light weight metals called duraluminum. When Mitchell demonstrated a battleship could be sunk by aerial bombing, another major re-think of ship design was forced on the naval architects and planners. By 1944, the American battleship had been relegated from a primary position in the fleet, to that of a floating AA battery to protect the aircraft carriers. Those nations lacking a naval airforce were forced to operate within the protection of land-based airforces.

Radar also changed the face of the naval engagement. It not only provided gunnery direction and ranging, especially in bad weather or at night, it also provided long-range aircraft detection, essential for a credible AA defense. In the 1943 campaign against the German U-Boat offensive, it was decisive.

All of the above factors need to be taken into account, if a realistic set of rules is to be designed. Two very important historical events need to be possible in any naval rule set.

(a) The loss of a capital ship on the first exchange of gunnery. (HMS Hood in 1941)
(b) The survival of badly damaged ships against what appear to be impossible odds. (IJN Mogami at Midway in June 1942)

Many early rule sets attempted to follow the "Fletcher" accounting system for recording damage. That is they set a numerical value for a vessel and when that is lost it is considered sunk. In addition specific damage to various areas of the ship are assigned as damage is taken. I believe this method is now obsolete. During the period this type of system was introduced, naval secrecy prevented the cause of ship losses being specifically identified. It has only been since the end of the '50 year rule' in England that the cause of major wartime naval losses have been revealed in some detail. The important part of these revelations has been the assessment of the likelihood for a particular system design to fail under attack. Thus it was revealed the Prince of Wales was primarily lost because her vital electrical supply systems, powering the AA turrets amidships, were too vulnerable. They should have been more centrally situated, buried deeper in the ship and cross linked. Such a cause of loss was not uncommon in many navies and I have therefore concluded rather than recording a specific weapon or propulsion failure, it is more realistic to have a reduction in overall efficiencies. Thus damage counters progressively reduce speed, gunnery and torpedo fire, simultaneously. Where there is a possibility of catastrophic loss, I have used the device of any double rolled with two dice. Play testing has shown this system results in historically valid results.

The Anti-submarine system is an abstract system, in that players are not required to laboriously move submerged submarines in an effort to gain position for an attack. The submarine comes into play automatically, but so does the ASW defense, thus there is a balance between attacker and defender. Play testing shows the submarine to be dangerous, but rarely decisive.

By 1942, aircraft began to dominate the outcome of all major naval battles. While the European theatre still relied on the heavy fleet units, supported by land based airpower, the Pacific required the use of aircraft carriers in substantial numbers to prosecute the war aims of the combatants. Aircraft carriers have a number of 'air groups' assigned to them. Each aircraft counter or model represents 4 actual aircraft, therefore an air group may consist of 4 counters (18 A6M6 Zero aboard IJN *Hiryu* in 1942).

The Carrier IJN Zuiho under attack at Leyte Gulf, in 1944

Aircraft left over from the actual air wing strengths should be considered unserviceable or replacements. All combat is between counters not individual aircraft. Losses of counters due to AA fire or air attack represent the reduction in efficiency by casualties not the total loss of every aircraft represented by the counter. The following example demonstrates the calculation system. The number in ( ) represents the number of counters.

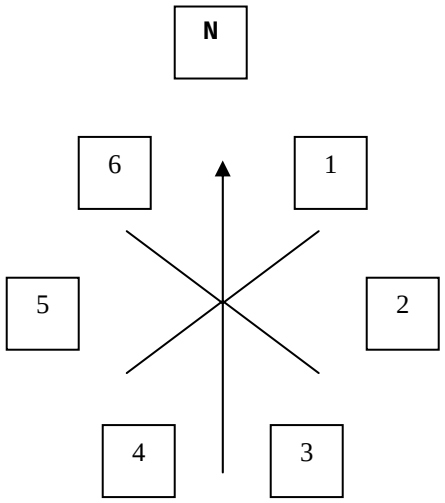
Battle of Santa Cruz Islands – October 1942

Junyo	26(6) A6M Zero	21(5) D3A Val	10(2) B5N Kate
Shokaku	18(4) A6M Zero	20(5) D3A Val	23(5) B5N Kate
Zuiho	18(4) A6M Zero	-	6(1) B5N Kate
Zuikaku	27(6) A6M Zero	27(6) D3A Val	18(4) B5N Kate
Enterprise	34(8) F4F Wildcat	36(9) SBD Dauntless	13(3) TBF Avenger
Hornet	36(9) F4F Wildcat	36(9) SBD Dauntless	16(4) TBF Avenger

It can be seen why the US Navy managed to hold the initiative in the Pacific against the IJN, with fewer carriers.

Locating the enemy
One of the major problems associated to gaming with models as opposed to computers is the problem of abstracting a long-range detection system, so necessary when reconstructing pacific carrier operations. One system that seems to work well is this.

Locating the target



Players determine the angle of approach of their forces in relation to each other using the above sector system. In order to detect an enemy force, the opposing player must roll the correct number for the sector that represents the correct direction of approach. Each player can either select a number as being the direction they chose to approach from or the dice roll determines which direction. The arrowhead represents a compass heading of north and players should determine the sector their forces occupy based on the arrowhead facing a constant northern alignment

Reconnaissance and air raid track – once target has been located.
Once the correct direction of approach by the enemy has been determined, it is then necessary to determine at what range they were detected. This is achieved by both players rolling a series of dice, starting with a range of 330 miles. This represents the longest practical range at which an air strike could be conducted. Both players roll 1D6. If either scores a '6' they have succeeded in

locating the enemy force at 330 miles from the locating forces' present position. If there are separate forces attempting to locate the same target, each force must make a separate dice roll.

Once the first player rolls the required '6' it fixes the range at which the two forces are separated. The second player continues to roll until they also achieve the required '6'. The number of dice rolls it takes the second locating player to roll a '6' is the number of game turns delay between the launching of that players' air attack against the target, in relation to the first player.

Example:
The first player rolls a '6' on first attempt. He locates the target at 330 miles and fixes the distance between the opposing forces at 330 miles. This requires 12 game turns (about 3 hours real time) to assemble a raid and arrive at the target. The second player fails to roll the required '6' on any dice rolls until he rolls 6D6. This means that he is six game turns behind the first player in launching his attack against the opposing player.

Both players assemble and launch their raids and follow the raid track from launch to 330 miles (12 game turns each) with the second player starting down the raid track six moves after the first.

RAID TRACK – each square takes 1 game turn to complete

Raid Assembly	30 miles	60 miles	90 miles	120 miles	150 miles
12D6	**11D6**	**10D6**	**9D6**	**8D6**	**7D6**

180 miles	210 miles	240 miles	270 miles	300 miles	330 miles
6D6	**5D6**	**4D6**	**3D6**	**2D6**	**1D6**

The Rules

Game Turn Sequence

1. Players dice for initiative, the highest winning, and therefore choosing which player moves, attacks and tests for damage first.
2. Both players move all forces, including air and submarine attacks.
3. Resolve all gunnery attacks.
4. Resolve all AA fire, including air-to-air combat.
5. Resolve all air attacks against ships and land targets.
6. Resolve all ASW attacks against submarines.
7. Resolve surface and submarine launched torpedo attacks.
8. Repair damage.

Movement

1. CL, DD, DE move 10 inches. CA, BA, BC, CV, IJN CVL move 9 inches. BB, US CVE move 7. All transport and fleet train vessels move 6 inches per game turn.
2. If turning up to 45^{o}, reduce movement rate by 1 inch.
3. If turning up to 90^{o}, reduce movement by 2 inches.
4. If turning up to 180^{0}, reduce movement by 3 inches.

The Gunnery System

Gunnery is divided into main, secondary and AA battery fire for each ship. The player nominates which battery is to fire, consults the table for the appropriate caliber weapon and cross references the range scale to give the number of D6 rolls applicable. Any '6' rolled causes a hit from the broadside. Batteries may fire once per game turn. Only AA batteries may be split against different targets. Once the number of hits is established, the player rolls a second dice for each hit and the number rolled indicates the number of damages against the target. 'Damages' against a target ship can be recorded by placing a D6 (with appropriate damages number uppermost) beside the target. 'Damages' reduce speed and gunnery capabilities.

Target Engagement Priority

Targets should be engaged that have fired on the firer first. This is especially true when fighting night actions and target spotting relied heavily on enemy gun flashes and searchlights in use. Ships under ship launched torpedo attack must always attempt to engage such enemy vessels before any other target. The only exception to this rule is where the target is out of range or obscured.

Night Fighting

Both the Japanese and British excelled at night fighting. The other navies either relied heavily on technology or preferred not to fight at night. In order to give a reasonable approximation, those navies equipped with surface search radar will locate all targets at around 15 miles (30,000 yards), in open waters. All other navies will visually detect the enemy at around 12,000 yards. Once firing is commenced, all firers are automatically located. Running torpedoes cannot be detected at night. To give a variation in visibility ranges, I suggest players role 2D6 each adding the results together to give a visibility in inches. <u>All basic gunnery is reduced to half the D6 shown.</u>

Heavy Calibre gun damage to ship targets

Where a DE/DD or CL is hit by a gun of 8" caliber or larger, the possibility of severe damage exists. This is reflected by the number of damages being increased by a 1D6 roll for each such hit. All hits (NOT damages) by 8 inch guns or larger, allow the firer to make a 'sink test' by rolling any double with 2D6. Guns 6 inches or smaller, may do the same against MTB, DE, DD, CL or auxiliary ship targets only.

Number of dice for each range

Range (in inches) up to		36”	24”	18”	12”	
Weapon	18”	3	3	4	5	Sinks on any double rolled by 2D6
	15/16”	2	3	5	6	with guns 12” caliber and over.
	14”	1	2	4	6	
	12”-11”	1	1	5	7	
	8”	-	2	6	8	
	6”-5.9”	-	1	4	8	May sink CL and DD/DE
	5.25”- 5”	-	1	4	8	or Auxiliary on any double with 2D6
	3.7”	-	-	2	6	

All gunnery reduced to half D6 during night fighting or bad weather.

+1D6 for gunnery radar firing at night or in bad weather, or when firing through a smoke screen
+1D6 for main batteries with more than 8 guns
+1D6 if target stopped in the water.
-1D6 for main batteries with less than 8 guns or manually loaded single mounts
Reduce the D6 numbers by half if the battery cannot bring a full broadside to bear.

Damage
The easiest way of recording damage to a target is to place a spare D6 beside it with the number of damages inflicted turned face up, then replace it with a red D6 after the damage repair phase of the game turn to indicate the number of ‘retained damages’. Note that players may attempt to remove ‘retained damages’ during subsequent game turns. It is therefore a wise strategy to attempt to remove damaged ships from the battle line to effect repairs if at all possible.

Each ‘damage’ remaining after the repair cycle (step 8) reduces the damaged ship’s speed by 1 inch and all gunnery, AA and torpedo factors by 1D6 for each remaining damage. Ships that reach their maximum damage capacity are deemed to either have sunk or become an abandoned hulk. Older ships should have their damage capacity reduced by 1, unless modernized before WW2. . Bombs that hit BA, BB, BC CV or CVL targets do not roll for immediate ‘sink tests’. Bombs that hit BA, BB, BC or carriers with an armoured deck have their 1D6 number of damages roll halved. In the case of land targets no D6 is rolled to inflict multiple damages, each “6” causes only 1 damage. However, land target damage may not be repaired during the course of the game.

The number of **damages** caused by 6 inch or smaller caliber weapon hits against CA or larger vessels are halved. The number of **damages** caused by 18.1inch caliber weapons is doubled against all targets.

Gunfire and Bomb Damage - Land Targets
Each land target is allocated a number of irreparable damage points at the beginning of the game. Once those damage points are reached, the land target is destroyed. Each hit results in a damage counter being added to the target.

Repairing Damage
After all damage has been recorded, players may attempt to repair damage in Step 8 by rolling one dice for each damaged ship and reducing the total number of damages by that dice roll. If the target still exceeds the number of damage points allowed, after a damage control dice roll is made, the vessel is lost and is immediately removed from the game.

Vessel type	Maximum damage capacity
Submarine	1
Transport vessel	4
DE/DD	6
CL	8
CA/BC /CVE	9
BB/CV	10
BA	12
Yamato and Musashi	14

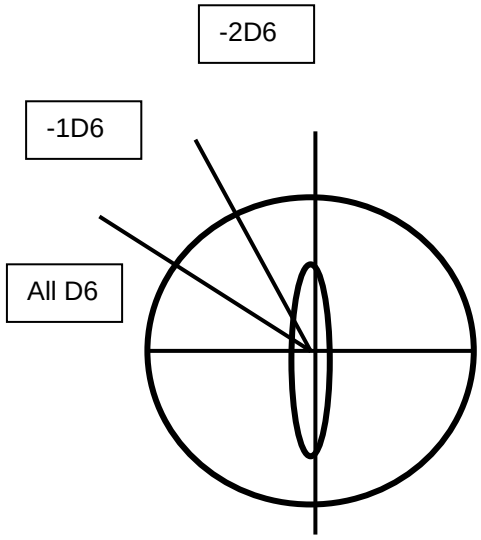
Torpedo Attack
Torpedo salvos are fired using 4D6 and adjusted for the following conditions.
Maximum torpedo range is 6 inches for Allied and German, 8 inches for Japanese Long Lance.

-1D6 if target is beam on to firer (270^0 or less)
-2D6 if target is dead astern or bow on to firer (over 270^0)
-2D6 if target over half maximum range or firing at night
+1D6 if target is stopped in the water or moving at less than $1/3^{rd}$ maximum speed.

ASW Warfare
When a submarine launches an attack, the submarine is placed anywhere within attack range of the intended target and the target declared. Any DD/DE or ASW vessel within 6 inches of the attacking submarine may conduct an ASW attack BEFORE the submarine attacks. All ASW attackers roll 1D6, the submarine rolls 1D6 for each of the ASW attacker's dice. If the ASW dice rolls equal or beat the submarine dice roll, the submarine is considered to have been driven off, and may make another attack later in the game. If any of the ASW dice rolls are a "6", the submarine has been sunk. If the submarine dice roll exceeds the ASW dice rolls, the submarine evades the ASW screen and presses home the attack.

Submarine torpedo attack
The submarine owner rolls 4D6 against the target vessel minus any adjustments for range and target angle. The target owner rolls the same number of dice. The highest dice roll wins inflicting 1D6 damage points for each hit.

Torpedo attack angle template.
Place against target.



MTB and Aircraft Torpedo Attacks
All MTB's have an attack value of 2D6 per salvo.
All aircraft launch their torpedoes 1inch from the target.

Torpedo Damage.
All torpedo hits score 1D6 number of damages against the target.
All torpedo hits (NOT damages) require an immediate 'sink test' of any double rolled with 2D6.

Air Attacks
Carrier and shore based attacking air groups are assembled by rolling 1D6 per type of aircraft available from each carrier or attack group. The number indicated on the D6 roll may not exceed the actual number of aircraft counters available. The number rolled represents the number of serviceable aircraft counters available at the time. If players are conducting a strictly historical re-enactment, launch the number of aircraft known to have been used in the attacks, but divided by 4 to represent aircraft group counters. There are air counters for USS Hornet in Appendix II by way of example. Where the number of aircraft counters is less than six, reduce the dice roll accordingly. Similarly increase the number rolled where they exceed six.

Example. On a US CVE the number of aircraft counters available are approximately 4. The 1D6 dice roll should be reduced by 2.

The AA System
Each ship has an AA factor that represents the number of D6 rolled against each air attack. Each air formation contains 4 actual aircraft, which is represented by one model or marker on the table. All AA fire takes place before any air attack, with the exception of wire guided air launched bombs such as the HS293 or the U.S Navy BAT. These weapons have a range of 12 inches and a 2D6 attack factor. The X4000, although guided, was a free fall weapon and as such does not have a stand off range.

Attacking aircraft markers are placed beside the intended target during step 2 of the game turn. During Step 4, where all AA fire is resolved, the defender may engage all attacking aircraft markers with any vessel up to 6 inches from the target. Each defender rolls the number of D6 indicated by their AA factor on the appropriate table. For each "6" rolled, 1 aircraft marker is removed. The aircraft group is deemed to have been driven off or reduced to ineffective strength

by the defenders. Any remaining aircraft press home their attack. It will be noted that air defenses can be swamped by attacking aircraft where the number of attacking air counters exceed the AA factor of the target ship. Remove aircraft losses from the nearest attackers first.

Air Combat
Aircraft groups of four actual aircraft are represented by single counters. Combat occurs when the moving player places his aircraft counter(s) in base-to-base contact with an enemy aircraft counter. Each player rolls off the number of D6 indicated in the air combat table. If a '6' is rolled the enemy air counter is removed. Where more than one six is rolled, this is not carried over to another target. If no '6' is rolled the player with the highest dice roll drives the other aircraft off, forcing it to return to base or carrier immediately. If the attackers win, they press home the attack. Bombers may not attack fighters or bombers! Each air counter may engage in only one air to air combat per game turn.

Example: 1 TBM counter is opposed by 1 A6M6 Zero counter.
TBM = 2, A6M6 = 4 therefore the USN player rolls 2 dice and the IJN player 4.

AA Fire Factor by year.

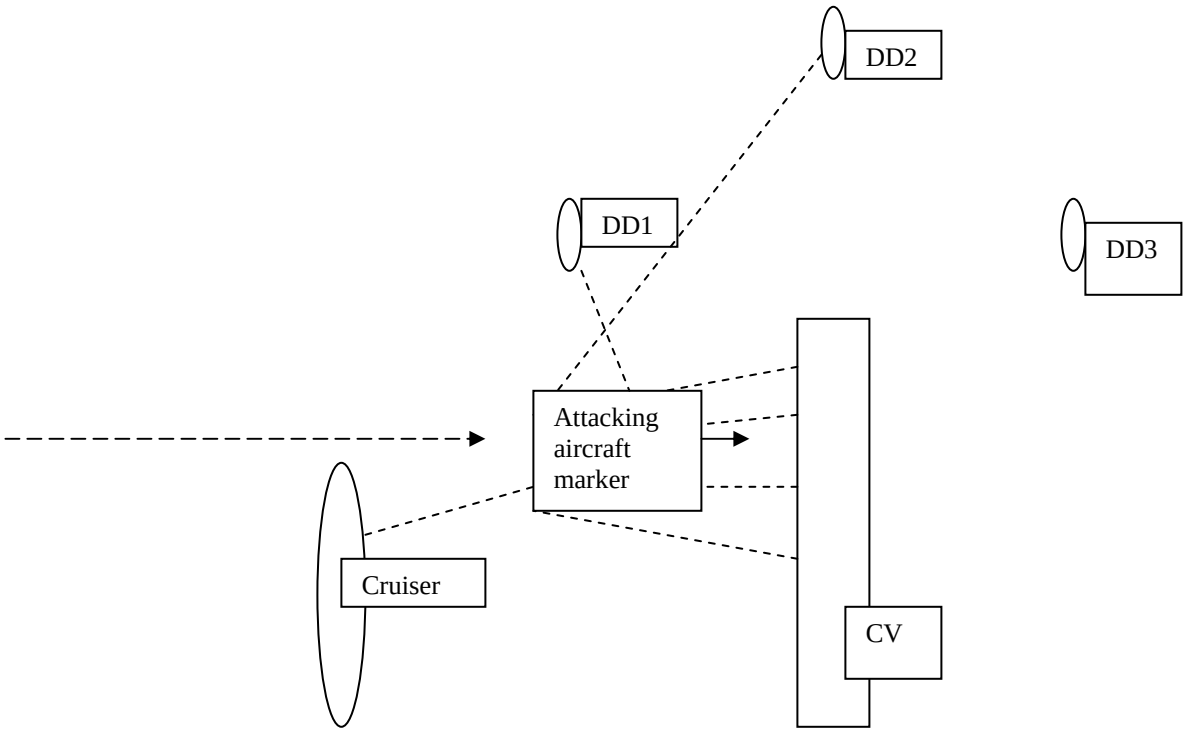
AA Factor by year	1939-40	1941	1942	1943	1944/45
Fleet Auxiliary	**1**	**1**	**1**	**1**	**2**
DD/DE	**1**	**1**	**1**	**2**	**2**
CL – CVL	**1**	**1**	**2**	**2**	**2**
CL – AA	**-**	**2**	**2**	**3**	**4**
CA	**1**	**1**	**2**	**2**	**3**
BC	**2**	**2**	**2**	**3**	**4**
BB – BA	**1**	**2**	**2**	**3**	**4**
CVE	**1**	**2**	**2**	**2**	**3**

Historical Note
By the beginning of 1944, the Japanese had lost their most experienced carrier pilots consequently their combat performance suffered accordingly. To reflect this fact, Allied players may add +1 to their air-to-air combat dice rolls.

Air launched torpedo attacks
Each attacking bomber or torpedo group rolls 4D6 as does the target ship. This 'roll off' represents the target's ability to out maneuver the attacker's bombs or torpedoes. For each hit roll a further 1D6 to represent the number of damages inflicted on a ship target

Kamikaze – The Emperor's divine wind
Attacks began at the end of the Leyte Gulf campaign in June 1944. Attackers will roll 2D6 while the defenders will roll their normal AA D6 entitlement. If the attacker wins they will assess the damage to the target as per the gunnery rules for a 12" shell. There will be no sink test. Kamikaze attacks will be assembled in the same manner as carrier raids using 1D6 roll for the number of attacks **per GAME.**

Air Attack diagram



All AA fire is assessed at the point where the attacking aircraft marker is placed against the target ship. In this example the cruiser, DD1, DD2 and CV add their fire as aircraft reaches the attack position. DD3 does not engage the attacking aircraft because it's line of fire is obscured by the carrier. However, it may be held in reserve against an attack from the opposite direction. All AA fire dice rolls occur only once in each attack sequence. All attacking aircraft counters are placed against the target ship and all AA fire is adjudicated before any air attacks take place.

Aircraft Combat Factors - (Number of dice for each naval aircraft counter)

Allied Aircraft

F2A Buffalo = 2	F4U Corsair = 4	TBM/TBF = 2
F4F Wildcat = 3	Seafire = 4	SBD/TBD = 1
F5F Hellcat = 4	Sea Hurricane = 3	B17 = 2
F6F Hellcat = 5	Firefly = 3	A26 Bomber = 1

Japanese Aircraft

A5M Claude = 2	A6M2 Zero (1941-43) = 3	VAL/Kate = 1
	A6M6 Zero (1943-45) = 4	Mitsubishi Betty = 1

Fighters attacking ships
It was generally recognized that fighters attacking large warships was a suicide mission and a waste of resources. Fighters may attack DD/DE and CL (not CLAA) and in doing so suppress them. This means that they cannot take part on a general AA defense of another ship within 6 inches but must look after their own defense instead.

Night Fighting – some further notes and ideas.
All actions at night are shrouded in a degree of confusion. This is especially so when forces become intermixed and dispersed. The first major night action fought between the Japanese and Allied naval forces occurred during the Guadalcanal campaign during August and October 1942. The Allied forces possessed the invaluable advantage of Radar, both air/surface search and gunnery ranging. The Japanese had produced their first air warning sets – with German assistance, but had not as yet fitted them to ships outside Home Waters. The Italians did possess Radar but did not fit it until 1943 at the earliest. The Germans possessed gunnery, surface search and air warning radar as well as radar warning receivers from early in the war.

Not surprisingly, there was a general distrust of this new device among the senior commanders of all navies at that time. It was not unlike the older generation of a few years ago when they were first confronted with computers. Like computers at the time of their introduction, radar was seen as something unfamiliar, unreliable and forever requiring attention. This was to have important consequences for U.S naval forces during the opening phases of the Guadalcanal Campaign in August 1942.

The early radar sets required considerable skill to maintain and operate. However, they did give two very important sets of data to the user. They were capable of accurately measuring target course and speed that gave gunnery and torpedo firing solutions greater accuracy in poor weather or at night. Secondly, they gave range takers the ability to accurately gauge the distance of overshoots when applying a ladder pattern to main battery ranging. Formerly, correcting overshooting was a time consuming business that could result in deadly delays. During the Second Battle of Savo Island, - on the night of 14/15th November 1942 - USS Washington recorded hits against a large target at 18,000 yards after only the third salvo. Washington fired 42 rounds in three minutes, causing near fatal damage to Kirishima.

This brings us to the part about confusion….

Even though the Allies possessed radar, they were still unable to identify friend from foe until after the war. Thus ships relied on visually identifying their targets once battle lines had become mixed and the position of enemy ships was no longer accurately known. To represent this problem, players should obtain a number of two different sized coloured discs, (blue for Allied and red for IJN) representing either small or large targets. Once contact has been made the players should place the markers at the relevant position until an accurate visual identification can be achieved. The only problem that remains is friendly forces being wrongly identified as the enemy. This can be simulated by a 1D6 roll for each radar target and if a 5 or 6 is rolled the target is fired on. The US Navy possessed the 'Talk between Ships' system (TBS) that allowed direct voice radio contact between every ship within about 10 miles. This system had the advantage of being able to immediately contact every ship within range, but the disadvantage that once too many callers tried to use the system simultaneously chaos invariably resulted. However, if an Allied player accidentally fires on a friendly vessel, the fire will immediately cease after the first accidental exchange of fire. It can be assumed the TBS system has been used to register the target's displeasure! The Japanese possessed no such system yet appear not to have been plagued by friendly fire incidents among their naval forces. This may be explained by their tactical doctrine of closing to within sighting range of a target before engaging. However, the IJN trained extensively in night fighting techniques, based on Royal Navy doctrine, before the war resulting in excellent night fighting capabilities.

Morale

Ships that become damaged must test to see if they remain in the battle line or they attempt to withdraw. Once a ship retains ½ of its total allowable damage points, it must be tested to see if it remains in the battle. Roll 2D6. The total of the two dice are added together and this must equal or exceed the number of retained damages the ship has at the end of that game turn. The morale test is taken after damage repair dice rolls have been taken.

APPENDIX I

Carrier Air Group composition

US Fleet carriers

	December 1941	**August 1942**	**June 1944**	**October 1944**	**December 1944**
Fighters	18	36	36	54	73
Dive Bombers	36	36	36	24	15
Torpedo Bomber	18	15	18	18	15

US Light carriers

	Fighters	Bombers
Langley	25F6F	2-TBF Avengers, 7-TBM Avengers
Princeton	24F6F	8TBM Avengers

British Carriers – March 1945

	Fighters	Bombers
Illustrious	36 Corsairs	16 Avengers
Indefatigable	40 Seafires, 9 Fireflies	20 Avengers
Indomitable	29 Hellcats	15 Avengers
Victorious	37 Hellcats	14 Avengers

Japanese Attack Groups – Pearl Harbour - 7th December 1941

	Fighters	Dive Bombers	Torpedo Bombers
Akagi	21 A6M Zero	18 D3A Val	27 B5N Kate
Kaga	21 A6M Zero	27 D3A Val	27 B5N Kate
Hiryu	18 A6M Zero	18 D3A Val	18 B5N Kate
Hosho	11 A5M Claude	-	8 B5N Kate
Zuiho	16 A5M Claude	-	12 B5N Kate
Ryujo	16 A5M Claude	-	18 B5N Kate

Battle of the Coral Sea – 4th May 1942

	Fighters	Dive Bombers	Torpedo Bombers
Shoho	12 A6M Zero	-	9 B5N Kate
Shokaku	21 A6M Zero	21 D3A Val	21 B5N Kate
Zuikaku	21 A6M Zero	21 D3A Val	21 B5N Kate
Lexington	23 F4F Wildcat	36 SBD Dauntless	12TBD Devastator
Yorktown	21 F4F Wildcat	38 SBD Dauntless	13 TBD Devastator

Battle of Midway – 30th May 1942

	Fighters	Dive Bombers	Torpedo Bombers
Akagi	18 A6M Zero	18 D3A Val	18 B5N Kate
Kaga	18 A6M Zero	18 D3A Val	27 B5N Kate
Hiryu	18 A6M Zero	18 D3A Val	18 B5N Kate
Soryu	18 A6M Zero	18 D3A Val	18 B5N Kate
Enterprise	27 F4F Wildcat	38 SBD Dauntless	14 TBD Devastator
Hornet	27 F4F Wildcat	37 SBD Dauntless	15 TBD Devastator
Yorktown	25 F4F Wildcat	37 SBD Dauntless	13 TBD Devastator

Battle of Guadalcanal – August-September 1942

Enterprise	36 F4F Wildcat	36 SBD Dauntless	15 TBF Avenger
Saratoga	34 F4F Wildcat	37 SBD Dauntless	16 TBF Avenger
Wasp	29 F4F Wildcat	30 SBD Dauntless	10 TBF Avenger

Battle of East Solomon Sea – August 1942

Enterprise	36 F4F Wildcat	37 SBD Dauntless	15 TBF Avenger
Saratoga	36 F4F Wildcat	37 SBD Dauntless	15 TBF Avenger
Wasp	29 F4F Wildcat	36 SBD Dauntless	15 TBF Avenger
Ryujo	16 A6M Zero	-	21 B5N Kate
Shokaku	26 A6M Zero	14 D3A Val	18 B5N Kate
Zuikaku	27 A6M Zero	27 D3A Val	18 B5N kate

Battle of Santa Cruz Islands – October 1942

Junyo	26 A6M Zero	21 D3A Val	10 B5N Kate
Shokaku	18 A6M Zero	20 D3A Val	23 B5N Kate
Zuiho	18 A6M Zero	-	6 B5N Kate
Zuikaku	27 A6M Zero	27 D3A Val	18 B5N Kate
Enterprise	34 F4F Wildcat	36 SBD Dauntless	13 TBF Avenger
Hornet	36 F4F Wildcat	36 SBD Dauntless	16 TBF Avenger

Battle of the Phillippine Sea – June 1944

I.J.N-The Mobile Fleet – Van Force – Carrier Division 3
CVL *Chitose*) 62 A6M Zero
CVL *Chiyoda*) 9 B6N Jill Torpedo Bombers
CVL *Zuiho*) 17 B5N Kate Torpedo Bombers

BB Yamato, BB Musashi, BC Kongo, BC Haruna
CA Atago, CA Maya, CA Tone, CA Chikuma, CA Chokai, CA Kumano, CA Suzuya
CL Noshiro
9 DD screen

"A" Force **Carrier Division 1**
CV *Taiho*) 79 A6M Zeros
CV *Zuikaku*) 70 D4Y Judy Dive Bombers, 7 D3A Val Dive Bombers
CV *Shokaku*) 51 B6N Jill Torpedo Bombers

CA *Myoko*, CA *Haguro*
CL *Yahagi*
3 DDAA, 6 DD as screen

"B" Force	**Carrier Division 2**
CV *Junyo*	) 81 A6M Zeros
CV *Hiyo*	) 27 D4Y Judy, 9 D3A Val Dive Bombers
CVL *Ryuho*	) 18 B6N Jill Torpedo Bombers

BB *Nagato*
CA *Mogami*
10 DD screen

US Fifth Fleet Task Force 58
Task Group One (TG58.1)

	Fighters	Dive Bombers	Torpedo Bombers
CV12 *Hornet*	40 F6F Hellcat	33 SB2C Helldiver	20 TBF/M Avengers
CV10 *Yorktown*	44 F6F Hellcat	31 SB2C Helldiver	18 TBF/M Avengers
CVL *Belleau Wood*	26 F6F Hellcat	-	9 TBF/M Avengers
CVL 29 *Bataan*	24 F6F Hellcat	-	9 TBM Avengers

CA Boston, CA Canberra, CA Baltimore
CLAA Oakland, CLAA San Juan
14 DD as screen

Task Group Two (TG 58.2)

	Fighters	Dive Bombers	Torpedo Bombers
CV17 *Bunker Hill*	41 F6F Hellcat	33 SB2C Helldiver	18 TBF/M Avenger
CV18 *Wasp*	41 F6F Hellcat	32 SB2C Helldiver	18 TBF/M Avenger
CVL26 *Monterey*	21 F6F Hellcat	-	8 TBM Avenger
CVL28 *Cabot*	24 F6F Hellcat	-	9 TBF/M Avenger

CL Santa Fee, CL Mobile, CL Biloxi
12 DD as screen

Task Group Three (TG58.3)

CV6 *Enterprise*	32 F6F Hellcat	23 SBD Dauntless	15 TBF/M Avenger
CV16 *Lexington*	42 F6F Hellcat	34 SBD Dauntless	20 TBF/M Avenger
CVL23 *Princeton*	25 F6F Hellcat	-	9 TBM Avenger
CVL 30 *San Jacinto*	24 F6F Hellcat	-	8 TBM Avenger

CA *Indianapolis*
CL *Montpellier*, CL *Cleveland*, CL *Birmingham*
13 DD as screen

Task Group Four (TG58.4)

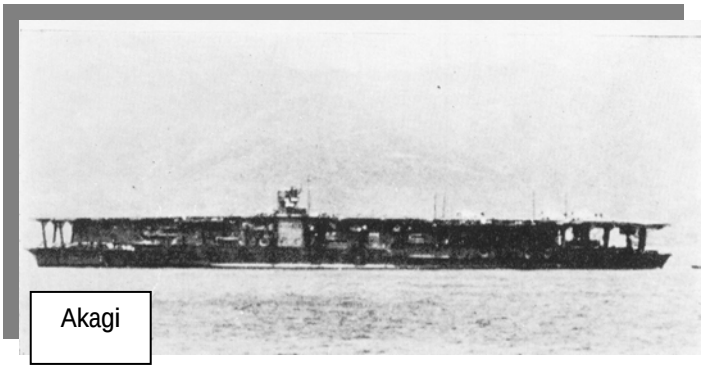
CV9 *Essex*	45 F6F Hellcat	36 SB2C Helldiver	20 TBF/M Avenger
CVL25 *Cowpens*	26 F6F hellcat	-	9 TBF/M Avenger
CVL27 *Langley*	25 F6F Hellcat	-	9 TBF/M Avenger

CL *Vincennes*, CL *Miami*, CL *Houston*, CLAA *San Diego*
14 DD as screen

Task Group Seven (TG58.7) Battle Line

BB's *Washington, North Carolina, Iowa, New Jersey, South Dakota, Alabama, Indiana*
CA's *Wichita, Minneapolis, New Orleans, San Francisco*
14 DD as screen

APPENDIX II (Aircraft counters)



Akagi, Hiryu and Soryu Naval Air Groups (NAG)

Battle of Midway 5th and 6th June 1942

A6M2 Zero	A6M2 Zero	A6M2 Zero	A6M2 Zero

Dive Bomber Group

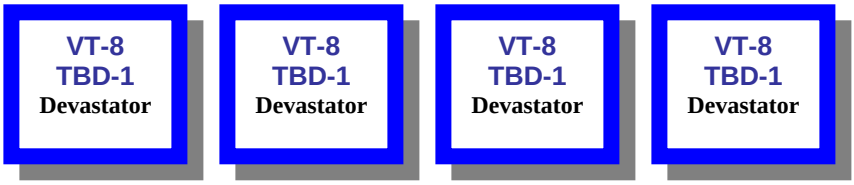
D3A Val	D3A Val	D3A Val	D3A Val

Torpedo and Level Bombing Group

B5N2 Kate	B5N2 Kate	B5N2 Kate	B5N2 Kate

USS Hornet (as at the Battle of Midway –5-6th June 1942)

VT-8



VS-8

VB-8

VF-8