Flying Mt. Washington Area Wave from Gorham, NH

Version 5.3, September, 2005 – copyright by John F. Good

DISCLAIMER

Wave flying is dangerous – one of the more dangerous activities that humans voluntarily engage in. With experience and care, the risks can be lowered, but not eliminated. Some aspects of safety in wave and mountain flying are presented here, but this is far from a complete discussion, and some of this material is not aimed at beginners. Pilots should strive to develop the judgment that will keep them safe, understanding that mountains such as these regularly present conditions in which even excellent aircraft and skilled pilots cannot safely fly.

The Mt. Washington area in northern New Hampshire is famous for wave flying. In 1938, Lewin Barringer made the first U.S. wave flight in this area, and there have been many gold and diamond climbs since then. Over the years, glider pilots have flown in Mt. Washington area wave from several sites including Glen and North Conway in New Hampshire, and Fryeburg, Maine. Currently, the best is Gorham, New Hampshire.

THE AIRFIELD

The Gorham airstrip (see Appendix A) is located at the western edge of the village of Gorham, New Hampshire, about 10 miles north of the summit of Mt. Washington, at an elevation of 835'. It consists of a single grass strip, oriented roughly east-west. There is limited space on the ground for aircraft – substantially less than at most airfields at which gliders fly. There is no taxiway and opportunities to roll clear of the runway are limited. Care and cooperation will be required of all pilots.

There is little routine activity at the airfield – no gliders and few powered aircraft. No telephone or electrical services are available. There is some cellphone coverage at the field.

The only area suitable for parking and staging any significant number of gliders is at the east end of the field, and even here space is limited. In typical weather, most launches will be to the west, for which staging is easy – the launch point is handy to the parking area. Launches to the east are a problem: gliders must be moved to the far end of the runway where the area available for staging is small.

Fields to deal with rope breaks and other problems early in the tow are very limited. Off the west end of the runway is a cut in the trees next to Route 2 that is home to a runaway truck ramp. This is an unattractive option (it's narrow, and metal posts pretty well

guarantee wing damage), but about the only one available to a glider west of the field that isn't high enough to return to the airstrip. To the east, a golf course offers better possibilities, but it is far enough away that it might not be reachable from a low-altitude emergency.

Due to rising terrain south of the airfield, all patterns should be flown north of the field. The narrow airstrip makes crowding a potential problem when even a few aircraft are operating. The opportunities to roll a glider clear of the runway are limited, so it's easy for the runway to become temporarily blocked and unusable. Because of trees, airborne gliders have trouble seeing the full runway and so may not be aware it's blocked. Considerable care will be needed. Glider pilots landing to the west should land as short as is safely possible so they can make use of the rollout area north of the first half of the runway. Reasonable space is available in the area to the right of the runway, as far west as the three hangars. Beyond that point there is no area in which to roll clear except at the west end of the runway. Pilots should plan their rollout well in advance, making every effort to leave the runway clear. If this proves impossible, the glider's tail should be quickly pushed into the grass, which will leave just enough room for another aircraft to use the runway.

Helpers on the ground will need to be alert and active to assist in towing gliders clear. All involved should be aware of traffic and the need to get the runway clear to make room for incoming aircraft. Arriving pilots should call on 123.3 and be sure to have enough altitude that they can check to see that the runway is clear and delay their landing as necessary.

It should also be noted that strong and gusty winds could be a real problem. There is plenty of rotor-generating terrain in many directions, and great care may be needed as conditions get strong. It may at times be necessary to restrict flying to experienced pilots only, or to shut down flying operations altogether.

TERRAIN

An area map (Appendix C) shows that Mt. Washington is not a lone peak but in fact the highest point on an impressive mountain ridge known as the Presidential Range that includes numerous summits, many named after U.S. Presidents. From south to north these include Eisenhower (4725'), Washington (6288'), Jefferson (5712'), Adams (5774') and Madison (5367'). It's useful to think of this as a ridge, and to understand the effect this has on glider flying in this area.

The Gorham airstrip lies at the north (technically, north-northeast) end of the Presidential ridge. The east-west airstrip is bordered by trees, so it is not easily seen unless you are aligned with the runway. All pilots should learn to recognize Pine Mountain (2375'), a hill with antennas 2 miles south of the field. Though less conspicuous than many nearby peaks, it is easily spotted and shows the location of this often-hidden airstrip. Mt. Hayes (2555'), 2.5 miles northeast of the field, sometimes provides useful "house" thermals.

The Crescent Range is a ridge about 5 miles west of Gorham whose peaks barely reach 3000', but which can generate interesting and useful low-altitude wave in a northwest wind.

East of the Presidential ridge is a lower north-south ridge known as the Moriah-Carter (or Wildcat) ridge. From south to north the significant peaks are Wildcat (4422' – home of the Wildcat ski area), Carter Dome (4780'), South, Middle & North Carter, Mt. Moriah, and Middle Moriah (3755'). This ridge is important because it often represents the best path from low altitudes to the Mt. Washington wave, and the best route back to Gorham. Pilots should be familiar with it and the names of its landmarks. They should also contemplate the possibility of a glide from the north end of this ridge back to the airstrip at Gorham.

North of Gorham is the town of Berlin, home to a large (and occasionally malodorous) paper mill. North of that is the village of Milan and the Berlin airport. The Androscoggin river flows south past Berlin to Gorham, then turns east toward Maine. It is visible at a long distance from most altitudes. It includes a dammed-up lake bisected by a railroad causeway about 4 miles east of Gorham – a conspicuous feature visible for many miles.

Route 2 is a major east-west road that passes through Gorham. Route 16 runs south from Berlin through Gorham, where it joins Route 2 for about two miles. It then heads south in the valley between the Presidential ridge and the Moriah-Carter ridge, through Pinkham Notch (near the Wildcat ski area), past Jackson to the village of Glen (about 12 miles south-southeast of the summit), where it joins Route 302. Another 5 miles south is the town of North Conway, formerly home to many Mt. Washington wave camps and now a shopping mecca.

From the village of Glen, Route 302 heads generally northwest. It passes south and west of the Presidential ridge, past Attitash ski area, Crawford Notch, the Bretton Woods golf course and ski area (east and west of the road, respectively), and on to the village of Twin Mountain.

LANDABILITY

This area has limited landability for gliders. Indeed, to a first approximation, there is only one acceptable landing place: Gorham airstrip. On many flights before you contact wave you'll be flying in the area of the Wildcat ridge; while doing so you must maintain the option of a safe glide home to Gorham. Be sure you know how to recognize the location of the Gorham airfield from the local terrain clues (see above) – you'll rarely be able to spot it.

If you're west of the Mt. Washington ridge, Twin Mountain and Whitefield (also known as Mt. Washington Regional) airports offer paved runways within reach of a medium-performance glider. A little higher and Franconia comes within range. (But in wave

conditions beware of making the kinds of assumptions about final glides that you'd use in thermal condition.) About 6 miles north of Gorham is the town of Berlin; the Berlin airport is about 7 miles north of that.

Airports to the east could possibly be significant: Pilots should be aware of Fryeburg (26 miles southeast of the summit, also known as Eastern Slopes) and Bethel (27 miles east-northeast of the summit, also known as Colonel Dyke) in Maine. Either of these might supply a safe haven to a glider caught "on top" – high in the wave with cloud forming below. (Wise pilots will take great care to avoid this trap.)

If airfields are limited, off-field landing possibilities are even more so. There is a golf course in the town of Gorham (about 1.5 miles east of the airstrip) that could work in an emergency. There is a field behind a house with a red barn about 2 miles west of the airfield and just south of Route 2 that in some years has looked more or less landable. Roads are worthless – the few that are anything like wide enough to land on have enough traffic to make them thoroughly unsafe.

There are two interesting possibilities along Route 16, just east of Mt. Washington. The first is the parking lot at the Wildcat ski area, and the other is a grassy area just south of the base of the Mt. Washington auto road and just west of the Peabody River. Each of these could be marginally landable under favorable conditions. To have any reasonable hope of a safe landing it would be necessary for a pilot to have inspected these areas on the ground (an interesting drive on a non-flying day). Most pilots who've done so have probably resolved to stay within safe gliding range of Gorham.

South of Mt. Washington, there is a golf course just east of Route 16 in Jackson, and a reasonably large field just southwest of the intersection of Routes 16 and 302 near the village of Glen. The next landable area to the south is the North Conway valley (around 16 miles from the summit), which has some good agricultural fields. The site of the old North Conway airport is not landable, though an adjacent golf driving range might be (it would require inspection first).

West of Mt. Washington lies the huge Mt. Washington Hotel and the Bretton Woods golf course. This golf course is not hospitable to gliders (too much rolling terrain) though a practice hole lying just north of the entrance road might work (again, prior inspection mandatory). Prudent pilots flying west or northwest of the mountain will keep Gorham, Twin Mountain or Whitefield airport within range.

WEATHER

Classic wave conditions at Mt. Washington involve the passage of a cold front and strong northwesterly winds that increase with altitude, perhaps exceeding 60 knots at 18,000'. Yet the area is also notable for good to excellent wave lift in conditions rather different from this. There have been flights to over 25,000' from Gorham on warm days with surface winds of 5 knots.

The Presidential ridge can be a good wave producer any time the summit wind velocity exceeds 12 knots and the direction is anything between south-southwest and north. Other terrain features can produce wave in these and other wind conditions. Wave can be reinforced when terrain features aligned with the wind are separated by an integral number of wavelengths. The terrain is complex and the wave can be too – probably only the basics are understood.

Wave can vary greatly in location and strength, but there's little question that the most reliable spot is near The Horn: the northernmost loop in the Mt. Washington auto road, just south of the Great Gulf Wilderness. This seems to be the case for many different wind directions.

There is a famous weather observatory at the summit of Mt. Washington, a place that claims to have "the worst weather in the world." This claim may be questionable, but there's no doubt that it's a windy spot, which glider pilots seeking wave tend to appreciate. It's helpful to have reports of conditions at the peak, but you should understand how to interpret them. There is a pronounced "venturi" effect that causes the wind at the peak to be higher than the general movement of the airmass. Pilots have struggled to ridge-soar the western face of the Presidential ridge after hearing reports of summit winds above 20 knots.

It should be obvious that the wind can be an enemy as well as an ally. Summit winds above 40 knots (sometime well above) are common and have produced rates of climb above 25 knots, sometimes for many thousands of feet (though 8 to 10 knots is more typical of the best wave lift on a good day). But when strong winds reach lower altitudes (as they often can), flying becomes treacherous. Rotor is possible anywhere below the altitude of upwind terrain, and it can be severe. Tales of broken canopies are common – you'll appreciate a 5-point harness that is really tight (and perhaps a piece of foam in your hat as well), especially at low altitudes. Gorham airfield can be a treacherous place to fly in strong wind (and, as previously noted, there are few to no landing alternates).

CLOUDS

Almost every discussion of wave flying mentions lenticular clouds. These are indeed fascinating – they represent a layer of relatively moist air that has been lifted and thus cooled by the wave so that its dewpoint is reached. They are continually forming at their upwind edge and dissipating at their downwind edge (where the air is descending and thus re-warming).

All lenticular clouds are caused by wave, but many of them are associated with weak, high wave unusable by glider pilots. And most usable wave (including plenty of strong wave) occurs without lenticular clouds. So lenticulars are not a particularly reliable guide. The exception is when they are seen at moderate to low altitudes, and especially when they are stacked.

Cumulus clouds provide more common and less obvious clues to wave. They tend to be "controlled" by the wave above them – their formation will be enhanced under the wave crests and suppressed under the wave troughs. Cumulus clouds lined up across the wind are a clue. When they are constantly forming in one fixed spot that correlates with upwind terrain you have a stronger clue. Rotor cumulus (fractured, shredded, and occasionally swirling cu of short duration) are another indication.

Occasionally, wave exists with a more-or-less solid layer of clouds at lower altitudes (not uncommonly, lower than the highest peaks). The cloud layer will be broken by "wave windows" – clear areas representing the wave troughs. Lift will be found at the downwind edges of these windows. These windows can be reliable indication of low-level wave and where to find it.

But they are treacherous: they can close with little warning, leaving a pilot trapped in sunny conditions high above, with no safe way down. Any time the lower cloud cover is more than about 75%, pilots need to alert for signs that the wave window below them might close. Sometimes "fingers" of cloud start to appear in the window. The window may shrink in length and width. Windows visible well upwind may begin to close, warning of the arrival of moister air. Great care and attention are called for, especially since it can take a long time to descend through a closing wave window.

The Mt. Washington area has a feature that pilots should be aware of in conditions where a wave window might close. To the east (i.e. downwind), terrain is lower and much flatter. It is common that the skies over Maine are much less overcast than those in the mountains of New Hampshire. A pilot caught "on top" may find an escape route to the east. Bethel and Fryeburg airports are each more than 25 miles from the summit, yet with a strong tailwind they should be within reach from even moderate wave altitudes. But your first defense is much simpler: don't get caught on top.

WAVE – AND HOW TO FIND IT

Experienced wave pilots know that the wave can be fickle and changeable. Almost anything you say about it can be contradicted by the experience of your next flight. Nevertheless, some useful generalizations are possible.

As previously noted, wave generated by the Presidential ridge is possible any time there is some west in the wind. The minimum wind velocity for usable wave can be surprisingly low – occasionally under 15 knots at the summit. This is rare – more typically, good wave conditions have wind velocities above 25 knots (and velocities far above this are not common). Wind velocity that increases with altitude is always a good sign (in a sense, the higher wave forms on the lower one).

There are several ways to enter the Mt. Washington wave. The simplest is a direct tow. On a day with little thermal activity and especially in a lower-performance glider, this

may be the only way to the wave. The necessary tow altitude may be less than you'd suspect. In many conditions, wave is found well below the peak of Mt. Washington (6288') – sometimes below 5000'. The first place to look is near The Horn. Once one glider (with a radio) has found the wave, it's often easy for others.

There are drawbacks to towing directly into the wave: Tows are long – fewer launches are possible. Tows can be rough – the short route to the wave passes near or through the most likely place to find rotor. A pilot who is towed into the wave has little idea about the lower-altitude soaring conditions, and so is likely to be unsure about what to do if he happens to fall out of the wave.

High tows are not essential – there are routes into the wave from lower altitudes. On any day with even moderate thermal activity, the best is often along the Moriah-Carter ridge. A 3000' tow gives enough altitude to reach this and ridge-soar to the top of its north end. On most wave days there should be wind sufficient to make this ridge work. But caution may be needed – in moderate to strong wave conditions, this ridge can be influenced by rotor and wave sink, and may be much less reliable than consideration of the wind alone suggests.

Once established on the Moriah-Carter ridge, the idea is to work south along it to a point downwind of the suspected best wave location (e.g. The Horn), looking for as much height as possible in any thermals encountered. If cumulus clouds are present, they will give clues to the location of thermal and wave lift (their upwind edge is generally the place). At the best altitude you can reach, punch out west – you're hoping for an upwind lift street and, of course, any sign of wave. Conserve altitude – even a few feet can matter here. If you find the very smooth air characteristic of wave lift, work it carefully – a sustained weak climb is preferable to searching for something better, at least until you have 1000' of wave climb in hand. If you fail to contact the wave and lose altitude, head back to the ridge with enough altitude that you can find another thermal and try again.

If there are wave clues in the cumulus clouds, a crosswind route may be indicated. It's obviously better to follow a wave-enhanced line of cumulus from a point where it intersects the Moriah-Carter ridge than to try to climb from a stretch of the ridge that the clouds are saying may be suppressed by wave sink. With attention and some practice, the clouds yield important clues.

A less reliable and more spectacular route involves a tow to the west (i.e. upwind) side of the Presidential ridge. Tow to a comfortable altitude. (This will depend on conditions and experience – if you're feeling particularly bold, would like a good low point on your barogram, and feel there is some chance of help from thermals, release at Pine Mountain.) You'll have to do a lot of ridge soaring to reach the top, and it's a treacherous ridge: many bowls and spurs. As you get higher, things get better – wind velocity tends to increase and the mountain has a better shape. Low-altitude ridge soaring here is only for *very* experienced ridge pilots – and few of them will be comfortable.

Once you've reached the top, breathe a sigh of relief and gain as much altitude as possible in ridge lift. Do some sightseeing along the ridge top (Check out the Cog Railway train as it spews out an amazing amount of smoke and steam on its steep climb to the summit.) Grab a thermal if you can (they may be too shredded to be of use), but don't get blown over the back. Make your best guess as to where on the downwind side of the ridge the wave will be found (again, it's likely to be near The Horn). When you're upwind of your chosen target at a safe altitude above the ridge, take a deep breath, tighten your belts, and head downwind. Don't fly too fast – you're going to hit sink but also strong turbulence, so you need to stay below maneuvering speed.

If luck is with you, you'll still have your teeth and have lost only about 500' when you hit the wave. You'll need to react quickly to any sign of smooth lift – flying with a strong tailwind, you're covering ground rapidly. Turn into the wind and climb in the wave. If you miss the wave, you're headed to the right place – the Moriah-Carter ridge. Once there, follow the upwind wave entry scheme described above.

It should not be necessary to add that entering the wave from upwind is the least safe and most difficult of the three methods described here. It's clearly not for beginners, and probably not for intermediate pilots, especially on a strong day. Use good judgment.

Once you have connected with wave and have climbed enough that you have some reserve height, it's a good habit to explore. Try penetrating forward or drifting back to see where the best lift is. Lateral excursions are also useful. At times the wave is broad and forgiving; other times it can vary sharply over a short distance – a well-positioned glider may see twice the climb rate of a nearby one whose pilot has not taken the trouble to explore a bit.

SAFETY IN MOUNTAINS & WAVE

As these are the subjects of many books, only a few points are presented here.

As with all glider flying, the primary rule is to have a route to safety at all times. This is less easy and requires more work of the pilot in mountainous terrain. Wind and weather compound the problem. Things can go wrong quickly.

We've already seen that the only good landing place anywhere near Gorham is the Gorham airstrip. Know how to get there from any point during your flight (or have another airport "in your pocket"). The best route back to Gorham is often along the Moriah-Carter ridge. When in doubt, head for this ridge and work your way north along it. From the northernmost high peak (Middle Moriah) it's just over 5 miles to the airfield, and you should have over 2500' in hand – a 10:1 glide. If everything goes against you, you may still be able to make a safe landing at the golf course east of the airfield.

From Gorham, you'll generally be attempting to contact the primary Mt. Washington wave. Once you have climbed in it, many others are possible. It can be rewarding to

explore the area, and rather little is known about the full White Mountain wave system (which is obviously complex and varies from day to day and even hour to hour).

If you choose to explore, keep several rules in mind. You must have a safe place to land within reach at all times. As we've seen, this usually means an airfield. Understand that "within reach" is hard to define in wave conditions. Glide computers have thermal flying in mind, where extended areas of strong sink (say, 10+ knots) are all but impossible; in mountain wave conditions, these are common. You must be very aware of likely conditions along your route (wind, terrain and clouds provide the clues), and much more conservative than in thermal conditions. Your computer's calculations are all but worthless. A standard mountain-flying rule of thumb is to use half your glider's best L/D as an estimate of safe glide-home performance. This is more reliable than what a typical glide computer will offer, but even this calculation can quickly be confounded by wave sink and strong headwinds.

Wave is associated with moderate to strong winds. When you fly downwind at any airspeed, you cover ground quickly – it's easy to fly further than you meant to, especially at high altitudes where your sense of distance may not be accurate. When you fly upwind, progress is always slow and requires a surprising amount of altitude – even when no strong sink is encountered. If you are trying to move between wave cycles, especially upwind – for example, trying to penetrate from a secondary to a primary wave – you should climb high in the strong part of the wave and then move crosswind before heading down- or upwind. The idea is to seek out strong parts of the wave for your climbs (which nearly everyone does) and weak parts for your transitions through sink (which surprisingly few pilots think of doing).

Another point to bear in mind, especially during upwind transitions, is cloud clearance. Floating thousands of feet above the clouds, it's easy to forget that there are bands of sink above them. Your usual judgment as to how much altitude you need to safely skim over the top of a cloud into the wave window upwind of it will not work – it's easy for a careless pilot to find himself sinking into the cloud. Another way to get caught is by flying where cumulus clouds are forming not far beneath you. These can occasionally build quickly, both vertically and upwind of you; in either case, they can engulf you with little warning. Clouds are dynamic and few pilots have much experience flying above them.

Flying in cloud can be big trouble: without a horizon reference, you'll be able to maintain controlled flight for only a short time. One possible result is that the glider enters a spiral dive, the pilot opens the spoilers, and the wings fail. *You must stay out of clouds*.

Though you should resolve never to put yourself in a situation where you might need it, all pilots should probably investigate their glider's benign spiral mode. In clear conditions with plenty of altitude, trim your glider so it flies hands-free about 50% faster than its straight-and-level stall speed. Fully open the divebrakes and take your hands and feet off all controls. Many gliders will descend at about 800-1000 fpm while remaining

under reasonable control indefinitely. Once checked, this can be the best way to descend if you are caught in cloud.

October days are short. It's easy to stay aloft later than you should. High in the wave you may not notice that the sun is getting low and the ground dark. When you decide it's time to land you may have 30-40 minutes of flying left if you wish to use a reasonable descent rate (rapid descents may be okay in metal ships, but are hard on composite finishes). This can mean landing near dark – not a good idea. And after an hour or two of peaceful wave flying, it's easy to forget the struggle with rotor and turbulence that awaits you near the ground. Prepare yourself.

If you find that a rapid descent is needed, the safest way to do one is often to leave the wave lift and seek out the wave sink. The air is smooth there, even if it's descending rapidly.

GPS navigation guidance is useful, and most pilots have it. But beware of over-dependence on it in the mountains. Unless you are fully comfortable with visual navigation, your GPS receiver can be a treacherous instrument, possibly leading you into places you can't easily get yourself out of. In particular, you should always be able to find your way to a safe landing without any help from any instrument, and you must not use your GPS as a rationalization for getting caught on top: "Well, I can't see the ground any more, but my GPS tells me exactly where I am, so everything's fine." Remember that the cold conditions typical of wave flights are hard on batteries, so GPS failures are more common than during other types of flying.

It shouldn't really be necessary to point out that in mountainous terrain, altimeters should be set to field elevation before takeoff, so that all reported altitudes are MSL. It makes very little sense to report an altitude as AGL, when the altitude of the ground you are over bears no relationship to the altitude of the field from which you launched hours earlier. There is also the point that gliders from other airfields occasionally fly near Mt. Washington.

OXYGEN

It is not the purpose of this document to present a course in high-altitude physiology. All pilots who come to fly in the Mt. Washington wave should already understand the importance of supplemental oxygen and how to use it. A brief summary should suffice here.

FARs require oxygen on all flights above 14,000'. This is a modest altitude on at good day at Mt. Washington, so it should be an unusual flight for which oxygen is not aboard. Healthy and fit non-smokers typically show few problems at altitudes below 15,000', so there is some temptation to regard the regulations as overly conservative. But any level of exertion or stress will cause a pilot used to near-sea-level altitudes to show significant symptoms of anoxia. Don't cut corners.

Glider oxygen systems often employ a nasal canula, whose use is limited to altitudes below 18,000'. Even with an oxygen mask, few glider oxygen systems are suitable above 25,000' – an altitude it's often possible to exceed in the Mt. Washington wave.

Oxygen fills will be available on the airfield. Oxygen is not expensive, and it's foolish to try to use it in a miserly way. If you believe there is any reasonable chance of exceeding 12,000', you should have your oxygen system in operation by 10,000', and be carrying enough oxygen that you feel no need to conserve. While descending, you should probably continue on oxygen until below 10,000'.

CLOTHING

During October in Gorham, any temperature between about 15 and 85 degrees F is possible on the ground. High in the wave, it will be cold – possibly well below zero. It can be challenging to dress for these extremes. The familiar principle of clothing in layers that can easily be donned or removed (which may call for practice in a tight cockpit) works well.

The single most versatile piece of clothing is a warm winter hat. The best kind covers the ears as well as the head. It is small and easily stowed when not in use, yet it makes more difference to heat loss than any other item can (as much as half of an uncovered pilot's heat losses are from his head). Second in value is warm footgear – but make sure it's not so bulky that it restricts movement of the rudder pedals.

Even in late Fall, the sun at altitude is always bright – don't forget sunglasses.

THE MT. WASHINGTON GLIDER AREA

As all pilots should know, FARs prohibit flight in Class A airspace (above Flight Level 180 – 18,000') without an ATC clearance. Such clearances normally require that the pilot and the aircraft be "instrument rated and equipped," which effectively excludes gliders. By prior arrangement, it is possible to get permission to fly by Visual Flight Rules above FL 180.

A Letter of Agreement has been obtained for glider flying near Mt. Washington (see Appendix B). It represents much work; violations of its requirements would probably lead to its withdrawal. The essential points are:

- All pilots must read, understand and comply with the Letter of Agreement.
- Other than altitude restrictions, all requirements of VFR flight remain in force, including rules governing cloud clearance and visual separation from other aircraft.
- You must not be above FL 180 unless:
  - you know the airspace is open, when it closes, and the maximum altitude allowed

- you remain within the horizontal limits of the Mt. Washington Glider Area and below the maximum altitude
- you are monitoring 123.3 Mhz

- You must descend below FL 180:
- before exiting the horizontal limits of the Mt. Washington Glider Area
- by the agreed-on closing time each day
- if you hear on 123.3 that a recall has been issued
- if it has been more than 30 minutes since you last heard a confirmation that the airspace remains open

The boundaries of the Mt. Washington Glider Area defined in the Letter of Agreement correspond roughly to the following visual points (clockwise from Gorham):

- Gorham airfield
- Androscoggin River railroad causeway
- The intersection of Routes 16 and 302
- The Mt. Washington Cog Railway base station
- Gorham airfield

The Mt. Washington Glider Area is often informally referred to as the "wave window". As this term is easily confused with the name of the clear area in a cloud layer generated by a wave, it should not be used this way. The term “airspace waiver” has been used in the past. It turns out that this is not the term that the FAA uses, and so to avoid confusion, glider pilots should not, either. A better term is “Mt. Washington Glider Area”, or simply "the airspace".

Beginning in 2005, this Letter of Agreement does not expire – it is in effect permanently. This is in part a reflection of the FAA’s confidence in Mt. Washington glider pilots, based on the experience of the past seven years. “Permanent” should not be understood to mean that violations of its provisions will not have serious consequences.

PILOT FAMILIARIZATION

Here are some suggestions for pilots new to this area:

1. Read this briefing and study a map. Learn the local landmarks, especially:
   - Pine Mountain
   - Androscoggin River (and its railroad causeway)
   - Mt. Washington
   - Mt. Jefferson, Mt. Adams & Mt. Madison
   - The Horn (loop in Mt. Washington auto road)
   - Wildcat ski area
   - Mt. Moriah
   - Routes 2, 16 and 302
   - Gorham golf course

- Glen, NH
- Attitash ski area
- Mt. Washington Hotel

2. Walk the airfield to learn its exact layout, and especially the places where a glider can (and can't) safely roll clear of the runway.
3. Learn the airspace procedures and the boundaries of the Mt. Washington Glider Area.
4. Take a familiarization flight:
   - Note how the airstrip is not visible from low (or even moderate) altitudes when you are not aligned with the runway.
   - Learn to recognize Pine Mountain, as this landmark shows the location of the airstrip from a long way off.
   - Note how the Androscoggin River is visible from a long distance, especially the lake and railroad causeway east of the airfield.
   - Learn the general appearance and features of the Presidential ridge and the Moriah-Carter (Wildcat) ridge.
5. Understand some common problems for glider pilots flying at Gorham:
   - Failure to fully plan the landing, leading to failure to roll clear of the runway, and thus a runway that's blocked for an unnecessary time.
   - Failure to plan for a landing no later than 17:30, resulting in a pattern flown with insufficient light for full safety.
   - Failure to appreciate the possibilities for turbulence, resulting in loose items in the cockpit and cracked/broken canopies.
6. Plan some details of your wave flight:
   - Wear appropriate clothing.
   - Have more than enough oxygen on board for the flight you hope to accomplish.
   - Set your altimeter for a field elevation of 835', so your altitude reports will be referenced to sea level.
   - Keep your harness really tight at low altitudes. Avoid loose items (e.g. cameras) in the cockpit.
   - Figure on touching down by 17:30 local time. Start your descent early enough that no extraordinary flying is needed to return in time.
   - When inbound for landing, call on 123.3 when several minutes out: "Xray Yankee Zulu will be landing Gorham in about 5 minutes." Arrive at Gorham with enough height (at least 1000') to allow you to check that the runway is clear and to sequence your landing with other arriving gliders. Don't assume that all radios are working.
   - Fly all patterns north of the Gorham airfield. This means a right-hand pattern when landing to the west.
   - On final, plan your touchdown so that you can roll clear of the runway, leaving it open for others.

ADDITIONAL INFORMATION

Interesting websites

Mt. Washington: www.mountwashington.com
Info about the summit park, the weather observatory, and the auto road.

Mt. Washington Observatory: www.mountwashington.org
Info about current and recent weather.

Mt. Washington Auto Road: www.mt-washington.com
Info about the auto road and the Great Glen trails center.

Mt. Washington Cog Railway: www.cog-railway.com
Schedule, prices and many interesting facts. (Check out the "Devil's shingle.")

Mt. Washington hotel: www.mtwashington.com
Just the place for pilots seeking luxury accommodations.

Driving directions:

From the southeast (e.g. Boston) the best choice is usually I-93 north through Franconia Notch, then Route 3 north, Route 115 east, Route 2 east to Route 16 in the town of Gorham. From the intersection of Routes 2 and 16, follow Route 16 south about 0.3 mile, turn right at the sign announcing the airport, then left just past the railroad tracks.

Another option is I-93 north, Route 104 east, Route 25 east, then Route 16 north through North Conway to the town of Gorham. This route is somewhat shorter in distance but usually longer in time due to normally heavy traffic in North Conway (an outlet shopping mecca).

From the south or southwest (e.g New York or Albany), the best option is to get to I-91 north, either via I-84 in Hartford or I-90 in Springfield. Follow I-91 north to Route 302 east, then follow Route 302 to Route 3 north, to Route 115 east. From this point, the route matches that described above.

Nearby automated weather sites:

Mt. Washington summit		603-356-0300
Berlin, NH	135.175	603-449-3328
Whitefield, NH	118.525	603-837-2769
Fryeburg, ME	135.775	207-935-2882
Montpelier, VT	132.675	802-229-2037
Morrisville, VT	135.625	802-888-7934

Appendix A – Gorham NH Airport information

ICAO designator: NH05 (some sources also list 2G8)
Elevation: 835’ MSL

Magnetic variation: 17 degrees west
Runway type: Turf
Runway dimensions: 2770’ x 70’
Runway orientation: 12-30
Sectional map: Montreal (New York may also be needed)

No services (water, electricity or phone) are available on the airfield. A porta-potty is put there by the town of Gorham during wave encampments.

The Gorham Water & Sewer department has an interest in the airfield. One of the main town wells is on airport property, which results in a strict rule that fuel for towplanes can be transferred only on the small paved ramp area. The W&S department controls a small parcel of property near the airport entrance; in 2004, they locked the gate there, requiring a slightly longer drive (via the midfield hangars).

Aerial photo of the Gorham airfield

Appendix B – Letter of Agreement

Boston Air Route Traffic Control Center (ARTCC) and Soaring Society of America (SSA) Letter of Agreement

Effective: July 2005
Subject: Mount Washington Glider Area, Glider Operations

1. **Purpose**: This agreement establishes the Mt. Washington Glider Area, communications procedures, and defines responsibility and coordination requirements.
2. **Effective**: Indefinitely.
3. **Scope**: The procedures apply to flights conducted at and above Flight Level 180, within the confines of the Mt. Washington Glider Area, as depicted in Attachment 1.
4. **Responsibilities**: This letter authorizes Soaring Society of America (SSA) - Region 1 to deviate from the requirements of Federal Aviation Regulation 91.135(a), (b) and (c) in order to conduct glider operations within the area specified in Attachment 1, under the conditions in paragraph 5 of this document.
5. **Procedures**:

a. SSA shall:

1. Contact Boston ARTCC at 603-879-6663 at least one hour but not sooner than three hours before planned glider activity to request activation of the glider area and to provide the following information:
   - Activation and termination times
   - Requested flight levels
   - Number of gliders
2. Ensure that the Boston ARTCC is notified if the area is not used as planned, or if it is vacated early.
3. Ensure that all pilots are briefed that, except for deviations authorized in paragraph 4 of this agreement, pilots shall comply with all applicable Federal Aviation Regulations.
4. Ensure pilots become sufficiently familiar with local terrain features that the flight will be conducted within the Mt. Washington Glider Area by visual reference to the ground.
5. Ensure pilots conduct operations in Visual Meteorological Conditions while operation in the Mt. Washington Glider Area.
6. Ensure that pilots operate in the Mt. Washington Glider Area at or below previously coordinated and approved flight levels and only during the time periods approved by Boston ARTCC.
7. Ensure that Boston ARTCC is supplied with a valid telephone number so that communication is available between Boston ARTCC and SSA during the hours of operation.
8. Ensure that air/ground communication exists with all flights utilizing the Mt. Washington Glider Area. In the event a recall of the airspace is required, all aircraft shall exit the area within 20 minutes of notification.

9. Ensure that all pilots are briefed that they are responsible for their own separation from other gliders operating within the Mt. Washington Glider Area.
10. Broadcast every 30 minutes on 123.3 Mhz the status of the glider area. If a pilot does not receive the broadcast, the pilot shall exit the area immediately.
11. Ensure that no student pilot act as Pilot in Command of a glider while in the glider area.
12. Ensure that all pilots are informed of and comply with any restrictions issued by Boston ARTCC.
13. Ensure that the Mt. Washington Glider Area is clear of gliders at the expiration time.
14. Ensure that all pilots utilizing the Mt. Washington Glider Area are aware of all provisions of this agreement.

b. Boston ARTCC shall:

1. Approve or disapprove SSA requests for use of the Mt. Washington Glider Area. If a request is disapproved, Boston ARTCC will attempt to approve an alternate time and/or altitudes.
2. Issue any restrictions necessary.
3. Provide separation of non-participating aircraft from the approved glider area.
4. If recall is required, contact SSA at the telephone number provided in accordance with paragraph 5a7 of this agreement.

6. **Definition**: Where used in this agreement, "shall" indicates the procedure is mandatory.
7. **Airspace**: The following latitudes and longitudes are use to define the boundaries of the Mt. Washington Glider Area:
   44-24.00N 071-12.00W
   44-24.00N 071-07.00W
   44-06.00N 071-10.00W
   44-04.00N 071-12.00W
   44-16.00N 071-23.00W
   44-24.00N 071-12.00W
8. **Attachment**: Depiction of the Mt. Washington Glider Area.
   [for a clearer map, see Appendix C]

Appendix C – Maps

These files contain pertinent maps and images:

`GorhamArea.jpg`

`MtWashArea.jpg`

`MWGA.jpg`

`MtWash3D.jpg`