Chapter 11
Flight Planning Considerations

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General Flight Dispatch Authority

Each aircraft operated by Bridgewater State College shall be specifically dispatched (released) by a Dispatcher through Aviation Operations. No other College department may dispatch or otherwise release aircraft or equipment for any flight type or operation.

Dispatcher Responsibilities

The Bridgewater State College Aviation Dispatcher shall provide flight crews, at the time of dispatch, an airworthy aircraft that is ready for flight.

Dispatchers shall, to the best of their ability and workload permitting, provide flight crews with any information that may affect the proposed flight. This information may include current information airspace restrictions, current or expected weather, departure and destination airport conditions, and any known or expected navigational irregularities that may affect the safety of the flight.

CAUTION

Dispatchers shall always be readily available via radio to assist flight crews with ramp service issues, in-flight urgencies or emergencies, and information necessary for the safe operation of aircraft.

Basic Flight Planning

Prior to any flight in a Bridgewater State College aircraft, the Pilot-In-Command, in accordance with 14 CFR 91.103, shall 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

All Bridgewater State College Aviation students conducting a cross-country flight shall plan and prepare two (2) cross-country routes in anticipation of possible adverse weather situations along one of the desired routes.

NOTE

If a flight cannot be completed due to a student's failure to prepare two (2) routes as indicated above, the flight event shall be considered an absence on the student's training record.

Selecting Routes

Students and their CFIs are able to select from a menu of available airports located in Chapter 12 of this manual. Only listed airports are authorized. 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 appropriate Part 141 cross-country requirements shall result in the lesson being conducted again at student expense. Flight Instructors who fail to properly review the planned routes and allow an incorrect flight to depart will be subject to disciplinary action.

Solo Cross-Country Requirements for Aircraft Release

Students preparing to fly solo cross-country flights must present to their CFI and Dispatcher, the following:

Student Pilots

- Weather brief for the entire route (departing and returning).
- Completed Flight Plan and Navigation Log for each leg of the flight.
- Accurately completed and signed PRE-PRIVATE SOLO CROSS-COUNTRY AUTHORIZATION FORM (original or copy) listing ALL points of intended landing and/or refueling.
- Current FAA Medical and properly endorsed current Student Pilot Certificate.
- Properly endorsed Pilot Log Book.

Private Pilot Certificate or Higher

- Weather brief for the entire route (departing and returning).
- Completed Flight Plan and Navigation Log for each leg of the flight.
- Accurately completed and signed CROSS-COUNTRY AUTHORIZATION FORM (original or copy) listing ALL points of intended landing and/or refueling.
- Current FAA Medical and Pilot Certificate.

NOTE

CFIs may not sign a Cross-Country Authorization form until they have reviewed all appropriate items. Dispatch will retain a copy of the Flight Plan and Authorization Form until the flight has been completed.

NOTE
To ensure that all Bridgewater State College cross-country flights operate within the highest margins of safety, a flight plan must be filed with FSS for all legs of the flight. All flight plans must be activated (opened) upon departure and closed upon arrival. This policy applies to all solo flights to destinations more than 25 NM from New Bedford Regional Airport.

Solo Cross-Country Flights – Commercial Pilot Applicants

Students training for a Commercial Pilot Certificate are not typically required to fly on an IFR flight plan in actual or simulated conditions as a requirement of any lesson in the Commercial Pilot course. Therefore, filing of an IFR flight plan in order to complete a solo lesson is not authorized. This limitation does not preclude filing an IFR flight plan while airborne if conditions warrant and/or if safety is a factor. Once the aircraft lands, *permission to depart under IFR is required before continuing the flight.* All Commercial students must request permission to file IFR prior to departure from any airport.

Cross-Country Flights Unable to Return for Weather

Students and their CFIs are required to conduct a thorough review and proper planning in order to accomplish a cross-country flight without delay. Per Chapter 10, Weather Information and Analysis, the PIC is responsible for ensuring that this requirement can be met prior to departure. If a flight is thereafter delayed for weather, and the flight crew is unable to return as a result, the student and CFI shall be financially responsible for their own food and/or lodging expenses. Therefore, all students and CFIs should ensure that sufficient funds (i.e. credit card or cash) are available 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 12 of this manual. Conditions established for the routes are:

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

Activity Invoices (Event Ticket & Receipt)

The proper charging and crediting of a student's account depends upon the proper use and completion of the event invoice and receipt. Event invoices shall be used for recording equipment use, payment, and training activity. All account transactions will be initiated at Aviation Operations via the use of the BSC Connect Card system. Deposits or withdrawals from a student's account shall only be transacted at Bridgewater State College's Office of Student Accounts.

Instructions for General Completion:

- Event invoices shall have the appropriate box marked at the top of the form, if applicable (FAA Check Ride, or Other).
- Student Full Name (Last, First, M.I.). For any flight for which a CFI is required to reimburse the College, the CFI shall be listed as the student.
- Student ID # number (Employee # for CFI, if applicable).
- Date of the event.
- Course of enrollment (if applicable).
- Stage number associated with the activity, if applicable.
- Lesson number associated with the activity, if applicable.
- Outcome of the activity, if appropriate (Complete or Incomplete).
- Equipment type used.
- Actual Time-Out (release) and Time-In (return) for the equipment.
- Equipment number (Aircraft N-Number, AATD Number).
- Hobbs meter starting and ending readings, to the nearest 1/10th hour (Aircraft and AATDs).
- For solo event, the authorizing CFI must sign and record his/her Certificate Number in the space provided.
- Elapsed Hobbs time of the Event (Dual or Solo).
- Elapsed Hobbs time of any Flight Briefing given (not less than .5 provided for any student training event).
- Amount of time, in 10^{ths} of an hour, for any Ground training conducted.

- Amount of time, in 10ths of an hour, for any Oral Stage Check conducted.
- Elapsed Hobbs time, in 10ths of an hour, of any FAA Check Flight conducted.
- Legible CFI Signature, Certificate #, and Employee #, in ink.
- Student receiving instruction/flight time must legibly print and sign his/her name in the space provided, in ink.

The payment to be collected from the customer is calculated automatically and debited from his/her Bridgewater State College student account. No funds will be exchanged at Aviation Operations. Students requesting detailed account information should contact Bridgewater State College Office of Student Accounts.

Over Water Operations

Bridgewater State College 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. Flight crews 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.

MEA: Minimum En Route Altitude - lowest published altitude between radio fixes within 4 nautical miles from route centerline that meets obstacle clearance requirements. In many countries, assures acceptable navigational signal coverage.

MOCA: Minimum Obstruction Clearance Altitude – lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments which meet obstacle clearance requirements for the entire route segment.

MSA - Minimum Safe Altitude / Minimum Sector Altitude – Provides obstacle clearance within a 25 NM radius from the NAVAID upon which the MSA is predicated.

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 Flying Environments

Bridgewater State College may operate aircraft in areas of high elevation terminal operations and/or mountainous terrain (e.g. Pittsfield, MA or Laconia, NH). Flight crews should refer to the following guidelines if conducting operations in these types of flying environments:

Crew Briefing

When operating in an adverse environment, crew briefings must be conducted prior to reaching the particular area, be thorough and clear. 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

Contingency planning must precede and continue throughout the flight. Thoroughly review the anticipated route of flight, paying particular attention to Grid MORAs, MEAs, MSAs, MCAs, and potential landing sites (on or off-airport). Read all chart NOTAMs. Develop plans to deal with emergencies such as engine failure or other malfunction when below Grid MORA, or before reaching MEA or MSA on departure. Maintain situational awareness of high terrain at all times. Follow ODPs where available.

Arrival Planning
Plan for the arrival well before reaching the approach area of the destination. Loss of situational awareness when below the Grid MORA can easily occur if the crew is not thoroughly familiar with all approaches and arrivals. Planning must also include missed approach procedures and a review of navigational aids and their operational status. Alternate planning must include weather, routing, fuel, altitude, and how the crew will climb to a safe altitude prior to proceeding to the alternate. The sooner this planning process takes place, the more attention can be devoted to completing a safe and uneventful arrival, approach, and landing.

High Terrain/Density Altitude Operations

Operating at higher elevations during cruise is routine. Performing terminal operations at higher elevations requires extra planning and consideration. Recall that aircraft performance is directly related to the density altitude at which the aircraft is flying. Density altitude is the result of pressure altitude corrected for temperature (and, to a lesser extent, humidity). Increases in temperature and humidity cause the density altitude to be higher than that actual MSL altitude. Performance effects of high density altitude must be considered for all flights.

Airspeed
Although indicated airspeed remains the same for a given weight, the less dense atmosphere requires a higher true airspeed (and therefore extended takeoff roll) during the takeoff. Decreased air density reduces engine thrust and decreased climb capability. On landing, those same higher true airspeeds for takeoff mean higher TAS on landing, resulting in the need for more runway to stop the aircraft. Land at or before the runway aim point markings, and slow down as early as possible.

Maneuvering
Any aircraft maneuvering at high density altitudes is operating closer to its certified and absolute performance capabilities.

Vx results in the greatest altitude attained for a given distance traveled. Regardless of climb-out speed, obstacles or terrain may restrict the aircraft’s maneuvering space. Pilots must therefore be able to safely turn the aircraft within the smallest possible turning radius. Because turn radius is a function of velocity and bank angle, the slower the aircraft flies or the tighter the bank angle, the smaller the space within which it can be turned. Slow turns at high bank angles present an option for very tight turns, but require high levels of pilot proficiency. Remember that at altitude, flaps can be used to operate at slower airspeeds.

CAUTION

Local winds must be accounted for when operating in limited space. Turns into the wind reduce turn radius relative to the terrain. Downwind turns increase the turn radius and quickly reduce or eliminate the amount of maneuvering space available to the aircraft.

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.