Equipment Proposal

Prepared for: GBCTA Board

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EXECUTIVE SUMMARY

Winter operations staff hope to acquire machinery purpose built for nordic grooming in order to improve trail maintenance, decrease equipment downtime and maximize efficiency. One of the few commercially available options for our circumstances is a Favero Lorenzo SR3. It is small and light enough to access all of our ski trails and brings hydraulic capabilities to grooming needs. Although is has a high initial capital cost, savings will be realized in the efficiency it brings to grooming procedures.

INTRODUCTION

Nordic grooming of trails in Kananaskis region of Southern Alberta is an extremely challenging endeavour. Some hurdles that need to be overcome are included in the table below:

GROOMING CHALLENGES

Situation	Challenge	Present Solution	Limitation(s)
Excessive snow	Packing and grooming	Roller packing followed by Ginzu grooming	Downtime and expense dealing with machinery not purpose built for the job
Limited snow	Covering terrain with snow, renovating existing snow	Snow harvesting, multiple passes with Ginzu to recondition snow.	Time consuming, access to donor sites, wear on machinery
Chinook winds	Rapid sublimation and melting	Snow harvesting	Time consuming, access to donor sites
Freeze/Thaw cycles	Boilerplate' snow and ice	Multiple passes with Ginzu to recondition snow, or closure of trail	Time consuming and wear on machinery
Heavy traffic	Worn tracks and tread	Ginzu grooming	Limited down pressure
65 km of trail	Time consuming to renovate	Dragging a Ginzu	High wear and tear on towing machines, renovation often requires multiple passes
Numerous areas of direct exposure to solar radiation	Rapid snow melt, ice formation when it freezes	Snow harvesting, renovation with Ginzu	Time consuming, access to donor sites and wear on machinery

Each one of the challenges above has an effect on ski trail grooming. As demand for a sustainable grooming program has increased over the last decade we have met the demand with more volunteers, and more equipment. The sheer volume of work that needs to be done both mechanically and by hand has increased dramatically over the last 5 years. This has put pressure on staff and machinery to the extent that we have suffered volunteer burnout and high maintenance costs. The equipment we use to pull our grooming equipment is not purpose built for the work it is subject to, and as a result, ends up failing somewhat prematurely.

As described above, we have a number of goals that we wish to accomplish with acquiring a snow cat. They include:

1) Ability to renovate snow efficiently

At present we deal with hard snow and ice by dragging knives over the trail surface with hopes that it will get broken up into small snow grains that can be re-manipulated into a fresh snow surface. This is fairly archaic and inefficient way of manipulating snow, albeit relatively inexpensive. It can take a number of passes with the groomers we have in order to manipulate hard snow. A snow cat on the other hand, uses hydraulic pressure to spin rotary knives at 2000 rpm, very effectively manipulating the snow surface in one pass.

2) Ability to set track

Our track setting involves using an electric motor to press the track setting pan into the snow surface. The effectiveness of this process is limited by hardness of the snow and the down pressure exerted by the electric motor. A snow cat on the other hand has the ability to use hydrostatic pressure on a track setting pan. Hydrostatic pressures are much greater than those developed by an electric motor, meaning much better track quality. In addition the ability to renovate snow much more effectively means that a snow cat is pressing the track setting pan into a softer snow surface.

3) Ability to contour and move snow

The very nature of skiing predisposes snow to displacement, especially on downhills where skiers often snow plow in order to maintain control. This ends up dishing out the middle of the trail and causes snow to build up on the side of the trail, causing a ‘half pipe’ type of contour. Over time, as the walls of snow on the side become increasingly tall, it becomes difficult to snow plow and hills become a safety hazard. At present we manage this issue by physically shovelling the peripheral snow into the middle of the trail and renovating the trail flat. This is extremely time consuming and illustrated by the photos below:

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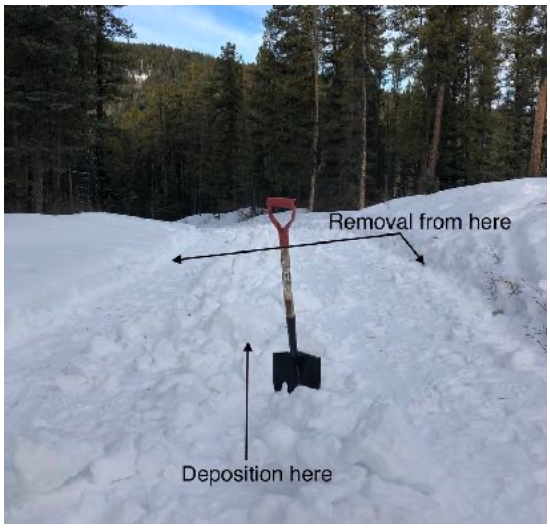

In contrast, a snow cat can perform this task with a hydraulically activated 12 way blade. What takes a crew of 2 approximately a half days work by hand can be done in a matter of minutes by a snow cat.

The process of snow harvesting is also simplified in that large amounts of snow can be moved fairly easily by a snow cat, reducing the amount of snow that needs to be loaded, unloaded and levelled by current methods.

SOLUTION

The ideal equipment to perform the functions mentioned above for our particular circumstances is the Favero Lorenzo SR3 Snow Rabbit. Our model has a 99 HP Kubota turbo diesel engine and is equipped with a 12 way blade, hydrostatic tiller and track setters.

We are precluded from having a regular sized Snow Cat in West Bragg due to weight and size restrictions on many of our trails. We have a number of small narrow bridges and trails that can only be navigated by a small Snow Cat such as the Snow Rabbit. It's weight (4000lbs) is less than half of the smallest Pisten Bully, and it's width is 79" which is slightly less than the width of our Ginzu Groomers.

The Kubota diesel engines are ubiquitous in North America, meaning parts and service are easily attained. In addition, although Italian made, all parts for Snow Rabbits are stocked by dealers in the U.S., specifically in Wyoming and Vermont.

Snow Rabbits have been in use in North America for a number of years, and are used for grooming ski and snowmobile trails, remote access, personnel transport, and navigation of extreme mountain terrain where compact size is a necessity.

CONSIDERATIONS

Decision making regarding a purchase of this size were not be taken lightly. Cost, weight, maintenance, durability, grooming quality, and fuel type are all considerations that were taken into account while assessing the viability of purchasing a Snow Cat for West Bragg Creek.

COST

Cost of a demo Snow Rabbit can range from 95 to 115K USD. New ones are in the neighbourhood of $150K. In contrast, a new Pisten Bully that is utilized by CNC and Sovereign Lakes runs north of $450K.

Comparatively, our current fleet of grooming machines cost from 15 to $22K each, and while they come at a relatively low initial cost, on going maintenance is proving to be substantial as we are asking them to do work that they are not designed for. Considering they are not that old, repairs to our quads, snowmobiles and Kei trucks are a significant cost relative to initial investment, and downtime is substantial.

WEIGHT

We are precluded from having a regular Snow Cat due to a number of bridges that could not handle the 10,000 lb weight of even the smallest Pisten Bully. As well as being quite light at around 4060 lbs with accessories, the Snow Rabbit is quite narrow and very similar in overall size to a Kei truck.

MAINTENANCE

Well used Snow Cats are renowned for their need for high levels of maintenance, especially preventative. A great deal of care is necessary to prevent small issues from becoming big ones. Considering the low number of hours on the models we are looking at, big ticket maintenance costs are not likely to be encountered for the first few years. That being said, it would be realistic to peg maintenance costs at between 2-5K per year, with bigger expenses accumulating after 5 years of use.

DURABILITY

Mountain Snow Cats have been utilizing these machines in their fleet since 2012 and have found them to be reliable and relatively easy to maintain.

GROOMING QUALITY

The fact that they use hydraulic power to do their work makes them far more efficient than methods we are currently using.

Seeing is believing and the only way to really assess the quality of grooming would be to see the Snow Rabbit in action. Mountain Snow Cats have extended an invitation to test drive the Snow Rabbits at one of their sites just an hour outside of Denver, Colorado.

FUEL TYPE

As these are Cats are diesel powered we would ultimately need to install a diesel fuel tank. This would mean either adding another tank to our compound, or trading up to a larger, combined diesel/gasoline tank.

CONCLUSION

The GBCTA is at a crossroads where growth and expectation are overwhelming our current resources. The purchase of a small Snow Cat would serve to alleviate the pressure of on some fo our existing equipment and manpower, resulting in more streamlined operations.

The benefits of acquiring a Favero Lorenzo SR3 Snow Rabbit are many, including superior renovating and track setting capabilities and the ability to move snow efficiently. The most significant downside is the initial capital cost and on going maintenance expenses. If the GBCTA could acquire a sustainable, reliable source of operating funds it would go a long way to alleviating concerns over cost.

ATTACHMENTS:

References:

https://www.facebook.com/favero.snowgroomers/

https://www.youtube.com/watch?v=NpjfSlgZ2hU