I4102 Brief Guide

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Curriculum Basis: CNATRAINST 1542.156D

Icing

Reporting Types and Intensity

Types (AIM 7-1-21; FIH C.17.b.(4)):

- Glaze (clear): Glossy, clear or translucent ice formed by relatively slow freezing of large supercooled water droplets.
- Rime: Rough, milky, opaque ice formed by instantaneous freezing of small supercooled water droplets.
- Mixed: Simultaneous appearance or combination of rime and glaze (clear) ice characteristics.

Intensity (AIM 7-1-20; FIH C.17.b.(4)):

- Trace: Ice becomes perceptible. Non-hazardous even without use of deicing/ anti-icing unless encountered > 1 hr.
- Light: Ice becomes problematic if encountered > 1 hr. Occasional use of deicing/anti-icing removes/prevents accumulation.
- Moderate: Short encounters are problematic. Use of deicing/anti-icing or diversion is necessary.
- Severe: Deicing/anti-icing fails to control the hazard. Immediate diversion is necessary.

CNAF

- Flights shall be planned to circumvent areas of forecast atmospheric icing and thunderstorm conditions whenever practicable.

FAR

- No operating restrictions in icing for single engine helicopters not-for-hire.
- IFR: Required to report un-forecast icing. FAR 91.183

AIM

- In flight icing conditions: visible precipitation between +2 to -10°C.
- Takes but 1/2 inch of ice to reduce lifting power of some aircraft by 50%.

Icing Emergency Procedure

Operation of the engine during icing conditions could result in ice formations on the compressor front support. If ice were allowed to build up, airflow to the engine would be affected and engine performance decreased. Every effort must be made to remain clear of known icing conditions. The anti-ice system in this helicopter is to be used as a preventative measure only. Once ice has accumulated, the anti-ice system cannot be used as a corrective measure (will not deice). Intentional flight in any known icing condition (< 4°C in visible moisture) is prohibited. For inadvertent flight in icing conditions, proceed as follows:

Procedures:

* 1. ENG ANTI-ICING - ON.

* 2. PITOT HEAT switches - HEAT.

* 3. -(C)- Alternate static source knob - As required.

* 4. Descend or climb to a warmer temperature or vacate clouds/moisture.

If unable to get clear of icing conditions:

* 5. Land as soon as possible.

Weather Watch (WW) / CNATRA Aviation Weather Watch (CAWW) / SIGMET (WS) / Convective SIGMET (WST)/ AIRMET (WA)

Weather Watch (WW)

AIM (AIM 7-1-5.g.2):

- Thunderstorm/tornado watches issued by Storm Prediction Center (SPC) in OK.
- Thunderstorm/tornado warning issued by NWS Weather Forecasts Offices (WFOs).

- Issued when conditions favor a severe thunderstorm (≥ 1 in hail and/or ≥ 50 kt gusts).
- Public severe thunderstorm and tornado watch notification messages were formerly known as the Severe Weather Watch Bulletins (WW). The NWS no longer uses that title or acronym for this product but retains WW in the product header for processing by weather data systems.

CNAF (CNAF M-3710.7 4.8.4.5; NAVAIR 00-80T-112 27.2.3.1):

- Except for operational necessity, emergencies, and flights involving all-weather research projects or weather reconnaissance, pilots shall not file into or through areas for which the Storm Prediction Center has issued a WW unless one of the following exceptions apply:

1. Storm development has not progressed as forecast. For air operations originating/terminating at Naval installations, local installation commanding officers and/or Wing Commanders may continue operations in areas under a WW based on a determination that storm development has not progressed as forecast for the planned route of flight. Normally, such determination should include verification by a DoD forecaster or a Flight Service Station (FSS). For Naval aviators contemplating flight operations from other DoD or commercial airfields, flight operations through WW are authorized only if storm development has not progressed as forecast for the planned route as verified by DoD forecasters or a FSS. In either situation:
    1. VFR filing is permitted if existing and forecast weather for the planned route permits such flights.
    2. IFR flight may be permitted if aircraft radar is installed and operative, thus permitting detection and avoidance of isolated thunderstorms.
    3. IFR flight is permissible in controlled airspace if VMC can be maintained, thus enabling aircraft to detect and avoid isolated thunderstorms.
    4. Performance characteristics of the aircraft permit an en route flight altitude above existing or developing severe storms.

- Note: It is not the intent to restrict flights within areas encompassed by or adjacent to a WW area unless storms have actually developed as forecast.

CNATRA Aviation Weather Watch (CAWW)

CNATRAINST 3710.8g:

- Indicates any of the following:

1. Embedded thunderstorms;
2. Severe thunderstorms;
3. Tornadoes.

- Issued when any of the above are within 100 miles of the station.
- May be issued 2 hrs prior to field opening through field closing.

SIGMET (WS)

AIM (AIM 7-5-1.c):

- Valid for 4 hrs (exception: tropical cyclones or volcanic ash, valid for 6 hrs).
- Issued for current or expected:

1. Severe icing not associated with thunderstorms;
2. Severe or extreme turbulence or clear air turbulence not associated with thunderstorms;
3. < 3 SM visibility from widespread dust/sand storms;
4. Volcanic ash.

Convective SIGMET (WST)

AIM (AIM 7-5-1.d):

- Valid for 4 hrs issued hourly at H+55.
- Issued for any of the following:

1. Severe t-storm (≥ 50 kt surface winds, ≥ 3/4 in hail, tornadoes);
2. Embedded t-storms;
3. A line of t-storms;
4. Thunderstorms with heavy precipitation ≥ 40% of an area ≥ 3000 sq mi.

RWOP 2.8:

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AIRMET (WA)

AIM (AIM 7-5-1.f):

- Valid for 6 hrs
- 3 types:

1. Sierra: IFR conditions or extensive mountain obscuration;
2. Tango: moderate turbulence, sustained surface winds ≥ 30 kt, or non- convective low level wind shear;
3. Zulu: moderate icing (provides freezing levels).

- Can be graphical (aviationweather.gov).

Sources of Weather Information

Pre-Flight

- FWB (Flight Weather Briefer)
- OWS (Operational Weather Squadron)
- TIBS (Telephone Information Briefing Service)

In-Flight

AIM (AIM 7-1-11):

- AWOS (Automated Weather Observation System)
  - Real time system operationally classified into nine basic levels based on data observed.
  - Transmitted on discrete VHF frequency or voice portion of local NAVAID.
  - Most can also be accessed by telephone.
- ASOS/AWSS (Automated Surface Observing System/Automated Weather Sensor System)
  - Primary surface weather observing system for the U.S.
  - Two types: AO1 (no precipitation discrimination) and AO2.
  - Transmitted on discrete VHF frequency or voice portion of local NAVAID.
  - Most can also be accessed by telephone.
- PIREPs (Pilot Reports)
- ATIS (Automated Terminal Information Service)
- FSS (Flight Service Station)
- FIS-B (Flight Information Services)
- PMSV (Pilot to Metro Service)
  - May be used to update DD-175-1.
  - Receives PIREPs.
- EFAS (Enroute Flight Advisory System)
- Decommissioned. Contact discrete FSS frequencies for same service. FAA
- Used to provide tailored weather and advisories for enroute phases of flight by calling “Flight Watch” on 122.0 MHz. FAA

- HIWAS (Hazardous Inflight Weather Advisory Service)
- TWEB (Transcribed Weather Broadcast)
  - Alaska only.
  - Broadcast continuously over certain L/MF and select VOR facilities.

Additional Resources

- FAA Pilot Guide: Flight in Icing Conditions