CASE I

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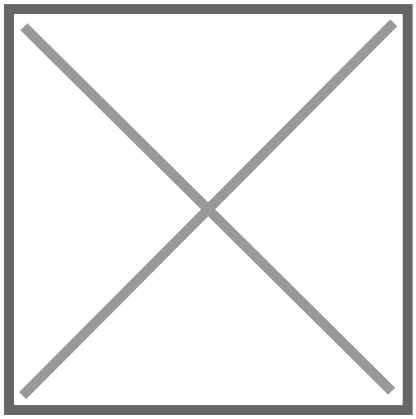
Marshall stack



The stack (overhead port holding) is defined as a left-hand pattern tangent to the BRC with one side located directly overhead the carrier position and the other 5 NM on the port side of the carrier.

The stack has four points. point one is directly overhead the carrier with points 2, 3 and 4 incrementing 90 degrees in the direction of flow.

Every flight gets assigned a stack altitude by the marshal, separated by 1000ft. All aircraft must remain within 5 NM of mother and no lower than 2,000 feet AGL while in the pattern.

Within the stack, climbs are performed between points 1 and 3 (climb area) and any descents are performed between points 3 and 1 (decent area).

The climb area is rarely used, but exists for altitude corrections or for departing the pattern to the recovery tanker. Normal recoveries do not use the climb area.

Entering the stack

Note: For the sake of simplicity, we will ignore Red Crown and Strike (ATC frequencies) as they do not add much to the landing and require two more human ATC's.

Before entering the stack, all flights will contact Marshal when approaching the carrier control area (50 nm from the carrier). The check-in call includes the flight's composition, position (bearing and range from mother), altitude, and fuel state. Marshal will provide each flight a stack altitude if not pre briefed, confirm recovery Case, and provide the expected BRC and Charlie time if applicable.

When the flight is visual with mother, max at 10 nm, they will report "see you at X" and switch to tower.

Flights may enter the stack from any direction but must enter tangentially and wings level. You are required to be established at your assigned stack altitude no later than 10 NM from the carrier. If another flight is already at your altitude, you should visually space out to maintain separation between other flights at the same altitude. For example, in case there are a total of two flights at the same altitude, they would ideally maintain 180 degrees separation, for 3 flights it's 120 degrees, etc.

Charlie

The first flight to recover has to ensure that the signal is Charlie before landing, meaning the deck is ready for recoveries to start. In most cases, there is a pre-briefed Charlie time, which is the time the first flight should arrive in the groove. In that case, the lowest flight should visually confirm a green deck and commence about 4-5 minutes before the given Charlie time. Sometimes Tower may call “100, signal is Charlie” to start the recovery immediately, but this is uncommon.

So “100, signal is Charlie” is not something the tower says to clear you to commence. It indicates the mother is ready to start the recovery procedure immediately.

Laddering down

The purpose of the marshall stack is to organize and sequence flights for an efficient and safe entry into the landing pattern. This sequencing is done visually by the flight leads through a process called laddering down or collapsing the stack.

Laddering Down Procedure:

- When a flight visually confirms that it is safe to descend to the lower altitude with safe spacing, they may descend to that lower level between points 3 and 1.
- After descending, the flight will space itself appropriately in the new layer, maintaining maximum separation from any other flights.
- Flights continue this stepwise descent until they reach the lowest layer.

Note: All flights must keep an eye on other flights both above and below them in order to plan their descent and allow them to create separation when other flights descend. It is advised to have no more than two flights at the same altitude if there is room on top of the stack.

Commencing

The lowest flight (typically at 2,000 ft) may commence at their own discretion, once the deck is ready. It is up to this flight to ensure they will arrive at the Initial without causing congestion.

Commencing is done strictly from point 3, where roll out at BRC+210 (counter course +30 degrees), start descending, speed up to 350, and then start your left turn towards initial 5.5nm from mother.

Note: It is advised to only commence with 1.5+ minutes separation to ensure efficiency and prevent over-congestion in the landing pattern.

Comms

In a non-Zip-Lip Case 1 recovery, the standard comms are:

- “Established at X” - when established in the stack
- “Commencing” - when leaving the stack for initial.
- “Initial” - when 3 NM astern, wings level at 800 ft.
- “Spinning” - if entering the spin pattern.
- “Hornet Ball X” - when acquiring the optical landing system on final approach. Include your state.
- LSOs will respond to the ball call with “Roger Ball” or other voice calls as needed.

During zip-lip, which is very common, comms are minimized and the following comms are left out entirely:

- “Established at X”
- “Initial”
- “Roger ball”

Never transmit on the radio when another aircraft is on the ball, unless required for safety of flight.

Sources

NAVAL AIR TRAINING COMMAND - P-816 - FLIGHT TRAINING INSTRUCTION - CV PROCEDURES - T–45C - 2014

NAVAIR 00-80T-105 - CV - NATOPS MANUAL - 2007

Landing Pattern

This guide provides a concise, authoritative reference for DCS F/A-18C pilots flying U.S. Navy Case I overhead patterns. All procedures reflect U.S. Navy CV NATOPS, LSO NATOPS, F/A-18C NATOPS, and CNATRA guidance.

Initial

The Case I carrier landing pattern is a left-hand overhead visual pattern flown in VMC. The pattern begins at the Initial, located 3 NM astern of the carrier at 800 feet and approximately 350 knots, slightly offset to the starboard side. Aircraft enter configured for landing, hook down and lights on. Upon arrival at the Initial, aircraft continue flying BRC until entering the break turn.

Break Turn

The break is a 180-degree left turn flown level at 800 feet. The break is initiated any time after passing the ship, but no later then 4nm ahead of the ship. Pilots reduce power, extend speed brakes, flaps, and landing gear once below 250 knots. Aim to roll out into the downwind at 600ft and 1.1 to 1.3 NM parallel to BRC.

Downwind

Downwind is flown parallel to the ship’s course (reciprocal of BRC), with the aircraft at 600 feet positioned 1.1 to 1.3 NM abeam the BRC. The descent from 800 to 600 feet should occur prior to the 180 position. The aircraft should be fully configured, checklist complete, and trimmed on-speed before reaching the abeam position.

Abeam and Approach Turn

The abeam (180) is directly opposite the intended landing spot, usually the LSO platform. The approach turn should be initiated shortly after this position, when the round down of the deck is first viable, in order to get the correct groove time. This left turn should be performed at 600 feet and on-speed, descending using 25 to 30 degrees of AOB depending on weight.

90-Degree Position and wake

As the aircraft reaches the 90-degree position, roughly halfway through the turn, it should be at approximately 450 to 500 feet, 1.2 NM from the carrier, and continuing a controlled descent. At the wake, the aircraft should be approximately 380ft and 45 degrees offset from the BRC.

Groove Entry

The turn should place the aircraft wings-level and aligned with the carrier’s angled deck centerline at the groove entry, roughly 0.75 NM astern of the ship at 340 to 360 feet. This point, known as the Start, begins the final approach segment known as the Groove, which lasts approximately 15 to 18 seconds.

Ball Call and Final Approach

At the Start, the pilot should make the Ball call (e.g., "Hornet 205, Ball, (fuel state) 3.2") if not under zip lip. The aircraft must be on-speed, ball centered, and lined up with the landing area. Glideslope is maintained with power, lineup with small roll corrections, and AoA with pitch trimming. After passing the carrier's bow, the aircraft should maintain its trajectory, without further corrections. The target is to get arresting wire #3. Upon touchdown, the pilot adds MIL or afterburner power in case of a bolter and only reduces throttle once a successful arrestment is confirmed.

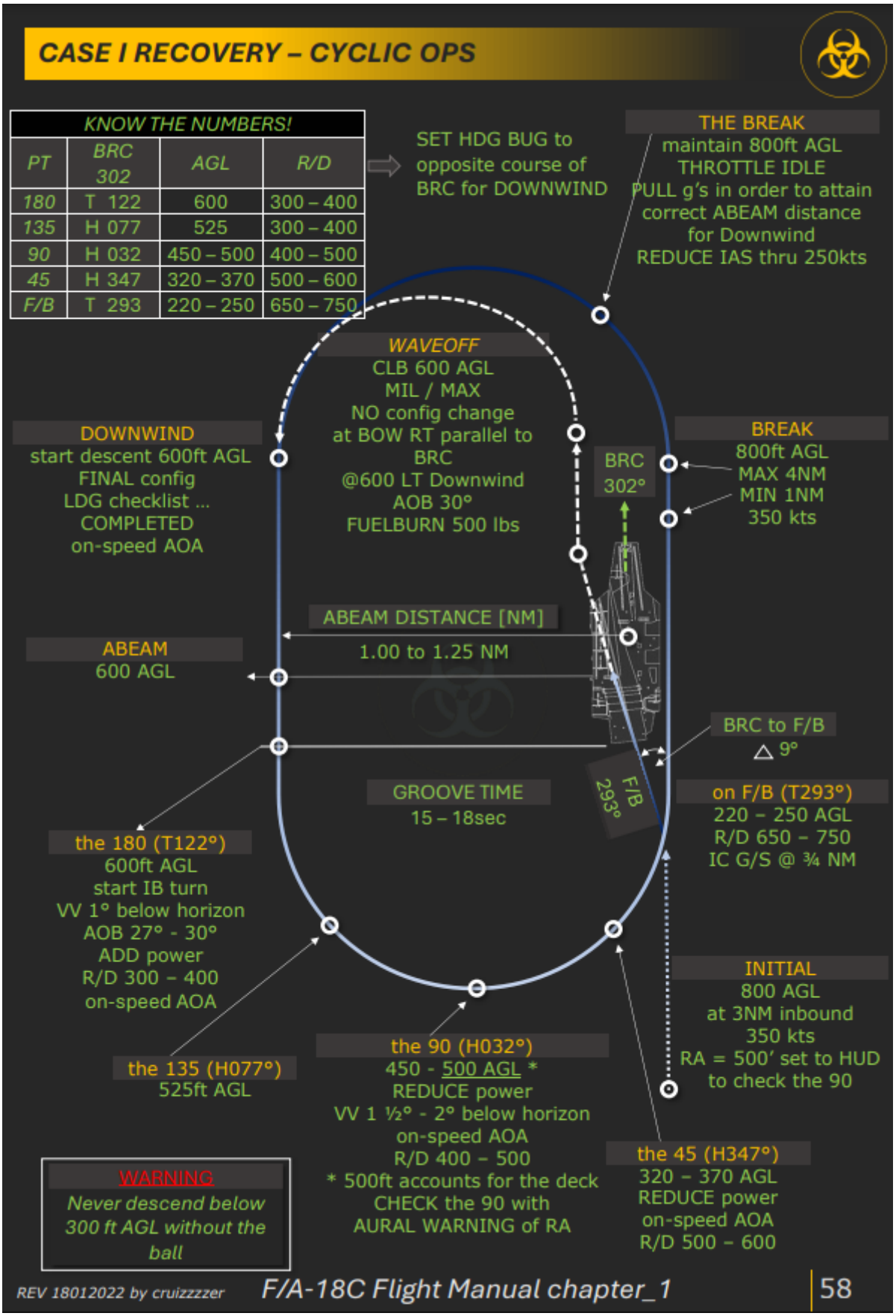
Wave-Off and Bolter

If a wave-off or bolter occurs, the pilot immediately applies full power, maintains on-speed AoA, and climbs along the angled deck heading until past the bow. A clearing turn to the right is then executed to the BRC. The aircraft climbs back to 600 feet, remains in landing configuration, and breaks no earlier then 1nm from the ship.

Best Practices

Maintaining discipline in pattern geometry, timing, and configuration is critical for safe and consistent Case I landings. Trim early, manage interval, and fly a smooth, predictable approach. Use the IFLOLS for glideslope, maintain lineup throughout the groove, and always be ready to wave off or bolter if the approach becomes unstable.

Reference Image

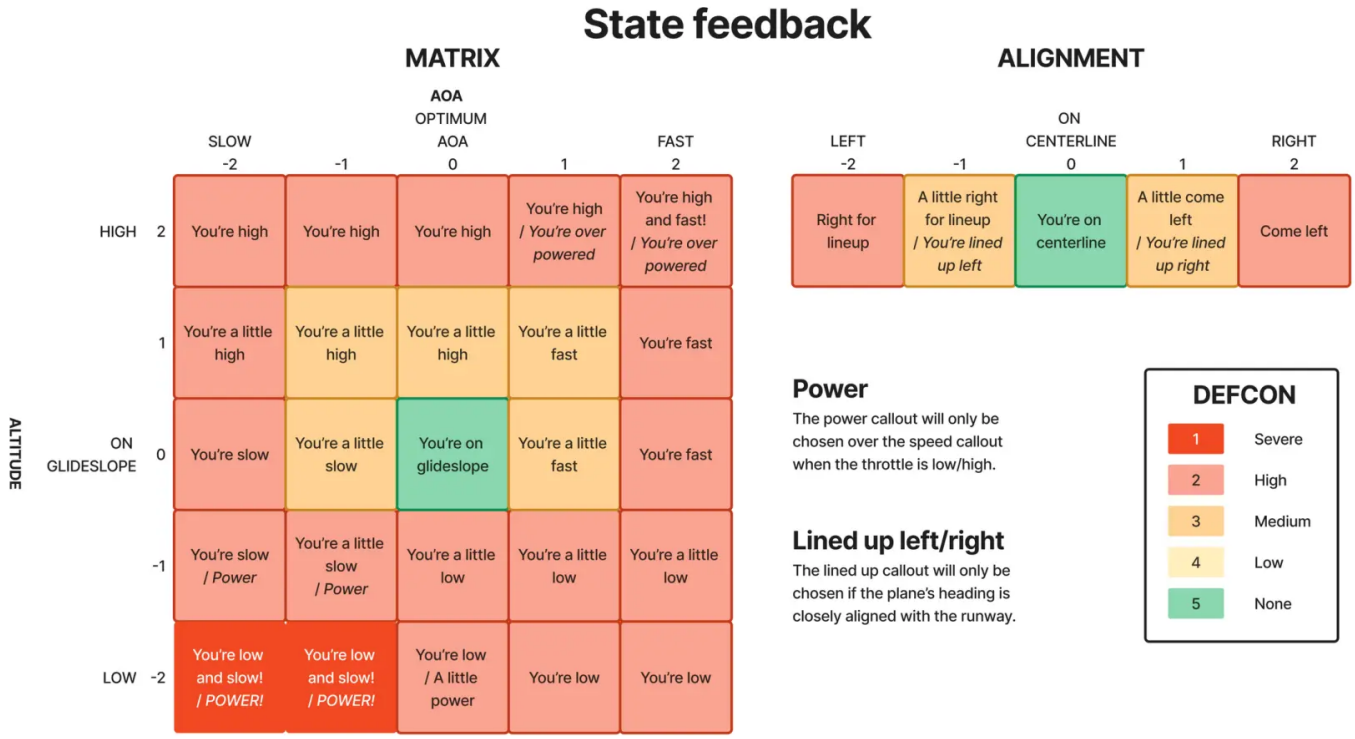


Sources: CV NATOPS, LSO NATOPS, F/A-18C NATOPS, CNATRA FCLP and Carrier Qualification Guides.

Landing Signal Officer (LSO) State Feedback Guide

During carrier landings, the Landing Signal Officer (LSO) provides critical feedback to help pilots maintain a safe and accurate approach. The chart above represents a standardized matrix used by LSOs to assess aircraft state in terms of **altitude**, **angle of attack (AOA)**, **speed**, and **alignment** with the landing area.

Matrix: Altitude vs AOA



The **Matrix** section of the chart gives feedback based on a combination of the aircraft's **altitude** (vertical position relative to the ideal glideslope) and **AOA** (which reflects energy state—too fast or too slow).

- The center of the matrix (0,0) is the ideal zone: "You're on glideslope" at optimum AOA.
- Movement away from the center reflects increasing deviation:
  - **High and fast** = "You're high and fast! / You're overpowered"
  - **Low and slow** = "You're low and slow! / POWER!"

- Color coding indicates severity, from **green** (ideal) to **red** (severe deviation), aligning with a DEFCON-style system:
  - DEFCON 5 (Green): Perfect
  - DEFCON 4 (Light Green): Slight deviation
  - DEFCON 3 (Yellow): Moderate deviation
  - DEFCON 2 (Orange): High risk
  - DEFCON 1 (Red): Critical state, immediate correction needed

Alignment Feedback

The **Alignment** section indicates the aircraft's lateral position relative to the centerline of the runway:

- **0**: "You're on centerline" – perfectly aligned.
- **±1**: Slight deviations — "A little right for lineup / You’re lined up left"
- **±2**: Major deviations — "Right for lineup" or "Come left"

An important note: **Lined up left/right** callouts are only made if the aircraft’s heading is closely aligned with the runway but offset laterally. This prevents confusing heading misalignments with position deviations.

Power Callouts

When determining whether to call out speed or power, **power takes priority** if the aircraft’s throttle setting is dangerously high or low. This ensures throttle corrections are addressed before secondary speed concerns.

Startup and Taxiing on deck

No call is required for starting up. As soon as you are able to, go on to tower frequency and your flight frequency and do a radio check by sayin the following:

- [modex number] radio check on [frequency]. if you are checking in on tower.
- [full flight name] radio check on [frequency]. if you are on any other frequency

If you get no response while you know other people are on the frequency, check your systems and repeat your radio check until you have radio contact.

As soon as you are fully done with startup and ready to taxi, tell your flight lead you are green jet and standby.

As flight lead its your responsibility to chose when to start taxiing your flight. Here is a checklist of all that is required before taxiing:

- All members are green jet.
- No other flights are currently taxiing.
- No landings are taking place.

Overview

The Case 1 pattern is the most commonly used patterns for landing on an aircraft carrier.

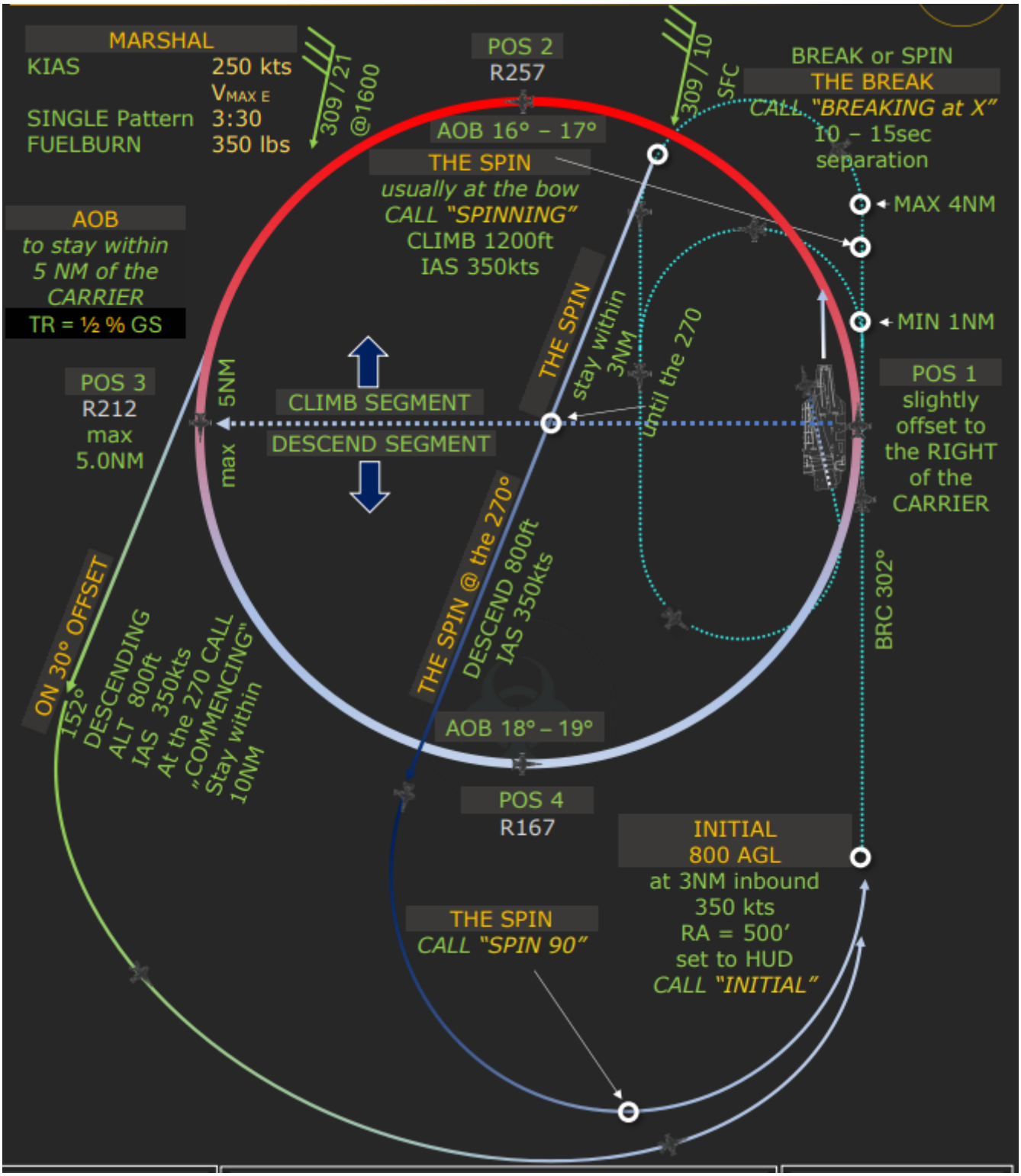
Departure and recovery operations are classified according to meteorological conditions into Case I, Case II, or Case III.

- **Case I** occurs when flights are anticipated to not encounter instrument conditions (instrument meteorological conditions) during daytime departures/recoveries, and the ceiling and visibility around the carrier are no lower than 3,000 feet (910 m) and 5 nautical miles (9.3 km; 5.8 mi), respectively. Maintaining radio silence, or "zip lip", during case-I launches and recoveries is the norm, breaking radio silence only for safety-of-flight issues.

- **Case II** happens when flights may encounter instrument conditions during a daytime departure/recovery, and the ceiling or visibility in the carrier control zone are no lower than 1,000 feet (300 m) or 5 nautical miles (9.3 km; 5.8 mi), respectively. It is used for an overcast condition.

- **Case III** exists when flights are expected to encounter instrument conditions during a departure/recovery because the ceiling or visibility around the carrier is lower than 1,000 feet (300 m) and 5 nautical miles (9.3 km; 5.8 mi), respectively, or for night departures/recoveries.

This picture shows how a complete case 1 approach should look like, and how a spin pattern is usually flown:



1. Flight lead announces intention to land 50 nm away from the carrier.
2. Flight lead calls "see you at xx" (usually 10 nm away) and descends to given altitude.
3. Enter the marshall stack at points 3 or 4.
4. Leave the stack and commence after you got a signal is charlie (commence heading: BRC +/- 180 degrees + 30 degrees).
5. Descend to 800ft and speed up to 350kts.
6. Overfly Pos 1.
7. Break 14s after the flight member in front of you.
8. Fly the case 1 pattern in a predictable way with the correct speeds and distances to reference points.

9. Land on the deck ("foul deck"), then clear the way asap for the next fighter to land ("green deck").
10. If theres something that prevents you to land, perform a waveoff and call that to all other flights in the pattern.
11. If you are in a flight behind another flight that is currently landing and your separation is too small, perform a spin ("spinning"). Every other flight behind that already commenced now also has to fly a spin pattern.