

**MARITIME HELICOPTERS, INC.  
(APPENDIX A)**

**(RW) IFR Standard Operating Procedures**

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Version 1.3

These procedures are in addition to the guidance found in the Maritime Helicopters Operations Manual. Pilots are expected to be knowledgeable of and comply with all guidance in the Operations Manual as well as this Standard Operating Procedures.

Compliance with Maritime Helicopters Standard Operating Procedures (SOP) is mandatory. No portion of the SOP should be construed as contrary to any Federal Regulation (FAR) or State Regulation.

This document is available online for Maritime Helicopter Inc. employees on the SharePoint site. Contact the Chief Pilot for login information.

Ref: AC 120-71A Standard Operating Procedures for Flight Deck Crewmembers

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## **MARITIME HELICOPTERS (RW) IFR STANDARD OPERATING PROCEDURES**

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### ***1.0 IFR/VFR HELICOPTER OPERATION - 2 PILOTS***

- A. The safe and efficient operation of an aircraft utilizing more than one pilot is predominantly based on crewmember communication and coordination. This section stipulates the policies and procedures essential for ensuring that each pilot fully understands his responsibilities and duties when functioning as a pilot-in-command or second-in-command in a multi-crew aircraft.
- B. Responsibilities:
  - 1. The pilot-in-command is responsible to the dispatch authority for all facets of the assigned mission. He is the final authority for aircraft operations, crewmembers, and passengers.
  - 2. The Second-in-command is responsible to the pilot-in-command for assisting with execution of the mission. He will ensure all tasks assigned by the pilot-in-command are completed in an efficient and expeditious manner.
- C. The following definitions are provided to preclude any misunderstanding of the intent in operational duties:
  - 1. Flying Pilot: The pilot occupying a cockpit station and physically in control of the aircraft as assigned by the pilot-in-command.
  - 2. Non-flying Pilot: The pilot occupying a cockpit station and assisting in the operation of the aircraft, but does not have physical control of aircraft movement.
  - 3. Normal Procedures: As pertaining to the movement of an aircraft, the actions required by the crew member(s) for the accomplishment of a given task in an aircraft where all systems and components are fully functional and maneuvering is within the aircraft's designed profile.
  - 4. Abnormal Procedure (Emergency Situation): As pertaining to the movement of an aircraft, the actions required by the crew member(s) when a system or component fails to function normally during a flight mode or the aircraft's design profile is exceeded.
- D. Qualifications:
  - 1. The pilot-in-command will be qualified and current in accordance with the appropriate subparagraphs of FAR Part 135 for the flight mode to be flown.
  - 2. The second-in-command, as a minimum, will have satisfactorily completed the New Hire Training program and applicable aircraft ground/flight training for second-in-command as outlined in the Maritime Helicopters Inc., Pilot Training Manual. In addition, he will meet the appropriate subparagraphs of FAR Part 135 for the flight mode to be flown.

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- E. A continuous dialog between the pilot-in-command and second-in-command is of paramount importance for the successful outcome of any mission. Prior to each flight, the pilot-in-command will brief the second-in-command on his duties and responsibilities. The briefing will include, but is not limited to the following:
1. Mission Profile
  2. SIC Responsibilities
  3. Control Transfer
  4. Emergency Procedures
- F. Crewmember Duties - Normal Procedures:
1. Sterile cockpit procedures will be in effect for all critical flight operations.
  2. Flying Pilot:
    - a. Maintain positive control of the aircraft.
    - b. Request the checklist as appropriate.
    - c. Visually, then verbally, clear the aircraft prior to turns.
    - d. Monitor the control radio frequency.
  3. Non-flying Pilots:
    - a. Read the checklist items as requested.
    - b. Visually, then verbally clear the aircraft.
    - c. Monitor the system and flight instruments.
    - d. When appropriate, announce hover power and power above maximum continuous.
    - e. Manipulate switches only when requested.
    - f. Tune and operate the radios as appropriate.
    - g. Announce altitudes, 500 feet and 100 feet from the target or assigned altitude.
    - h. Announce airspeed variation of 10 KTS/MPH from the target airspeed.
    - i. Altitude is +/- 100 feet of assigned.
- G. Crewmember Duties - Abnormal Procedures:
1. Crewmembers often become distracted by the developing events of an emergency situation and allow control of the aircraft to become secondary. As a result, the outcome is often unsuccessful. Positive aircraft control is the single most important aspect in handling an emergency. In addition to the crewmember duties above, the following shall be used for abnormal procedures:
    - a. Flying Pilot:
      - i) Call for the emergency procedure checklist.
      - ii) Monitor non-flying pilot as checklist is completed.

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- b. Non-Flying Pilot:
  - i) Assist flying pilot as required.
  - ii) Complete emergency procedure checklist.
  - iii) Notify ground station by radio if appropriate.

### **2.0 VFR STABILIZED APPROACH PROCEDURES (TWO PILOTS)**

A. Prior to the initiating a VFR approach the aircraft must be in the landing configuration with the airspeed stable at the selected final approach speed. From the initiation of the approach through landing, a missed approach must be initiated if any of the following occur:

1. If the final approach speed cannot be stabilized within + or - 10 knots, a missed approach must be initiated.
2. During the final approach segment of any VFR approach, if the rate of descent exceeds 750 FPM, a missed approach must be initiated. In the event that a higher descent rate is required, it must be pre-briefed and the descent rate shall not exceed 1000 FPM.
3. The flying pilot or the non-flying pilot may make a call for a missed approach at anytime during a VFR approach.

B. Missed Approach procedures:

1. A Call for a missed approach is required if stabilized approach procedures are not maintained, or if either pilot determines continuation of the approach presents a hazard to the flight.
2. If the non-flying pilot calls "Missed Approach" the flying pilot will immediately begin the missed approach and confirm- Missed Approach".

### **3.0 CREW COMPOSITION**

A. The minimum flight crew shall consist of two qualified pilots:

1. The Pilot in Command (PIC) will have an Airline Transport Certificate, Type Rating if appropriate, and a helicopter instrument rating. The Pilot in Command will be qualified under the appropriate provisions of FAR Part 135.
2. The Second in Command (SIC) will have a Commercial helicopter certificate, helicopter instrument rating, and will be qualified under the appropriate provisions of FAR Part 135.

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### ***4.0 TAKE-OFF BRIEFING***

- A. Before every take-off, a briefing will be given covering all the relevant aspects of that take-off and subsequent departure. As a minimum the following must be addressed:
  - 1. Departure runway designation.
  - 2. Standard Instrument Departure (SID) procedure being flown or departure clearance, including any altitude, heading or speed restriction.
  - 3. Use of anti-ice systems in the climb.
  - 4. Actions in the event of an emergency after a rejected take-off is no longer possible, and
  - 5. Any questions.

### ***5.0 MONITORING OF RADIO AIDS***

- A. Radio NAVAIDS must be identified and, where possible tested before use. NDBs should be continuously monitored when in use, as they are subject to interference, and have no off-flag to indicate loss of signal. All radio NAVAIDS must be identified, or re-identified:
  - 1. On every frequency change.
  - 2. If warning flags appear, then clear.
  - 3. Whenever indications are in doubt.
- B. Wherever possible, information from one radio aid should be crosschecked with information from another, e.g. ILS glide path against DME. Even where timing is not obligatory for the type of approach being conducted, the stopwatch should always be used to provide both backup information and a gross error check.

### ***6.0 RADIO NAVAID WARNING FLAGS***

- A. It is possible during certain ground station malfunctions for warning flags not to appear when the main signal is invalid. This emphasizes the need for cross-monitoring whenever possible and being alert at all times to anomalous helicopter flight behavior, e.g. abnormal headings and rates of descent for the type of approach flown and current wind velocities.

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### ***7.0 APPROACH AND LANDING BRIEFING***

- A. This may be given by the Pilot Flying or the Non Flying Pilot before the helicopter begins its initial descent for approach and should cover, as a minimum, the items required for the approach briefing contained on the appropriate aircraft checklist.

### ***8.0 DESCENT FOR APPROACH***

- A. A helicopter must not descend below the minimum altitude for IFR operations except:
  - 1. By using an approved Instrument Approach procedure, or
  - 2. When under positive radar control and the pilot in command is satisfied with the flight profile.

### ***9.0 SUCCESSIVE APPROACHES***

- A. Except in an emergency, or when there has been a significant change in reported weather conditions, no more than two successive approaches to an airport or heliport may be carried out where both approaches have resulted in go-around.

### ***10.0 LOST COMMUNICATIONS (IFR)***

- A. In the event of a loss of communications, each pilot is required to comply with Part 91.185.

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### 11.0 AIRBORNE RADAR APPROACH ARA

#### 11.1 ARA MINIMUMS

- A. An Airborne Radar Approach should be flown in accordance with the procedure as described in the current Maritime Helicopters ARA approach chart. The approach minima are repeated below:
- B. *Minimum Descent Altitude (MDA)*: An MDA may only be used if the radio altimeter is unserviceable.
- C. *Visual Reference*: No pilot may continue an approach beyond the radar landing minimum (radar range) or below MDH/MDA unless he has visual contact with the destination or target structure.
- D. *Circling Minima*: With reference to an ARA, a circling maneuver may only be conducted in order to orientate the aircraft for the helideck landing. Prior to this, the ARA will be flown into wind. The minimum altitude for circling shall be 300 feet (day) and 500 feet (night). An ARA approach is considered a circling approach when obstacles, or other factors, require a heading change in excess of 90 degrees to land on the helideck.

**Table 1: Minimum weather conditions for circling after an ARA**

	MDH (AGL)	Visibility
Day	300 ft	1 nm
Night	500 ft	2 nm

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### ***11.2 CONSIDERATIONS WHEN CONDUCTING AN ARA***

- A. Prior to commencing an ARA, the pilot must be aware of the content of the text information on the ARA approach chart.
- B. Before committing to radar for navigation, the radar range and bearing of the destination shall be cross-checked against the GPS range and bearing. If there is a range discrepancy of greater than 0.3nm, or a bearing discrepancy greater than 10°, the approach shall be aborted.
- C. Before beginning the final approach, the Radar Operator shall ensure that a clear path exists on the radar screen for the final and missed approach segments.
- D. The Pilot in Command shall ensure that the cloud ceiling is sufficiently clear above the helideck to permit a safe landing.

### ***12.0 USE OF AUTOMATION (AUTOPILOT)***

- A. When the autopilot is engaged, the flying pilot must closely guard the flight controls, (hands, and feet near or slightly touching the flight controls).
- B. During Approaches. During an instrument approach in marginal weather conditions, the final approach should be flown coupled where automated modes are available.
- C. Use of automation during abnormal or emergency operations. Subject to any limitations contained in the RFM, maximum use should be made of the autopilot-coupled modes while dealing with abnormal or emergency operations in order to reduce workload and allow more effective fault analysis and resolution of the emergency.

### ***13.0 STABILIZED APPROACH PROCEDURES***

- A. Prior to the final approach fix for all instrument approaches the aircraft must be in the landing configuration with the airspeed stable at the selected final approach speed. From the final approach fix inbound or during the final approach segment of an instrument approach without a final approach fix, a missed approach must be initiated if any of the following occur:
  - 1. If the final approach speed cannot be stabilized within + or - 10 knots, a missed approach must be initiated.
  - 2. During an ILS approach, if the localizer or glide slope deviation is in excess of ¾ scale deflection, a missed approach must be initiated.
  - 3. During a VOR, LDA, SDF, or GPS approach, if the course bar deviation is in excess of ¾ scale deflection, a missed approach must be initiated.

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4. During an NDB approach, the final approach course must be maintained within + or - 10 degrees or a missed approach must be initiated.
5. During the final approach segment of any instrument approach, if the rate of descent exceeds 750 FPM, a missed approach must be initiated. In the event that a higher descent rate is required, it must be pre-briefed and the descent rate shall not exceed 1000 FPM.

### ***14.0 MISSED APPROACH (GO-AROUND) PROCEDURES.***

- A. The flying pilot or the non-flying pilot may make a call for a missed approach at anytime during an instrument approach.
- B. A Call for a missed approach is required if stabilized approach procedures are not maintained, or if either pilot determines continuation of the approach presents a hazard to the flight.
- C. The non-flying pilot will make a call that the runway, runway lights, or other required visual cues are present- “Visual- Continue” or that the runway, runway lights, or other required visual cues are not in sight at the required MAP or Decision Altitude; “Negative Contact-Missed Approach”.
- D. If the non-flying pilot calls “Missed Approach” the flying pilot will immediately begin the missed approach procedure and confirm- Missed Approach”.

### ***15.0 SPECIAL INSTRUMENT APPROACH PROCEDURES***

- A. Special Instrument Approach Procedures: Prior to conducting IFR operations to any airport served by a special instrument approach, the PIC will coordinate with Maritime Helicopters Operations to ensure the airport, weather reporting, and navigation facilities are available throughout the period required for that operation. If at least one flight crewmember has not operated at an airport served by a special instrument approach within the last 12 months, the descent from the MEA approach and landing must be completed under VFR.
- B. Flights in uncontrolled airspace will be conducted to airports and on routes approved in Maritime Helicopters Inc. Operations Specifications.

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### ***16.0 CLASS II NAVIGATION PROCEDURES***

#### A. IFR Class II Navigation Procedures:

1. Prior to conducting Class II Operations, the following must be met:
  - (a) Aircraft must be equipped with two independent and operational Garmin 430 WAAS navigation systems with GPS software v3.XX or later and an approved GPS antenna.
  - (b) For all Garmin WAAS enabled units (regardless of the GPS software version or antenna model): an FDE prediction is required for operations where the route requires Class II Navigation (e.g. Oceanic/Remote operation) and GPS is to be the primary source of navigation per FAA AC 20-138A Appendix 1. The Oceanic/Remote flight phase occurs when the flight plan will place the aircraft more than 200 nautical miles from the nearest airport. All operators using a Garmin WAAS-certified unit as primary means of navigation in oceanic/remote areas under FAR parts 91, 121, 125, and 135 must utilize the WFDE Prediction Program prior to conducting a flight in these areas. Prior to conducting Oceanic/Remote operations (This phase occurs when the flight plan will place the aircraft more than 200 nautical miles from the nearest airport), the PIC or his designee will utilize the Garmin Fault Detection and Exclusion (FDE) program to ensure the GPS constellation will provide a navigation solution for the specified route of flight. If the FDE program predicts a loss of navigational coverage that exceeds five minutes over the specified route of flight, the flight must be either delayed, rerouted or canceled.
2. Class II Operations are authorized in the following locations:
  - (a) USA- The State of Alaska to include operations IAW SFAR No. 97.
  - (b) USA- The 48 contiguous United States and the District of Columbia.
  - (c) Canada.
3. Degraded Navigation Capabilities and/or satellite system outages.
  - (a) Single GPS Failure- Receiver displays a loss of navigation function alert, the pilot may continue to destination using the other GPS receiver.
  - (b) Dual GPS Failure- Both GPS receivers display a loss of navigation function alert, the pilot should immediately begin using dead reckoning procedures until GPS navigation is restored.
  - (c) Operations below the MEA and/or IAW SFAR No.97- Either GPS receivers display a loss of navigation function alert, the pilot should immediately coordinate with ATC using the onboard satellite telephone for a climb to the MEA or higher to enable the use of ground based navigational facilities.

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4. Reporting- Any degradation in GPS navigation capability will be reported to ATC as soon as possible in accordance with 91.187.

### ***17.0 CRITERIA FOR DETERMINING THE USABILITY OF HELIPORTS***

- A. For operations under IFR, an approved instrument approach procedure (Listed in Ops Spec H122) must be available for each destination and alternate heliport, with up-to-date copies of the approach plates available to each pilot.
- B. All Heliports utilized for IFR operations will have the following:
  1. A National Weather Service (NWS) approved source of weather.
  2. Adequate heliport lighting.
  3. A suitable means for the Pilot in Command to acquire air traffic advisories and the status of airport services and facilities.
  4. Facilities and services necessary to safely conduct IFR operations are available and operational at the time of the operation.

### ***18.0 PLANNING MINIMUM FOR IFR FLIGHTS***

- A. For an airport/heliport to be selected as a destination, the weather reports or forecast, or any combination of them for that airport/heliport must indicate that the weather will be equal to or greater than the published weather planning minimum (Ceiling and Visibility) for the approach procedure to be flown at ETA. When there are intermittent weather conditions, they will apply. If inoperative components for an approach exist, adjust the weather planning minimums as indicated by the DOD/US Government FLIP and section 21.22 of this manual.. Pilots may reduce destination Category A visibility minimums by 50 percent, but not less than 1/4 mile or 1600 RVR. Reduction of visibility for approaches labeled “copter only” is not authorized.
- B. An alternate is not required for the first airport/heliport of intended landing when the weather during the period of one hour before and one hour after the estimated time of arrival, the appropriate weather reports or forecasts, or any combination of them indicate:
  1. The ceiling will be at least 1,500 feet above the lowest circling approach MDA; or
  2. If a circling instrument approach is not authorized for that airport, the ceiling will be 1500 feet above the lowest published minimum or 2000 feet above the airport elevation, whichever is higher; and

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- 3. Visibility for that airport is forecast to be at least 3 miles, or two miles more than the lowest applicable visibility minimums, whichever is the greater, for the instrument approach procedure to be used at the destination airport.
  
- C. Fuel will be sufficient to fly to destination plus to an alternate (When required) plus 10% trip fuel plus 30 minutes reserve fuel. An allowance should also be made for start-up and taxi.

### ***19.0 REQUIREMENT FOR A TAKE-OFF ALTERNATE***

- A. A take-off alternate is required where weather conditions are at or above take-off minimums but are below authorized IFR landing minimums for that airport/heliport.

### ***20.0 SELECTION OF A TAKE-OFF ALTERNATE***

- A. The designated airport/heliport must be within 1 hours flying time (at normal cruising speed) of the airport of departure and meet all requirements for selection as an alternate airport/heliport.
  
- B. An airport/helideck will not be selected as a takeoff alternate unless the latest weather indicates that, the weather conditions will be at or above authorized alternate minimums for that airport/heliport at the estimated time of arrival.

**Table 1: Planning Minima for a take-off alternate airport/heliports**

<b>Alternate Airport IFR Weather Minimums</b>		
For airports with at least one operational navigational facility providing a straight-in non-precision approach procedure, or a straight-in precision approach procedure, or, when applicable, a circling maneuver from an instrument approach procedure.	A ceiling derived by adding 200 ft. to the published HAT or HAA for the approach to be flown.	1 sm. but never less than the published minimum visibility for the approach to be flown.

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### ***21.0 SELECTION OF A DESTINATION ALTERNATE AIRPORT/HELIPORT***

- A. An airport/heliport will not be selected as an onshore alternate unless the latest weather indicates that, the weather conditions will be at or above published alternate minimums for that airport/heliport at the estimated time of arrival. If alternate minimums are not published, alternate minimums are to be determined from Table 1.

**Table 1: Planning Minima for Alternate airport/heliports**

<b>Alternate Airport IFR Weather Minimums</b>		
For airports with at least one operational navigational facility providing a straight-in non-precision approach procedure, or a straight-in precision approach procedure, or, when applicable, a circling maneuver from an instrument approach procedure.	A ceiling derived by adding 200 ft. to the published HAT or HAA for the approach to be flown.	1 sm. but never less than the published minimum visibility for the approach to be flown.

### ***22.0 STANDARD TAKE-OFF MINIMUM***

- A. The standard takeoff minimums are defined as ½ statute mile visibility or RVR 2400. RVR reports, when available for a particular runway, shall be used for all takeoff operations on that runway.
- B. All takeoff operations, based on RVR, must use RVR reports from the locations along the runway.
- C. When a takeoff minimum is not published, Maritime Helicopters may use the standard takeoff minimum and any lower than standard takeoff minimum authorized by Operations Specifications. (See Section 23.0 LOWER THAN STANDARD TAKE-OFF MINIMUM). When standard takeoff minimums or greater are used, the Touchdown Zone RVR report, if available, is controlling.
- D. When a published takeoff minimum is greater than the standard takeoff minimum and an alternate procedure (such as a minimum climb gradient compatible with aircraft capabilities) is not prescribed, Maritime Helicopters shall not use a takeoff minimum lower than the published minimum. The Touchdown Zone RVR report, if available, is controlling.
- E. When takeoff minimums are less than the standard takeoff minimum, Maritime Helicopters is authorized to use a takeoff minimum equal to the lowest authorized straight in Category 1 IFR landing minimum applicable to Maritime Helicopters Alaska for that particular airport/heliport. The Touchdown Zone RVR report, if available, is controlling.

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### ***23.0 LOWER THAN STANDARD TAKE-OFF MINIMUM***

- A. When takeoff minimums are less than the standard takeoff minimum and the operation is conducted with the provisions and limitations listed below, Maritime Helicopters is authorized to use the lower than standard takeoff minimums described below to depart from an IFR airport/heliport:
- B. The PIC must have at least 100 hours as Pilot in Command in the specific make and model aircraft and must have completed training for lower than standard takeoff minimums.
1. For an SIC to manipulate the flight controls during lower than standard takeoff minimums he must have logged a minimum of 100 hours in the specific make and model aircraft and must have completed training for lower than standard takeoff minimums.
  2. Visibility or RVV  $\frac{1}{4}$  statute mile or Touchdown Zone RVR 1200, provided at least one of the following visual aids is available. The Touchdown Zone RVR report, if available, is controlling. The Mid RVR report may be substituted for the Touchdown Zone RVR report if the Touchdown Zone RVR report is not available.
    - (a) Operative high intensity runway lights (HIRL).
    - (b) Operative runway centerline lights (CL).
    - (c) Runway centerline marking (RCLM).
    - (d) In circumstances when none of the above visual aids are available, visibility or RVV  $\frac{1}{4}$  statute mile may still be used, provided the other runway markings or runway lighting provide pilots with adequate visual reference to continuously identify the takeoff surface and maintain directional control throughout the takeoff run.
  3. Touchdown Zone RVR 600 (beginning of takeoff run), Mid RVR 600, and Rollout RVR 600, provided all of the following visual aids and RVR equipment are available. The Mid RVR report may be substituted for the Touchdown Zone RVR report if the Touchdown Zone RVR report is not available.
    - (a) Operative runway centerline lights (CL).
    - (b) Runway centerline marking (RCLM).
    - (c) Operative Touchdown Zone and Rollout RVR reporting systems serving the runway to be used, all of which are controlling. However, if one of the three RVR reporting systems has failed, a takeoff is authorized provided the remaining two RVR values are at or above the appropriate takeoff minimum.

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4. For takeoffs when the RVR is less than Touchdown Zone RVR 1200 and Rollout RVR 1000, each helicopter used must be operated at a takeoff weight not greater than the weight at which the helicopter, with an engine failure at any point in the takeoff path can meet either below:
  - (a) Return to, and stop safely on, the takeoff area.
  - (b) Continue the takeoff and clear all obstacles along the takeoff path by either a height of 35 feet vertically or 200 feet horizontally within the airport boundaries and 300 feet horizontally after passing the airport boundaries. The takeoff path extends from a standing start to a point in the takeoff at which the helicopter is 1500 feet above the takeoff surface, or at a point at which the transition from the takeoff configuration to the en route configuration is completed, whichever is higher.

### **24.0 APPROACH MINIMUMS**

- A. Straight-in Category 1 Precision Instrument Approach Procedures- All airports/heliports.
  1. Maritime Helicopters shall not use any Category 1 IFR landing minimum lower than that prescribed by any applicable published instrument approach procedure. The IFR landing minimums listed below are the lowest authorized (other than airborne radar approaches) for use at any airport/heliport. Provided the fastest approach speed used in the final approach segment is less than 91 knots, Maritime Helicopters is authorized to conduct straight- in precision instrument approach procedures using the following:
    - (a) The published Category A minimum descent altitude (MDA) or decision height (DH), as appropriate.
    - (b) One-half of the published Category A visibility/RVR minimum or the visibility/RVR minimums listed below, which ever is higher.

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2. Maritime Helicopters shall not use an IFR landing minimum for straight-in precision approach procedures lower than that specified in the following table. Touchdown Zone RVR reports, when available for a particular runway, are controlling for all approaches to and landing on that runway. (See Note 2)

Precision Approaches		Full ILS (See Note 1), MLS, or PAR			
Approach Light Configuration	HAT	Helicopters Operated at Speeds of 90 Knots or Less		Helicopters Operated at Speeds More Than 90 Knots	
		Visibility In SM.	TDZ RVR In Feet	Visibility In SM.	TDZ RVR In Feet
No Lights or ODALS or MALS or SSALS	200	3/4	3500	3/4	4000
MALSR or SSLAR or ALSF-1 or ALSF-2	200	1/4	1600	1/2	2400
MALSR with TDZ and CL or SSLAR with TDZ and CL or ALSF-1/ALSF-2 with TDZ and CL	200	1/4	1600	1/2	1800

**NOTE 1:** A full ILS requires an operative LOC, GS, and OM or FAF. A precision or surveillance radar fix, an NDB, VOR, DME fix, or a published minim GSIA fix may be used in lieu of an outer marker.

**NOTE 2:** The Mid RVR and Rollout RVR reports (if available) provide advisory information to pilots. The Mid RVR report may be substituted for the TDZ RVR report if the TDZ RVR report is not available.

**B. Straight-in Category 1 Non-Precision Instrument Approach Procedures- All airports/heliports.**

1. Maritime Helicopters shall not use any Category 1 IFR landing minimum lower than that prescribed by any applicable published instrument approach procedure. The IFR landing minimums listed below are the lowest authorized (other than airborne radar approaches) for use at any airport/heliport. Provided the fastest approach speed used in the final approach segment is less than 91 knots, Maritime Helicopters is authorized to conduct straight- in precision instrument approach procedures using the following:
  - (a) The published Category A minimum descent altitude (MDA) or decision height (DH), as appropriate.
  - (b) One-half of the published Category A visibility/RVR minimum or the visibility/RVR minimums listed below, which ever is higher.

## MARITIME HELICOPTERS (RW) IFR STANDARD OPERATING PROCEDURES

2. Maritime Helicopters shall not use an IFR landing minimum for straight-in non-precision approach procedures lower than that specified in the following table. Touchdown Zone RVR reports, when available for a particular runway, are controlling for all approaches to and landing on that runway. (See Note 7)

<b>NON PRECISION APPROACHES</b>					
Approach Light Configuration	HAT (See NOTES 1,2, and 3)	Helicopters Operated at Speeds of 90 Knots or Less (See NOTE 6)		Helicopters Operated at Speeds More Than 90 Knots	
		Visibility In SM.	TDZ RVR In Feet	Visibility In SM.	TDZ RVR In Feet
No Lights	250	3/8	2000	1	5000
ODALS or MALS or SALS	250	3/8 (See Note 5)	1600 (See Note 5)	3/4	4000
MALSR or SSLAR or ALSF-1 or ALSF-2	250	1/4 (See Note 5)	1600 (See Note 5)	1/2 (See Note 4)	2400 (See Note 4)
DME ARC any light configuration	500	3/4	4000	1	5000

**NOTE 1:** For NDB approaches with a FAF, add 50 ft. to the HAT.

**NOTE 2:** For NDB approaches without a FAF, add 100 ft. to the HAT.

**NOTE 3:** For VOR approaches with a FAF, add 50 ft. to the HAT.

**NOTE 4:** For NDB approaches, the lowest authorized visibility is  $\frac{3}{4}$  and the lowest RVR is 4000.

**NOTE 5:** For NDB approaches, the lowest authorized visibility is  $\frac{3}{8}$  and the lowest RVR is RVR 2000.

**NOTE 6:** A visual descent gradient of 6 degrees or more is required and must be used when operating with these minimums.

**NOTE 7:** The Mid RVR and Rollout RVR reports (if available) provide advisory information to pilots. The Mid RVR report may be substituted for the TDZ RVR report if the TDZ report is not available.

## **MARITIME HELICOPTERS (RW) IFR STANDARD OPERATING PROCEDURES**

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### C. Category 1 IFR Landing Minimums- Circle to Land Approach Maneuver.

1. Maritime Helicopters shall not use any Category 1 IFR landing minimum lower than that prescribed by any applicable published instrument approach procedure. The IFR landing minimum prescribed in the following table are the lowest authorized (other than Airborne Radar Approaches) for use at any airport.
2. Maritime Helicopters is authorized to conduct circling maneuvers provided the following is met:
  - (a) The pilot in command must have satisfactorily completed the Maritime Helicopters Pilot Training Program and satisfactorily completed a flight check for the circling maneuver.
  - (b) Maritime Helicopters Alaska shall not use a speed during the circling maneuver which is slower than the approved Instrument Flight Minimum Speed (V-mini) specified in the FAA approved Rotorcraft Flight Manual.
  - (c) When conducting an instrument approach procedure, which requires a circling maneuver to the runway of intended landing, Maritime Helicopters, shall not use a landing minimum lower than the minimum prescribed for the applicable circling maneuver or a landing minimum lower than specified in the following, whichever is higher.
  - (d) The lowest authorized IFR landing minimum for instrument approaches, which require a circling maneuver to the runway of intended landing, shall be determined for a particular aircraft by using the speed category appropriate to the highest speed used during the circling maneuver.

<b>Category 1 IFR Landing Minimums- Circle to Land Approach Maneuver</b>		
Speed Category	HAA	Visibility in statute miles
Less than 91 Kts	350	1
91 to 120 Kts	450	1
121 to 140 Kts	450	1 ½
141 to 165 Kts	550	2
Above 165 Kts	1000	3

3. Refer to Section 11.1 ARA Minimums for circling procedures.

### D. Category 1 Contact Approach Procedures.

1. Maritime Helicopters shall not use any Category 1 IFR landing minimum lower than that prescribed by any applicable published instrument approach procedures. The IFR landing minimums prescribed below are the lowest authorized (other than Airborne Radar Approaches) for use at any airport.

## **MARITIME HELICOPTERS**

### **(RW) IFR STANDARD OPERATING PROCEDURES**

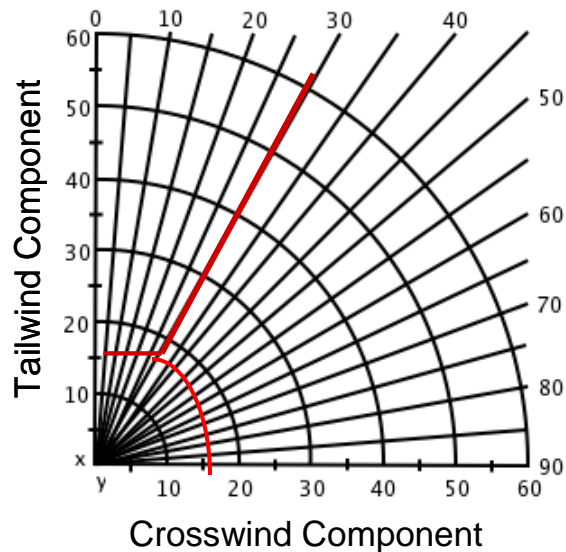
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2. Maritime Helicopters is authorized to conduct contact approaches provided the following is met:
  - (a) The pilot in command must have satisfactorily completed the Maritime Helicopters Pilot Training Program for contact approaches.
  - (b) A contact approach will not be conducted unless the approach is conducted to an airport with an approved instrument approach procedure for that airport, and all of the following:
    1. The flight remains under instrument flight rules and is authorized by ATC to conduct a contact approach.
    2. The report visibility/RVR for the runway of intended landing is at or above the authorized IFR minimum for the Category 1 non-precision approach established for that runway or one statute mile (RVR 5000), which ever is higher.
    3. The flight is operating clear of clouds and can remain clear of clouds throughout the contact approach. The flight visibility must be sufficient for the pilot to see and avoid all obstacles and safely maneuver the aircraft to the landing runway using external visual references.
    4. The flight does not descend below the MEA/MSA, MVA, or the FAF altitude, as appropriate, until:
      - a. The flight is established on the instrument approach procedure, operating below the reported ceiling, and the pilot has identified sufficient prominent landmarks to safely navigate the aircraft to the airport, or
      - b. The flight is operating below any cloud base, which constitutes a ceiling, the airport is in sight, and the pilot can maintain visual contact with the airport throughout the maneuver.
      - c. The flight does not descent below the highest circling MDA prescribed for the runway of intended landing until the aircraft is in a position from which a descent to touchdown, within the touchdown zone, can be made at a normal rate of descent using normal maneuvers.

## MARITIME HELICOPTERS (RW) IFR STANDARD OPERATING PROCEDURES

### 25.0 DOWNWIND APPROACHES

- A. Copter RNAV straight-in instrument approach procedures will be limited to a maximum of a 10-knot tailwind component.
- B. All other straight-in instrument approach procedures will be limited to a maximum of a 15 Knot tailwind component.
- C. Refer to the following table to determine the tailwind component.



### 26.0 OFFSHORE ALTERNATES-GENERAL

- A. The use of Offshore Alternates as a normal VMC and IMC operating procedure utilizes the helicopter's ability, at a One Engine Inoperative Restricted Landing Weight (OEI RLW), to carry out a deliberate single engine landing on a stable helideck.
- B. This type of operation requires the calculation of a Decision Point (DP) beyond which the aircraft is committed to an offshore landing. Pilots should be aware of the DP at the planning stage and en route when subsequently updated by actual conditions.

## MARITIME HELICOPTERS (RW) IFR STANDARD OPERATING PROCEDURES

### 27.0 OFFSHORE ALTERNATES-PERFORMANCE

- A. One Engine Inoperative Restricted Landing Weight (OEI RLW): For offshore alternate operations when fuel to a land diversion is not carried, the maximum gross weight for take-off from the departure point, whether onshore or offshore, must be determined by reference to the OEI RLW which will allow a deliberate single engine landing at the offshore destination.
- B. The OEI RLW must be greater than the planned landing weight with crew, passengers, baggage and freight, plus 30 minutes of fuel calculated at the “loiter” fuel consumption for the helicopter type. The helicopter may arrive at both the destination and alternate at a weight above the OEI RLW which, in the event of an engine failure, will require the aircraft to remain in the vicinity of the installation until excess fuel has been burnt off and the correct weight achieved prior to the commencing final approach.

### 28.0 OFFSHORE ALTERNATES-DECISION POINT (DP)

- A. **Decision Point (DP):** The DP is that point along a route to the destination beyond which the total fuel available, excluding holding and contingency reserves, is no longer sufficient to allow a return to the onshore departure point at cruise speed fuel consumption.

1. At the planning stage a DP may be calculated from the point of departure using the following formula: (Example 2 hours fuel, 100 KIAS with zero wind)

DP (Time)	$\frac{T \times H}{O+H}$	$= \frac{120 \times 100}{200}$	$= \frac{12000}{200}$	Time = 60 Minutes
DP (Range)	$\frac{T \times H \times O}{(O+H) \times 60}$	$= \frac{120 \times 100 \times 100}{(200) \times 60}$	$= \frac{1200000}{12000}$	Range= 100 Miles

Where T = endurance in minutes of the take-off fuel (not including reserves) at twin engine cruise speed and fuel consumption.

O = ground speed out to DP H = ground speed from DP back to departure point.

Note: O and H should be calculated using the same wind velocity.

- B. **Actions at Decision Point:** Before passing the DP, which should be no more than 30 minutes from the destination, the following actions should have been completed:

1. Confirmation that navigation to the destination and offshore alternate can be assured.
2. Radio contact with the destination and offshore alternate has been established.
3. The landing weather information forecast at the destination and offshore alternate have been obtained and confirmed to be at or above the required minima.

## MARITIME HELICOPTERS (RW) IFR STANDARD OPERATING PROCEDURES

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4. The requirements for the OEI landing have been checked with the latest available reported weather conditions to ensure that they can be met.
5. If the prevailing conditions require the use of an offshore alternate, the availability of such an alternate should be guaranteed by the operator of the rig/platform until a landing has been completed at the destination or the offshore alternate.

### 29.0 OFFSHORE ALTERNATES-WEATHER CONSIDERATIONS

- A. *Meteorological Observations:* When the use of an offshore alternate is planned, the meteorological observations at the destination and the alternate will be from a National Weather Service approved source. The use of automatic meteorological observation stations may be used.
- B. *Weather Minima:* A helideck should not be selected as an offshore alternate unless the latest weather indicates that, during a period commencing one hour before and ending one hour after the expected time of arrival at the offshore alternate, the weather conditions will be at or above the planning minima.

**Table 1: Planning Minima for offshore alternate heliports**

Alternate Airport IFR Weather Minima		
For airports with at least one operational navigational facility providing a straight-in nonprecision approach procedure, or a straight-in precision approach procedure, or, when applicable, a circling maneuver from an instrument approach procedure.	A ceiling derived by adding 200 ft. to the published HAT or HAA for the approach to be flown.	1 sm. but never less than the published minimum visibility for the approach to be flown.
ARA Approaches	800 feet	2 sm.

- C. When fog is forecast, or has been observed within the last two hours within 60 nm of the destination or alternate, an offshore alternate should not be used.

## MARITIME HELICOPTERS (RW) IFR STANDARD OPERATING PROCEDURES

### 30.0 Cold Temperature Restricted Airports

- A. Instrument approach charts will contain a snowflake symbol and a temperature  $\text{[SN]-20°C/-4°F}$  when the cold temperature correction must be applied. Pilots operating into airports requiring cold temperature corrections should request the lowest forecast temperature at the airport for departure and arrival times. When the temperature is forecast to be at or below any published cold temperature restriction, calculate an altitude correction for the appropriate segment(s) (Intermediate, Final, Missed Approach) as required.
- B. All cold temperature corrected altitudes must be reported to Air Traffic Control (ATC) whenever applying a cold temperature correction on an intermediate segment and/or a published missed approach final altitude.
- C. Refer to [www.faa.gov/air\\_traffic/publications/notices](http://www.faa.gov/air_traffic/publications/notices) NTAP, Part 4. Graphic Notices, Section 1. General - Cold Temperature Restricted Airports. For a complete list of Cold Temperature Restricted Airports.

*TBL 7-2-3*  
**ICAO Cold Temperature Error Table**  
**Height Above Airport in Feet**

	200	300	400	500	600	700	800	900	1000	1500	2000	3000	4000	5000
Reported Temp °C	+10	10	10	10	20	20	20	20	20	30	40	60	80	90
	0	20	20	30	30	40	40	50	50	60	90	120	170	280
	-10	20	30	40	50	60	70	80	90	100	150	200	290	390
	-20	30	50	60	70	90	100	120	130	140	210	280	420	570
	-30	40	60	80	100	120	140	150	170	190	280	380	570	760
	-40	50	80	100	120	150	170	190	220	240	360	480	720	970
	-50	60	90	120	150	180	210	240	270	300	450	590	890	1190

**NOTE:** Refer to AIM para 7-2-3 for more details on altimeter errors.

## MARITIME HELICOPTERS (RW) IFR STANDARD OPERATING PROCEDURES

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### ***31.0 HELICOPTER TERRAIN AWARENESS AND WARNING SYSTEM (HTAWS)***

- A. HTAWS should only be inhibited when in visual contact with terrain and when the pilot can be assured of maintaining clearance from terrain and obstacles.
- B. Pilots are authorized to deviate from their current ATC clearance to the extent necessary to comply with HTAWS warnings.
- C. HTAWS Alert Procedures.
  - 1. “Terrain” or aural with “Caution – Terrain, Terrain” or “Obstacle” or aural with “Caution – Obstacle, Obstacle” caption.
    - a. Verify the helicopter flight path and correct if necessary.
    - b. Flying Pilot calls out his observed height and intentions.
  - 2. Aural “Warning – Terrain, Terrain”, or aural “Warning – Obstacle, Obstacle” with Red Terrain or Obstacle Caption.
    - a. If IMC or at Night where visual judgment of the situation is not assured:
      - (1) Roll wings level; and simultaneously:
      - (2) Apply Maximum Continuous Power and:
      - (3) Maintain climb until all visual and aural warnings cease.
      - (4) The Pilot not flying must monitor and call the radar altimeter height and trend during a terrain avoidance maneuver.
    - b. If VMC where visual judgment of the situation is assured:
      - (1) Evaluate the helicopter flight path with respect to terrain and obstacles.
      - (2) Take corrective action as necessary to recover safe terrain and obstacle clearance.
      - (3) Flying pilot calls out his observed height and intentions.