



# LAKE TAHOE airport

## WINTER OPERATIONS PLAN

### Introduction:

This document reflects best practices for General Aviation airport snow removal and ice control practices recommended through Airport Cooperative Research Board Report 67, *Airside Snow Removal Practices for Small Airports with Limited Budgets* and Federal Aviation Administration Advisory Circular, *Airport Field Condition Assessments and Winter Operations Safety* (AC150/5200-30D 2016); *Airport Snow and Ice Control Equipment* (AC150/5220-20A 2014).

### ACRP SYNTHESIS 67

#### Airside Snow Removal Practices for Small Airports with Limited Budgets

#### A Synthesis of Airport Practice

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## Advisory Circular

Subject: Airport Field Condition Assessments and Winter Operations Safety

Date: 7/29/2016

AC No: 150/5200-30D

Initiated By: AAS-300

- 1 **PURPOSE.**  
This advisory circular (AC) provides guidance to assist airport operators in developing a snow and ice control plan, assessing and reporting airport conditions through the utilization of the Runway Condition Assessment Matrix (RCAM), and establishing snow removal and control procedures.
- 2 **CANCELLATION.**  
This AC cancels AC 150/5200-30C, *Airport Winter Safety and Operations*, dated December 9, 2008.
- 3 **APPLICATION.**
  1. The information contained in this AC provides guidance for the airport operators in the development of plans, methods, and procedures for identifying, reporting, and removal of airport contaminants. The use of this guidance is an acceptable means of compliance, for airports certificated under Title 14 Code of Federal Regulations (CFR) part 139, Certification of Airports. The use of this AC is also a method of compliance for federally obligated airports. Furthermore, use of the specifications in this AC is mandatory for projects funded under the Airport Improvement Program (AIP) or with revenue from the Passenger Facility Charge (PFC) program.
  2. For implementation purposes, all certificated airports must submit revised Snow and Ice Control Plans to the FAA no later than September 1, 2016, for approval. The Federal NOTAM System is the primary means of conveying airport condition information by certificated and federally obligated airports. Effective October 1, 2016, the Federal NOTAM System will incorporate the new reporting criteria and methodology contained in this AC.

The timely removal of snow from an airport surface can be an important safety and business matter for an airport. For instance the Lake Tahoe Airport provides a base of operations for medical life-flights operated by CalStar™ Air Ambulance. The airport also needs to clear the runways to accommodate local corporate and business aircraft that might locate elsewhere like Truckee/Tahoe or Minden if not able to use the airport. The inability of an aircraft to use an airport can result in a loss of fuel sales, maintenance business, or other income generating or economic



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opportunities. There is also the documented aircraft accidents as a result of incomplete snow removal. Lake Tahoe Airport also recognizes that limited budgets severely hamper the ability of small general aviation airports to remove snow in a consistent and timely manner. However, the City of Lake Tahoe and the Lake Tahoe Airport strives to do the most efficient job possible with the limited resources available.

At the Lake Tahoe Airport, the City of South Lake Tahoe Public Works Department manages all snow removal operations. The Lake Tahoe Airport Manager will assist the Public Works Department in snow removal operations when conditions warrant and other conflicts are not present. The Airport has also contracted with a third party contract snow removal company to provide snow removal services to certain portions of the airport.

## Operating Conditions Present at Lake Tahoe Airport:

Lake Tahoe Airport is a general aviation facility that is not required to meet Federal Air Regulations 139.313 Airport Snow and Ice Control. The Airport is required to adhere to Federal Aviation Administration Advisory Circular, *Airport Field Condition Assessments and Winter Operations Safety* (AC150/5200-30D 2016) for non-commercial airports. Lake Tahoe Airport is not required to have a snow and ice control plan and this plan does not require approval by the FAA Western-Pacific Office of Airport Safety & Standards. However, due to climatic conditions this airport voluntarily provides a snow control plan in the interest of safety and maximizing limited resources for the citizens of South Lake Tahoe, CA.

The decisions and challenges include evaluation of costs and benefits as a result of limited budgets for continued use or replacement of old and/or inadequate snow equipment; determination of snow removal priority over other activities; equipment operator training for airfield winter operations; and keeping up to date with current NOTAM protocols. Budget allocations can be a reflection of the degree of importance a community places on the airport. It also represents the likelihood of a certain number of winter events occurring and the amount of time, effort, and supplies expended by the airport to address winter events.

“Conditions Not Monitored” Are published in the Airport Facilities Directory and the Airport 5010 record whereby the airport is not issuing weather condition



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reports (FICON) via NOTAM for Lake Tahoe Airport. After normal business hours field conditions are not monitored via NOTAM. This facility is not staffed 24/7. Normal Business hours are Monday-Friday 0700 - 1600 hrs. Pacific time.

Starting in the 2017/2018 winter season, the Airport has contracted some of the snow removal activities to third party contract snow removal company. The third party contract snow removal company is responsible for clearing snow at the public airport parking lot, Airport Road, and between the City owned hangars. The third party contract snow removal company is responsible to report to the airport to commence snow removal operations when snow reaches a depth of 3 inches or more.

Airport tenants and pilots who wish to coordinate snow removal for certain hangar rows or specific requests for snow removal at the airport should contact the City of South Tahoe Snow Hotline (530) 542-6030. Requests by pilots should be made 24 hours in advance to allow for time to coordinate snow removal for the requested area. The Lake Tahoe Airport is not staffed on a continual basis and snow removal requires the assignment of staff to the site. The third party contract snow removal company will be notified of a tenant request for hangar service. The clearing of snow around airport hangars will only occur after a snow event concludes and new snow accumulations are not forecast in the next 12 hour period.

The airport is required to conform to the following Federal Aviation Administration (FAA) requirements for general aviation facilities:

**TABLE 7  
CLEARANCE TIMES FOR OTHER-THAN-COMMERCIAL  
SERVICE AIRPORTS**

<i>Annual Airplane Operations (includes cargo operations)</i>	<i>Clearance Time<sup>1</sup> (hour)</i>
<i>40,000 or more</i>	<i>2</i>
<i>10,000 – but less than 40,000</i>	<i>3</i>
<i>6,000 – but less than 10,000</i>	<i>4</i>
<i>Less than 6,000</i>	<i>6</i>

*General: Although not specifically defined, non-commercial service airports are airports that are not classified as commercial service airports [see Table 1-1, general note].*

*Footnote 1: These airports may wish to have sufficient equipment to clear 1 inch (2.54 cm) of falling snow weighing up to 25 lb/ft<sup>3</sup> (400 kg/m<sup>3</sup>) from Priority 1 areas within the recommended clearance times.*

Source: FAA AC 150/5200-30C.



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Lake Tahoe Airport is required to clear the area defined as Priority 1 within 3 hours as the airport currently has approximately 24,000 annual operations. Priority 1 areas will be defined in this document at “Code Red”. For small airports, the FAA defines Priority 1 surface areas as the **primary runway, an access taxiway leading directly to the terminal or ramp area, emergency access service roads, and Navigational Aid System (NAVAIDs) critical areas.**

The following is the required snow/ice control equipment for general aviation airports:

**TABLE 15  
FAA RECOMMENDATIONS FOR MINIMUM TYPE AND NUMBER OF SRE  
AT NON-COMMERCIAL SERVICE AIRPORTS**

<b>Minimum high-speed rotary plow and snow plow for non-commercial Service Airports</b>		
<b>Annual Operations</b>	<b>Annual Snowfall (inches)</b>	<b>Minimum type and number of equipment</b>
<b>10,000 or fewer</b>	<b>30 inches (76 cm) or less</b>	<b>1 snow plow</b>
	<b>more than 30 inches (76 cm)</b>	<b>1 high-speed rotary plow supported by 2 snow plows</b>
<b>over 10,000</b>	<b>15 inches (38 cm) or more</b>	<b>1 high-speed rotary plow supported by 2 snow plows</b>
	<b>Less than 15 inches (38 cm)</b>	<b>1 snow plow</b>

*Source: AC150/5220-20A 2007.*

The Lake Tahoe Airport has over 10,000 annual operations and receives on average 200 inches of snow annually. The FAA requires that the airport provide 1 high speed rotary plow with two additional snow plow trucks. Currently the Lake Tahoe Airport is not in compliance with FAA equipment standards for general aviation airports. We do not have two dedicated airport use snow plow trucks that meet conformance standards. The City of South Lake Tahoe does have snow plow trucks available in its overall fleet staged at other offsite locations. Extra snow removal equipment could be relocated to the Lake Tahoe Airport upon request depending on conditions on a case by case basis. However, the City of South Lake Tahoe will be exploring options through the FAA Airport Improvement Program Grant and possibly used plow trucks to assign and stage the listed equipment at the Lake Tahoe Airport to meet the FAA equipment standard.



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Current Equipment Assigned and Staged at the Airport for Snow Removal for the 2018/2018 Season Includes:

5049-2011 Kodiak Rotary Blower	Rental-Caterpillar 950M
1990- Caterpillar 140 G Motor Grader	5051-1994 John Deere 644G Loader
5050-John Deere Loader	

The Public Works Department assigns staff as weather conditions require. Public Works Snow Operations has assigned the following staff to provide winter operations oversight and assist with snow removal services for the Lake Tahoe Airport. As need arises, additional personal and equipment will be assigned.

## SNOW REMOVAL PERSONNEL

City Snow Desk	(530) 542-6030	*Call for Snow Clearance Request to Hangar Area or other concern. Must provide 24 hour notice to allow time to coordinate resolution.
Mark Gibbs	(530) 208-8074 (303) 506-8613	Airport Manager
Frankie Jones Phil Trella Darin Smith	(530) 416-2018 (530) 318-4855 (530) 400-4088	Alpine Smith, Inc. Contract Snow Removal for Airport Parking Lot, Airport Road and Hangar Rows

## Lake Tahoe Airport Snow Plan:

### I. PRESEASON

- A. A committee will be formed and will meet annually in the late summer. Invited will be all based tenants, PW Operations management and Fleet Operations to review the snow control plan and receive feedback on any recommended changes. This is to ensure this plan is up to date and planning is optimal. City Fleet Operations will provide annual condition and maintenance reports on all snow removal equipment.



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This committee will conduct pre and post seasonal planning meetings to evaluate the methods and procedures contained within the winter operations plan, costs and proposed changes (as needed).

- B. Public Works Staff and Tenant Training. Using classroom lectures, and hands on training snow removal staff will be trained on implementing the snow plan. Training includes familiarization, communications and operations on Air Operations Area (AOA). Training will be conducted prior to any duties assigned. Training records will be maintained for attendance via a sign in sheet. This will be to reduce airport liability and enhance safety when conducting snow operations.

## 2. PRESTORM

- A. When inclement winter weather is forecasted for the Sierra Mountains within a 24 hour period, the airport manager or his/her designate will maintain snow watch monitoring of the National Weather Service announcements and Doppler radar feeds for South Lake Tahoe, CA. The monitoring of pre-forecast weather will be conducted until inclement weather conditions are present on the airfield.
- B. Prior to the arrival of each storm, assigned staff will perform pre-checks of all equipment so they will be made ready including provisioning full fuel tanks, and checking that the vehicles heater blocks are plugged in. An inspection of all snow removal equipment will take place for every snow event and regular intervals during the snow season, even if there is no forecasted snow. Any deficiencies will be reported to Fleet Operations and the Public Works Snow Operations Manager so that alternate arrangements can be made. The Public Works Fleet Operations Department should be notified of any maintenance issues as soon as possible so that they can respond as necessary to return snow removal equipment to service.

## 3. NOTAMS AND AIRFIELD CLOSURE

- A. When actual inclement weather is observed for South Lake Tahoe the airport will close after ½” inch of slush or 2 inch of wet snow or 3



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inches of dry powder snow has accumulated on the ground. The Airport Manager or designee will issue a NOTAM to close the airport to air traffic following NOTAM dissemination procedures including notifying Oakland Air Route Traffic Control Center (ZOA) at Tel: (510) 745-3331. No snow removal operations will be allowed until the airport is closed.

- B. During the administrative business hours for the City of South Lake Tahoe, the Airport Manager or designee will be responsible to monitor the accumulation of snow and/or ice on the airfield. The Airport Manager or his/her assigned designee will call the Public Works Maintenance Manager on his/her Cellular phone for City Snow Operations to initiate a callout of Public Works to initiate snow removal at the airport. As snow accumulates to ½” inch of slush or 2 inch of wet snow or 3 inches of dry powder snow on the ground. The Airport Manager or designee will issue a NOTAM for Aerodrome Closed Except with 1 hour prior permission telephone at (530) 208-8074.

NOTAM Text for Snow Clearing Operations During Administrative Business Hours will appear as follows:

**TVL AD AP CLSD EXC IHR PPR 530-208-8074 XXXXXXXXXZ  
(date/time in Zulu)**

A Prior Permission (PPR) NOTAM allows a pilot who wishes to fly into or out from Lake Tahoe Airport the ability to call to find out if the airport will have the runway clear and coordinate an amicable time to depart based upon snow removal operations. The airport will be closed for snow removal operations but it allows pilots the flexibility to work with City staff to possibly allow air operations if runway conditions cleared of snow and it is safe to do so. These are made on a case by case basis and reflect conditions on the ground. Notification will also be made to Mountain West FBO Tel: (530) 541-2110 to inform them of an arrival or departure of an aircraft if permission is granted after the airport is closed for snow removal operations.



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During non-administrative business hours, the Airport Manager or designee will monitor conditions from their home and will make the determination when snow accumulates to ½” inch of slush or 2 inch of wet snow or 3 inches of dry powder snow on the ground. The Airport Manager or his/her assigned designee will call the Public Works Maintenance Manager on his/her cellular phone for City Snow Operations to initiate a callout of Public Works to initiate snow removal at the airport. During non-administrative business hours the Airport Manager or designee will issue a NOTAM to close the airport until the storm abates and the Code Red (Priority 1) areas are clear of snow leaving safe operating conditions. There will not be any prior permission aircraft operations during non-administrative business hours allowed under any circumstance.

NOTAM Text for Snow Clearing Operations During Non-Administrative Business Hours will appear as follows:

TVL AD CLSD XXXXXXXXXXXXZ (date/time in Zulu)

- C. Other conditions may occur on the airport from time to time including but not limited to the buildup of ice, lightning strikes, high wind, flooding, and fog. When such conditions are present to make the airport unsafe for use, the Airport Manager or his designated representative should be notified. It will be the Airport Manager or his designated representative’s responsibility to determine what action should be taken based on current airport conditions and notify the appropriate staff.
4. INITIATION OF SNOW REMOVAL OPERATIONS
- A. During the hours of administrative business if it is determined by the Airport Manager or his designated representative that snow removal is required a call will be placed to the Public Works Maintenance Manager, Public Works will make preparations for snow removal.



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- B. During times other than administrative hours when it has been determined by the methods described in Paragraph 3.B that snow removal is required then notification will be made by the snow watch designee to the Public Works Snow Operations Manager via telephone. The snow watch designee will then coordinate the time that snow removal will commence at the airport.
- C. All efforts will be made to accommodate the schedules of airport users; however, there is no guarantee that all schedules will be accommodated due to airfield conditions.
- D. Runway Condition Assessment Matrix (RCAM) will be conducted by Public Works Staff assigned and properly trained on a timely basis or as weather events dictate during normal administrative business hours. The usage of PIREP's will be used in conjunction with weather reports and surface conditions to formulate accurate airfield condition reports. All information will be made available to aircraft landing or departing the airport. Staff will take into account the type of aircraft giving the PIREP reports. Pilots are subjective in their reporting of runway contamination and the Airport will verify pilot reports with other information sources when issuing NOTAMs.

A report of "Nil" braking action will immediately close the movement area affected by such a report. The Airport Manager or designee will close the airport via NOTAM if a report of "nil" braking action is reported by a pilot. The Airport Manager or designee will then verify the validity of the "Nil" report. If nil conditions are present on sections of airfield pavement that is not the runway those areas will be closed via NOTAM. The Airport Manager or designee will determine through Runway Condition Assessment Matrix (RCAM) when normal operations may continue and NOTAM rescinded.

## 5. SNOW REMOVAL PROCEDURES

No exceptions will be made to allow aircraft onto a closed airfield component (Runway/Taxiway).



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- A. While working on the Airport Movement Area the snow removal team will work together at all times coordinating with each other on the CTAF frequency. Every effort will be made to remain in visual contact with each other during snow removal. If radio equipment fails, operators will immediately stop and contact the snow removal lead and/or manager by cell phone for further instructions.
  - B. During low visibility or whiteout conditions all equipment must stop and report their position. Operators will monitor the radio to ensure they do not cause a collision hazard.
  - C. The Public Works Snow Operations Manager may call in City staff as he/she determines based upon conditions. City Workers may be called in during off duty hours and maybe required to work twelve (12) hour shifts if operational need dictates.
  - D. Every effort is made to position snow off the movement area surfaces and make airfield signage and markings visible to pilot navigation.
  - E. All other request or communications made by airport users concerning snow removal will be directed to the Airport Manager, Public Works Snow Operations Manager or designated representative. At no time will a member of the public direct or manage any member of the snow removal team in the conduct of their duties.
7. Primary Snow Removal Priorities at the Lake Tahoe Airport are based on two priority levels based on the time/date of the snow event and available City resources. During non-administrative business hours the Airport Manager or designee will declare a Code Red Snow Event. The following areas will be cleared of snow/ice accumulations as prescribed by FAA Advisory Circular 150/5200-30 series. During a Code Red snow event Public Works will confine snow removal operations to only areas designated as “Code Red”. Secondary Snow Removal Code Yellow areas will not be cleared until after the winter storm event concludes during normal administrative business hours based on availability of Public Work crew schedules. **Airport tenants or itinerant pilots who wish to have specific areas of the ramp or taxi lanes plowed**



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clear of snow should contact the City Snow Hotline (530) 542-6030 at least 24-hours in advance before needing access to the area requiring service.

## 8. Code Red Areas

1. Runway 18/36
2. High speed Taxiway E
3. High speed Taxiway F
4. Taxiway F
5. Terminal Apron (300 feet by 500 feet)
6. Airport Road and City Parking Lot (*Provided by Third Party Contractor*)
7. North Road to Mountain West Aviation Building/Parking
8. Gate V1 to Apron (emergency ingress/egress) (*Provided by Third Party Contractor*)
9. One Pass from Apron in front of FBO Building to Fuel Farm Tanks
10. Shovel stairs from Parking Lot to Terminal/Ice Melt Stairs
11. Hangar Rows (*Provided by Third Party Contractor*)

While work is progressing on these priorities, the condition of the active runway will be monitored by the snow removal team. If continuing snowfall requires re-plowing, work in all other areas will be suspended and all necessary equipment diverted to repeating Code Red areas. Do not proceed to new areas until areas are clear of snow.

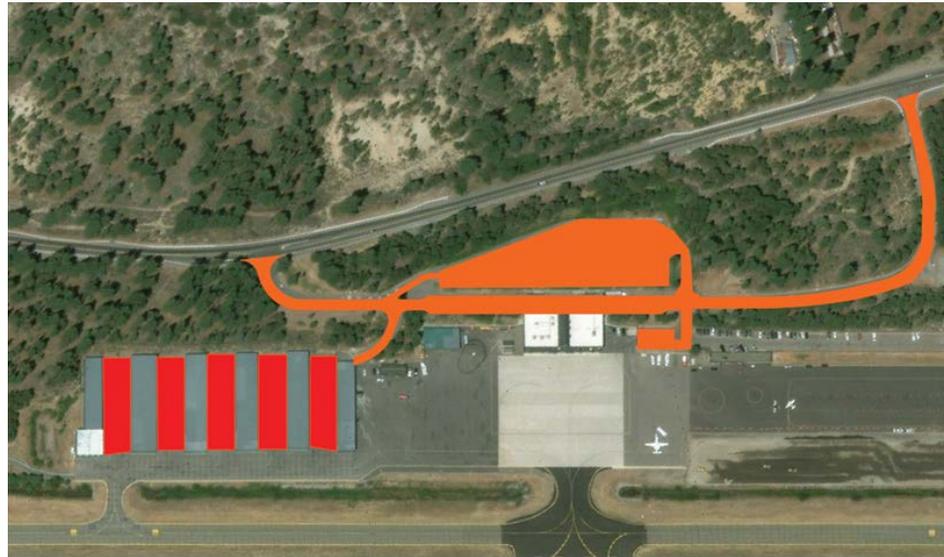
*Priorities 1-10 Required by FAA AC 150/5200-30 series*

Once the snow removal is complete for the Code Red areas the airport closure NOTAM will be canceled and the airport reopened on CTAF frequency. This can be accomplished by any City employee on the Authorized NOTAM user form.



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The airport has contracted out snow removal for the airport parking lot, Airport Road, and the City Hangar Rows to a third party contractor as depicted as the shaded areas right.



Third party contract snow removal services will complete snow removal operations in the following priority order 1-3.

1. Clear snow from the surface of Airport Road and ensure snow berms created from U.S. Hwy 50 (Caltrans) snow removal operations are removed allowing access into and out from the airport. Clear snow starting at the terminal frontage curbs and pile snow west along the sidewalk and retaining wall in front of the parking lot. Clear fifteen vehicle parking spots along the Eastern row of the public airport parking lot during any storm daily before 06:30 am Pacific Time (Frequency storm to storm when snow accumulation reaches depth of 3" or more. May require more than one visit by the third party contract snow removal company in one day if conditions warrant)
2. Clear the remaining vehicle parking spaces in the public parking lot by pushing snow West towards U.S. Highway 50. Clean up snow on Airport Road providing for two lanes at the entry and exit and the single lane road access to the City owned hangars and the other single lane road access to Gate VI. (Frequency storm to storm when snow accumulation reaches depth of 3" or more. May require more than one visit by the third party contract snow removal company in one day if conditions warrant)
3. Post storm event, the third party contract snow removal company will clear in between hangar buildings pushing snow east and piling the snow as far East along Taxiway Delta. Snow will be piled on Taxiway Delta in a manner that allows for City personnel to use a Kodiak blower to throw the snow accumulated from the hangar rows into the West Airport Storm Water Ditch. This means no



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piles of snow greater than five feet in height. The north face of the hangars will employ a push snow to clear snow between the face of the building to a distance of 4-5 feet out from the North building face for each hangar building. The remaining snow can be removed using a loader. South facing areas do not require the use of a snow blower as the sun melts snow in these areas.

The third party contract snow removal company agrees to clear hangar rows in a timely manner post-storm event or upon request by the airport when a specific hangar tenants requires access to their hangar. The Airport will never require clearing of snow around hangars during a snow event. (Frequency storm to storm when snow accumulation reaches depth of 3" or more. Only clear snow after storm event concludes and when new snow accumulations are not expected in the forecast 12 hours.)

The third party contract snow removal company is not responsible for the following snow removal activities under this contract:

- A. Sanding of roadway, parking lot or any paved areas
  - B. Clearing of snow from sidewalks and pedestrian areas
  - C. Clearing of snow from areas not specified in this contract
  - D. Placing any snow melt chemicals on any surfaces at the airport
9. All aeronautical areas not covered in Code Red are Code Yellow. Secondary Snow Removal priorities will not be cleared until after the winter storm event concludes and based on availability of airport operations crew schedules. The Public Works Snow Removal Manager will coordinate the Code Yellow snow clearing.
10. The City Owned hangar rows will be plowed by a third party contractor. The City is responsible to use the Kodiak Blower to blow snow that is pushed from the hangar rows to Taxiway Delta. The third party contractor will pile snow on the East side of Taxiway Delta and the City will remove those piles of snow on TWY Delta blowing the snow into the West Airport Storm Water ditch.
11. Code Yellow Areas (In order of Importance)
1. *Taxiway A*
  2. *Taxiway B*
  3. *Taxiway K*



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4. *General Aviation Apron from Terminal North and creating a path for aircraft from Mountain West Aviation's North Hangars.*
5. *General Aviation Apron from Terminal South blowing snow from Taxiway Delta*
6. *Path to ASOS station*
7. *Finish clearing Vehicle Service Road to Fuel Farm Tanks*
8. *Access road to FAA NAVAID Building North of Taxiway K*
9. *Ice Melt Terminal Curb*
10. *Use Blower to move piles of snow around airfield lights, signs.*

## 13. Completion of Snow Removal

- A. As time and personnel allow other non-priority areas of the airport may be cleared. Additional requests for snow removal should be made through the Airport Manager or his/her designated representative.
- B. Debriefings of the snow removal operation may be held from time to time to discuss both the positive and negative aspects of Lake Tahoe Airport winter operations plan. The winter operations plan will be modified as necessary based on input from users, pilots and tenants alike.



## Definition of Terms

### **Ash.**

A grayish-white to black solid residue of combustion normally originating from pulverized particulate matter ejected by volcanic eruption.

### **Compacted Snow.**

Snow that has been compressed and consolidated into a solid form that resists further compression such that an airplane will remain on its surface without displacing any of it. If a chunk of compressed snow can be picked up by hand, it will hold together or can be broken into smaller chunks rather than falling away as individual snow particles.

Note: A layer of compacted snow over ice must be reported as compacted snow only.

Example: When operating on the surface, significant rutting or compaction will not occur. Compacted snow may include a mixture of snow and embedded ice; if it is more ice than compacted snow, then it should be reported as either ice or wet ice, as applicable.

### **Contaminant.**

A deposit such as frost, any snow, slush, ice, or water on an aerodrome pavement where the effects could be detrimental to the friction characteristics of the pavement surface.

### **Contaminated Runway.**

For purposes of generating a runway condition code and airplane performance, a runway is considered contaminated when more than 25 percent of the runway surface area (within the reported length and the width being used) is covered by frost, ice, and any depth of snow, slush, or water.

When runway contaminants exist, but overall coverage is 25 percent or less, the contaminants will still be reported. However, a runway condition code will not be generated.

Note: While mud, ash, sand, oil, and rubber are reportable contaminants, there is no associated airplane performance data available and no depth or Runway Condition Code (RwyCC) will be reported.



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Exception: Rubber is not subject to the 25 percent rule, and will be reported as Slippery When Wet when the pavement evaluation/friction deterioration indicates the averaged Mu value on the wet pavement surface is below the Minimum Friction Level classification, Friction Level Classification for Runway Pavement Surfaces, of AC 150/5320-12, Measurement, Construction, and Maintenance of Skid-Resistant Airport

## Pavement Surfaces.

### **Dry (Pavement).**

Describes a surface that is neither wet nor contaminated

### **Dry Runway.**

A runway is dry when it is neither wet, nor contaminated. For purposes of condition reporting and airplane performance, a runway can be considered dry when no more than 25 percent of the runway surface area within the reported length and the width being used is covered by:

1. Visible moisture or dampness, or
2. Frost, slush, snow (any type), or ice.

Note: A FICON NOTAM must not be originated for the sole purpose of reporting a dry runway. A dry surface must be reported only when there is need to report conditions on the remainder of the surface.

### **Dry Snow.**

Snow that has insufficient free water to cause it to stick together. This generally occurs at temperatures well below 32° F (0° C). If when making a snowball, it falls apart, the snow is considered dry.

### **Eutectic Temperature/Composition.**

A deicing chemical melts ice by lowering the freezing point. The extent of this freezing point depression depends on the chemical and water in the system. The limit of freezing point depression, equivalent to the lowest temperature that the chemical will melt ice, occurs with a specific amount of chemical. This temperature is called the eutectic temperature, and the amount of chemical is the eutectic composition. Collectively, they are referred to as the eutectic point.



## FICON (Field Condition Report).

A Notice to Airmen (NOTAM) generated to reflect Runway Condition Codes (RwyCCs) and pavement surface conditions on runways, taxiways, and aprons.

### Frost.

Frost consists of ice crystals formed from airborne moisture that condenses on a surface whose temperature is below freezing. Frost differs from ice in that the frost crystals grow independently and therefore have a more granular texture.

Note: Heavy frost that has noticeable depth may have friction qualities similar to ice and downgrading the runway condition code accordingly should be considered. If driving a vehicle over the frost does not result in tire tracks down to bare pavement, the frost should be considered to have sufficient depth to consider a downgrade of the runway condition code.

### Ice.

The solid form of frozen water to include ice that is textured (i.e., rough or scarified ice).

Note: A layer of ice over compacted snow must be reported as ice only.

### Layered Contaminant.

A contaminant consisting of two overlapping contaminants. The approved list of layered

contaminants has been identified in the RCAM and includes:

1. Dry Snow over Compacted Snow
2. Wet Snow over Compacted Snow
3. Slush over Ice
4. Water over Compacted Snow
5. Dry Snow over Ice
6. Wet Snow over Ice

### Mud.

Wet, sticky, soft earth material.

### Multiple Contaminants.

A combination of contaminants (as identified in the RCAM) observed on paved surfaces. When reporting multiple contaminants, only the two most prevalent / hazardous contaminants are reported. When reporting on runways, up to two contaminant types may be reported for each runway third. The reported



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contaminants may consist of a single and layered contaminant, two single contaminants, or two layered contaminants. The reporting of “multiple contaminants” represent contaminants which are located adjacent to each other, not to be confused with a “layered contaminant” which is overlapping. Example:

- Single contaminant and Layered contaminant.  
‘Wet’ and ‘Wet Snow over Compacted Snow’
- Single contaminant and Single contaminant.  
‘Wet Snow’ and ‘Slush’
- Layered contaminant and Layered contaminant.  
‘Dry Snow over Compacted Snow’ and ‘Dry Snow over Ice’

## Oil.

A viscous liquid, derived from petroleum or synthetic material, especially for use as a fuel or lubricant.

## Runways (Primary and Secondary)

### Primary.

Runway(s) being actively used or expected to be used during existing or anticipated adverse meteorological conditions, where the majority of the takeoff and landing operations will take place.

### Runway Condition Assessment Matrix (RCAM).

The tool (Table 5-2) by which an airport operator will assess a runway surface when contaminants are present.

### Runway Condition Code (RwyCC).

Runway Condition Codes describe runway conditions based on defined contaminants for each runway third. Use of RwyCCs harmonizes with ICAO Annex 14, providing a standardized “shorthand” format (e.g., 4/3/2) for reporting. RwyCCs (which replaced Mu values) are used by pilots to conduct landing performance calculations.

## Sand.

A sedimentary material, finer than a granule and coarser than silt.



## **Slippery When Wet Runway.**

A wet runway where the surface friction characteristics would indicate diminished braking action as compared to a normal wet runway.

Note: Slippery When Wet is only reported when a pavement maintenance evaluation indicates the averaged Mu value on the wet pavement surface is below the Minimum Friction Level classification specified in Table 3-2 of AC 150/5320-12, Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces. Some contributing factors that can create this condition include: Rubber buildup, groove failures/wear, pavement macro/micro textures.

## **Slush.**

Snow that has water content exceeding a freely drained condition such that it takes on fluid properties (e.g., flowing and splashing). Water will drain from slush when a handful is picked up. This type of water-saturated snow will be displaced with a splatter by a heel and toe slap-down motion against the ground.

## **Slush over Ice.**

See individual definitions for each contaminant.

## **Water.**

The liquid state of water. For purposes of condition reporting and airplane performance, water is greater than 1/8-inch (3mm) in depth.

## **Wet Ice.**

Ice that is melting, or ice with a layer of water (any depth) on top.

## **Wet Runway.**

A runway is wet when it is neither dry nor contaminated. For purposes of condition reporting and airplane performance, a runway can be considered wet when more than 25 percent of the runway surface area within the reported length and the width being used is covered by any visible dampness or water that is 1/8-inch or less in depth.

## **Wet Snow.**



# LAKE TAHOE airport

Snow that has grains coated with liquid water, which bonds the mass together, but that has no excess water in the pore spaces. A well-compacted, solid snowball can be made, but water will not squeeze out.



# LAKE TAHOE airport

## Runway Condition Matrix Reporting Forms

Airport ID: \_\_\_\_\_ Date: \_\_\_\_\_ Pilot Reported Braking Action  
(within 15 minutes of assessment when available): \_\_\_\_\_  
Observed time (local): \_\_\_\_\_

### Instructions

- Fill out a separate form for each runway.
- **Outside Air Temperature (OAT):** Only applicable to compacted snow. If the OAT is warmer than -15 °C, the RCAM generates Code 3. If the OAT is -15 °C or colder, the RCAM generates Code 4.
- **Depth.** Report inches or feet, as directed by the current version of AC 150/5200-30.
- **Contaminants.** See the current version of AC 150/5200-30 for a list of approved contaminant entries.
- **Runway Condition Code:** See Table 5-2, Runway Condition Assessment Matrix (RCAM), in AC 150/5200-30. Only report if contaminant coverage is greater than 25 percent. Otherwise, leave blank.
- **Airport Operator Generated Condition Codes (Optional):** If you do not think the RCAM generated code accurately reflects conditions, use the optional table below to indicate the upgraded or downgraded codes that you intend to report in the NOTAM system. Upgrade Codes 0 or 1 only.

### Airport Conditions Assessment

Runway direction in use: \_\_\_\_\_ Is OAT warmer than -15 °C? Yes No

Coverage		Depth	Contaminants	Runway Cond. Code
Location	%			
Touchdown				
Midpoint				
Rollout				

### Optional Information

Use the table below if you intend to report a downgraded or upgraded code in the NOTAM system.

### Airport Operator Generated Condition Codes Reported in NOTAM System

Upgrade or Downgrade?*	Touchdown Code	Midpoint Code	Rollout Code

\*For upgrades, the issuer certifies all upgrade requirements are met: Friction values >40 in affected third(s), friction equipment is calibrated; airport judgment, observations, and vehicle braking action support upgraded codes; continuously monitor conditions while the upgraded codes are in effect.

\*For downgrades, the issuer certifies all downgrade requirements are met: Airport operator experience, Friction values <40 in affected third(s), deceleration and directional control observation(s), and/or Pilot reported braking action from landing aircraft.

**Remarks, if applicable** (Remainders, Treatments, Snowbanking, etc.):



# LAKE TAHOE airport

Assessment Criteria		Downgrade Assessment Criteria		
Runway Condition Description	Code	Mu ( $\mu$ ) 1	Vehicle Deceleration or Directional Control Observation	Pilot Reported Braking Action
<ul style="list-style-type: none"> <li>Dry</li> </ul>	6	40 or Higher 39 to 30 29 to 21 20 or Lower	---	---
<ul style="list-style-type: none"> <li>Frost</li> <li>Wet (Includes damp and 1/8 inch depth or less of water)</li> </ul> 1/8 inch (3mm) depth or less of: <ul style="list-style-type: none"> <li>Slush</li> <li>Dry Snow</li> <li>Wet Snow</li> </ul>	5		Braking deceleration is normal for the wheel braking effort applied AND directional control is normal.	Good
-15°C and Colder outside air temperature: <ul style="list-style-type: none"> <li>Compacted Snow</li> </ul>	4		Braking deceleration OR directional control is between Good and Medium.	Good to Medium
<ul style="list-style-type: none"> <li>Slippery When Wet (wet runway)</li> <li>Dry Snow or Wet Snow (Any depth) over Compacted Snow</li> </ul> Greater than 1/8 inch (3mm) depth of: <ul style="list-style-type: none"> <li>Dry Snow</li> <li>Wet Snow</li> </ul> Warmer than -15°C outside air temperature: <ul style="list-style-type: none"> <li>Compacted Snow</li> </ul>	3		Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced.	Medium
Greater than 1/8 (3mm) inch depth of: <ul style="list-style-type: none"> <li>Water</li> <li>Slush</li> </ul>	2		Braking deceleration OR directional control is between Medium and Poor.	Medium to Poor
<ul style="list-style-type: none"> <li>Ice <sup>2</sup></li> </ul>	1		Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced.	Poor
<ul style="list-style-type: none"> <li>Wet Ice <sup>2</sup></li> <li>Slush over Ice</li> <li>Water over Compacted Snow <sup>2</sup></li> <li>Dry Snow or Wet Snow over Ice <sup>2</sup></li> </ul>	0		Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain.	Nil