

FS Break Mission Competition Submission

Name: Mountain Air Hamburger fly-in

Location: Burnsville, North Carolina

Time of Year: Summer

Aircraft: Any single or multi-engine GA aircraft.

Plot: Navigate to and land at Mountain Air community airstrip (2NC0) in Burnsville, NC.



Possible synopsis: I'm looking for ideas as to how to build a mission around this, but it could go something like...

Mark Stewart has just won the lottery. Not one to waste any time, he's purchased a home at the exclusive Mountain Air fly-in community in Burnsville, NC. Mountain Air is the highest elevation airport on the east coast. He's invited the entire FS Break community over for hamburgers and HE'S cooking... You need to navigate your way to this challenging airstrip from one of the regional GA airports of your choice.

Mountain Air is challenging to land at. Besides being located at the top of a mountain, it's a very short (2,500ft +/-), very narrow (50ft) and usually has challenging wind conditions to deal with. Landing long at this airstrip will result in a less than desirable result.



You can find out more about Mountain Air at the following website:

<http://www.mapilots.org/>

An optional mission extension may go something like as follows: Mark may be a good pilot, but he's a lousy cook. As you touch down, he comes over the radio and tells you that he's run out of beer and chips. He's already contacted his buddy who runs the local FBO nearby and he's standing by with the fresh supplies. Fly over to the airport, pick up the supplies and fly back to the party. Mark relays the VOR info over the radio and you'll have to set up your instruments accordingly. As you near Mountain Air on the return leg, the wind has picked up and there's now a generous cross wind to deal with.

Design Note: For this mission, custom scenery will need to be created (at least for FSX). The standard scenery for 2NC0 is nothing like what exists in real life. The airplane parking areas are also missing as well as other buildings and scenery features.

I've attached the MAPA Pilot's Manual for additional planning and reference purposes.

Reward: A Mark Stewart hamburger of course.





Mountain Air Country Club Pilot's Manual

Version 1.07

Mountain Air Pilots Association

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Educational Committee:

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DISCLAIMER: This manual was prepared by voluntary members of MAPA without any compensation. While we have used our best efforts to make this a valuable informational tool, we are not responsible for any misstatements, errors or omissions in this manual. We make no representations that the advice given herein is accurate or adequate to prepare you to use the runway at Mountain Air. You should not rely on this manual as your sole source of instruction when planning to use the Mountain Air runway and ultimately must rely on your own skills and judgment, considering local weather, your aircraft and other factors.

Introduction

Landing your aircraft at Mountain Air is one of the most satisfying (and convenient!) experiences a pilot can experience. However, mountain flying is substantially different than the usual experience of landing at a conventional "flatland" field. This manual is meant to review the process for landing and take off in the mountain environment – in particular, at Mountain Air. A variety of exceptionally experienced pilots have contributed to this manual. The editor thanks them for their contributions. ***As pilot in command, you are responsible for the operation of your aircraft. These comments are for informational purposes only; please refer to above disclaimer.***

Summary

Runway 32 is the preferred runway for landing and runway 14 is the preferred runway for take off.

- Expect potentially significant changes in wind direction and velocity over the approach end of runway 32.
- A slightly higher approach angle is suggested to compensate for the “burble” at the end of runway 32, which may cause rapid loss of altitude during the last few hundred feet on approach.
- Maintain strict alignment with the centerline! Remember, runway width is only 50 feet, and the existence of hills and trees on either side of the end of runway 32 allows for little deviation from the centerline.
- Be prepared, and never hesitate to execute a go-around if the final approach is destabilized due to any factor.
- Always plan an alternate landing – AVL or TRI – if local weather conditions make landing at Mountain Air difficult or inadvisable.
- Due to the slope of the runway, landing on 14 and departures on 32, are rarely recommended.
- Consider carefully the effects of density altitude on the performance of your aircraft, both for landing and departure. Remember, density altitudes of over 6000 feet are not unusual during summer months!

Flight Planning

Mountain Air Country Club is located approximately 30 nm NNE of Asheville, North Carolina. The runway is located at N 35° 52' 07.4, W 82° 20' 30.5 on the 354 radial from the Sugarloaf (SUG -112.2) VOR at 29 nautical miles DME, and on the 085 radial from the Snowbird (SOT-108.8) VOR at 35 nautical miles DME.

The runway is day-VFR only, is 2875 x 50 feet, and is at 4400 feet MSL. No fuel is available at Mountain Air.



Figure 1. View of MACC approaching from the SW, 5500 MSL.

Asheville Approach is the controlling air space to the south and west of the field on 124.65, while Atlanta Center controls the airspace to the north and east on 125.15. The minimum vectoring altitude for aircraft approaching from the west and south is 7100 feet, while aircraft from the north and east have a minimum vectoring altitude of 8100 feet. Both KAVL and KTRI offer excellent alternate sites for landing, with excellent ILS approaches. Both fields are about one hour's drive from Mountain Air Country Club; rental cars are readily available. Never hesitate to divert to one of these airports if weather conditions at Mountain Air Country Club are not within your limits!

If you are INEXPERIENCED in flying in a mountain environment, please reserve your first landing at Mountain Air with winds less than 10 knots and wind direction within 10 degrees of either side of the runway centerline.

PRIOR TO LANDING AT 2NC0

Pre-flight should include the following:

- Watch the MAPA video for information and a detailed explanation of Landing Procedures for 2NC0.
- Check the MAPA web site at <http://wx.mtnair.org> for current weather data including wind direction and velocity, density altitude, and use the runway cameras to assess visibility and cloud cover. Weather is also available via cell phone at <http://wx.mtnair.org/cellphone.htm>.
- Contact a MAPA pilot. Many pilots are happy to discuss landing and take-off procedures with pilots who are new to 2NC0. There are also some who are willing to fly in with pilots who are new to the airport and/or mountain flying. The editor may be contacted for further information at Cuckler@Charter.net or at 205-936-9119 (cell phone).
- Reference your Pilot Operating Handbook (POH) to familiarize yourself with the appropriate operating procedures for your aircraft for short field landings, short field take-offs, downwind landings, downwind takeoffs, balked landings (“go-arounds”), crosswind landings and airspeed and descent rates for landing.
- Pay extra attention to calculating weight and balance. Remember, density altitudes during summer months may exceed 6000 feet or higher – a careful review of the POH for your aircraft should allow calculation of expected landing distance.
- It is strongly recommended that the pilot practice short-field landings, flight at minimum controllable airspeed and balked landings before attempting to land at 2NC0. Practice slow flight, stalls, and maneuvering and balked landings at 5000 MSL to simulate the landing environment.



Figure 2. View of runway prior to initial turn to downwind leg 5500 MSL.

- Practice downwind take-offs and landings with at least 10 knots of tail wind – the more familiar you are with the procedures, the calmer you will stay under all conditions (consult your POH for the amount of runway your aircraft requires for these types of take-offs and landings, and consider the effect of density altitude and aircraft weight on performance in these conditions).
- Familiarize yourself with procedures for handling wind shear. It is not unusual to encounter wind shear or downdrafts on short final approach to runway 32.
- Pay close attention to wind direction. It is predominantly WNW, which sets up well for landing runway 32. However, winds out of the SSE can create hazardous landing conditions such as wind shear, turbulence, and mountain wave. Many pilots at Mountain Air will not consider landing with SSE winds, and will simply divert to AVL or TRI.
- Look at the sectional for this area to familiarize your self with the terrain, including mountain heights and landmarks. Within 10 NM there are multiple mountains that are 1500 feet or higher than the runway altitude at Mountain Air.

- A recommended ceiling of 2000 feet AGL or higher is suggested prior to landing at Mountain Air on your first fly-in visit.
- Be sure to make the appropriate calculations to account for density altitude for landings, including balked landings, as this will affect the aircraft's performance. Density altitude is also an issue for take-off on warm summer days.

NOTE: Plans to fly in or out of 2NC0 should include contingencies for all types of emergencies, engine failure, and/or loss of power in particular.

The Approach

The CTAF for Mountain Air is 122.725. Conventional transmissions should be made starting at 10 miles out, stating direction of approach and altitude. The Mountain Air Golf Shop monitors this frequency, and can provide traffic advisories and wind conditions (terrain may prevent the Golf Shop from hearing your call, depending on altitude); however, the anemometer and wind direction sensor at the end of runway 14 may not accurately reflect conditions at the end of runway 32! An automated ASOS can be activated by 5 discrete clicks of the microphone button on 122.725.

NOTE: If significant gusting conditions exist, the pilot is strongly encouraged to consider diverting to AVL or TRI.

Radio Position Reports on Mountain Air Unicom 122.725

1. Outside of 5 NM state altitude, bearing and distance from Mountain Air.
2. Approaching downwind
3. Established on downwind
4. Turning onto base including gear down and locked call
5. Turning final
6. Clear of the runway

It is extremely important that you make all position reports.

The call on final and clear of the runway allows the Golf Shop to activate warning lights around the golf course for protection of those on the ground when you about to land and to turn off the lights when you are clear of the runway!

The Mountain Air runway has a 48-foot elevation change from the TDZE of runway 32 to the parking area. The up-sloping runway will be appreciated as you decelerate after touchdown, as your ground speed will be higher than landing at lower altitudes. It is for this reason that landing on runway 32 is highly preferred over landing on runway 14. It is not unusual for wind direction to differ by 180° at opposite ends of the runway! Thus, prior to landing on runway 32 strong winds may result in the pilot sensing a wind direction change or shear on final approach prior to the numbers. A slightly steeper approach is suggested to compensate for the "burble" typically present at the end of the runway.

The pattern altitude for the approach is 5500 feet, with a right base to final on runway 32. On the downwind leg, the end of the runway will be temporarily obscured by the hill on the northeast side of 32. There is a valley 1800 feet below the end of runway 32, with a highway (Rt. 197 or the “Pensacola Highway”) running through it which can serve as a useful visual clue to the turn to base leg. Follow the valley to the west – the Black Mountain range (highest peak Mount Mitchell, 6684’) will be about 5 miles off your left wing. The end of runway 32 will soon come into sight, initially with the wind sock located at the end of the runway. A gentle turn to the final leg and commencement of the descent will be facilitated by the VSL located on the left side of the runway. The VSL will show a flashing white light when above a 3.5° degree glide slope, a steady white light on glide slope, and a steady red light when below glide slope.



Figure 3. Right downwind view of runway 32 from 1 ¼ miles, ~5500 MSL.

The new Mountain Air pilot is encouraged to perform a “low fly-by” at 5000 MSL on the first approach, in order to become familiar with the visual clues and wind conditions over the runway. As the pilot rolls out on final from the right base turn, the “sight picture” is unlike that customarily associated with approaches to conventional air fields. This is due to the sharp drop off at the end of the runway (1800 feet at the end of runway 32), the hills on either side of the approach end, and the up sloping runway. These factors will combine to produce the optical illusion of being too steep an approach path – but a steeper approach is necessary because of the potential for a down draft and/or crosswind at the end of the runway.

If this is your first time at Mountain Air it is suggested that you fly down the runway at an altitude of 5000' MSL to look over the environment and judge wind conditions.

LANDING AT 2NC0

- **Runway 32 is the recommended runway for landings.** Pilots, *especially* pilots new to the airport, are discouraged from landing on Runway 14. SE winds create extra hazards which combined with the downhill slope of Runway 14 can make landings exceptionally difficult.
- Runway 32 is the recommended runway for two main reasons: (1) the uphill slope of the runway extends its functional length, and (2) there are fewer obstructions at the arrival end of the runway.
- **It is best to arrive to land at Mountain Air from the west** as Mount Mitchell is to the south-south-east of Runway 32.
- Arrival Traffic for Runway 32 must fly a **right pattern at 5500 feet MSL**. Trim aircraft for level flight and on speed.
- At the 90 degree position attempt to be at 5000 feet MSL on speed and aircraft trimmed for landing.
- As mentioned in Pre-Flight section, consult your POH with regard to the expected landing distance for the density altitude and aircraft weight. Once you have made the commitment to land and have “made” the runway, you should put the aircraft on the ground as soon as possible. Do not be concerned with making a “pretty” landing or “greasing” it on the runway as that tends to make you high and fast and will result in a float down the runway. There are no style points!
- Focus on flying the proper pattern paying close attention to air speed and descent rates for your particular aircraft. A good rule of thumb is to turn final at approximately 200 feet above touch-down ½ mile on final, power, airspeed, and descent rate should all be stabilized.



- Consider flying a steeper approach to compensate for the “burble” downdraft typically present at the end of the runway.
- Pilots flying in just prior to and at sunset should be cautious as the sun can severely limit visibility when making the turn to base and onto final.

- You should prepare for a Balked Landing until you are positive that the aircraft is stabilized and that you have the runway made. Only at that time do you make the commitment to land!
- If you have not touched down in the first 1000 feet, under no circumstances should you try to land. ***You must Go Around!***



Figure 5. Short final to 32, a little higher than normal to allow for wind shear at the end of the runway. The building to the left of the runway is a good visual marker for the touch down point.

Remember, leave your ego behind. Asheville is only 50 minutes away by car – if it is not safe to land, don't!

NOTE: Remember, Ground Speed, not Air Speed determines runway usage on a Short Field Landing.

Landing “on-the-numbers” is not recommended at Mountain Air – there is not displaced threshold to forgive a short landing!

The VSL will show a flashing white sequence when above the 3.5° glideslope; steady white indicates on glideslope, while steady red indicates below glideslope. Many pilots prefer a slightly higher than normal glideslope to compensate for the expected “burble” or wind shear at the end of the runway

Given the higher groundspeed over the numbers resulting from the altitude and density altitude effects, **touch down before the 2000' marker is essential – execute a go-around if you have not touched down prior to the 2000 foot marker!** Remember, although your airspeed over the numbers will read the same (or perhaps slightly higher) as at your home field, your ground speed at landing will be higher, which will require a little more aggressive braking after touchdown.

NOTE: Do not over apply braking pressure and lock up your brakes. This may result in a blown tire.

Most aircraft will want to use full flaps on landing, in order to minimize ground speed at touchdown. However, on touchdown, raising the flaps as soon as practicable will increase the load on the main gear tires, thus increasing braking efficiency. Consider the Mountain Air landing a short-field technique! The pilot new to Mountain Air is encouraged to practice such techniques at his or her home field; if possible and safe, consider practicing downwind landings and take off to simulate some of the varied wind conditions which may be encountered at Mountain Air.

NOTE: If it is your habit not to touch anything in the cockpit until clear of the runway, do not change your habit pattern at Mountain Air!

Parking

In general, from 8 am to 5 pm someone from the Golf Shop will be available to assist you with tie down in the parking area. Please call Mountain Air Unicom on 122.725 when you are clear of the runway, so that the warning lights can be turned off and golfers can resume their play! Tie-down ropes are provided on the parking ramp. If you wish, you may want to bring a pair of wheel chocks for additional security of your aircraft.

Departure

TAKE-OFFS AT 2NC0

- As mentioned in Pre-Flight section, all take-offs should be conducted under Short-Field Take-Off guidelines. Consult your POH for the effects of weight and density altitude on expected take off roll distance. In addition, consider the effects of a tailwind (if any) on take off roll.
- You are strongly advised to use Runway 14 for Take-Offs for two main reasons: (1) the downhill slope of the runway is of help in achieving proper air speed for rotation, and (2) there are fewer obstructions at the departure end.
- **For piston powered aircraft, remember to lean the mixture to maximum power setting, as the density altitude will significantly affect engine power.**
- Departures from runway 32 must take extreme care to not deviate from the center line of the runway. To the right is aircraft parking and to the left is a large hill – very little margin for error.
- Most departing traffic will fly a left pattern upon departure from runway 32.
- Before taxi, monitor 122.725 for incoming traffic. Five clicks of the microphone button (approximately 1 second intervals) will activate the ASOS system for barometric pressure, wind, and temperature conditions. Call Mountain Air Unicom on 122.725 for traffic advisories, and announce intentions when taking the active runway for departure.
- Call Mountain Air Unicom declaring you are taking off from Mountain Air and which runway you are departing.
- **Emergency Landings:**
 - Departures from runway 14. In the valley, there is the Pensacola Road as well as some fields that may be suitable in an emergency. **Be aware of power lines crossing the road.**
 - Departures from runway 32: Straight ahead and slightly to the south there are tobacco fields and rural roads that may be used in an emergency.

Useful Phone Numbers

Mountain Air Golf Shop: 828-682-4600

The Golf Shop Staff can offer observations regarding visibility and wind conditions. Arriving pilots are requested to inform the Golf Shop of expected arrival time, and first time pilots should provide the landing authorization number.

AVL Tower: 828-684-7259

The Asheville Tower is open from 6:30 am until 11 pm daily. Tower controllers are extremely helpful with regard to local weather and information on the arrival of aircraft into Mountain Air.

Contributors to this Manual

The editor would like to thank the contributors and pilots at Mountain Air for their helpful input and suggestions to this manual. The following are gratefully acknowledged:

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