TELLURIDE™
REGIONAL AIRPORT

SNOW AND ICE CONTROL PLAN

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Section 1 – Definitions

a) Contaminant. Any substance on a runway or taxiway, for the purpose of this SICP contaminant is snow, slush, ice or standing water.

b) Dry Snow. Snow that insufficient free water to cause cohesion between individual particles. If when making a snowball, it falls apart, the snow is considered dry.

c) Wet Snow. 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.

d) Compacted Snow. Snow that has been compressed into a solid mass that resists further compression and will hold together or break up into lumps if picked up.

e) Slush. Snow that has water content exceeding its freely drained condition, such that it take a fluid properties (.e.g. flowing and splashing). Water will drain from slush when a handful is picked up.

f) Patchy Conditions. This condition exists when the contaminate conditions cover 25% or less of the clear/treated/usable surface.

g) Approved Chemicals. A chemical, either solid or liquid, that meets a generic SAE or MIL specification.

h) Fluid Deicer/Anti-Icers. The approved specification is SAE AMS 1435, Fluid, Generic Deicing/Anti-icing, Runways and Taxiways.

i) Generic Solids. The approved specification is SAE AMS 1431, Compound, Solid Runway and Taxiway Deicing/Anti-Icing.

j) Airside Urea. (Otherwise known as "Carbamide") The approved specifications are SAE AMS 1431, Compound, Solid Runway and Taxiway Deicing/Anti-Icing, and MIL SPEC DOD-U-10866, Technical Urea. Agricultural grade urea that meets any of these specifications, called airside urea, is acceptable.

Section 2 - Administrative

a) After each season in April the Airport Manager, Maintenance Manager and airline station managers will meet to discuss the previous season's snow removal activities, and discuss areas of improvements for the next season. This meeting will be followed by a pre-season meeting in November to discuss any airline schedule changes, etc. that could influence snow removal operations. In addition, the Airport Manager and Maintenance Manager will meet in April to discuss equipment maintenance issues and a time table for completing all maintenance items during the off-season (April – October).

b) Discussion topics relevant to the Telluride Regional Airport shall include the following.

- Airport Clearing Operations Discussion Topics
  - Areas Designated as Priority I area, any new airfield infrastructure
  - Clearing operations and follow-up airfield assessments
  - Potentials for pilot or vehicular runway incursions or incidents
  - Staff requirements and qualifications (training)
  - Update training program
  - Response time to keep runways, taxiways and ramp areas operational
  - Communication, terminology, frequencies, and procedures
  - Monitoring and updating of runway surface conditions
  - Issuance of NOTAMS/FCR's and dissemination to ensure timely notification
  - Equipment inspection, maintenance and testing.

- Air Carrier Ground Deicing/anti-icing programs
  - Assessing all air carriers deicing programs by reviewing the readiness of airline de-icing equipment and verifying that the airline employees have been trained using the Airport's de-icing pad and valve system.

c) All TRAA employees who's responsibilities include Line Service, ARFF, Airport Maintenance and Snow Removal operations shall receive initial training, and training on an annual basis thereafter in the following areas;

  - Drivers Training for Operating on the AOA.
  - AOA Self-Inspection
  - Airport Certification Manuel
  - Specific training relating to operating the TRAA's snow removal equipment and snow removal operations.

Section 3 – Snow Removal Operations

Before beginning any snow removal operations, a NOTAM must be issued with the FAA stating that the runway is closed for snow removal operations. Always look both ways and self-announce on Unicom frequency 123.00 before entering the runway environment.

a) Runway Snow Removal Operations

The first order of business is to plow and broom the runway, and remove all wind rows with the snow blower by 7:00 a.m. when it snows overnight. The equipment used for this operation includes the 1985 John Deere Loader with light plow attachment, the 1998 Oshkosh plow/broom truck, and the 1998 Stewart-Stevenson snow blower.

Step 1:

Begin the runway snow removal operations by simultaneously removing snow from around the runway lights using the runway light plow, while the second operator is plowing and brooming the runway starting from the center line and plowing the snow to each side of the runway. The runway light plow will establish the initial windrow, whereby the runway plow will add to this windrow as it plows to each runway edge. This will establish the windrow for the snow blower. The ramp plow or the John Deere loader with the ramp plow attachment can be used to clean up the area between the demarcation line and the EMAS. **Keep all windrows on the pavement and never drive the plow truck off the asphalt pavement!**

Step 2:

Once the plowing and brooming operations have been completed on the runway, the plow/broom truck operator will continue plowing and sweeping the taxiways and the Apron (Area 2) south and east of the terminal.

Step 3:

If a fourth qualified snow blower operator is available, said operator will begin removing the windrows from the runway and continue removing windrows from the taxiways and ramp as the plowing dictates. If a fourth operator is not available, the plow/broom truck operator will begin the snow blower operations once Steps 1 and 2 are completed.

b) Alternate Runway Snow Removal Operations

If the snow depth is one inch or less, broom the runway in lieu of the plowing by following the procedures in Step 1, except no windrow will be created.

c) **Runway Breaking Action**

In any circumstances, the runway must be broomed if the runway braking action as reported by the friction test is less than 40.

d) **Apron Snow Removal**

Step 1:

The 1985 John Deere Loader is used in the following sequence (See Drawing in Appendix);

1. Plow the ramp to the west of the Terminal Building.
2. Plow the taxiway between the hangars and in front of fuel farm.
3. Plow around the T-Hangar.

When plowing the taxiways, the John Deere loader with the runway light plow is to be used to clean around the taxiway lights and markers that are located on the asphalt. The plow truck operator should position all windrows using the same method as used on the runway to position the windrows.

When plowing the ramps, all the snow must be pushed to the south end of the ramp and formed into a windrow. **Keep all windrows on the pavement and never drive equipment off the asphalt pavement!**

Step 2:

As stated in Step 3 in Section 3.a, once the snow blower operator has completed removing the windrows on the runway, he may proceed to remove the windrows on the taxiways and aprons.

If a runway light, sign or taxiway marker is damaged, complete a work order and repair as soon as possible.

Do not attempt to move snow banks, and/or pile snow with the plow truck. It is not designed for this use. Windrows and piles of snow are removed with the snow blower or John Deere 644 Loader.

Never drive the snow blower off the asphalt pavement. The Airport Manager or designated snow blower operators will maintain the runway safety areas in accordance to FAR Part 139.313.

If one of the snow removal equipment is inoperable, utilize all other equipment to complete the snow removal operations. It will take longer, but the job can be completed.

If the snow blower is inoperative, issue a NOTAM stating that windrows are present on the runway and movement areas.

e) **Runway Signs**

When the snow depth reaches the bottom of any runway sign base, the snow must be cleared within a 3-foot diameter of the sign. The only method proven to work is a shovel. The Skid Steer with the plow or snow blower attachment may be used to assist. The snow blower shall clear the snow between the runway distance remaining signs so pilots have a clear view of all runway signs.

f) **Navigation Aids**

Access roads to the PAPI's and Localizer/DME building must be plowed after each storm. PAPI light boxes and REIL's must be clear of snow. The John 644 Deere loader and snow blower can be used for this job. Hand shoveling is required around the PAPI boxes and REIL's.

g) **Terminal Perimeter**

Line personnel are responsible for clearing snow from around the perimeter of the terminal building, which includes all walks and entrances. The John Deere loader, Caterpillar Skid Steer and shovels are used for this task. The snow shall be removed far enough away from the building so that the larger equipment can safely remove it. **Always move snow away from buildings and fences.**

h) **Motor Vehicle Parking Lot**

The parking lot is plowed using the Skid Steer with the plow attachment. All snow is to be plowed to the east and placed in the drainage ditches that are on either side of the fuel farm. The concrete pad in front of the terminal entrance is to be broomed using the Skid Steer. This snow is to be plowed into the drop-off lanes where it can be pushed east by the Skid Steer. **Always push snow away from buildings and fences. The John Deere loader can be used to push large piles of snow into the drainage swales.**

i) **Plowing Around Aircraft**

When plowing around aircraft, always maintain a safe distance. Remember the ramp can be icy, and the vehicle could slide into an aircraft. Use shovels and the John Deere loader or Skid Steer to clean around aircraft. Remove tie-down ropes before plowing. Never try to tow an aircraft in snow more than 1-inch deep or over windrows.

j) **When Do I Start Plowing?**

The runway must be opened by completing all the steps under paragraph "a" by 7:00 a.m. All other areas of the AOA should be plowed and windrows removed by 9:00 a.m. The motor vehicle parking lot should be plowed and completed by 8:00 a.m.

Never let the snow accumulate to a depth greater than 8 inches before plowing if possible. It will take a long time to remove deep snow, and may be more than the vehicle can plow.

During the day, snow removal operations should begin when the snow is at least 1-inch deep, or when you can no longer see the runway markings, and/or when the braking action as reported by the friction test is less than 40.

If it is blowing snow and the visibility is less than 180 feet (the distance between two runway lights) you should stop operations until visibility improves.

Never leave any windrows within the runway environment and safety areas. If the snow blower becomes inoperative, windrows that are on the runway should be pushed to the edge of the pavement, and a NOTAM issued.

k) **Fueling Equipment**

Never put snow removal equipment in storage with empty fuel tanks. After each snow removal operation, the tanks must be filled if the tanks are half full.

l) **Snow Control Center (SCC)**

The customer service desk and the customer service representative is the TRAA's command center for emergencies and snow removal operations. This area contains computers, weather information, and communication equipment (phone, fax, email and radios). The customer service representative is in communication with the snow removal equipment and all tenants on the airport. In addition, they monitor UNICOM and issue and cancel NOTAMs.
The airport opens at 7:00 a.m. and is at 9:00 p.m. Snow removal operations during the time of closure are directed by the snow plow operator who will issue a NOTAM and monitor the UNICOM frequency 123.00 in the plow truck.

m) **Weather Forecasting**

Personnel who are assigned snow removal duty are responsible for monitoring the weather using on-line weather reports. In addition, a camera is located on the airport that allows

operators to view from their home computer at night the conditions at the Airport. For example, the snow plow operator checks the remote camera, if snow has fallen on the pavement, then he will come to the Airport and begin snow removal operations as required. If it is snowing before the airport closes at night, the operator has the option of remaining at the airport all night.

n) Airfield Clearance Times

TRAA will have the runway open by 7:00 a.m. during snow events that occur overnight. Snow events that occur during normal operating hours will be responded to as required based on snow fall and intensity. Normally, the runway can be plowed and/or broomed within one-hour. TRAA has approximately 12,000 operations per year.

Table 1-1. Clearance Times for Commercial Service Airports

Annual Airplane Operations (includes cargo operations)	*Clearance Time[1] (hour)*
40,000 or more	*½*
10,000 – but less than 40,000	*1*
6,000 – but less than 10,000	*1½*
Less than 6,000	*2*

General: Commercial Service Airport means a public-use airport that the U.S. Secretary of Transportation determines has at least 2,500 passenger boardings each year and that receives scheduled passenger airplane service [reference Title 49 United States Code, Section 47102(7)].

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

o) Snow Equipment List

Please see Appendix B

p) Storage of Snow and Ice Control Equipment

All snow removal equipment is stored in the maintenance building which is heated.

q) FAA-Approved Chemicals

No chemicals are used on the AOA or on the Airport.

r) NAVAIDs/Weather Observation Equipment

All snow around NAVAIDs including access roads is cleared using the snow blower and/or John Deere 644 loader when applicable.

s) Controlling/Mitigating Snow Drifts

Snow drifts are not a problem at the Telluride Regional Airport. All AOA surfaces are plowed and windrowed. All windrows are removed with the snow blower.

t) Safety areas, Blast Pads, De-icing Pads, Special Circumstance Surfaces or Areas

Snow removal from the EMAS will be authorized by the Airport Manager utilizing the Skid Steer if required.

u) Methods for Ice Control and Removal-Chemicals.

Not Applicable.

v) Sand

Not Applicable

w) Stockpiling

Not Applicable

Section 5 - Runway Incursion/Surface Incident Mitigation Procedures

All vehicles are marked and lighted in accordance with AC 150/2510-5, *Painting, Marking and Lighting of Vehicles Used on an Airport.*

a) Radio Communications

See Snow Removal Operations.

b) **Failed Radio Communication**

If a radio fails inside one of the snow removal vehicles, a hand-held radio with earphone is available.

c) **Low Visibility and Whiteout Conditions**

If visibility falls below 180 feet (the distance between two runway lights) snow removal operations shall cease until visibility improves.

d) **Driver Fatigue**

Snow equipment operators work a maximum of eight hours per day.

e) **Cell Phone Usage**

The use of cell phones while operating snow removal equipment is strictly forbidden. In emergencies where the Unicom radio is inoperative or unattended, cell phones may be used and the vehicle operator must come to a complete stop when using a cell phone.

Section 6 - Runway Surface Assessment Reporting

a) Runway Condition Reporting.

A runway (and taxiway) condition report is provided whenever the pavement condition is worse than bare and wet.

Describe procedures for reporting:

- Once the runway has been plowed and/or broomed, a runway condition report using an electronic meter is completed and reported by NOTAM and to the air carriers.
- Any runway condition that is not normal, such as a windrow that has not been removed at the edge of the runway, taxiway or apron due to equipment breakdowns is reported by NOTAM.

The following events will trigger a runway surface condition update;

- active snow event

- plowing/brooming
- rapidly rising or falling temperatures
- rapidly changing conditions

New snow events during the day will require snow removal operations and the above reporting procedures are repeated.

Describe how your airport assesses runway conditions to ensure that they are accurate and timely?

- After snow removal operations are completed, and the Tapley report is less than 40, then a Tapley report shall be completed each hour until the Tapley report is 40 or above.

- The Customer Service Representative shall communicate the runway conditions by way of NOTAM and email with the airlines.

- Runway condition reporting form is included in Appendix

b) Runway Friction Surveys and Equipment. The Telluride Regional Airport uses a Vericom friction meter.

c) Conditions. Describe what pavement contaminants conditions are acceptable to use decelerometer.

- Ice or wet ice. Wet ice is a term used to define ice surfaces that are covered with a thin film of moisture caused by melting. The liquid water film deposit is of minimal depth of 0.04 inch (1mm) or less, insufficient to cause hydroplaning.
- Compacted snow at any depth.
- Dry snow 1 inch or less.
- Wet snow or slush 1/8 inch or less.
- It is not acceptable to use decelerometers to access any contaminants outside of these parameters.

d) When to Conduct. Friction assessments should be conducted if any of the following occurs:

- When the central portion of the runway, centered longitudinally along the runway centerline, is contaminated 500 feet or more.

- After any type of snow removal operations or chemical application (including sanding)
- Immediately following any aircraft incident or accident on the runway.
- When sun and temperature conditions change that can affect braking action.

f) Friction Measuring Procedures - How to Conduct. Describe procedures in how you conduct a friction test and address:

- lateral location from centerline approximately 10 feet.
- direction (same direction as arrival aircraft)
- friction tests is completed in one pass
- Runway zones: Touchdown, midpoint and rollout zones.

g) Friction Assessment Reporting. Describe procedures at your airport for friction assessment reporting and the format used to report. (Provide a sample report if not provided as an exhibit in the ACM).

Friction values will be reported when:

- Compacted snow and/or ice are present on the center portion of the runway, and friction values are 40 or below on any zone of the runway.
- Rise above 40 on all zones of any active runway that previously have a friction value below 40.
- Go below 40 for any zone (touchdown, midpoint, and rollout) of any active runway that previously had Mu's above 40.

h) Out of Service Equipment. A NOTAM will be issued whenever the Vericom meter is out-of-service. This NOTAM will remain until the Vericom meter is available for service. A Tapley meter is available for backup use.

i) Requirements for Runway Closures. Runways receiving a NIL braking (either a PIREP or by a braking action assessment by the airport operator) are unsafe for aircraft operations. The runway will be closed until the airport operator is satisfied that the NIL condition no longer exists. The runways will also be closed if two consecutive poor conditions are reported.

j) Continuous Monitoring. During winter conditions, the runway braking action is monitored by observation of the surface conditions (i.e. melting, freezing conditions and other weather changes) and periodic Tapley testing. The Unicom operator is instructed to solicit pilot reports to aid in this monitoring.

Section 7- Post Season Activities

a) After each season in April the Airport Manager, staff and airline station managers will meet to discuss the previous season's snow removal activities, and discuss areas of improvements for the next season. This meeting will be followed by a pre-season meeting in November to discuss any airline schedule changes, etc. that could influence snow removal operations. In addition, the Airport Manager and staff will meet in April to discuss equipment maintenance issues and a time table for completing all maintenance items during the off-season (April – October).

Section 8 – Appendices

Appendix A: Runway Contamination Mitigation Record and Runway Friction Survey Record.

Appendix B: List of Equipment.

Appendix C: Snow Removal Map

Appendix D: Advisory Circular 150/5200-30C

Section 8 – Appendices

Appendix A: Runway Contamination Mitigation Record and Runway Friction Survey Record.

Appendix B: List of Equipment.

Appendix C: Snow Removal Map

Appendix D: Advisory Circular 150/5200-30C

Appendix B

List of Equipment

1. 1998 Oshkosh Plow/Broom Truck with 22-foot blade and 18-foot broom.
2. 1985 John Deere 644C Loader with 18-foot blade and Runway Light Plow.
3. 1998 Stewart & Stevenson Snow Blower (4000 Tons/Hour.
4. 2010 Caterpillar Skid Steer with Plow and Snow Blower attachments.
5. 1994 GMC ¾ ton truck used for runway friction tests.