Alton Bay Ice Runway (B18) – Decision Making on Ice!

FAASTeam Course

Winter Flight Operations on the only Registered Ice Runway in the Contiguous United States.

On the Boston FAASTeam YouTube Channel at:

https://www.youtube.com/channel/UCkC297dCC0AF_6r_zauUi_g

Or

https://www.youtube.com/watch?v=kp3GUirhj5o

NOTE: This is NOT a short course, but it is comprehensive. You should plan up to 2 hours!

Flight Operations at the Alton Bay Ice Runway, Located on Lake Winnipesaukee in New Hampshire. Each winter, a unique airport in New England opens for just a short time. It is a great opportunity to try something new and challenging and experience some terrific winter flying. It also requires good Aeronautical Decision Making - Are you ready for both?

INTRO:

In Alton Bay, in central New Hampshire, there is a unique seaplane base that has a hard surfaced runway for a short time each year allowing it to be used by other than seaplanes. It is a runway that is ice; ice that is part of the frozen Lake Winnipesaukee. Alton Bay ice runway has the only registered ice runway in the contiguous United States!

Alton Bay Ice Runway and Seaplane Base (B18) is a state owned, public-use general aviation airport in the Lakes Region of New Hampshire (NH). It is classified as a Basic Airport within the New Hampshire State Airport System Plan (NHSASP). Located two miles north of Alton, the airport is an

ice runway during the winter and a seaplane base in the summer. During the winter, Runway 01/19 is plowed and marked as approximately 100' wide and 2,600' to 3,000' long. A parallel taxiway and aircraft parking apron are also provided. The Bureau of Aeronautics developed a basic Airport Layout Plan for the airport, which provides a guide each year in placing the runway in the proper location on the ice and ensuring adequate clearances can be maintained for the safety of all users on Alton Bay each winter. The volunteer managers of B18 have recently provided a small warming hut for pilots visiting the area to get warm and learn a little about the community.

There are no based aircraft at B18. Operations over the winter months have grown to about 600+ operations, fluctuating due to weather conditions and availability of the ice runway. As such, a forecast of aviation activity was not developed for this unique airport. As management of the airport has become more proficient, interest in the airport continues to spread within the aviation community and is anticipated to be a popular destination for winter aviators from across the region and beyond. An interest and need for seaplane parking has recently been determined. Discussions about providing parking to transient aircraft are currently ongoing and would make shore access for pilots available year round.

B18 is unique among NH airports as it is an ice runway in the winter and a seaplane base during the summer. Volunteers manage the day-to-day operations of the airport and maintain it through the winter season. The beginning of the winter season varies, but is determined by airport management when the required ice thickness, of at least 12 to 14 inches along its entire length is achieved to support aircraft and snow-removal operations. Markers are used to define the operational surface of the runway. The runway, parallel taxiway, and the aircraft parking apron are plowed throughout the season, providing a clear ice surface for aircraft to operate. Because of its nature, the airport draws pilots from all over New England and beyond who fly to the airport to experience landing on an ice covered lake without the aid of skis. The nearby town offers a number of restaurants and a general store. The pilots flying into B18 provide a welcome economic boost during the normally slow winter months.

As the ice runway is temporary, no permanent facilities are recommended for the airport during the winter season. The markers and wind cone serve the primary needs of the airport to delineate the active runway surface, but are removed when ice conditions deteriorate or March 31st, whichever comes first.

Volunteers and donations fund the entire operation of the airport. No funding is provided by the Bureau of Aeronautics, except for small amount in the hundreds of dollars that comes from the Aircraft Operating Fee returns program.

Review (Suggest also click on Print Friendly Version to open in new Window)

1) A unique airport
    a. The ice runway is unique, and as a result requires exceptional planning and decision making skills.
    b. The airport is constantly changing, due to weather, ice conditions, snow amounts and loads and really too many factors to list.
        i. Length and width of the runway, taxiway and even the ramp change through the season, usually getting shorter, narrower and slicker.
        ii. The runway can change dramatically in just a couple of hours, due to seasonally extreme temperature variations and sun angle.
            1. Each season, there are a few days where it might be 20 degrees Fahrenheit in the morning and 60 degrees by noon. Occasionally there are days that work just the opposite, where wet snow or snow/rain falls and then

temperatures plummet to near zero, freezing everything solid.

iii. The airport typically is only open for 4 – 6 weeks each year, very rarely prior to early January and rarely into late March. The most common "time" that is open is the latter half of January, into February and it is a good season if it stays open into March. No matter the conditions, the airport closes by March 31, even if there is sufficient ice.

1. It may close for snow storms etc., and may even remain closed for a day or two after in order to provide the best conditions for clearing the runway or to provide the best conditions for the runway itself upon clearing.
    a. The airport is not cleared of snow or maintained in the dark, at night. This is for the safety of the ground crew and volunteers, as an event on or through ice in the dark can be deadly.
    b. All aircraft operations are in Day VFR conditions, along with almost all field clearing and maintenance.
    c. Clearing/plowing of the runway is normally done with a fleet of volunteers, at locations all over the airport. This is usually because once the snow is plowed, things will freeze quickly and they need to move quickly. Do not plan on being able to use any portion of the airport during plowing operations. i.e. Prior Permission Required (PPR) operations are not available. Plan to give the

airport operations team time to get it ready for safe operations.

i. In order to establish and plow the runway there needs to be 12 to 14 inches of ice and "black" ice is much stronger. Black ice is more translucent and has less air and impurities. White ice is weaker due to the air mixed in and this is often created when snow and slush is frozen into the ice.

2) <u>An airport by pilots, for pilots.</u>

a. The airport is staffed by volunteers, usually on good weather weekend days.

i. The airport manager or other volunteers may be in the area monitoring via radio and common traffic advisory frequency (CTAF) of 122.8, during weekdays or slow times. They may or may not be able to assist.

b. The runway is plowed and maintained by volunteers that use primarily their own equipment and money.

c. As a result, many pilot organizations and FBO's in the area hold events or other fundraising to help defray the costs and supplement the small monies provided by the state.

d. Although few pilots from the Northeast ever fly into Alton Bay, many have a desire to do it at least once. It takes extra planning and preparation compared to any other flights the pilot has likely ever undertaken.

i. Through the years, various mementos have been available to commemorate flying into and out of the Alton Bay Ice Runway.

These include certificates, buttons or pins, hats or t-shirts, some at no cost, some are at nominal costs in nearby shops.

1. Ask the volunteers or airport management what is available.

3) Location and alternates

a. The B18 airport is located in the most southeast portion of Lake Winnipesaukee, at the southern end of the long bay know as Alton Bay.

i. Lake Winnipesaukee is the largest lake in NH, and is located in the center of the state.

ii. Latitude & Longitude

1. 43.48 degrees N
2. 71.24 degrees W

b. Flying to B18, all pilots should plan on having an alternate, as conditions and availability of parking and use of the runway can change quickly. Probably more quickly than any other airport the pilot has ever flown into.

i. Laconia (KLCI) is probably the most popular and well used alternate, as almost all services are available at 2 FBOs at this paved 5000'+ runway. It is 10nm to the northwest of B18

ii. Nearby, to the north is Moultonborough, a private airport as this is written, but likely soon to open to the public again. Former identifiers for Moultonborough have been NH08 & 5M3

iii. Other nearby GA airports with services are Concord (KCON), Rochester Skyhaven (KDAW) and Sanford Seacoast Regional (KSFM).

4) Hazards, Risk and Safety.

a. The New England FAASTeam supports operations at B18, but emphasizes the need for pilots to recognize the added hazards and risks involved.
    i. The accident/incident rate is significantly greater than other General Aviation (GA) airports in New England – with estimates of at least 10 times greater per 10,000 operations.
b. In discussing how to operate at B18, pilots need know that the FAA discusses Risk Management using various terms:
    i. Hazard – A present condition, event, object or circumstance that could lead to or contribute an unplanned or undesired event, such as an accident or incident. It is a source of danger.
        1. An example at B18 could be recent rain or melting snow and ice that has frozen into very smooth and slick ice.
    ii. Risk – The future impact of a hazard that is not controlled or eliminated. It is the possibility of a loss or injury. The level of risk is measured by the number of people or resources affected (exposure); the extent of possible loss and the likelihood of loss.
        1. An example at B18 is if an entire group of pilots in higher performance single engine airplanes (ex – Mooney, Cirrus or A36s) decided to fly into the ice runway after the hazard of a recent rain refroze to become very slick. The risk would be greater because of the larger number of operations, pilot's possibly "displaying" and the higher performance airplanes with greater landing speeds and longer landing rolls as compared to a smaller, lighter, slower airplane.

iii. Safety - Freedom from those conditions that can cause death, injury, occupational illness, or damage to or loss of equipment or property, or damage to the environment. Note that absolute safety is not possible because complete freedom from all hazardous conditions is not possible. Therefore, safety is a relative term that implies a level of risk that is both perceived and accepted.

    1. In the above example, safety can be improved and risk reduced by multiple methods, some independently, others concurrently. A pilot could choose not to go to B18, they could wait or fly in at lighter weights, or wait for more headwind/less crosswind. Also other entities can impact safety, such as the airport operator could have left some snow/slush on the runway, so that the refreezing ice is rougher and provides more traction than slick ice.

iv. Principles of Risk Management - The goal of risk management is to proactively identify safety-related hazards and mitigate the associated risks. Pilots should consider the following conditions in deciding how much risk they are will to accept.

    1. Accept No Unnecessary Risk
    2. Make Risk Decisions at the Appropriate Level
    3. Accept Risk When Benefits Outweigh the Costs
    4. Integrate Risk Management into Planning at All Levels

v. Risk Management Process - Risk management is a simple process which identifies operational hazards and takes reasonable measures to reduce risk to personnel, equipment, and the mission. During each flight, the pilot makes many

decisions under hazardous conditions. To fly safely, the pilot needs to identify the risk, assess the degree of risk, and determine the best course of action to mitigate the risk. This is what the entire webinar and course for the Alton Bay ice runway is about, to help a pilot operating at vastly different airport to manage the risk, do it safely and have a wonderful experience. The recording and course will emphasize on the 3 steps below. Without going into details on the different methods, processes and tools that may be used to manage risk, the following 3 steps need to always be considered:

1. Identify the Hazard
2. Assess the Risk
3. Mitigate the Risk

c. The FAA 5 P's is one practical application for use in Single-Pilot Resource Management (SRM).The 5 Ps consist of "the Plan, the Plane, the Pilot, the Passengers, and the Programming."
    i. *This approach is how the following presentation is basically oriented, covering each of the 5 P's as a topic area.*
    ii. Each of these areas consists of a set of challenges and opportunities that face a pilot. Each area (P) can substantially increase or decrease the risk of successfully completing the flight based on the pilot's ability to make informed and timely decisions.
        1. The 5 Ps are used to evaluate the pilot's current situation at key decision points during the flight, or when an emergency arises. These decision points include preflight, pretakeoff, hourly or at the midpoint of the

flight, predescent, and just prior to the final approach fix or for visual flight rules (VFR) operations, just prior to entering the traffic pattern.

a. I.e. review the status the 5P's five times in your flight.

Figure 1-9. *The 5P checklist.*

d. Risk Management and Insurance – Although many pilots do not think of it, aircraft insurance is one of the principle ways that pilots mitigate risk, mostly to themselves. All pilots should check with their insurance agent prior to flying to B18, as there is a possibility they may not be covered. It is rare that insurance will not provide some coverage, as Alton Bay is a public hard surface runway, but limits on hull and liability insurance need to be considered. Since there are not maintenance facilities available at B18, what may be a minor "occurrence" and easily repaired at another GA airport, could become very expensive. It is possible for an aircraft to be totaled by an insurance company on what may normally be a minor repair due to the cost of dismantling the aircraft, trucking it over roads along with

escorts for road/highway closures in addition to the costs of the repair. In addition, costs can increase especially late in the season, if it needs to be removed almost immediately or there is volatile material leakage (fuel & oil).

5) Preflight Planning
    a. Preflight planning begins at home, well in advance. Pilots considering flying to B18 should consider the condition and capabilities of themselves and their aircraft. This is the time to become familiar with all available information, as noted in 14 CFR §91.103. However, B18 is a vastly different airport and the information will need to be obtained by not only the regular means, but also by other vastly different means of preflight planning. The information may be insufficient using your normal tools of preflight planning. You will need to go the extra mile in your planning and research.
        i. Because the Alton Bay ice runway is unique, it does not fit well into normal "systems" or channels of information, such as the chart supplement and NOTAMs.
        ii. NOTAMs – Since the airport is dependent on Mother Nature and operates for only a short period of time, NOTAMS are not normally posted until the airport is NOTAMd open and active. Also NOTAMs for the ice runway are NOT posted past after March 31st each year until the ice runway is activated/open in the following year. This is just the opposite of almost every other airport in the United States. i.e. because you do not see it NOTAMd closed, do not assume it is open, it likely is not.

iii. Runway closures and markings – Since there are significant considerations for environmental impact, there are no markings on the surface.

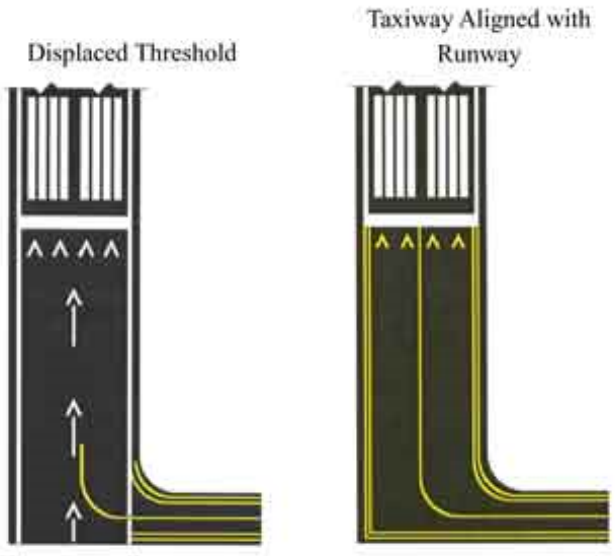
1. The edges and threshold are marked by large yellow cones that are removed at the end of the season and sometimes mid-season for plowing or weather conditions.
2. If the runway is closed, there are no markings. It is by NOTAM and other Preflight Preparation means (Recording). There is no "X" displayed on the runway. There is no electricity or materials readily available that can be deployed & removed quickly, or will not melt and freeze into the runway or create an environmental hazard.
3. There are no centerlines, taxiway line lines or hold short lines on the surfaces. Pilots are required to use their best judgement.
4. Signs – There are not any of the typical airport signs, such as hold short or runway indicators. There may be some signs or traffic cones used, especially in or near the parking area. However, recognize they are on ice, so they could have been moved or blown away by prop wash or the wind. Also, depending on weather conditions or approaching/recent snow, they may have been removed entirely. Again, use your superior "pilot knowledge" to know what is right and safe.

6) The Plan – The Airport

a. The State of New Hampshire provides an assessment and plan for the layout of the runway. GPS has made it much more accurate, but it is not always the same. The runway (taxiway) may bend or twist slightly or it may be shorter or narrower. It typically will get narrower and shorter throughout the season, as snow banks build.
b. Parking is on the south end of the runway. Due to limited space, aircraft are normally parked with wings overlapping, i.e. high wing/lowing/high wing. Aircraft are pushed into place by flight crew and volunteers. Departing aircraft should also be pulled out by flight crew and volunteers prior to starting and taxing. Pilots are very strongly encourage to check with volunteers (in person and/or radio) prior to starting to ensure the public is clear.
    i. CAUTION! – When placing an aircraft into or pulling out of a parking space, extreme care should be given to tail clearances. You do not want to have your tail hit a snow bank or the aircraft next to you.
    ii. You should bring your own chocks and use them. Note, especially if it sunny, they will melt and refreeze into the ice slightly while you are parked. The longer your stay, the more challenging it will be to remove your chocks. Remember, dark colors are more susceptible to melting into the ice than lighter colors.
    iii. Bring your portable tow bar, as it will likely be needed and it is likely that there will not be one available.
c. The threshold for RWY 1, the most commonly used runway, is about 100+ feet north of the “Band Stand”. It is indicated by the three cones in a row on each side of the runway. You will also see the area opens

up from about a 50’ wide taxiway lane, commonly called the “Throat” to about the 100’ wide runway.

d. The threshold is commonly referred to as a “Displaced Threshold”, however it is really a taxi lane leading up to the threshold. A taxiway aligned with the runway. The area of the throat is not intended for, nor should it be used for takeoff or landing. Takeoff power should not be applied until north of the threshold on RWY 1. In the following picture, it would have the runway markings as shown on the right.



e. Runway 19 has added hazards and risks, as the departure end of it is in line with the parking ramp. After some scary events, since late in the season in 2019, landing operations on RWY 19 have been curtailed. If operations will require the use of RWY 19 (Southerly Wind), the airport will be shut down. Runway 19 will not be available, so checking resources in your preflight planning is essential. Also checking the weather forecasts and if there is to be a southerly wind, there is a high likelihood the airport will be closed.

i. Thankfully, a south wind usually means warmer weather, which means a melting runway, so in most circumstances RWY 19 was hardly used.
    1. Note – if there is standing water on the runway, usually due to warmer weather and/or recent rain, the airport will normally be closed.
ii. The State of NH, Aeronautics Division & Fish & Game along with the FAA, are looking to try to develop alternate parking area(s) to mitigate this risk and return RWY 19 to normal operations.

f. Run-ups prior to takeoff can be especially challenging. There may be limited space and pilots need to be especially aware of their prop wash as it can easily push airplanes and equipment around on the ice. **Do not run-up in the ramp area without checking with volunteers!** Pilots should contact the airport volunteers to determine the best place to do a run-up, which is usually near the throat approaching RWY 1. Due to the slickness of ice, a "Seaplane" run-up with the aircraft rolling or sliding, possibly at reduced power, may be required.

7) Preflight Planning – Information Channels; how to find out what you need to know.
    a. Information is available through normal means, but it may be insufficient to make an accurate judgement or decision about your planned flight. Traditional preflight planning resources will have some information about B18, but due constantly changing conditions, it may not be as timely as required.
        i. Be sure to check the Chart Supplement, there are some useful phone numbers along with the typical information. Note – it

does say to contact the airport manager for ice runway conditions.

ii. NOTAMs are issued for the ice runway, but as mentioned before, since B18 is a different airport, NOTAMs are not normally issued until the ice runway is activated and open. Also due to logistics, the NOTAMs may not be as timely as other methods.

1. Also, think about how often does a GA pilot typically get updated NOTAMs enroute; hardly ever. However, this should be a necessary enroute task if you are going to B18.

b. Airport Information "Hotline". There is a recorded message that is updated by the airport manager as required. This is almost daily when the airport is open, and some days it is updated multiple times. This should be checked just before departure.

i. The number is published as the "Airport Manager" number in the Chart Supplement.

1. 603-875-3498

c. Facebook – The Alton Bay Seaplane Base and Ice Runway.

i. In addition to the typical positive stories and photos that you will find on an airport Facebook, this Facebook page has a tremendous amount of preflight information. The posts by the airport manager are especially helpful, as they are usually condition updates with videos or photos, and are uploaded every couple days or so.

d. Other information on the internet.

i. Although we would typically err with some caution to pilots about getting preflight information from “non-standard” sources, the ice runway is different. In your initial preflight planning, days ahead of your planned departure, we would encourage to view various photos and videos of the ice runway on the internet. You may even see a few of the mishaps in the past. What you should be gathering from this is the variations in the conditions, like what the ice looks like after melting, in better colder or warmer conditions and the impact on snow.

1. We would strongly encourage to also view videos of the runway being plowed or cleared. This will provide you tremendous insight.

e. Runway 19 Limitations

i. Limitations imposed on the use of RWY 19 are new and they are not yet published in the Chart Supplement. They are in the update que and may appear before the end of the 2021 season. However, they are posted on the B18 Facebook page by the State of NH.

ii. Once the airport is open, NOTAMs should be issued on the limitations of RWY 19 operations.

f. 2021 – COVID-19 Operations

i. In early 2021, many residents, towns and states are dealing with the implications of keeping the populous safe in the Covid-19 pandemic. As a result, state policies are being followed and you may encounter limitations. This may vary throughout the season, and it will hopefully only be the 2021 season, so the details are not discussed here.

g. Windsock
    i. The color of the windsock, located on the bandstand, is significant. When the ice runway is not “activated” the windsock is a white windsock. When it is “activated”, the airport management changes it to a traditional aviation orange windsock.
        1. Do not assume an orange windsock to mean that the airport is open. It means that the airport manager is “activating” the airport, getting the appropriate runway markings in place and working with the State and Flight Service to open it imminently, if conditions permit.
        2. If it is the end of the season and it has been changed back to white windsock, PLEASE DO NOT ATTEMPT TO LAND! This means that conditions are not conducive to operating on the ice runway, nor are they expected to improve. It is highly likely that all airport related markings will have been removed and the ice is too thin, soft or patchy to operate upon with people and equipment.

8) The Plane
    a. Ski-planes are not required to operate at B18 on the ice runway. It is maintained to be used by airplanes on wheels. If in a ski-plane, wheel penetration skis are usually best or with retracted skis so the wheels are the principal landing gear in use.
        i. Most ski-plane pilots will be able to find themselves able to operate on straight skis, but how much “slickness” there is to the ice will be a major consideration.

1. A “Ski Drag” could be very useful for operations on straight skis.

ii. The airport operator will usually try to flatten some snow banks near the parking area to allow taxi on/off in the area of the ramp. Check ahead of time.

iii. Occasionally, ski-planes have used the ice adjacent to the runway (almost always on the east side and northern portions) for landing or takeoff. However this is at the pilot’s own risk. It is discouraged by the NH Fish & Game department. It also has many hazards: numerous old ice fishing holes and the area is used by ice fishing bob-houses and others. Again – it is strongly suggested that you contact airport management prior to departing your home airport to discuss what may work best for you.

b. Use of radios are strongly encouraged. Even having a hand-held transceiver is beneficial in aircraft that are normally NO RaDiO (NORDO).

i. The current CTAF/Unicom is 122.800 and is monitored by airport management and volunteers. It is likely being monitored even in the middle of the week although the individuals may not be able to provide personal assistance.

ii. Be aware that on the surface, the Unicom frequency is used heavily to coordinate for parking and ground operations

iii. 122.800 is also a widely used CTAF frequency, so at altitude the frequency can be very busy on a pleasant day.

iv. Be aware that volunteers on the ground may not be pilots so "non-aviation" language may occasionally be used in parking/ramp assistance.

c. Takeoff and landing performance is not available in almost all aircraft manuals for the type and runway conditions that are experienced on the Alton Bay Ice Runway. Conditions can change rapidly, with improving or significantly decreasing runway performance.

   i. Other than directional control issues, takeoff performance is usually very good, matching near book numbers when flown appropriately.

      1. It is usually a very low density altitude, almost always below zero/sea level and quite often near -3,000' density altitudes.

   ii. Landing performance is a significant concern due the ice and lack of braking action.

      1. A general recommendation is to easily expect landing roll outs to be 200% or more of book values for a paved runway.
      2. Another recommendation is to practice some landings on a flat paved runway and "measure" your ground roll to a complete stop without using any brakes at all, only aerodynamic braking. Add 50% to this value.
         a. Do not use this value if measured on a grass or gravel runway, as those surfaces can produce significantly more drag than an ice runway.
      3. Recognize that a headwind component will have a significant impact on the length of your landing distance.

4. Don't forget the distance to clear an obstacle also…
    a. You will want to be at or above the height of the windsock (about 12-15') passing the bandstand and also want to cross the power lines near the bridge on the approach end of RWY 1.
    b. It will likely require slightly more than a 3 degree glideslope, closer to a 3.8 degree glideslope. This should be within the capabilities of a pilot that is proficient in short field landing techniques.
    c. If you cross over the bridge area on the approach to RWY 1 at 100' AGL, along with passing the bandstand as mentioned above, this should put you on the correct glideslope to land beyond the runway threshold. The height of a tall pine tree is about 100' and there are a couple each side of the bridge, especially on the east side.

d. Directional control and the requirement to correct for crosswinds and torque effect (See Pilot's Handbook of Aeronautical Knowledge - chap. 5) require significant awareness and practiced skill on the part of the pilot.
    i. Pilots will find torque effect more pronounced as compared to other runway surfaces.
    ii. The aircraft may skid or slide sideways significantly.
        1. This is dependent on pilot skill, runway conditions and wind conditions.

2. Pilots may find that the aircraft will weather-vane into the wind, especially at low to zero speeds when there is little airflow over the rudder.
3. Most pilots recommend a personal minimum of ½ their normal maximum crosswind component, and very few are comfortable with even as much as 10 knots crosswind at B18.

e. Runway Condition Assessment Matrix (RCAM) and braking action reports.
    i. Most small airports, including B18, do not have the equipment or personnel to determine the runway condition through the newer RCAM. However, it is beneficial at other airports and to provide a comparison the conditions at B18.
        1. RCAM is for paved runways only.
        2. The descriptor is for "thirds" of the runway and it is a numerical system from 0 to 6. Zero being like wet ice and 6 being a dry paved runway.
    ii. The condition is usually given in what is known as a Field Condition NOTAM (FICON) and an example is in the webinar and handouts.
        1. So your dry paved runway at home would have a 6/6/6 condition.
        2. B18 is normally a 1/1/1 condition and at best is probably only a 3/3/3. It also can easily be a 0/0/0 in warming, melting weather or with a strong sun when near 32 degrees F.

iii. The actual conditions braking action conditions will rarely be directly reported, as it is an ice runway, which means it is slippery. Also any feedback on conditions from other pilots must consider the circumstances of landing on an ice runway. It is all relative. What may be good braking action at B18 could easily be considered poor at your home airport.

9) The Pilot

a. Because of the uniqueness of an ice runway, B18 can attract or create an "attitude" within the pilot. A pilot needs to wary and plan accordingly. Hazardous attitudes of *Macho, Invulnerability, or even Impulsivity* can sneak up on a pilot. So proper planning, attitude and training/proficiency is essential.

b. The Alton Bay ice runway is the place to use your superior pilot decision making skills to avoid having to use your superior pilot performance skills. But, have those superior pilot performance skills just in case.

c. The first thing a pilot should do is be sure to not go it alone. Proper planning, research and guidance is essential. Your first time flying to B18 should be with someone that has done it before.

i. Many Pilot groups or flying clubs have informal get togethers going to B18, tag along for your first time.

ii. Maybe you know someone who goes there regularly or has been before. Go with them if you can. Ask ahead of time for coaching, guidance and help.

iii. Check with nearby flight schools (Remember the alternate airports mentioned earlier). Some will actually provide dual instruction to B18 in their aircraft. If not, they likely have an

instructor that has been there and can provide instruction in your aircraft. It is a great weekday flight up to a nearby airport, pick up the instructor, go to B18 and get some terrific training and then back to drop of the instructor.

d. It is not recommended that the airport be used for student instruction, especially on weekends when it is busy. Other than an intro with an instructor on a quiet weekday, it is likely to be overwhelming for a student. It is an airport that is at an extreme. Would you take a student pilot to an extreme like Logan or JFK?
e. Before flying to B18, you should practice at your home and become the "Ace of the Base" on the following:
    i. Crosswinds during approach, landing and rollout, takeoffs and for taxi.
        1. Remember, an ice runway is slick and the aircraft will be effected by the wind easily.
        2. Landing without brakes and using aerodynamic braking.
            a. You can use your brakes at B18, just judiciously and be prepared for a wheel locking and sliding, and possibly suddenly grabbing if you were to say, hit a patch of snow.
    ii. Landings and be able to correct for excursions/heading deviations due to one wheel having more drag than the other during rollout and taxi.
        1. This will happen, the snow will be deeper on one wheel, ice rougher on one wheel versus the other etc.
        2. Be prepared to use brakes independently and at different amounts of pressure.

3. Have a very good soft field approach and landing (along with takeoff). It could be necessary, especially if there is some remaining snow.

iii. Go-Arounds
    1. You need to be thoroughly proficient at going around.
        a. From any portion of the final approach and any leg of the pattern, including the base leg.
        b. Know what to do to if there are just too many aircraft in the pattern and it is turning into the "five mile finals". You all are not all going to be able to fit in the parking area….

iv. Precision landing. You need to be able to easily meet the standards (ACS/PTS – Short Field Approach & Landing) for the distance to touchdown for the appropriate certificate, all the time!
    1. Private – "Touch down at a proper pitch attitude within 200 feet beyond or on the specified point, threshold markings, or runway numbers, with no side drift, minimum float, and with the airplane's longitudinal axis aligned with and over runway centerline."
    2. Commercial – "Touch down at a proper pitch attitude within 100 feet beyond or on the specified point, threshold markings, or runway numbers, with no side drift, minimum float, and with the airplane's longitudinal axis aligned with and over runway centerline"

f. There are many other factors, such as illusions, weather, turbulence and other conditions that also need to be considered by the pilot.

i. Turbulence and wind shear can be common at B18 with a strong northwesterly flow that is common when using RWY 1. Remember the airport is down at the level of the lake, which is the lowest point in the area and you are at the bottom of the valley. Nearby hills within about 1 mile of the airport are 1,000" + higher and Belknap Mtn., just 6 NM to the northwest, is nearly 2,000 feet higher.
ii. The rising and sinking air associated with this mechanical turbulence can also trigger snow showers and snow squalls. These are difficult to "see" on radar of any sort, can pop up quickly and can be right next to an area or airport reporting CAVU conditions. Do not try flying close to them, as visibility can suddenly drop significantly and showers can expand rapidly. They should be given a sufficient and wide berth. A diversion to an alternate may be necessary.
iii. Be aware that snow can hide many dangers and pilots should not try landing until after the runway has been cleared of snow. Snow greater than light fluffy layer will weigh down the ice, causing water to seep up into the lower portions of snow, creating a layer of sticky slush. This can remain for days following a snowfall, as the snow acts as an insulating blanket. However, when disturbed, not only will your airplane stick to the slush, it will very soon be frozen solid as you have removed some of that insulating layer.
    1. Many times you might recognize this as a grey or yellow tinge and spotting color of the snow. This is why you will see ski planes drag a landing area first. They are looking

to see if their tracks turn the grey or yellowish grey indicating trapped water and slush under the snow.

iv. Recognize that many snow banks are made of this slush/snow mixture which has frozen. They are solid – as concrete. Snow banks are not soft. Don't hit them or even try to taxi over them.

v. After a significant melting or rain event, followed by freezing temperatures, the ice runway could turn into a virtual airplane skating rink. Check, plan and wait. The airport management will do their best to make it useable.

vi. Overcast skies (especially thin to moderate overcast) with a low sun angle found in the winter can also create a hazard known as "Flat Light". This condition makes for determining object depth, especially of grey or similarly colored items, difficult. Most pilots at the ice runway will experience this during the flare to landing, either flaring too high or too late. Objects placed nearby will (cones etc.) help overcome this phenomena. It is similar to a seaplane landing on glassy water. However, be aware it can hide dangers in plain sight too, such as ice ridges, ice chunks or fishing holes. This is monitored on the ice runway, but is of significant risk for ski planes landing elsewhere.

g. Departing B18.

i. Standard departures are strongly recommended in accordance with the Aeronautical Information Manual and other FAA guidance.

1. A straight out or 45 degree departure will generally keep you over the lower terrain.

2. It is not recommended and is strongly discouraged to depart at lower altitudes flying up the bay to the north.
    a. This cannot normally be done without a violation of 14 CFR 91.119 Minimum Safe Altitudes: General.
    b. In addition to potential violations of Federal Aviation Regulations, it can be contrary to state regulations.
        i. New Hampshire Fish & Game could consider it harassment of fisherman IAW NH Statue 207:57. The airport only exists because of a positive relationship with the NH Fish & Game Department and the other users of the "public lands" that the Alton Bay Ice Runway exists upon. Do not ruin it.
    c. Low altitude flight has significantly more hazards and risks. These include visual illusions and flat light conditions previously discussed. We have seen more than one accident as a result of this.
        i. See NTSB Accident # NYC00LA084

h. Returning home, be aware that ice and slush may have splashed up onto your aircraft, freezing in "unusual" areas.
    i. Pilot have found their flaps frozen up upon entering the pattern back home.
    ii. Elevators and elevator trim that become stuck due to slush and snow that was splashed upon them from the tires.

iii. Frozen brakes and a locked wheel could be discovered on landing back home. This can providing for an exciting ride that could be short if the wheel breaks loose almost immediately. It can become a little expensive if it stays stuck/frozen, causing a major tire flat spot and or a blow-out.

1. Suggest that on climb out you do not touch the aircraft brakes to stop the wheels from spinning, but let them coast to a stop on their own. Retractable gear aircraft may want to delay gear retraction for a little bit to allow the snow and slush to blow off due to the airstream.

10) The Passengers – On the Ice

a. Attire for you, your passengers and your airplane is essential. This is New Hampshire in the winter. Remember, Mount Washington, known for the worst weather in the world, is just less than 50nm due north of B18. You need to be prepared.

i. This needs to include for each person.

1. Ski pants, winter jacket, gloves, hat and boots.
2. Sunglasses – it gets very bright in sunny weather with the reflection off the ice and snow.
3. Ice creepers! Very essential – Pilots have had to leave airplanes because they were injured walking on the ice.

ii. Your airplane needs care and loving too, you will want items to keep it warm and to keep the snow out.

1. Bring a Pitot tube cover, and engine plugs if you got them.

2. Bring an engine blanket. If not, a large moving blanket with strong clips/clamps from places like Harbor Freight can be a quick inexpensive alternate.
    a. This is not available near Alton Bay – you will have to bring them from home.
3. You will also need to bring your (portable) tow bar and chocks. Recognize that chocks will melt the ice slightly and freeze into the ice. You want a way to "pull" them out, especially if staying for a longer period.
4. Many items you would find at a typical small GA airport are not available. You need to plan to be self-sufficient. Do not expect any services. No fuel, no maintenance, no jump starts, no preheat etc.
    a. The volunteers may bring what they can to make your stop pleasant, but you cannot count on any of these above items.
5. The ramp area can be crowded and typically the only way to move aircraft is by hand.
    a. Do not start up unless you are absolutely sure the area is clear. If there are any volunteers working at the airport, check with them first.
    b. Be aware that the general public may also be around. These are individuals that do not recognize the hazards of propellers, prop blast or even smoking around 100LL fuel. Please be especially vigilant.

c. For your passengers, especially the furry type, be aware that there other vehicles operating adjacent to the runway, such as snowmobiles. Also there is open water nearby, at the bridge and around the docks. The ice is thin near the edges and everyone needs to give a wide berth. You may need to keep passengers on a leash, even the ones without fur ☺.

d. Be aware that the airport is used by other forms of aircraft too, including but not limited to Helicopters, Weight Shift, and Gliders.

    i. The may approach, land and park differently and in different areas.

11) Wrap-up

a. We want to enjoy this unique airport and have an experience of a lifetime for all the right reasons. At and around the airport there are numerous activities and events that many people not familiar with winter in NH will find amazing. This is the opportunity to experience it. You may see antique snowmobiles, snowmobile drag races, RVs and trucks driving on the ice, ice fishing, skating and so much more. On a busy day you will meet pilots from all over, and see some neat aircraft. Please come and enjoy, just make sure you are prepared.