The educational utility of microgames

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Microgames or postcard games are small, compact games designed to be played within 30-40mins. Originally popularized by commercial wargaming magazines, microgames often featured few components, rapid gameplay, and a high level of accessibility. Their hallmark was their ease of play. Recently, microgames are increasingly used for professional military education (PME). Due to their focused design, microgames can explore niche or non-traditional topics in military operations -- such as blockades, troop readiness, medical care, and more. Moreover, for those unfamiliar with wargaming, microgames provide an easy way to learn the strengths and limits of professional wargaming. Admittedly, microgames can be limited by the high level of abstraction required for quick gameplay. However, microgames are well suited for classrooms and tactical units where time is constrained, especially when paired with relevant readings,

lectures, and podcasts. And for those aiming to explore game design, microgames provide a means to research, design, develop, and playtest a complete wargame on a short timeline. For both aspiring wargame players and designers, there is no substitute for experience -- whether that's the thrill of playing against an adaptive opponent or the struggles of creating an original game.

Microgames at Center for Naval Analyses:
https://www.cna.org/centers-and-divisions/cna/ow/gaming-and-integration

Designer Notes

By Sebastian J. Bae
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Call Sign is a simple micro-wargame where players must marshal varying aerial platforms – leveraging each of their strengths – to destroy the opposing carrier. This encourages players to balance the inherent tradeoffs and capabilities of different aerial platforms. However, as a micro-game, Call Sign significantly simplifies complex, multi-role platforms and the intricacies of air combat for ease of play and accessibility. The underlying goal of this game is to help familiarize players to both the utility and limitations of wargames. Wargames excel in highlighting the dynamic interaction between opposing minds, each adapting to one another's actions. Moreover, wargames help players inspect and explore the logic of their own actions and the reactions of their opponent. And like most wargames, the result is less important than the process of acting, reacting, and adapting. Wargames do not predict the future, but help players understand why a particular outcome happened.

The **CNA Gaming & Integration Program** designs bespoke analytical and educational games on a variety of topics – such as operational warfighting, cyber & space, global security, future technologies, and more. We tailor the wargame design, data collection process, and analysis to meet each sponsor's unique needs.

If you are interested in learning more about CNA wargaming, you can reach out to the following:

Christopher Ma, Research Program Director, Gaming & Integration Program, mac@cna.org
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CALL SIGN ✈

2 Player Game

Type → FTR **3-1-2**

Jam **0-(0)-2**

Combat Value | Combat Range | Fuel Range

Special Effect Range

Setup: Cut out each unit along the dotted lines (left) and give each player the six units matching their color. Set the damage counters aside.

Objective: Win by destroying the opposing carrier by delivering 2 hits. Place a damage counter on the carrier for each successful hit.

Order of Play: Each turn, players roll 1d6. Higher number has initiative and goes first. Each player does **ONE** of the following actions:

- **Generate one unit.** Place a unit adjacent to or on top of your carrier.
- **Move one unit one hex.** Units can stack with no limit, but this action only moves one unit.
- **Activate a unit's special ability.**
- **Regenerate unit.** Roll 1d6. If the result is 5 or less, place one destroyed unit adjacent or on top of the carrier.

Combat: After both players have finished their actions, combat occurs automatically. The initiative player chooses combat order. Each unit may only engage in combat ONCE per turn. If there are multiple eligible targets within range, then the attacker chooses its target for combat.

Evasion: The Defender may Evade. Roll 1d6. On a 1, move Defender to a hex without an enemy unit with a Combat Value and the Engagement ends. Otherwise, continue Engagement. If it cannot retreat safely, destroy the unit.

Resolving Combat Engagements: Select one unit as the Attacker and one unit within its Combat Range as the Defender. If the Attacker and Defender are engaging one another, roll dice simultaneously. If the roll is equal to or less than the unit's Combat Value, the opposing unit is destroyed (remove from the board and place in the appropriate Regeneration Box). All units can only take one hit.

In a turn, a unit destroyed in combat may still roll for its own combat against its target – before being sent to the Regeneration Box. i.e.; If A destroys B, and B is targeting C – then B can still roll to destroy C before going to the Regeneration Box.

Special Rules:
A unit further from a fuel source than its Fuel Range is destroyed at the end of the turn. Available fuel sources: Tanker (TKR) or the carrier. If a unit has (∞) for its Fuel Range, it does not need a fuel source. When counting range for combat or fuel, the occupied hex is a range of zero and the adjacent hex is a range of 1.

A Bomber (BMR) has a combat value of 1 against all units except the opponent's carrier.

C2 Special Ability: Select up to 2 of your units within the Special Effect Range. Move the selected units one hex each.

Jam Special Ability: Roll 1d6. On a 4 or less, reduces all enemy combat values by 2 against units in its hex. This ability is automatic when enemy units engages in combat against its hex. Roll for this ability prior to the Attacker's roll.

Glossary:
1d6 – one six-sided die (Image of d6)
Unit – one of the six aircraft available to each player

CARRIER

Blue Regeneration

Red Regeneration | **CARRIER**

FTR **3-1-2** | FTR **3-1-2**

BMR **5(1)-2-∞** | TKR **0-0-∞**

Jam **0-(0)-2** | C2 **0-(3)-2**

FTR **3-1-2** | FTR **3-1-2**

BMR **5(1)-2-∞** | TKR **0-0-∞**

Jam **0-(0)-2** | C2 **0-(3)-2**

DAMAGE | DAMAGE

Designed By Sebastian J. Bae

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Source: https://www.cna.org/files/CallSign_20MAR2023.pdf

Designer Notes

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Find, Fix, & Fire is a micro-wargame where players wrestle with imperfect information as they hunt for the opposing fleets. The game aims to familiarize players with the tense back and forth as each fleet simultaneously tries to find their targets, while concealing their own fleets. Each of the ISR capabilities within the game broadly represents different means to find the enemy. "Focus ISR" represents imagery intelligence such as unmanned aerial systems. "Directional ISR" represents techniques like combat directional finding. "Area ISR" represents signals intelligence that covers a large area. Although immensely simplified, the game aims to highlight how different capabilities have comparative advantages – represented by a tradeoff between probability of success and area of coverage. The map and game is specifically designed that no singular method is guaranteed or supreme. Each method has its specific value and contextual application. Similarly, the simple combat mechanic aims to highlight key factors – such as distance and terrain – in maritime combat. In the spirit of Wayne Hughes' *Fleet Tactics*, each player must strive to find the enemy first and strike decisively. If unsuccessful, the enemy fleet may surmise your own position or detect your position from your attack and respond with a counter-attack of their own.

Find, Fix, & Finish seeks to familiarize players with the utility and limitations of wargames. Wargames must scope their focus and abstract reality into simplified models. Wargames excel in highlighting the dynamic interaction between opposing minds, each adapting to one another's actions. In *Find, Fix, & Finish*, anticipating the adversary's actions or inferring their location is a mental tug of war of information. Thus, the result is less important than the process of acting, reacting, and adapting against an active opponent. Wargames do not predict the future, but help players understand why a particular outcome happened.

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FIND, FIX, & FIRE

Designed by Sebastian J. Bae

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Setup: Each player gets their own sheet (preferably laminated), a blue and red cube (or two different coins), a dry erase marker, and 2 d6 die each. Place a screen such as a folder or face in opposite directions so the opposing player cannot see your map. **Each player secretly places their 2 cubes (called Fleets, red and blue) on naval/blue hexes on their respective map**.

Directions: Each player will get **ONE** action (#1 or #2) per turn. The player who destroys both opposing surface fleets (both cubes) first wins! It requires **2 hits** to destroy a Fleet. Cross out a DAMAGE box for each successful hit against YOUR associated fleet. Write on your map and track notes of where you have searched.

1) Conduct **ONE** of the following **ISR** capabilities.

Focus: Select a hex. The opponent must reveal if there are any ships in the selected hex.

Directional: Select a row of 3 adjacent hexes. If you roll 5 or less, the opponent must reveal the location of all ships in selected hexes.

Area: Select 4 adjacent hexes. If you roll 4 or less, the opponent must reveal the location of all ships in selected hexes.

Range (Hexes)	Roll Required
0-2	2+
3-6	3+
7+	4+

Combat: If you have <u>successfully detected</u> the enemy Fleet, you may **immediately** conduct a **STRIKE** (using 2 dice) against each enemy Fleet(s) in the hex(es) with ONE of your Fleets. Without revealing the location of your Fleet, calculate the shortest distance between the target(s) and your attacking Fleet (not counting your own Fleet's hex). If 0-2 hexes, success requires a roll of 2 or higher. If 3-6 hexes, requires 3 or higher. If greater than 7 hexes, requires a 4 or higher. **For each land hex (brown) your shot path crosses, subtract 1 from your roll**. The attacker allocates 1 DAMAGE to an enemy Fleet for each success. **Lastly, the defender rolls 1 die for detection – on 5 or higher, reveal the attacking Fleet's location**. Even if a Fleet is destroyed, it gets to roll for detection.

2) Move one or both your Fleets ONE adjacent hex on the map – by crossing off one of its associated fuel bubbles. You can only move into naval blue hexes and all brown hexes are impassable. If you have no more fuel, you cannot move.
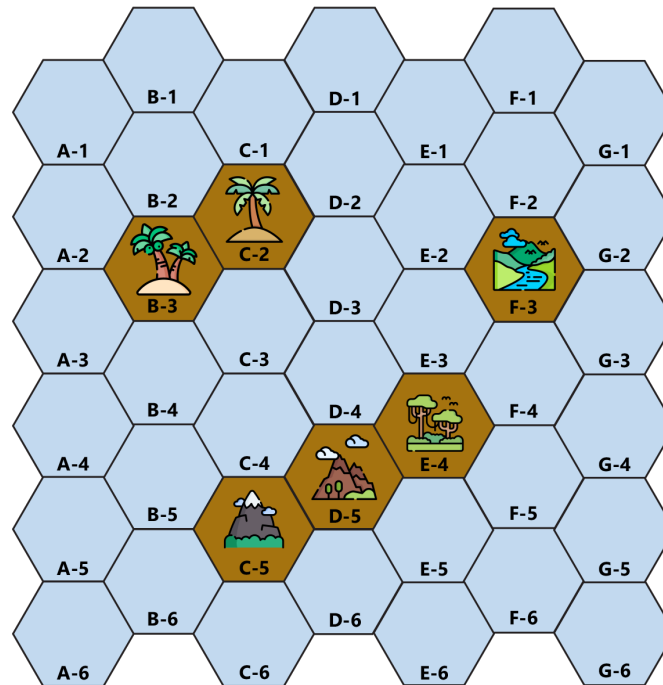
Your Red Fleet (Cube)   Fuel
DAMAGE   DAMAGE

Your Blue Fleet (Cube)   Fuel
DAMAGE   DAMAGE

(Hex grid map: Columns A through G, rows 1 through 6)
B-1, D-1, F-1
A-1, C-1, E-1, G-1
B-2, D-2, F-2
A-2, C-2, E-2, G-2
B-3, D-3, F-3
A-3, C-3, E-3, G-3
B-4, D-4, F-4
A-4, C-4, E-4, G-4
B-5, D-5, F-5
A-5, C-5, E-5, G-5
B-6, D-6, F-6
A-6, C-6, E-6, G-6

Glossary:
1d6 – one six-sided die (Image of d6)
ISR – Inteligence, Surveillance, and Reconnaissance

Requires:
2 sheets of the game, 2 red cubes, 2 blue cubes, 4 d6, a screen, and a pen or dry erase marker if laminated

Source: https://www.cna.org/files/Find-Fix-and%20Finish_28Feb2023_FINAL.pdf