

Jaws of the Dragon Rulebook

Written by Evan D'Alessandro © 2022

Assumptions

1 turn = 1 day

1 hex = 100 miles, which is approximately 150km (161km = 100mi, but I care more about ease of understanding)

Unit	Constituent Units	Missiles	Notes
CSG	1 carrier + 4-5 ships ¹	2 Atk., 2 Def.	Roughly 400 VLS cells.
ESG	2 amphib + 4-5 ships	2 Atk., 2 Def.	Assumed to have embarked 1 marine battalion unless explicitly disembarked. Roughly 400 VLS cells.
SAG	4-5 ships	2 Atk., 2 Def.	Roughly 400 VLS cells.
Missile Boats	6 Missile Boats ²	1 Atk.	Any sort of ships using hit and run tactics (incl. corvettes, frigates)
Submarine	1 submarine	1 Atk. (SSGN 2)	
Land Units	Brigade Size		Logistics, air defense, etc. abstracted. While frontages are quite wide here 4 units per hex would allow for a "continuous line" to be formed. ³
Air Units	Squadron		Tankers, AWAC's, EW, SEAD, etc. abstracted, but assumed . 12 5 th gen, 16-18 all other gens.
Bombers	US 6, Chi. Regiment		# based around 100 missiles, B-1's can carry 24, B52's 20, B2's 16, HK-6's can carry 6 YJ-12

Movement

Unit	Movement	Notes
CSG, ESG, SAG	6 hexes/day	25 knots
Submarines	3 hexes/day	Slow speed + need to get coms
Land Units	2 hexes/day	Assuming 80km/6hr
Land Logistics Movement	4 hexes/day	180km/6 hr = 450mi/day = 4.5 hexes, w/ friction 4 hexes
Embark Units on Ships	1/day/per port	Gross abstraction
Squadron Changing Air Theaters	1 day	Gross abstraction

Detection

Surface ships (Either single units or for a task force):

- If inside the First Island Chain, on a d10 roll the # of hexes or higher to friendly country.
- If outside the First Island Chain, roll a d10. On a 1 or 2 they are detected.
- If ships are in the same hex, roll a d10, on a 2+ they are detected.

Submarines

- See the detection section of Undersea Combat.

Land Units and Air Units are always detected.

Weather⁴

Represents predominate weather conditions for each Air Theater.

Clear

- No Effects.

Cloudy

- Detection rolls have -1, all Air Strikes have a 10% chance to fail.

Rain

- Detection rolls have -2, all Air Strikes have a 30% chance to fail.

Storms

- Detection rolls have -4, all Air Strikes have a 50% chance to fail.

Sea Movement

Unit	Movement	Notes
CSG, ESG, SAG	6 hexes/day	25 knots
Submarines	3 hexes/day	Slow speed + need to get coms

Sea Combat (d10)

Missile Ranges (**MUST HAVE DETECTED ENEMY TO SHOOT**)

Important Info		Unimportant Info	
Missile Type	Range	Missiles/Salvo	Notes
Chinese AShM	2 hexes	95	Assumed to be either YJ-12 (supersonic) or YJ-91 (sea skimming, supersonic) , average range is about 200mi (2 hexes)
US AShM	1 hex	115	Assumed to be Tomahawks II or II+ (sea skimming)
Sub AShM	1 hex	By Nation	Have to have better targeting so must be in same hex.
C Carrier J15	3 hexes	½ Atk. Missile	J-15 combat radius is 500km ³ (300mi), though at full combat load launching from a carrier it's going to be shorter
US Carrier Av	6 hexes	½ Atk. Missile	F-35 combat radius is 1000km ⁶ (600mi), F-18 combat radius w/ drop tanks is ~600mi ⁷

Roll type = Offensive missiles - Defensive missiles*

*When Subs shoot, they resolve as if **Defense is equal too** at a minimum on the table below⁸

D10 Roll ⁹	- 1 -	- 2 -	- 3 -	- 4 -	- 5 -	- 6 -	- 7 -	- 8 -	- 9 -	- 10 -
If Defense greater	1 <i>Damage</i>	1 <i>Damage</i>	-	-	-	-	-	-	-	-
If Defense is equal	2 <i>Damage</i>	2 <i>Damage</i>	1 <i>Damage</i>	1 <i>Damage</i>	1 <i>Damage</i>	1 <i>Damage</i>	-	-	-	-
If Defense less than	3 <i>Damage</i>	3 <i>Damage</i>	3 <i>Damage</i>	3 <i>Damage</i>	3 <i>Damage</i>	3 <i>Damage</i>	2 <i>Damage</i>	2 <i>Damage</i>	1 <i>Damage</i>	1 <i>Damage</i>

Excess damage carries over to other units in the same task force

Type	1st Damage	2nd Damage	3rd Damage ¹⁰
SAG	<ul style="list-style-type: none"> Loose half (1/2) missiles Speed half (1/2) 	Sunk	-
CSG (Carrier)	<ul style="list-style-type: none"> Loose half (1/2) missiles Speed half (1/2) Half (1/2) sortie generation 	<ul style="list-style-type: none"> Lose remaining missiles Speed one-quarter (1/4) No sorties 	Sunk ¹¹
ESG (Amphib)	<ul style="list-style-type: none"> Loose half (1/2) missiles Speed half (1/2) Carried units damaged 	<ul style="list-style-type: none"> Lose remaining missiles Speed one-quarter (1/4) Carried units destroyed 	Sunk
Missile Boat Squadron	<ul style="list-style-type: none"> None 	Sunk	-

Submarine Combat (d20)

Detection Table

Roll if:

- The sub attempts to attack (to see if they are caught) or shadow a unit.
 - Use below table
- For each enemy unit with detection capabilities (Sub, CSG, ESG, SAG) the sub is in the same hex as.
 - Roll a d20: on a 1 the sub has been detected.
- The sub is inside an unfriendly Air Zone
 - Use table below for *ASW Fixed Wing*
- The Sub is in a hex with an unfriendly city
 - Use table for *ASW Rotary*

Water Depth (modifies the number rolled on the die)

- Shallow Water = +3
- Medium Water = +0
- Deep Water = -6

Roll higher than or equal to the number on D20 to detect the target.

	US/Allies				CN*					Platforms				
Hunter ► Hunted ▼	*US Sub	SAG	CSG	ESG	CN Nuke Sub	CN Diesel Sub	SAG	CSG	ESG	Civilian	Counter fire	ASW Fixed Wing	ASW Rotary	ASW Surface
<i>Seawolf</i>	-	-	-	-	18	16	19	19	19	19	17	19	19	19
<i>Virginia</i>	-	-	-	-	17	15	19	19	19	19	16	19	19	19
<i>Los Ange</i>	-	-	-	-	15	14	18	18	18	18	12	18	18	18
<i>C Type93</i>	4	9	8	9	-	-	-	-	-	14	5	10	8	15
<i>C Diesel</i>	3	14	11	15	-	-	-	-	-	18	5	10	8	14
<i>Japan</i>	-	-	-	-	16	15	18	18	18	18	10	14	12	16
<i>Vietnam</i>	-	-	-	-	10	8	13	12	15	17	9	5	7	4

* If inside Chinese SOSUS line add +1

* US SOSUS line detects as US sub

Attack Table (only use if sub is detected)¹²

For Subs vs. Subs and ASW vs. Subs. If sub shoots at another sub, use Counterfire to see if shooting sub is detected, and the attacked sub can fire in response.

D20 Roll	1 to 9	10	11 to 20
Effect	<i>Sub Sunk</i>	<i>Half (1/2) movement +10 on rolls to be detected</i>	<i>Sub Escapes</i>

Air Movement

Unit	Movement	Notes
Squadron Switching Theaters	1 day	Gross abstraction ¹³

Air Combat (d10)

Carrier Air uses a range system rather than theater system. It is considered to operate only in it's theater.

Squadrons can either be at full strength, damaged,¹⁴ or destroyed (if a Squadron is damaged and suffers a second damaged it is destroyed). When damaged they roll two d10 and use the worse result.

Squadrons can be used to conduct one of the following missions per turn in their or an adjacent Air Sector:

- Fight for Air Supremacy - All squadrons dedicated to fighting for air supremacy are paired up at random with Enemies and then roll on the Air to Air Table for resolution.
 - Squadrons that are unpaired 1:1 can be reassigned or can gang up in other fights
- Conduct Strike – A squadron may conduct a strike on any unit in its sector.
 - Maritime Strike – Pass the attack information to Naval Control for them to resolve it. Air strikes carry ½ of an attacking missile per squadron (exception: bombers count as carry 4 attacking missiles)
 - Air Support – if Strike makes it through, pass “Air Support” marker to Land control.
- Escort Strikes – Select a strike to Escort. If strike is attacked, squadron battles intercepting fighters as if Fighting for Air Supremacy.
- SEAD – A squadron equipped to conduct a SEAD missions degrades IADS by 1 for one strike.
- Intercept Strikes – Can attack one strike and its escorts. Battles any escorting fighters as if Fighting for Air Supremacy.
 - vs. Escorted - If the Intercepts inflict a Damaged or Destroyed result on the escorting Squadron, roll on the Escorted Strike row.
 - vs. Unescorted – roll on the Unescorted Strike row.

IADS¹⁵

For any enemy squadron operating in a sector with an IADS value, roll a d10. If the number is less than or equal to the IADS value, the squadron is damaged. Exceptions:

Plane	B1	B2	5 th Gen
Chance to Ignore IADS	50%	100%	50%

Air-to-Air Table

Air-to-Air = d10 roll + Attackers attack modifier, + Defender defense modifier

Strikes = straight d10 roll

D10 Roll ¹⁶	- 1 -	- 2 -	- 3 -	- 4 -	- 5 -	- 6 -	- 7 -	- 8 -	- 9 -	- 10 -	- 11+ -
Air-to-Air	–	–	–	–	–	–	–	Sqn. damaged	Sqn. damaged	Sqn. damaged	Sqn. destroyed
Escorted Strike	Strike aborts, destroyed	Strike aborts, damaged	Strike aborts	Strike damaged	Strike damaged	–	–	–	–	–	–
Unescorted Strike	Strike aborts, destroyed	Strike aborts, destroyed	Strike aborts, destroyed	Strike aborts, destroyed	Strike aborts, damaged	Strike aborts, damaged	Strike aborts, damaged	Strike damaged	Strike damaged	–	–

Modifiers:

	5 th Gen	4 th Gen	3 rd Gen	2 nd Gen	F-35	No AWACS
Attack Modifier	+2	+0	-1	-3	+1 to another friendly squadron attacking the same target in the air engagement 1/turn.	-3
Defense Modifier	-1	+0	+1	+3		

Land Movement

Unit	Movement ¹⁷	Notes
Land Units	2 hexes/day	Assuming 80km/6hr
Land Rear Area Movement*	4 hexes/day	180km/6 hr = 450mi/day = 4.5 hexes, w/ friction 4 hexes
Embark Units on Ships	1 day	Gross abstraction

*A rear area move is for units moving long distance with all administrative /support vehicles not expecting fighting (for example, tanks loaded onto transporters). A rear area move requires a major road (highway or equivalent). Units in a rear area move become strung out over 30km, and if attacked will suffer badly.

Land Combat (d6)

Land units can take points of damage up to their combat power.¹⁸ Every 5 attrition¹⁹ = 1 point of damage. 1 point of attrition can be removed each day by rotating the unit off the front line. Each point of damage subtracts 1 from the unit's combat power. A unit with no combat power remaining is destroyed.²⁰

Procedure:

- Pick units to attack, each unit only engages 1 unit in the hex.
- Determine Combat
 - Ratio Column = Sum Attacker Power vs. Sum Defender Power
 - Unsupplied units halve combat power
 - Note any column shifts from other factors
 - Then roll 1d6²¹ for each side and shift that number of columns in each side's favor
- If a unit forces a retreat on the enemy, it can attack another enemy in the sector at 1 unfavorable column shift.

Attritional vs. Maneuver Combat²²

When attacking decide if the attack is an attritional attack or maneuver attack. Attritional attacks resolve as normal on the table below. If the attack is a maneuver attack however, when a result states that the unit was attritted, it takes d6 attrition instead of just one.

Ratio = Sum Attacker Power vs. Sum Defender Power

Then roll 1d6 for each side and shift that number of columns in each side's favor

Atk vs. Def Ratio: ²³	1:4	1:3	1:2	1:1	2:1	3:1	4:1	5:1	6:1	7:1	8:1	9:1	10:1	11:1
Meeting Engagement	▲, ♣	▲	☠	☠	☠	♥	♥, ♣	♥, ♣	♥, ♣	♥, ♣	♥, ♣	♥, ♣	♥, ♣	♥, ♣, ♣
Prepared Atk. vs. Prepared Defense	▲, ♣	▲, ♣	▲	▲	☠	☠	♥	♥, ♣	♥, ♣	♥, ♣	♥, ♣	♥, ♣	♥, ♣	♥, ♣, ♣
Prepared Atk. vs. Breaching	▲, ♣	▲, ♣	▲, ♣	▲, ♣	▲, ♣	▲	☠	☠	♥	♥	♥, ♣	♥, ♣	♥, ♣	♥, ♣

▲ = Attacker attritted, ♥ = Defender attritted, ☠ = Attacker and Defender attritted

♣ = Number of hexes damaged unit must retreat (cannot be mitigated). If unit cannot retreat to friendly hex it is destroyed.

♣ = Number of hexes damaged unit must retreat. A unit can choose not to retreat (or to retreat some) and is attritted for each ♣ it chooses to ignore.²⁴ If unit must retreat and cannot retreat to friendly hex it is destroyed.

Factors	Column Shift	Other Effects
Light Inf vs. Armor	1 favorable shift for tanks	
Air Support (per strike) ²⁵	1 favorable shift	
Mountains/Heavy Urban	4 favorable shifts for Defender ²⁶	May ignore 1 ♣
Light Urban	2 favorable shifts for Defender	
Fortification (per level)	1 favorable shift for Defender	May ignore 1 ♣
Amphibious Assault	2 favorable shifts for Defender ²⁷	For each ♣ Attacker is damaged
Naval Gunfire Support	1 favorable shift	

Tactical Nuke Rules

If naval task force (CSG, ESG, SAG) or air unit (squadron), the unit is destroyed.

If unit is Battalion the unit's dispersion determines damage:²⁸

Dispersion	Example	Damage ²⁹
Highly Dispersed	Defending an area after dispersing due to nuclear threat.	10%
Dispersed	Defending an area	30%
Concentrated	Conducting attack	40%
Highly Concentrated	Defending key point (airfield, port), fighting in urban terrain. ³⁰	80%

Pre-Generated Damage Reference³¹

Unit Cbt. Power	Damage			
	10%	30%	40%	80%
1	0 Damage, 1 Attrition	0 Damage, 2 Attrition	0 Damage, 2 Attrition	0 Damage, 4 Attrition
1.5	0 Damage, 1 Attrition	0 Damage, 3 Attrition	0 Damage, 3 Attrition	1 Damage, 1 Attrition
2	0 Damage, 1 Attrition	0 Damage, 3 Attrition	0 Damage, 4 Attrition	1 Damage, 3 Attrition
2.5	0 Damage, 2 Attrition	0 Damage, 4 Attrition	1 Damage, 0 Attrition	2 Damage, 0 Attrition
3	0 Damage, 2 Attrition	1 Damage, 0 Attrition	1 Damage, 1 Attrition	2 Damage, 2 Attrition
3.5	0 Damage, 2 Attrition	1 Damage, 1 Attrition	1 Damage, 2 Attrition	2 Damage, 4 Attrition
4	0 Damage, 2 Attrition	1 Damage, 1 Attrition	1 Damage, 3 Attrition	3 Damage, 1 Attrition
4.5	0 Damage, 3 Attrition	1 Damage, 2 Attrition	1 Damage, 4 Attrition	3 Damage, 3 Attrition
5	0 Damage, 3 Attrition	1 Damage, 3 Attrition	2 Damage, 0 Attrition	4 Damage, 0 Attrition
5.5	0 Damage, 3 Attrition	1 Damage, 4 Attrition	2 Damage, 1 Attrition	4 Damage, 2 Attrition
6	0 Damage, 3 Attrition	1 Damage, 4 Attrition	2 Damage, 2 Attrition	4 Damage, 4 Attrition
6.5	0 Damage, 4 Attrition	2 Damage, 0 Attrition	2 Damage, 3 Attrition	5 Damage, 1 Attrition
7	0 Damage, 4 Attrition	2 Damage, 1 Attrition	2 Damage, 4 Attrition	5 Damage, 3 Attrition
7.5	0 Damage, 4 Attrition	2 Damage, 2 Attrition	3 Damage, 0 Attrition	6 Damage, 0 Attrition
8	0 Damage, 4 Attrition	2 Damage, 2 Attrition	3 Damage, 1 Attrition	6 Damage, 2 Attrition
8.5	1 Damage, 0 Attrition	2 Damage, 3 Attrition	3 Damage, 2 Attrition	6 Damage, 4 Attrition
9	1 Damage, 0 Attrition	2 Damage, 4 Attrition	3 Damage, 3 Attrition	7 Damage, 1 Attrition
9.5	1 Damage, 0 Attrition	3 Damage, 0 Attrition	3 Damage, 4 Attrition	7 Damage, 3 Attrition
10	1 Damage, 0 Attrition	3 Damage, 0 Attrition	4 Damage, 0 Attrition	8 Damage, 0 Attrition
10.5	1 Damage, 1 Attrition	3 Damage, 1 Attrition	4 Damage, 1 Attrition	8 Damage, 2 Attrition
11	1 Damage, 1 Attrition	3 Damage, 2 Attrition	4 Damage, 2 Attrition	8 Damage, 4 Attrition

Strategic Nuke Rules

Facilitator adjudicates as needed.

Quick Reference

See Nuclear Checklist

Missile Rules

As described on the Missile Tracker sheet.

Cyber Rules

Facilitator adjudicates as needed.

Quick Reference

See each team's cyber sheets for what capabilities they have. When these capabilities are used they may be lost: generally the bigger/more visible the problem made, the more likely it is to be lost.

Existing cyber capabilities have a chance to be attrited when attacks happen as people take defensive measures preemptively (attrit what you see fit, use your discretion on what capabilities can't be attrited).

Use	Big Capability	Small Capability
1 st Use	10% chance of capability loss.	3% chance of capability loss.
2 nd Use	5% chance of capability loss.	2% chance of capability loss.
3 rd + Use	3% chance of capability loss.	1% chance of capability loss.

- At the outbreak of a crisis there is a 5% chance of capability loss.
- At the start of war there is a 10% chance of capability loss.

Regenerating capabilities:

Attack	Example	Time
<i>Small</i>	Defacing website	1d2 weeks
<i>Medium</i>	Attack a selected node in a network	1d4+1 weeks
<i>Large</i>	Major attack against protected infrastructure	3d4 weeks

Attacks:

Chance of success of the attack = chance of preexisting vulnerability * chance of vulnerability still working * chance of major effect

Impact = chance of major damage * time it takes to repair the damage

SOF Rules

Facilitator adjudicates as needed. As a general rule, limit them to conduct as many missions as they have Tier 1 units. Tier 2 SF, Psychological Warfare units, et. al. can be employed in addition.

Country	Tier 1 Units
Australia	• SASR
Canada	• JTF 2 – Canadian Special Operations Regiment
China ³²	• <i>PLAA Eastern</i> : Sharks, Thunderbolts, Dragons of the East Sea – <i>PLAA Southern</i> : Sword of the South, Unnamed SF Bn. – <i>PLANMC</i> : Sea Dragons – <i>PLAAF</i> : Thunder Gods – <i>PAP</i> : Snow Leopards ³³
France	• 1er RPIMa – 13e RDP – Commandos Marine – CPA 10
Japan	• Special Forces Group
New Zealand	• NZSAS
Philippines	• Light Reaction Regiment – NAVSOCOM
Taiwan	• Airborne Special Service Company – 101st Amphibious Reconnaissance Battalion
UK	• SAS – SBS
US	• Delta (Army) – Regimental Reconnaissance Company (Rangers) – SEALs (Navy) – SOG (CIA) – AFSOC (24th STS) – MARSOC (Marines)

Space Rules

Facilitator adjudicates as needed.

Quick Reference

See space capabilities

¹ While CSG's do not always deploy with enough ships to provide 400 VLS cells of capacity, I make the assumption for two reasons: First: I suspect that in a war there would be a tendency to want to provide more magazine depth than can be provided by a 3 ship configuration (1 Ticonderoga, and 2 Arleigh Burke for example) to defend more vulnerable assets, without leading to over centralization making targeting easier (the current game system allows such stacking at the player's discretion which would make detection easier for the enemy. This makes it a player choice, not a designer choice on the value of concentration vs. dispersion of forces). Second: it limits the number of pieces on the board, making the game easier to play. Thus, all naval units (CSG, ESG, CSG) use the 400 VLS cell number as their benchmark.

² The number of missile boats making up a squadron is taken from historical numbers of ships involved in Battle of Baltim (6 Israeli, 4 Egyptian), Battle of Latakia (5 Israeli, 4 Syrian), Second Battle of Latakia (various groupings of 2, 3, and 4), Operation Trident (3 Indian missile boats plus other ships). While the average of these historical numbers is 3-5, I choose to use 6 as: 1) missile defenses are better than they were historically necessitating more missiles fired, meaning more boats necessary, 2) historically smaller ships were being engaged by missile boats, necessitating less missiles than the larger combatants of the game, and 3) using 6 reduces the number of pieces on the board, making the game easier to play.

³ See Ukrainian generals' comments on Brigades holding 40km lines. <https://www.nationaldefensemagazine.org/articles/2022/6/15/ukraine-to-us-defense-industry-we-need-long-range-precision-weapons> (2022). This works well in the abstract and for larger hexes on the operations map, but on Taiwan 4 brigades per hex is relatively also consistent due to smaller frontages (on the Taiwan map this would mean each brigade holds a frontage of ~5km) due to the more difficult terrain. It is worth noting that in an urban environment the frontage of a brigade becomes 6-12 blocks, where 1 block is ~100m (ATP 3-06 Urban Operations, July 2022, section 4-42), but lines can be lengthened the lower the force density is (and I am of the opinion low force densities will feature in a Taiwan invasion due to the lack of PRC units to move across the strait, and the low number (and manning) of Taiwanese units.

⁴ This section is primarily based on an interview with Paul Kendal OBE.

⁵ <http://www.military-today.com/aircraft/j15.htm> (Accessed March 5, 2022)

⁶ <https://www.airforce.gov.au/technology/f-35a-specifications> (Accessed March 5, 2022)

⁷ https://en.wikipedia.org/wiki/Boeing_F/A-18E/F_Super_Hornet (Accessed March 5, 2022)

⁸ This represents the fact that submarines engage from within the engagement envelope of the defensive systems of the group, thus allowing for less chances to engage incoming missiles.

⁹ This table is based on my own custom salvo combat model informed by:

- Fleet Tactics and Naval Operations 3rd Edition
- *Using kill-chain analysis to develop surface ship CONOPS to defend against anti-ship cruise missiles* Smith, Roy M. Naval Postgraduate School (2010)
- To determine survivability analysis of missile and bomb effects against military grade ships built after 1970 sunk/put OOA, and ships hit by missiles even if they were not sunk. Ships damaged by mines were not included as they strike below the waterline. The given data may not account for advancements in damage control techniques and materials on newer ships. Full data and assumptions available upon request.

¹⁰ The reason for a 3rd damage on CSG's and ESG's is due to the ability of larger combatants to 1) provide more ISR and (slightly) more defensive capacity, 2) to soak up damage 3) to provide extra assistance (beyond what a SAG would provide) to other ships in the task force if damaged (extra damage control teams, helicopters, ability to take ships into tow, etc.).

¹¹ It should be noted that a "sunk" result does not necessary mean that all ships are sunk, but rather that the unit (CSG, SAG, etc.) has lost so many ships, or sustained such damage that they are unable to continue operations and must return to repair yards for a long period of time, e.g. a mission kill.

¹² Estimating the Pk of a torpedo is difficult (see the section on "Kill Probability" in <https://www.strikepod.com/strikepod-command-counter-poseidon-2/> for a brief overview). The Pk of a ASROC is ~.2 (see pg. 39-40 of Probability of kill for VLA ASROC torpedo launch, Valerio, Stephen M. Monterey, California. Naval Postgraduate School, 2009, https://calhoun.nps.edu/bitstream/handle/10945/4820/09Mar_Valerio.pdf). The paper takes as a given that the target has been detected (as per the detection table) and assumes that 3 shots from a torpedo with a Pk of .2 occurs against the sub (.512 chance of 3 misses, or .488 cumulative chance of a hit on the Sub). Three shots is chosen as it makes good probabilities and seems a reasonable number to the author for the number of torpedoes fired across a whole sub vs. sub or sub vs. ASW engagement (which may go through several phases of attempting to detect and attack the sub over several hours which is comprised into one turn, so the 3 torpedoes may well be spread out over several minutes or several hours, but the aggravate over one turn is roughly 3).

¹³ If necessary limited operations can be conducted by a squadron operating in a very expeditionary capacity, backed by one or two cargo planes as demonstrated by US exercises in the Pacific, then allowing the rest of the squadron to flow in over several days (so operations can be conducted from the first day). However, the main reason for this is to ease the amount of work Control has to do while running the game.

¹⁴ Damage here represents a combination of loss of airframes, decrease in sortie generation due to pilot and airframe fatigue, and other miscellaneous factors that decrease the overall effectiveness of the squadron. Thus, a Destroyed result does not mean that all aircraft have been destroyed, but that the squadron's effective fighting power has been reduced to the point where it has a negligible impact on the air battle.

¹⁵ Here IADS represents both short, medium, and long-range air defense.

¹⁶ The rate of damage to squadrons here is heavily colored by *Defending Mother Russia's Skies*, RUSI (July 13th, 2022), particularly the point that in the 142 days after the invasion, Ukraine had lost 19% of its pre-war stockpiles (not including decreases in readiness rates due to mechanical fatigue which are not able to be documented), in a war seeing limited amounts of air power, which also generally stayed behind the respective side's FLOT. Furthermore, such combat also took place over a piece of land, where pilots are easy to recover (especially as they were likely to be shot down close to, or behind their own FLOT), something made more difficult in the contested airspace and water (instead of land) that would characterize a war in the Pacific.

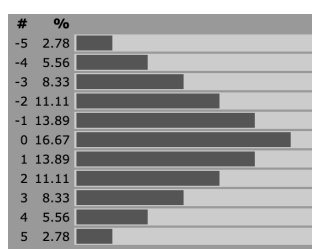
¹⁷ Unit movement is based on numbers from *Warfighter 2 Remote* by Maj. Tom Mouat MBE.

¹⁸ Combat power is calculated by using the Force Equivalent numbers from (the download takes some time to load properly) https://rdl.train.army.mil/catalog/view/100.ATSC/CE5F5937-49EC-44EF-83F3-FC25CB0CB942-1274110898250/aledc_ref/cas3_force_ratio_calc.xls which are based on CGSC ST 100-3, Back Cover.

¹⁹ Here attrition is a combination of KIA, WIA, morale, equipment losses, supply issues, C2 degradation, unit quality degradation, etc. (see *The Relationship Of Battle Damage To Unit Combat Performance*, Leonard Wainstein, 1986, Institute for Defense Analyses, specifically pg. 2 and pg. 11-12 for several of these attritional factors). Thus, small attritions (represented as attrition) add up to the point (represented as points of damage) where rotating the unit out of combat doesn't fix the problem without long periods to reconstitute combat power.

²⁰ This view of units remaining effective in combat even when ground down to a much lower number than classically assumed to make a unit "combat ineffective" is based on of *The Relationship Of Battle Damage To Unit Combat Performance*, Leonard Wainstein, 1986, Institute for Defense Analyses.

²¹ The use of a d6 here leads to high *potential* variability (+5/-5), though the use of two dice means that this is a normal/gaussian distribution (a bell curve). While some would argue about the accuracy of such variability in combat, I would note that combat is inherently complicated, confusing, and dependent upon a menagerie of different factors that make outcomes imprecise. Adding in such variability using the d6 system (a 44% chance of being inside the bounds of +1/-1, and a 66% chance of being inside the bounds of +2/-2), is less unrealistically "swinging" than might be initially presumed. The 1d6-1d6 distribution is as follows:



²² This difference between attritional combat which slowly wears at units and maneuver combat which expends great numbers of men and material to achieve results (hence d6 as maneuver combat varies greatly in losses depending on distance, terrain, supply, and enemy resistance) allows for both types of warfare to be fought with these rules.

²³ This combat results table is based on the DSTL Force Ratio Risk Table. Available at <https://www.professionalwargaming.co.uk/Force%20Ratio%20Table%20with%20Numbers%20v0.1.png>. Given the turn time of the game (1 turn = 1 day) I do not include hasty attacks as it would add another level of unnecessary complexity and uncertainty to adjudication and could cause players to argue if an umpire judged an attack to be hasty when players believed otherwise. Given the nature of fighting on Taiwan to include many dug-in positions, difficult terrain, and high force density around initial beachheads, I believe it likely that hasty attacks will not be especially efficient in taking ground and inflicting casualties (except perhaps on the attacker), thus meaning that they can be abstracted into prepared attacks that do have a larger effect on the battle.

²⁴ This allows the representation of a unit screening the enemy while withdrawing (fall back in correspondence to the strength of enemy push) or choosing to stand and fight (in which case you trade casualties for holding your position). However, at very high force ratios one will be forced to pull out to avoid being surrounded and destroyed hence (↺), while with breaching you can

generally safely pull out hence no need for (G) as it represents a rapid need to disengage due to overwhelming speed of enemy movement due to high numbers of forces available to the enemy.

²⁵ Strike here is with a squadron of aircraft. Effect is a combination of the strike itself, and aftereffects on morale, unit dispersion, camouflage, and digging in to limit further airstrikes effect limiting combat capabilities temporarily.

²⁶ Ignoring the debates around the accuracy of force ratios, generally a successful attack is at 3:1 attacker to defender. For urban operations, a ratio of 4-10:1 seems to be sufficient (average of ~7), so $7-3 = 4$, thus 4 shifts for the defender in urban terrain (of course one could argue about different types of urban terrain, but at the game's level of abstraction this is ignored for simplicities sake). For underlying numbers see: <http://www.dupuyinstitute.org/blog/2018/04/25/u-s-army-force-ratios/> (2018)

²⁷ It is extremely difficult to determine the force ratio difference from 3:1 an amphibious assault requires on average to be successful (*Charting the Pathway to OMFTS: A Historical Assessment of Amphibious Operations From 1941 to the Present*, Carter A. Malkasian, CNA, 2002, pg. 53-59). Given data from the same source (on pgs. 55-56), it seems like past 5:1 the chance of an operational pause lessens dramatically, thus giving us a 2-column shift (3:1 -> 5:1).

²⁸ This section is heavily influenced by *Casualty Estimation for Nuclear and Radiological Weapons*, Carl A. Curling, 2016 <https://www.ida.org/-/media/feature/publications/c/ca/casualty-estimation-for-nuclear-and-radiological-weapons/p-5220.ashx>. It is assumed that the study's one light infantry battalion represents 30% of the combat power of a brigade, and that the study's dispersion of the battalion is approximate with a defensive posture. Thus a "Dispersed" posture resulting in 30% damage to the unit.

²⁹ Damage against a fresh unit. Damage here is against the combat effectiveness of the unit, not the whole brigade itself, and rear echelon units of the brigade would likely be less affected than combat units.

³⁰ For an example of why this would be so devastating to a brigade in an urban environment the frontage of a brigade becomes 6-12 blocks, where 1 block is ~100m (see ATP 3-06 Urban Operations, July 2022, section 4-42), putting the entire brigade inside the danger zone of a tactical nuclear weapon.

³¹ Note that this sheet rounds up when forced to round.

³² China Maritime Report No. 18: Chinese Special Operations in a Large-Scale Island Landing (2022) pg. 6, unit names from pg. 7. "five SOF brigades of the Eastern and Southern Theater Commands, along with the PLAN Marine Corps' Sea Dragons brigade based in Hainan, and possibly the PLAAF's Thunder Gods brigade" (pg. 6). The SF unit allocation here assumes that each SOF brigade has a tier 1 unit in it.

³³ China Maritime Report No. 18: Chinese Special Operations in a Large-Scale Island Landing (2022) pg. 10