Chapter 10
Weather Information and Flight Planning

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“Aviation in itself is not inherently dangerous. But to an even greater degree than the sea, it is terribly unforgiving of any carelessness, incapacity or neglect.”

*Captain A. G. Lamplugh, British Aviation Insurance Group, London, circa early 1930s.*

**General**  
All BSU aircraft must be dispatched (released) by a Dispatcher unless prior authorization has been coordinated with the Chief Instructor or his/her designee.  
Pilots are not permitted to dispatch their own aircraft.  
The PIC shall be thoroughly familiar with and plan for reported and forecast weather conditions along the intended route of flight.

**NOTE**  
The PIC is ultimately responsible for proper flight planning and for making an appropriate Go/No-Go decision.

**Dispatch** - May be contacted on the appropriate dispatch 123.50 when within range or by telephone (508-531-1476) from any ground station.

**Flight Service Station** – Available on 122.2 or as depicted on navigational charts. En Route Flight Advisory Service (Flight Watch) on frequency 122.0. Flight Service can also be reached via telephone at (1-800-WX-BRIEF or local telephone number).

**PIREPs** - Pilots are strongly encouraged to provide pilot reports (PIREPs) on all flights. Utilizing FSS and Flight Watch provides other pilots with access to actual en route weather conditions: PIREPs are the best source of immediate and accurate in-flight weather information. A PIREP may also aid in the issuance or modification of other weather reports (e.g. AIRMETs).

**Weather Analysis in Flight Planning**  
No flight in a BSU aircraft may depart unless the takeoff, en route, and landing phases of flight can be conducted in accordance with the weather requirements described in BSU Aviation Safety Procedures & Practices (see Ch. 8). The PIC will ensure that the appropriate weather reports or forecasts or any combination thereof indicate that the weather conditions at the estimated time of arrival (ETA) meet the weather requirements as described in this manual.

**Weather Minimums**  
When approach minimums published on the applicable IAP are higher than the minimums specified in the Safety Procedures & Practices, the published higher minimums shall apply.
Operating At or Near Minimums

Turbulence, precipitation, and/or depth of overcast may significantly increase the challenge of completing a satisfactory approach procedure, especially if conditions exist at the lower levels. Consider all available information prior to initiating an approach procedure.

Required Reports to Dispatch

The PIC shall ensure that Dispatch is immediately notified any time unforecast or hazardous weather conditions are encountered that will or may affect the safety of the flight and/or other BSU flight events. Contact Dispatch as soon as practical via radio or telephone.

Severe or Extreme Turbulence

Any BSU pilot encountering severe or extreme turbulence shall take any measure necessary to ensure the safety of the flight. Upon landing, notify Dispatch, provide a PIREP, and make an aircraft maintenance Squawk. Dispatch will ground the aircraft for inspection, and notify Maintenance that the aircraft encountered severe or extreme turbulence.

Unforecast Severe Icing

Pilots encountering unforecast severe icing shall inform Dispatch as soon as practical. The report shall include the nature and location (including altitude and position) of the conditions and any actions taken by the pilot.

Hydroplaning

Hydroplaning is a condition that can exist when an airplane is landed on a runway surface contaminated with standing water, slush, and/or wet snow. Whether it occurs depends on numerous factors including aircraft speed, tire tread depth, tire air pressure, depth and consistency of the runway contaminant, type of runway surface, etc.

NOTE

The pilot can calculate the speed at which dynamic hydroplaning is likely to occur (and below which it is less likely) by multiplying the square root of the main gear tire pressure (p.s.i.), by nine (9) (e.g. main gear tire pressure is 36 psi, \(\sqrt{36} \times 9 = 6 \times 9 = 54\): The airplane could begin hydroplaning at 54 knots.

Preventive Measures

- Land at minimum possible speed.
- Maintain directional control and runway alignment (on approach and flare).
- Brakes judiciously and only after the landing gear tires have spun up to rolling speed. Do NOT lock the brakes.
- Touchdown firmly to plant the wheels on the runway surface.
- Touch down near the threshold to assure maximum runway length.
Thunderstorm Avoidance Policy and Procedure
BSU aircraft shall not attempt takeoff or landing when a thunderstorm is over or in the vicinity of the airport, or is on the departure path or final approach path.

**WARNING**
There is no reason to fly through or near a thunderstorm. Pilots shall ensure the flight remains at least 20 NM from any thunderstorm and avoids associated hazards (turbulence, wind shear, microbursts, etc.).

**WARNING**
BSU pilots shall not attempt to takeoff or land when braking action is reported as “nil.” A “nil” braking report is rendered invalid when meteorological conditions improve or when ground personnel take action to improve the braking conditions.

General Flight Dispatch Authority and Responsibility
Each aircraft operated by Bridgewater State University shall be specifically dispatched (released) by a Dispatcher through Aviation Operations.

Dispatchers shall, to the best of their ability, provide pilots with an airworthy aircraft that is ready for flight. Workload permitting, the on-duty dispatcher shall provide pilots with any information that may affect the proposed flight, including but not limited to known airspace restrictions, current and expected weather, and any known or expected navigational irregularities that may affect the safety of the flight.

**CAUTION**
The on-duty dispatcher shall ALWAYS be readily available via radio to assist pilots with ground or and/or flight operations.

Basic Flight Planning
Prior to any flight in a BSU aircraft, the PIC shall, in accordance with 14 CFR 91.103, become familiar with all available information concerning that flight including:

- Fuel requirements.
- Alternates available if the planned flight cannot be completed.
- Any known traffic delays relayed by ATC.
- Runway lengths at airports of intended use.
- Takeoff and landing distance data.
- NOTAM information.
Weather reports for the route of flight including alternate(s), if applicable.
MEL items, if applicable, which affect the flight status of the aircraft.
Minimum fuel required (including taxi, takeoff to arrival at the destination, approach and landing, missed approach, and if applicable, alternate, holding, and reserve fuel).

Cross-Country Flights
Students conducting a cross-country flight shall plan cross-country routes to two (2) separate destinations to avoid adverse weather along one of the desired routes. Failure to do so and subsequent cancelation of a flight that could have been conducted may result in a no-show assessment in the student training record.

Selecting Routes
Students and their CFIs may select any U.S. civil-use airport, provided the airport is listed in Chapter 11 of this manual or has been approved by the Chief Instructor or his/her designee. Students and their CFIs are responsible for selecting routes that will accomplish the objectives of the lesson being conducted.

NOTE
Failure to properly select a route that meets applicable Part 61 or 141 requirements shall result in the lesson being conducted again at student expense. A CFI who fails to properly review the planned route(s) and allows an improper departure will be subject to disciplinary action.

Solo Cross-Country Requirements for Aircraft Release
A student preparing to fly solo cross-country must present the following to her/his CFI:

Student Pilots
- Weather brief for the entire route (departing and returning).
- Completed flight plan (at Dispatch) and navigation log (all flight legs) (copy with CFI).
- Current government-issue photo ID, FAA Medical, and properly endorsed current Student Pilot Certificate.
- Properly endorsed pilot Log Book.

Private Pilot Certificate and Higher
- Weather brief for the entire route (departing and returning).
- Completed flight plan (at Dispatch) and navigation log (all flight legs) (copy with CFI).
- Current government-issue photo ID, FAA Medical and Pilot Certificate.

NOTE
ALL flights beyond 50NM from KEWB: A flight plan must be filed with FSS for all legs of the flight. All flight plans must be opened upon departure and closed upon arrival.
Solo Cross-Country Flights/VFR/IFR for C-ASEL Applicants
Solo flights in the C-ASEL course are to be conducted predominantly under VFR, however filing an IFR flight plan may be required in order to depart and/or complete a solo flight. Pilots shall adhere to requirements specified in Safety Procedures and Practices, Ch. 8 of this manual.

Cross-Country Flights Unable to Return for Weather
Pilots are required to conduct a thorough review and proper planning in order to accomplish a cross-country flight without delay. If however a flight is delayed or diverted for en route weather and the pilot is unable to return to KEWB as scheduled, the pilot shall notify Dispatch as soon as possible. In the event of a diversion or delay, pilots shall be financially responsible for any personal expenses (e.g. food, lodging). Pilots should ensure that sufficient funds are available and accessible for use on cross-country flights.

Cross-Country Lessons & Routes
Students are scheduled for cross-country lessons of various distances as part of the 14 CFR Part 141 course requirements. Cross-country route destinations for use during training flights are provided in Chapter 11 of this manual. Conditions established for the routes are:

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Cessna 172R, 2400 lbs at takeoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>Set 65% (105 TAS) for Economy, 75% (112 TAS) for Speed</td>
</tr>
<tr>
<td>Fuel Burn</td>
<td>7.0 – 8.3 GPH</td>
</tr>
<tr>
<td>Weather/Winds</td>
<td>No wind, Standard Temperature</td>
</tr>
<tr>
<td>Fuel</td>
<td>1 hour Reserve</td>
</tr>
<tr>
<td>Time allocated for landing</td>
<td>30 Minutes with refueling</td>
</tr>
<tr>
<td></td>
<td>15 Minutes without refueling</td>
</tr>
</tbody>
</table>

Over Water Operations
Bridgewater State University aircraft are not authorized to conduct extended over water operations. Common ATC vectoring for instrument approaches to and around coastal airports (e.g. approaches into Martha’s Vineyard) are not considered extended over water operations. Pilots are reminded of the requirements of 14 CFR 91.205 concerning required equipment.

Mountain Flying
Definitions
OROCA: Off-route Obstruction Clearance Altitude - provides 1000’ clearance below 5000’ MSL; 2000’ clearance above 5000’MSL (depicted as a brown-toned large numerical figure on NACO IFR Low-Enroute Charts), indicates minimum altitude to guarantee obstacle clearance in area marked by lat/long lines.

Mountain Weather Phenomenon
Mountain Wave - Mountain waves are produced when stable air crosses a mountain barrier. Air flowing up the windward side is relatively smooth while wind flow across the barrier is laminar, that is, it tends to flow in layers. The wave pattern is a standing or mountain wave, so named.
because it remains essentially stationary and is associated with the mountain. The wave pattern may extend 100 miles or more downwind from the barrier. Wave crests extend well above the highest mountains, sometimes into the lower stratosphere. The longer the wave length, the stronger the wave. Clouds may mark the mountain wave; however, they are not always present. Always anticipate mountain wave turbulence when winds in excess of 20 knots blow across a mountain or ridge in stable air. Turbulence can be anticipated and vary widely, ranging from none to severe. Mountain waves appear in excellent visibility conditions, giving a pilot the false idea that the air is smooth.

**Standing Lenticular Clouds** - Lens-shaped standing lenticular altocumulus clouds form in conjunction with mountain waves when there is enough moisture in the air. The more lenticular stacking that exists, the stronger the wave. The presence of these clouds indicates very strong turbulence and they should be avoided.

**Rotor Clouds** - Rotary circulation forms below the elevation of the mountain peaks, hence the name of the cloud. Turbulence can be violent in the overturning rotor, and structurally damage or destroy an aircraft caught in the associated updrafts and/or downdrafts. If sufficient moisture exists and a rotor cloud becomes visible, avoid the area.

**Adverse or Unfamiliar Flying Environments**

BSU training aircraft frequently operate in flight environments that are unfamiliar to at least one member of a two-person pilot (the student). These environments may include areas of high elevation terminal operations and/or mountainous terrain (e.g. Pittsfield, MA or Laconia, NH). Proper planning and adherence to safe operating practices will ensure minimal risk on any such operation. Pilots should refer to the following guidelines when conducting operations in these types of flying environments.

**Pilot Briefing**

Pilots must know exactly what is planned and expected during all phases of flight. Performance, situational awareness strategy, terrain avoidance, crew resource management technique, and crew conduct in the event of a suspected CFIT situation must be briefed.

**Contingency Planning**

Develop plans to deal with emergencies such as engine failure or other malfunctions. Thoroughly review the anticipated route of flight, paying particular attention to potential landing sites (on or off-airport). Maintain situational awareness of high terrain at all times. Follow ODPs where available.

**Arrival Planning**

Plan for the arrival well before reaching the destination, and be prepared in the event a let-down and/or landing is not possible.
Departure Planning
Plan for and use ODPs/SIDs when they are published for the departure airport. Base departure performance calculations on accurate information, full situational awareness and realistic expectations.

High Terrain
Some airports are surrounded by high terrain. Poor weather, lack of radar flight following, communications difficulties and darkness may further complicate the flying.

Situational awareness is critical at all times. Be able to accurately determine the aircraft’s position relative to the surrounding terrain. Always be aware of MEAs, MSAs, MORAs and MOCAs, as applicable.

Never accept off route vectors when operating below Grid MORA unless the aircraft’s position can be positively determined and the flight is under radar control.

Manage airspeed carefully. High speed greatly increases turn radius and limits maneuverability.

Carefully plan any diversion (e.g.: flight to an alternate airport). Many cases will require a climb in a holding pattern until reaching the MEA for the flight.