Launching Aircraft

5.1 PRELAUNCH PROCEDURES

As early as possible before launch, the catapult officer and deck launching officer shall advise the air officer of the
launch wind requirements. The air officer shall relay this information to the bridge.

The aircraft handling officer shall perform the following prior to each launch or setting of Condition I or II, as
described in paragraph 5.12.

1. Assign aircraft to each event specified on the air plan.
2. Brief key flight and hangar deck personnel on the following:
   - Starting and launching sequence
   - Disposition of downed and spare aircraft
   - Aircraft to be towed or taxied forward after the launch
   - Recovery spot (when a recovery is scheduled to follow the launch).
3. Ensure the air gunner or his designated representative attends the aforementioned brief to comment as
   appropriate on ordnance safety precautions or weapon handling procedures incident to the launch and
   forthcoming recovery if applicable.
4. Ensure the launch spot is relayed to the ready rooms and inform PriFly, CATCC, and the ready rooms as early
   as possible of the side numbers of aircraft assigned for launch.
5. Conduct FOD walkdown (minimum one day/one night and as required).

The flight deck officer or his representative shall tour the flight deck to ensure the following:

1. Propellers, tailpipes, and helicopter rotors have sufficient clearance
2. Each aircraft can be safely taxied from its spot
3. Deck-edge antennas are properly positioned and the jackstaff, flagstaff, bow rails, and stern rails have been
   removed and stowed
4. No gear is adrift on the flight deck.

The aviation fuel officer or his designated representative shall ensure all aircraft, including standbys, have been fueled as prescribed in the air plan. Discrepancies shall be brought to the attention of the aircraft handling officer immediately.

The air wing weapon officer or his designated representative shall visually inspect each aircraft to ensure ordnance loading is as prescribed in the ordnance load plan. Discrepancies shall be brought to the attention of the aircraft handling officer and ordnance handling officer immediately.

The launching officer(s) shall brief the topside catapult crew(s) and ensure all equipment is ready and that sufficient launching accessories are available to complete the launch. These tasks shall be completed prior to each launch. In addition, he shall verify fuel and ordnance loading by consultation with aviation fuel and ordnance personnel. He shall then compute aircraft launch weights.

The pilot shall confirm fuel, ordnance, and gross weights in writing, which will be submitted to flight deck control prior to man-up time.

5.1.1 Manning Aircraft

Approximately 45 minutes before launch time, flightcrews will be ordered to man aircraft. When called, they shall proceed to their aircraft via the designated route and conduct preflight inspections as expeditiously as safety permits.

5.1.2 COD/VOD Aircraft

COD/VOD aircraft passengers shall be escorted to and from the aircraft by the ATO or his assistant. The ATO or his assistant shall remain with the passengers until they have been embarked. Passengers and cargo will not be off-loaded until the ATO or his assistant is present. Flight deck survival equipment (cranial helmet, goggles,

and floatation
equipment) shall not be removed until passengers are well clear of the hazards of the flight deck environment.

5.2 LAUNCHING FIXED-WING AIRCRAFT

5.2.1 Engine Start and Turnup

Prior to starting engines, the air officer shall issue appropriate orders or information over the flight deck announcing
system to ensure all prestart preparations are completed and all personnel on the flight deck are alerted.

The air officer shall ensure all flight deck personnel are indoctrinated in and adhere to the positioning of aircraft and
aircraft starting units so that the established minimum distances are maintained. Pilots and aircrews shall be made aware of proper positioning criteria. The responsibility for safe starting of all aircraft rests with the air officer. All
personnel shall follow the prescribed procedures when operating aircraft and aircraft starting units. All unsafe starting
conditions shall immediately be called to the attention of cognizant personnel.

WARNING

Hot exhaust from aircraft and aircraft starting units is a serious hazard when operating in close proximity to aircraft, aircraft components, fuel, weapons, equipment, external store CADs, and personnel.

Engines shall be started only on signal and under the positive control of PriFly. During the starting evolution, the
aircraft handling crew shall remove the towbar if necessary for accomplishment of preflight checks and the plane
captain shall assist the pilot as necessary with preflight checks. Towbars shall remain on or in the immediate vicinity
of aircraft parked in the landing area or in a position that fouls the deck until that aircraft is ready for taxi.

WARNING

Prior to start, ensure nosewheels are not cocked. Cocked nosewheel may pose a threat to flight deck personnel.

The plane directors shall monitor the aircraft throughout the warmup and checkout period. Control is assumed by
the plane captain for preflight checks only.

Turboprop aircraft shall not be turned up above 1,500 shaft horsepower (SHP) without specific clearance from a flight
deck director. The pilot shall request clearance to turn up by giving his director the one finger turnup signal. The
director, after checking chocks and tiedowns and ensure the area behind the aircraft is clear, shall return the signal,
thereby clearing the pilot for turnup.

Note

Clearance for turnup shall not be given by anyone other than a flight deck director.

While an engine is turning up at high power, the director shall continuously check the area behind the aircraft. The
pilot shall frequently look at the director to ensure the “all clear” signal is still being given. After completing all
poststart checks, the pilot shall signal the director, indicating the status of the aircraft. The director will relay the signal
to the officer or petty officer in charge of that area of the flight deck.

5.2.2 Final Preparations for Launch

Approximately 15 minutes before launch, the air officer will initiate the following prelaunch checklist:

1. Wind — Verify the estimated wind available for launch and notify bridge of maximum/minimum wind
   requirements.
2. List — Check ship’s list to ensure a level deck.
3. Jet blast deflector cooling — Ensure saltwater cooling is functioning on all active JBDs.

If aircraft are to be deck launched, the launching officer shall compute the required deck run and confirm it with the
air officer. The catapult launching officer shall inspect the catapult track(s) and adjacent flight deck area to ensure
they are clear of chocks, towbars, or other equipment. By this time, the following personnel should

have manned their
launch stations:

1. LSO
2. Arresting gear personnel
3. ILARTS operator
4. Lens operator
5. Mobile firefighting equipment operators.
6. Mobile firefighting equipment operators.

5.2.3 Taxiing

Before ordering removal of chocks, directors shall signal for the pilot to hold brakes. It is imperative that the pilot
acknowledge this signal by affirmative nod of the head in the daytime and by a flashlight at night. The flight deck
officer will control the rate at which aircraft are moved toward the catapult(s) or deck launch spot, ensuring a constant
steady flow of traffic while avoiding unnecessary crowding. All taxi signals shall be answered promptly and
accurately unless the pilot considers there is a dangerous situation existing or developing, in which case he shall stop.

WARNING

- A director shall not leave an aircraft unattended after chocks and tiedowns have been removed.
- Aircraft shall not be taxied until pretaxi checks and required procedures prescribed in the appropriate NAVAIR weapon/store loading checklists/
store reliability cards have been completed.
- COD aircraft shall not be unchained until all passengers and aircrew are
strapped into their seats and the aircraft commander has passed the up and
ready signal.

Note

All movement of aircraft shall be under the control of a plane director.
Safety personnel shall be posted as required to assist the director.

If a pilot loses sight of his director, he shall stop immediately. The director shall stay in view of the pilot at all times
and remain stationary while controlling aircraft. If it is necessary to change his position while controlling an aircraft
at night, the director shall signal the pilot to hold brakes. He will continue giving the hold brake signal while moving
expeditiously to the new position, then resume movement of the aircraft.

Control of a taxiing aircraft shall not be passed from one director to another until the receiving director signals by
extending one arm vertically that he is ready to accept control. A director shall not give signals to a pilot who is already
under the control of another director except in an attempt to avert an accident.

When a nosewheel tiller/towbar is to be used in taxiing an aircraft, the director shall signal the pilot that a tiller/towbar
is being attached and shall discontinue giving him directional signals. The pilot must then be careful to avoid
differential braking and/or nosewheel steering and use the brakes only for slowing or stopping the aircraft. Nosewheel
steering shall not be engaged with tiller/towbar attached.

CAUTION

Launching fixed wing aircraft while other aircraft are taxied, spotted, or towed close behind a JBD may cause damage to those aircraft. Additionally, launching fixed wing aircraft from catapult #1 with a helicopter spotted in the vicinity of elevator #1 exposes the helicopter to a high level of turbulence which may cause significant damage to the helicopter.

5.2.4 Catapult Launching

Prior to the launch, the launching officer shall relay the minimum and maximum WOD requirements for the
forthcoming launch to the air officer who shall, in turn, advise the bridge.

During CARQUAL operations, the pilot shall transmit aircraft side number, fuel weight, and gross weight during
a two-way radio check. This report is required prior to initial launch, after hot refueling or when pilot switch occurs.
The air officer shall ensure aircraft side number and gross weight is passed to and confirmed by the launching officer.

WARNING

- During CARQUAL operations, close monitoring of aircraft gross weights by the air officer, launching officer, pilots, and squadron representatives is mandatory to ensure operational safety.
- Turboprop aircraft shall not be launched from waist catapults when jet/turboprop aircraft with engines operating on No. 2 catapult or a possibility exists that hot exhaust gases from aircraft spotted anywhere on the flight deck may be ingested into the turboprop engine during launch.
- Squadron aircraft inspectors shall not perform inspections while an aircraft is taxiing. It is mandatory to remain well clear of rolling tires at all times to prevent injury.

CAUTION

Aircraft with wing-or pylon-mounted engines shall not be launched from catapults having only a single panel JBD if aircraft within 200 feet aft of the JBD are not properly tied down.

In positioning an aircraft on the catapult, the director must be acutely aware of the activities of the catapult crewmen
and control the aircraft’s speed and movement in such a way that personnel safety will not be jeopardized. Pilots must
guard against the tendency to use excessive power that invariably results in roughness and poor control and
jeopardizes launching accessories.
As the aircraft approaches the catapult, the director shall ensure the aircraft is in the takeoff configuration. JBDs shall
be raised as appropriate.

CAUTION

All JBD operators/safety observers shall ensure aircraft clearance is sufficient prior to raising or lowering JBD. Catapult three requires a JBD safety observer at all times. Bow catapults utilizing JBD deckedge control boxes require one JBD safety observer per catapult. JBD safety observers shall be positioned on the furthest side of the JBD away from the operator. The safety observer will signal the JBD operator with hand/wands when the aircraft is clear and the JBD can be raised.

For aircraft using the nosegear launch system, the director shall stop the aircraft at the entry wye area of the guide
track. The holdback man shall attach the holdback bar. The director shall signal the pilot and the hookup petty officer
to lower the launch bar.

CAUTION

Aircraft launch bar should not be lowered outside of the entry wye. Excessive wear, burring, and hangup may occur if the bar passes over the deck cleat link track onto the entry wye.

Before taxiing past the shuttle, the pilot shall verify the aircraft gross weight by giving a “thumbs up” signal during
the day or a circular motion with a flashlight at night. A “thumbs down” or negative signal will not be used to indicate
disagreement with the gross weight board. If the pilot does not agree with the gross weight, he will request adjustment
as follows.

1. During the day:
   - To raise the gross weight, hold hand flat with palm up and move in a vertical direction, emphasizing the
     upward motion.
   - To lower the gross weight, hold hand with palm down and move in a horizontal direction.
2. At night:
   - To raise the gross weight, move flashlight in a vertical direction, emphasizing the upward motion.
   - To lower the gross weight, move flashlight in a horizontal direction.

When more than two correction steps are required on the weight board or any difficulty is experienced in confirming
the gross weight, the aircraft shall not be launched until positive determination can be made by the air officer and

confirmed by the pilot and launching officer.

When an aircraft carrying ordnance requires arming, the aircraft will be taxied into the arming area. Nose-tow aircraft shall be stopped after the appropriate JBD has been raised and prior to positioning nose-tow launch bar over shuttle spreader. Prior to arming, aircraft shall be properly configured for flight. The director shall ensure all personnel are clear and then direct the aircrew's attention to the ordnance arming supervisor for arming. When the arming has been completed and the arming crew is clear, the ordnance arming supervisor will signal the pilot with a "thumbs up" signal (day) or display a vertical sweep with a red, banded wand (night) and then direct the pilot's attention back to the director.

As the aircraft is positioned on the catapult, the squadrons' aircraft inspector shall inspect the aircraft to ensure it is properly configured and ready for flight. He shall give a "thumbs up" signal (day) or display a blue wand held vertically (night) to indicate that he considers the aircraft ready for launch. He shall continuously display this signal at a position from which he is clearly visible to the launching officer. Should the aircraft inspector desire to prevent the aircraft from being launched, he shall immediately give a "suspend" signal (day) or display a blue wand moved horizontally (night) to the director or launching officer who has control of the aircraft at the time the discrepancy is discovered.

WARNING

Aircraft shall not have nose-tow launch bar over shuttle spreader until the aircraft is armed and properly configured for flight.

As the ship approaches the launching parameters, the air officer shall monitor the wind repeater and keep the launching officer(s) advised of the relative wind velocity. Upon receiving permission from the bridge to launch aircraft, he shall make a final check to ensure relative wind is within the envelope prescribed in the applicable aircraft launching bulletin. This shall be accomplished before changing the rotating beacon(s) from red to green (this lights the PriFly "go" light on the catapult officer ICCS console when in use), thereby clearing the launching officer(s) to

begin launching.

5.13 CONTROL OF DEPARTING AIRCRAFT

Primary responsibility for adherence to the assigned departure rests with the pilot; however, advisory control shall normally be exercised, with a shift to positive control as required by weather conditions, upon request, or when the assigned departure is not being adhered to. After launch, CATCC shall:

1. Record data as required on status boards.
2. Ensure communications and positive track are established with all aircraft to the extent possible under existing EMCON conditions.
3. Request NAVAID checks as necessary.
4. Maintain advisory control of departing point-to-point flights until pilots shift to en route frequencies and of other aircraft until control is accepted by CDC or another controlling agency.
5. Before releasing aircraft to another controlling agency, give each pilot (or flight leader) any pertinent information, such as changes in composition of flight, changes in PIM, or changes in mission.
6. When transferring control to CDC, give CDC the range and bearing of the aircraft being transferred, and ensure CDC acknowledges assumption of control.
7. File flight plans as necessary.

5.13.1 Departure Radials

Departure radials are based on the use of TACAN for providing lateral separation. The minimum standard separation of departure radials under instrument conditions is 20.

Assignment of departure radials is normally dependent on the following:

1. Mission of the aircraft
2. Number of carriers in the formation
3. Topographical features in the area
4. Those radials reserved for emergencies, letdowns, or helicopter holding.

Direct routing will be utilized as much as possible in order to lessen delay time in the execution of departures.

5.13.2 Departure Communication Procedures

5.13.2.1 Launch Frequencies

Aircraft shall normally launch on the departure frequency that shall be monitored by the tower. Condition and CAP launches will be on a frequency designated by CDC and monitored by the tower.

5.13.2.2 Single-Frequency Departures

These departures are highly desirable and shall be utilized whenever possible. Where single-frequency departures are not possible, single-piloted aircraft shall not be required to change radio frequencies or IFF/SIF codes after launch until at least 2,500 feet of altitude has been reached and the aircraft is in a climbing, wings-level attitude. Single-piloted aircraft that are assigned operating altitudes below 2,500 feet shall not change frequencies or IFF/SIF codes until a level attitude and cruise configuration have been attained. Guard channel shall be monitored at all times.

5.13.2.3 Case III Departure Voice Reports

These reports will vary with weather, state of training, EMCON condition, and the type of operation. The following reports are commonly used:

1. Airborne
2. Passing 2,500 feet
3. Arcing
4. Established outbound (on assigned radial)
5. Popeye, with altitude (see Note)
6. On top, with altitude
7. Kilo.

Note

When in IMC, Popeye will be a mandatory report for departing aircraft passing FL 180 (or assigned departure altitude if lower) if not on top.

5.13.2.4 Lost Communications During Departures

If communications are lost during departure, squawk Modes I and III as listed in Figure 4-2. If in VMC when communications are lost, remain VMC. If able, return to the ship by visual means for recovery. If on top/IMC, proceed to the applicable emergency marshal and commence a descent to depart that fix at EEAT.

5.13.2.4.1 Good Azimuth and No DME

In the event of lost communications and a loss of TACAN DME, the following departure procedure shall be followed utilizing TACAN azimuth. Continue with the prebriefed departure; utilize DR procedures to maintain the appropriate arc until reaching assigned departure radial. Proceed to approximately 50 miles, reverse course, proceed inbound on the assigned departure radial at the emergency marshal assigned altitude, and enter overhead holding using the prebriefed expected final bearing for proper holding orientation. Conserve fuel and be alert for joinup. If not joined by an escort aircraft, commence approach at EEAT. Use prebriefed expected final bearing to determine outbound and inbound tracks.

5.13.2.4.2 Good Azimuth and Good DME

All aircraft will continue with prebriefed departure, climbing outbound on departure radial unless modified by CATCC or until reaching 50 nm DME and commence left-hand holding between between 40 and 50 nm DME. After holding for 30 minutes, proceed inbound on the departure radial, climbing or descending to the emergency marshal assigned altitude. When reaching the distance prescribed for emergency marshal, arc in the shortest direction until reaching the assigned emergency marshal fix, enter holding, and commence approach at assigned EEAT.

Note

Helicopters experiencing lost communications should remain at or below 300 feet, arc to enter starboard Delta, and execute lost communications procedures in accordance with Figure 6-8.

5.13.3 Fixed-Wing Departures/Rendezvous

5.13.3.1 Case I Departure

This departure may be utilized when it is anticipated that flights will not encounter instrument conditions during departures and rendezvous with weather conditions no lower than 3,000 feet and 5 nm visibility.

5.13.3.1.1 Jet/Turboprop Aircraft

After a clearing turn, proceed straight ahead paralleling the BRC at 500 feet until 7 nm. Aircraft are then cleared to climb unrestricted in visual conditions.

5.13.3.2 Case I Rendezvous

Rendezvous shall conform to air wing doctrine.

5.13.3.3 Case II Departure

For departure, visual conditions at the ship may exist down to a ceiling of 1,000 feet and visibility of 5 miles. Launch shall be on departure control frequency.

5.13.3.3.1 Jet Aircraft

After a clearing turn, proceed straight ahead at 500 feet paralleling the BRC. At 7 nm, turn to intercept the 10-nm arc, maintaining visual conditions until established on the departure radial. The 500-foot restriction is lifted after 7 nm if the climb can be continued in visual conditions. Jets shall maintain 300 knots until VMC on top.

5.13.3.3.2 Turboprop Aircraft

After a clearing turn, parallel the BRC at 500 feet. At 6 nm, turn to intercept the 7nm arc, maintaining visual conditions until established outbound on the departure radial. Maintain 500 feet until 12 nm on the departure radial.

Note

COD aircraft will depart straight ahead unless otherwise directed and maintain 500 feet until 12 nm.

5.13.3.4 Case III Departure

This departure shall be used whenever existing weather at the ship is below Case II departure minimums and during all night operations except as modified by the OTC or commanding officer. Case III departures are compatible only with Case III recoveries. The launch shall be on departure control frequency. A minimum launch interval of 30 seconds shall be used between aircraft. When possible, a 60-second interval will be provided when launching a jet aircraft following a turboprop.

5.13.3.4.1 Jet Aircraft

Climb straight ahead accelerating at 300 knots crossing 5 nm at 1,500 feet or above. At 7 nm, execute turn to fly the 10-nm arc until intercepting the departure radial.

5.13.3.4.2 Turboprop Aircraft

Climb straight ahead to 1,000 feet, accelerating to 250 knots after level-off. At 5 nm, turn to intercept the 7-nm arc and arc to the departure radial. Maintain 1,000 feet until 12 nm on the departure radial.

Note

COD aircraft shall depart straight ahead unless otherwise directed and maintain 1,000 feet until 12 nm.

5.13.3.5 Case II/III Rendezvous

Case II/III aircraft shall rendezvous between 20 and 50 miles from the carrier on the left side of the departure radial at a prebriefed altitude (for example, 1,000 feet above the cloud layer). This does not preclude other visual rendezvous procedures as directed by air wing doctrine.

5.13.3.6 Fixed-Wing IMC at Altitude

The first aircraft of each flight shall report to departure control passing FL 180 if not on top. Unless operational necessity dictates otherwise, the departure controller shall assign aircraft that are IMC and appropriate altitude; for example, with four aircraft expected on the same departure radial, altitude assignments would be as follows:

1. First aircraft — FL 220
2. Second aircraft — FL 210
3. Third aircraft — FL 200
4. Fourth aircraft — FL 190.

Note

Carrier-based aircraft shall fly MSL altitudes below 18,000 feet MSL and flight levels at and above 18,000 feet MSL unless regional supplementary procedures, as published in the FLIP Planning document, dictate otherwise.

5.13.4 Helicopter Departure

5.13.4.1 Case I and Case II

Helicopters shall clear the control zone as directed by the tower. When departing for operations within the control zone (for example, SAR), they shall remain under control of the tower or other designated controlling agency.

5.13.4.2 Case III

Whenever possible, helicopters shall be maintained as a flight beneath the clouds. If unable to remain beneath the clouds, they shall proceed individually to prebriefed departure fixes. After takeoff, they shall climb straight ahead to between 200-300 feet (unaided), 150-300 feet (NVD aided), or as assigned by CATCC, and arc within 3 miles to intercept the assigned departure radial. Helicopters being launched from the angled deck will not cross the bow when fixed-wing aircraft are being launched. SAR helicopters will arc to the SAR pattern (see paragraph 3.6) if able to remain beneath the clouds. If the SAR helicopter is unable to remain beneath the clouds, the procedure presented above shall be carried out under positive control of CATCC and position will be taken in helicopter marshal (see Figure 6-5). The climb to departure altitude will be commenced on the departure radial outside 12 nm.

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