The Hunting of the PLARK

A Game of Anti Submarine Warfare

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Table of Contents

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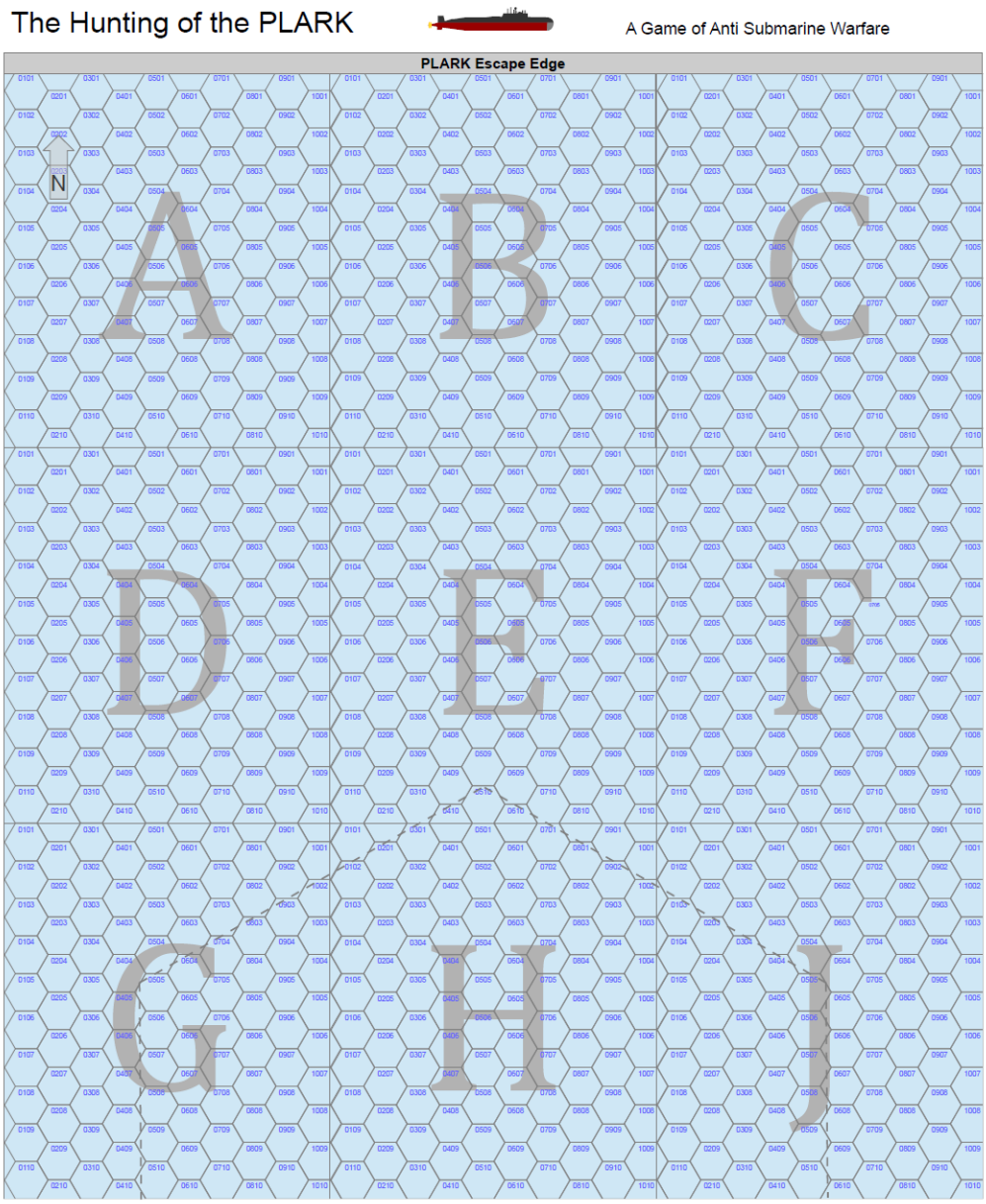
1 Introduction

The Hunting of the PLARK is a two-player game simulating a maritime patrol aircraft hunting a hostile nuclear submarine. As well as the map, counters and plotting sheets provided, players will need a pencil and an ordinary six-sided die.

1.1 The Map

The game is played on a map covered in a hexagonal grid. Each hex represents 1 nautical mile from side to side, and each turn represents 5 minutes of real time. The map is made up of sub-maps, each with an identification letter, and the hexes of each sub-map are numbered.



Sequence of Play
1. Pelican phase
Move the aircraft, drop sonobuoys and torpedoes
2. Madman phase
Indicate MAD detection
3. Maypoles phase
Indicate HOT sonobuoys
4. Panther phase
Plot submarine move
5. Bloodhound phase
Secretly resolve torpedo attacks, place explosions

Torpedo Damage Table (secret roll)

Die Roll	1	2	3	4	5	6
Result	SUNK	SUNK	Damaged	Damaged	Miss	Miss

Biologics Table (open roll)

Die Roll	1	2	3	4	5	6
Result	Biologics	Biologics	–	–	–	–

Sonar Detection Table

Sub speed	Stopped	Slow	Fast
Detection range	1 hex	3 hexes	5 hexes
Detection range (through layer)	impossible	1 hex	3 hexes

Underwater explosion activates sonobuoys to 10 hexes
Disturbed water activates sonobuoys to 5 hexes

2 The Players

2.1 Pelican Player

One player controls a Long-Range Maritime Patrol (LRMP) aircraft, such as the Breguet *Atlantique*, Lockheed P-3 *Orion*, or Hawker Siddeley *Nimrod*. The NATO brevity word for such an aircraft is Pelican. The aircraft is equipped with a Magnetic Anomaly Detector (MAD) and carries in its weapons bay a mix of non-directional sonobuoys (Maypoles) and anti-submarine torpedoes (Bloodhounds).

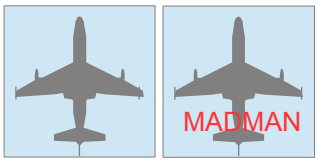
2.2 Panther Player

The second player controls a nuclear-powered cruise missile submarine, or PLARK (Подводная Лодка Атомная Ракетная Крылатая *Podvodnaya Lodka Atomnaya Raketnaya Krylataya*) such as a Charlie, Oscar, Yankee Sidecar or Yankee Notch. The NATO brevity word for a hostile nuclear submarine is Panther.

3 Playing Pieces

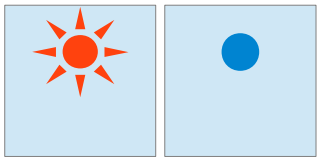
Almost all of these are placed by the Pelican player.

3.1 The Pelican [1]



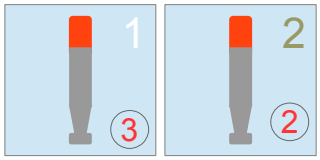
This counter shows the current location of the LRMP aircraft. One side indicates a MAD contact, the other indicates no MAD contact.

3.2 Maypole [20]



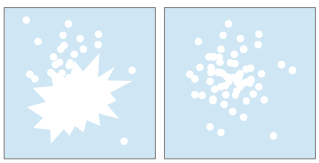
This counter shows the location of a sonobuoy in the water. The HOT side (red star) shows the sonobuoy has a current contact, the COLD side (blue circle) shows no contact.

3.3 Bloodhound [4]



This counter shows the location of an anti-submarine torpedo in the water. One side shows it on its first turn of running, the other on the second turn. The number in the circle shows its move distance, in hexes.

3.4 Underwater Explosion/Disturbed Water [2]



This counter is placed when a torpedo detonates. The turn after the explosion it is flipped over to reveal disturbed water.

4 Setting up the game

4.1 Warload

The Pelican player has a card representing the aircraft's weapons bay. The Weapons Bay has 24 slots. A sonobuoy takes up one slot, and a torpedo takes up two. Torpedoes and sonobuoys are removed from the weapons bay to be placed on the map when they are dropped; they may never be placed back in the weapons bay once dropped. Sonobuoys remain on the map permanently once deployed, and do not move. Torpedoes do move, but last for only two turns.

4.2 Start Positions

There is no counter representing the position of the PLARK. The Panther player secretly records the current location and speed of the submarine on the Panther Plot sheet. At the start of the game, he records its initial position and speed before game turn 1. This must be within ten hexes of hex H0510. This area is delineated by a dashed grey line on the map.

The Pelican player can start the aircraft anywhere on the map.

5 Sequence of Play

5.1 Pelican Phase

The Pelican player moves the aircraft counter across the map in any direction, or combination of directions, up to a maximum of twenty hexes. Torpedoes or sonobuoys from the weapon bay may be dropped in any hex the aircraft passes through during this phase. Torpedoes are dropped with their “1” side showing, and sonobuoys with their COLD side showing. Because torpedoes home on the sound of other torpedoes, it is not normally advisable to drop one while there is already a torpedo in the water.

5.2 Madman Phase

If the aircraft passed over a hex containing the PLARK at any time during its move, the Panther player turns the counter over to its MADMAN side; otherwise, it should be placed on its blank side.

5.3 Maypoles Phase

Next, the Panther player checks each of the sonobuoys to see if it is in contact. The detection range depends on the speed the PLARK moved last turn:

PLARK Speed:	**Stopped**	**Slow**	**Fast**
Detection range:	1 hex	3 hexes	5 hexes

Sonobuoys in contact are turned to their HOT side, those out of contact to their COLD side.

Sonobuoys are also considered in contact and turned to their HOT side if they are within 10 hexes of an underwater explosion, or within 5 hexes of disturbed water.

5.4 Panther Phase

The Panther player chooses how many hexes to move this turn: stopped (0 hexes), slow (1 hex) or fast (2 hexes). The Panther player records the hex in which the submarine ends the turn, and the

speed at which it was travelling. If the optional rule for the layer is being used, record also whether the submarine is SHALLOW (S) or DEEP (D).

5.5 Bloodhound Phase

Any disturbed water counters on the map are removed, and any underwater explosion counters are turned over to the disturbed water side.

If there are any torpedoes in the water, the Panther player now moves them. Torpedoes will move directly towards another torpedo or the submarine if they are within detection range, and closer than any disturbed water. Use the same detection ranges as for sonobuoys, and assume that torpedoes are detected at a distance of five hexes. If more than one target is in detection range, the torpedo homes on the closer; break ties with a die roll. Torpedoes that do not home on a target, either because no target is within listening range or disturbed water is closer, are considered to execute a circular search pattern, and so remain in their current hex. Torpedoes move at the following speeds (shown as circled numbers on the Bloodhound counters):

Turn	**1st turn**	**2nd turn**
Torpedo speed	3 hexes	2 hexes

When a torpedo completes its first turn in the water, it is flipped over to its "2" side. When a torpedo finishes its second turn in the water, it is removed from play.

If at any time during its movement a torpedo enters the same hex as the submarine (not another torpedo), it attacks it. The Panther player should roll a die for each torpedo in the water, ignoring the results for any except those that intercept a submarine. Torpedo attacks are resolved using the following table:

Roll	**1**	**2**	**3**	**4**	**5**	**6**
Result	SUNK	SUNK	Damaged	Damaged	Miss	Miss

If the result is "SUNK" or "Damaged", place an underwater explosion counter in hex where the attack took place. The submarine is destroyed if it suffers a SUNK result, or if it is damaged twice.

Regardless of the result of the attack, remove the torpedo counter after the attack is resolved.

6 Ending the Game: Winning and Losing

The game ends when any of the following occurs:

- BINGO: 36 turns (three hours) have elapsed, and the aircraft must return to base through lack of fuel.
- WINCHESTER: The aircraft has dropped all its torpedoes, and all torpedoes in the water have finished running.
- The submarine escapes over the top edge (the xx01 hex row) of sub-map A, B or C.

The Pelican player wins if the submarine is sunk. The Panther player wins if the submarine is undamaged. Any other result is a draw.

7 Optional Rules

Any or all of these rules may be added with the consent of both players.

7.1 Extended Weapons Bay

The Pelican player has a weapons bay with 28 slots, instead of the usual 24.

7.2 Reduced Weapons Bay

The Pelican player has a weapons bay with 20 slots, instead of the usual 24.

7.3 Bidding for the Pelican

At the start of the game, players secretly write their bid for the number of weapons bay slots they will use if they are the Pelican player. The lower bid wins, and the player who made it becomes the Pelican player, but is limited to the number of slots bid (recall that it needs one slot for a sonobuoy, two for a torpedo).

7.4 Active Torpedoes

Torpedoes home on the submarine at a range of three hexes, regardless of the submarine's speed.

7.5 GASS (Gyro Angle Snake Search)

Instead of performing a search pattern in their own hex, torpedoes without a contact move straight ahead in the direction they are pointing. They cannot detect submarines behind them in their rear 120-degree arc.

7.6 Re-Attack

If a torpedo on its first turn in the water attacks a submarine and misses, it is not removed from play, but completes its move in the submarine's hex and remains in the water for the next turn.

7.7 The Layer

When using this rule, the Pelican player must declare sonobuoys to be either SHALLOW or DEEP when dropped. Their depth may not be changed later. Indicate SHALLOW sonobuoys by placing them with the symbol at the top, DEEP with the symbol at the bottom. The Panther player must also note, each turn, whether the submarine ends the turn SHALLOW or DEEP (write"S" or "D" at the end of the plot). If the submarine changes depth within the normal detection range of any sonobuoy that is not activated by an underwater explosion or disturbed water, the Panther player must declare "POPCORN" to the Pelican player. Apart from this, sonobuoy and torpedo detection distances are reduced by two if the depth setting of sonobuoy and submarine are not the same.

7.8 Biologics

To simulate the potential false targets and interference caused by whales, shoals of fish and other biological denizens of the deep, the Panther player openly rolls a die at the start of the Mad Man and Maypoles phase each turn and consults the following table:

Roll	**1**	**2**	**3**	**4**	**5**	**6**
Result	Biologics	Biologics	--	--	--	--

If the result is “Biologics”, then in that turn only the Panther player is entitled to turn one sonobuoy to its HOT side that would not otherwise be activated. Obviously there is no need to tell the Pelican player which one this is.

7.9 Decoys

The Panther player has two expendable decoys, which may be launched at the start of any Panther movement phase to provide false targets. A decoy must be launched on a steady course, speed and depth. Decoys activate sonobuoys and are attacked by torpedoes in exactly the same way as a real submarine, but do not trigger MAD. If a torpedo has to choose between homing on a real submarine and a decoy, it will pick the closest target, then the fastest target, then pick at random (roll a die). Decoys last for three turns, then sink.

7.10 Other Goblins

At the start of the game the Panther player secretly selects six hexes which represent the locations of wrecks or other magnetic anomalies. These hexes give MAD contacts just like a real submarine. They do not give any indication to sonobuoys, nor do torpedoes home on them.

7.11 Diesel Boat

The submarine is a Juliett class PLRK instead of a PLARK. It is only capable of full speed on alternate turns. If stopped, then sonobuoy and passive torpedo detection ranges are all reduced to zero (they must be in the same hex).

8 Designer's Notes

This game was first designed in about 1978, inspired by a sidebar in *Strategy & Tactics* magazine no. 48 on how RAF Nimrods hunt submarines. The extreme simplicity of the representation was also partly inspired by SDC's game of nuclear warfare, *NORAD*. The game first appeared in print in 1987 under the title of *Subsunk!* in *Battlefleet*, the journal of the Naval Wargames Society, vol. 16, no. 3. The differences between that game and the basic rules for the current re-titled version are that the range of MAD contacts is much reduced, torpedo attacks are slightly less dangerous, torpedoes now interfere with each other, and disturbed water has been added. NATO brevity codes have been included to lend an authentic atmosphere. The optional rules are all new. In repeated plays of the original game, it seemed to be balanced, each side winning about half the time. Evidently some of the optional rules will tend to tilt the game in favour of the submarine – decoys, the layer, biologics and other goblins – while others will favour the aircraft.

Even with the optional rules, the game is extremely simple, and represents airborne ASW only in very broad terms. A real ASW aircraft is likely to carry a variety of sonobuoys, including DICASS (Directional Command-Activated Sonobuoy System) active buoys. In real life a submarine's sonar operators could detect actively pinging buoys, and might hear the splash of a buoy hitting the water, but would not have the information available that the Panther player has in the game. *The Hunting of the PLARK* is an impressionistic rather than an accurate simulation, but it does capture the fact that the main problem of ASW – as with all naval combat – is the problem of search. Without going into a detailed study of underwater acoustics, it reflects the decisions commanders must make about planning a search or taking action to evade it.

An aspect not represented is the boredom of prolonged searches. The game lasts only three hours (36 turns), and assumes that information about the location of the PLARK was received before the hunt started. In reality, an LRMP crew would spend hour after hour fruitlessly patrolling empty sea; but that would not make much of a game.

8.1 NATO Anti-Submarine Warfare Brevity Codes

BINGO	Aircraft must return to base because of low fuel
BLOODHOUND	Anti-submarine homing torpedo
COBRA	An anti-submarine torpedo capable of Gyro Angle Snake Search (GASS)
COLD	Sonar contact lost
DEEP	Submarine target below the layer
GOBLIN	Submerged object detected
HOT	Sonar contact held
MADMAN	Magnetic Anomaly Detector (MAD) contact
MAYPOLE	Non-directional sonobuoy
PANTHER	Hostile nuclear submarine
PELICAN	Long-range maritime patrol aircraft capable of both search and attack
POPCORN	Hull popping noises from a submarine changing depth
SHALLOW	Submarine target above the layer
WINCHESTER	Aircraft has no weapons remaining