



# Groomer Operator Training Resource Guide

## Chapter 1: Introduction to trail grooming (Beginner operators)

# Grooming

- It's the greatest expense of the program
- It's your job to ensure funds are spent efficiently & effectively

# Grooming

- Grooming is determined by:
  - Temperature
  - Type & depth of snow
  - Terrain
  - Traffic volume & use patterns
  - Wind
  - Current or incoming storms
  - Water crossings
  - Time of day



# Grooming is

- Establishing a trail base at the beginning of the season
- Having to reestablish a trail after heavy snowfall
- Fixing the trail because winds have caused drifting
- Restoring a moguled trail

# GPS Trackers

- Remember to plug in or activate the GPS Tracking system so riders can see where the trails have been groomed.
- There is a time delay of six hours or more of groomer activity that the public can view on the website.

# Grooming Objective

- Provide smooth trails that are suitable for all levels of rider experience





# Grooming Objective

- Build a solid base of “**snow pavement**” for snowmobiles & grooming equipment to operate upon



# Early Season Trail Preparation

- Packing the first snowfall establishes a smooth base for the remainder of the season
- Early snowfall contains more moisture and is easier to pack



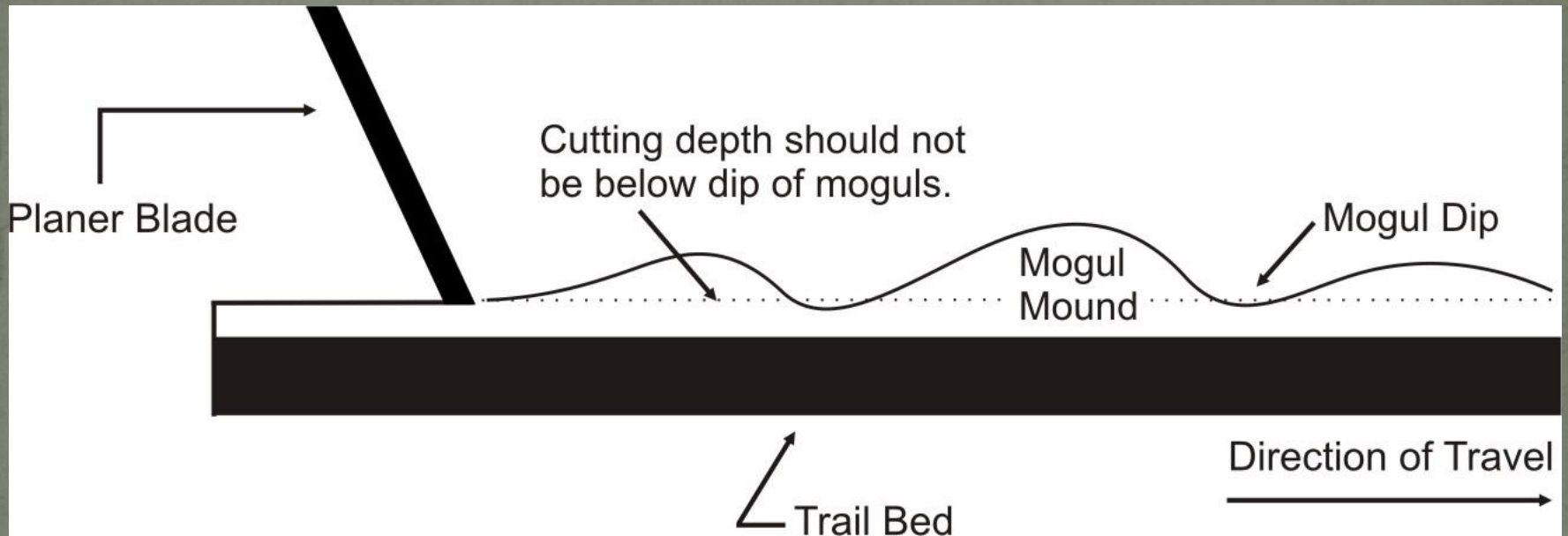
# **Early Season Trail Preparation**

- **Cattail Removal** - Groomers can be used to remove/knock down cattails if the following requirements are met:
  - **All expenses are to be paid from the First Benchmark**
  - **Idler wheels cannot be submerged in water**
  - **Keep the air filter and radiator clean!!!!**

# Four Steps to Grooming

1. Removal of Moguls
2. Processing the Snow
3. Compression of the Processed Snow
4. Trail Setup

# Step 1: Removal of Moguls

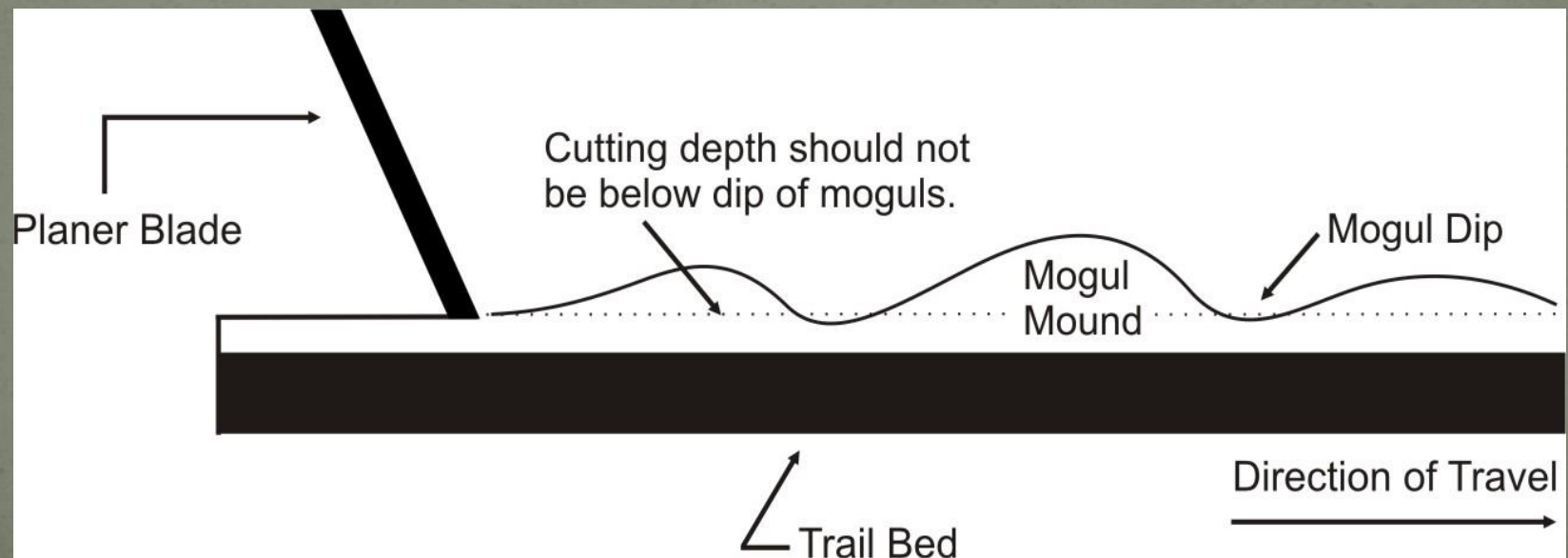


- The planer blade cutting depth should cut to the bottom of the mogul's dip, but not into the compacted trail bed
- Don't cut to bareground



# Step 1: Removal of Moguls

- Critical to remove the entire mogul profile
- Cutting off just the top leaves a “memory”
- But don’t cut into the trail base below dip



# Removal of Moguls: Limitations

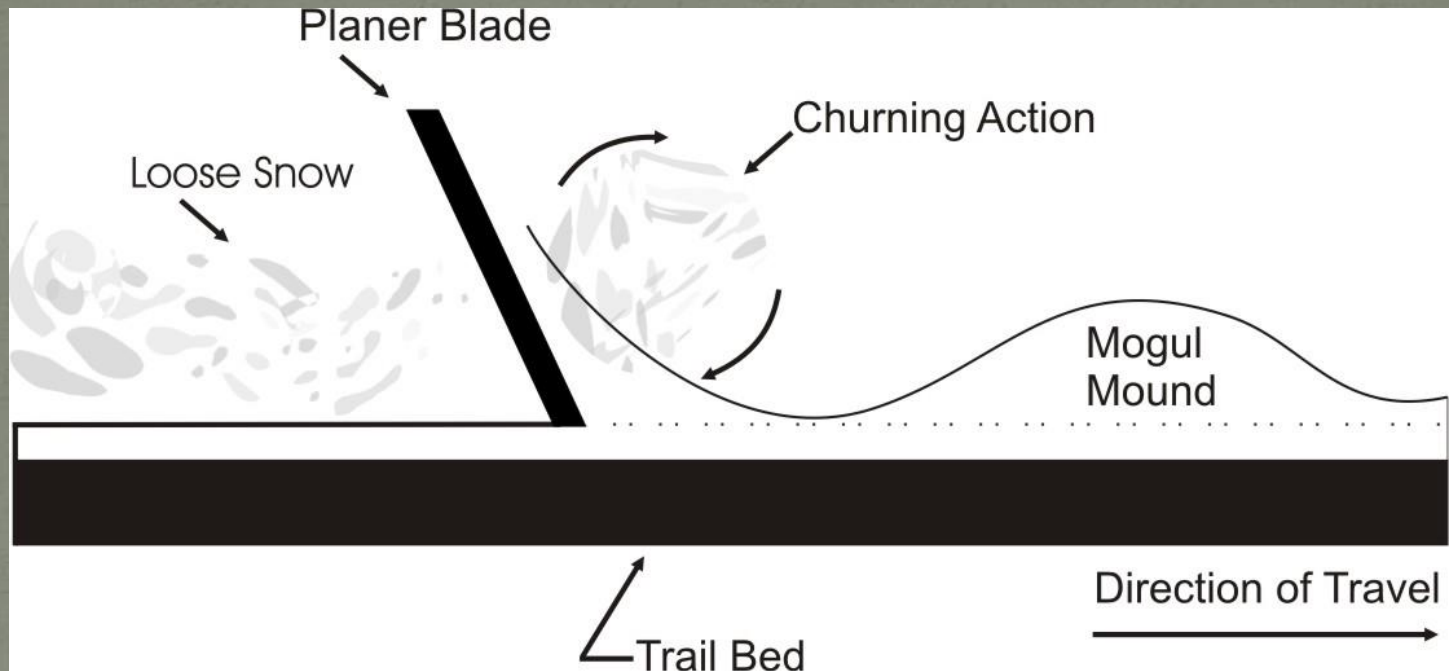
- Multi-blade drags will only cut as deep as the siderails will allow
- If the base is soft, the blades can cut in to the bed

# Removal of Moguls: Limitations

- After heavy snowfall, it may not always be possible or practical to remove the moguls



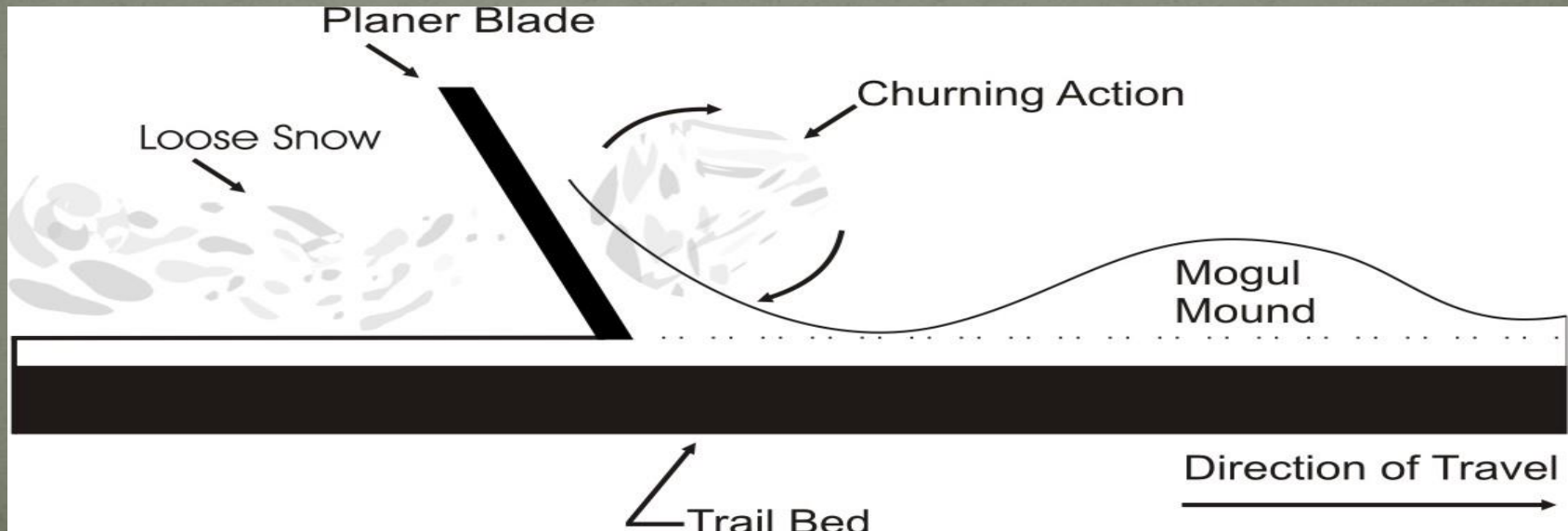
# Step 2: Processing the Snow



- A churning action should be created in front of the planer blade to help process the compacted snow from the mogul into granules of various sizes

# Step 2: Processing the Snow

- A rolling or **churning action** is critical
- De-aeration makes the snow more dense
- Helps to break away points on snowflakes



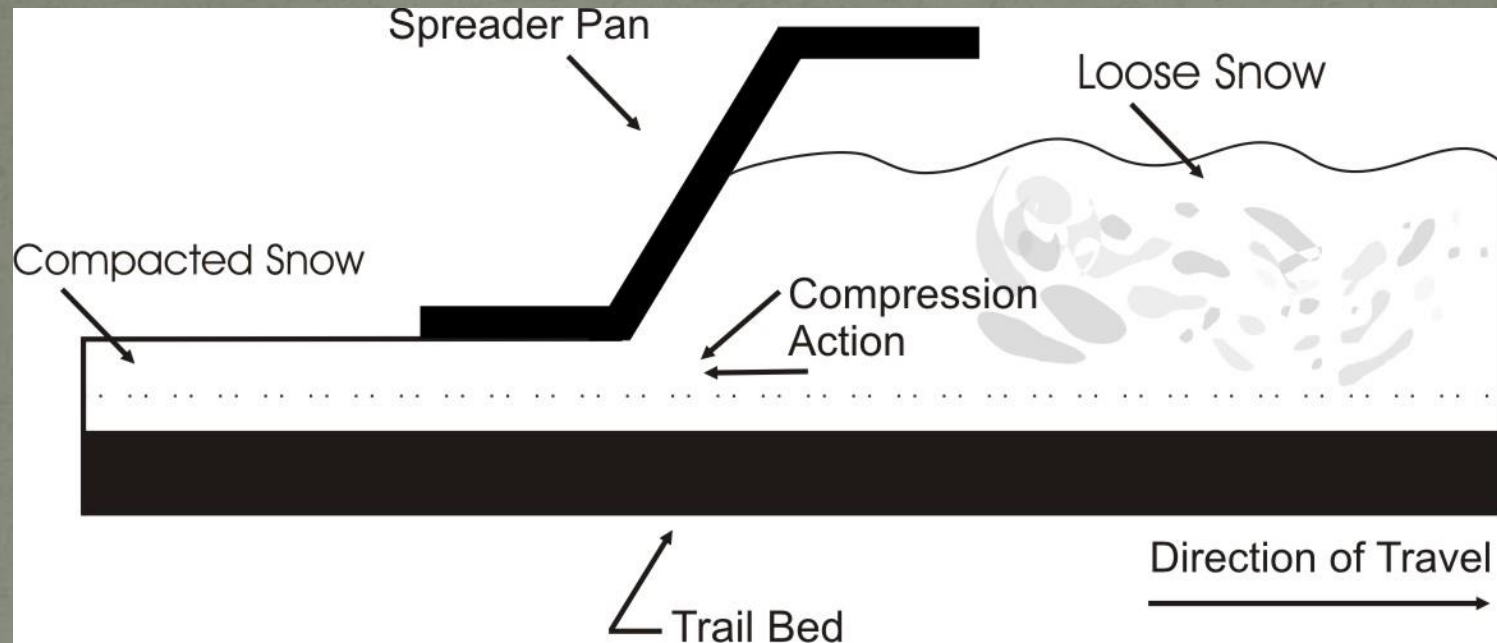
## Step 2: Processing the Snow

### **SLOW DOWN!**

- **Most Effective Speed is 5 to 7 mph**
- Too Slow: rolling action isn't established
- Too Fast: sprays snow out & wastes it; snow doesn't have time to roll & process; prematurely wears out snow. Creates a rocking motion & leaves the rough trail



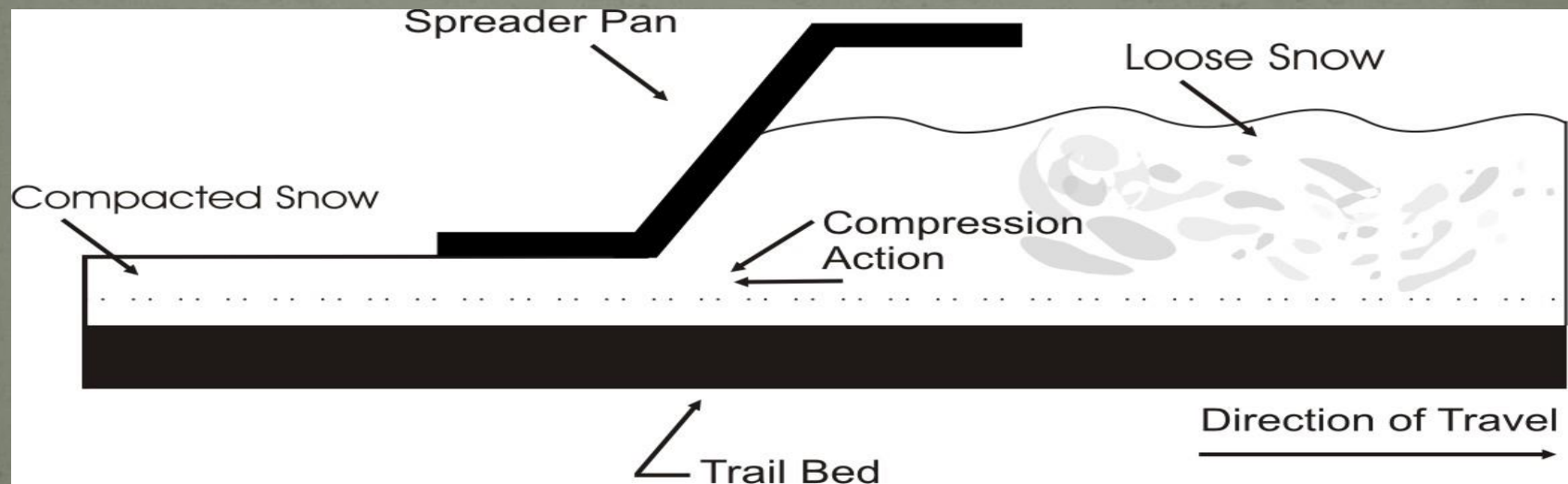
# Step 3: Compression of the Snow



- The loose snow is disbursed by the spreader pan and then compressed into a new layer of compacted snow

# Step 3: Compression of the Snow

- Further de-aerates the snow
- Provides a compressed, uniform, smooth surface
- Increases trail base depth



## Step 4: Trail Setup

- The longer the setup, the more durable the trail will be



**This trail was able to setup overnight.**



# Step 4: Trail Setup

- 6 to 10 hours required to refreeze
- Night grooming is often the best
- Adjust grooming start and end times to maximize setup time



Setup Will **NOT** Occur If Sleds Are  
Following





# Groomer Operator Training Resource Guide

## Chapter 2: Operating Grooming Equipment (Beginner operators)



# General Operating Guidelines

## How Much Snow is Required to Start Grooming Operations?

1. More snow is needed to operate a groomer than it takes to operate a snowmobile
2. Don't rush it, encourage riders to pack the trail first to start the de-aeration and compaction process

# How Much Snow is Required to Start Grooming Operations?

**It varies by area & is affected by terrain & type of snow:**

- Generally, at least 8 to 12 inches of snow is needed to start grooming operations
- Rough terrain or drier snow may take 12" or more

4" base minimum

# Snow Requirements

- 4 inch Base: compacted snow totaling 4 inches
- **NOT A TOTAL OF 4 INCHES OF SNOW**



# Best Grooming Temperatures

- Grooming should be suspended when the air temperature is below -20 F or above +35 F
- Warm temps will cause snow to stick in the blades or build up on the packing pan
  - Night grooming minimizes these effects
- Cold temps are unsafe for equipment and operators

# **General Operating Guidelines**

## **Wind & Shade Can be Beneficial for Grooming**

- Always consider these factors when placing the trail

# General Operating Guidelines

## Stay on the Trail!

- Stay on the compacted trail base with the grooming equipment at all times
- If you get into deep loose snow, you risk becoming severely stuck
- Only turn around where you know the snow base will support the equipment





# General Operating Guidelines

## Know the Trail & Stay on It



Don't follow snowmobile tracks  
unless you're positive  
they're on the trail!

# **Always Watch for Snowmobiles**

When trail is narrow or winding – keep to right & slow down. If necessary, stop when a large group is approaching

## **ALWAYS ANTICIPATE**

Plan for approaching snowmobiles at sharp or blind curves & on hills

# Ideal Groomed Trail Width

- Maintaining a trail width of  $1\frac{1}{2}$  times the drag width consistently grooms the **middle of the trail**, where most will ride





# Grooming Basics

## Stay to the Right

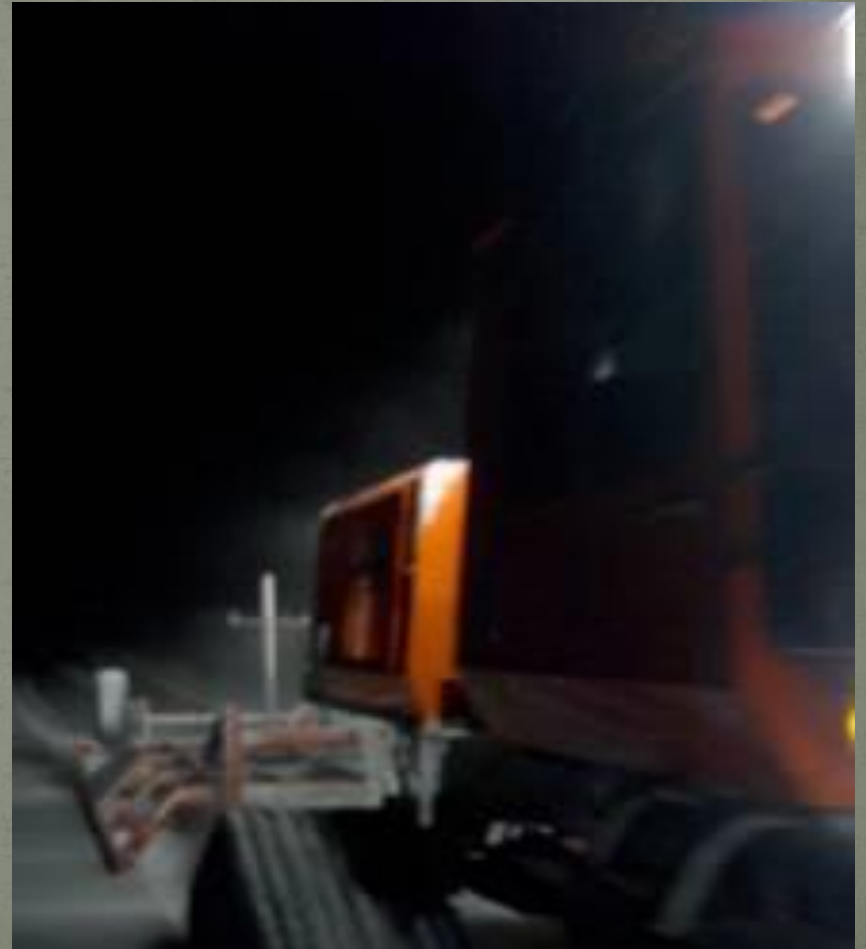
- **ALWAYS** groom on the right side of the trail
- Reverse grooming direction the next pass to widen trail
- **NEVER** groom against traffic



# Grooming Basics

## Constantly Watch Behind

- Pay attention to what's in the rearview mirrors
- Spend up to 75% of your time monitoring the product behind



# Grooming Basics

## Adjusting Heated Mirrors



Use 2 hands, 1 on each side, to adjust the mirrors.  
**DO NOT PLACE YOUR PALM ON THE GLASS, THIS IS  
WHAT CAUSES THE MIRROR TO BREAK!**



## Grooming Basics

### Know the Trail & Anticipate Needs

- If possible, carry snow in the drag at all times
- Use it for covering hill tops, filling dips and bottoms of curves



# Know the Trail & Anticipate Needs

- Raise blades to dump snow and avoid spinouts or getting stuck when approaching:
  - Heavily drifted or deep snow area
  - Steep hill
  - Road crossing





# Tips for Effective Grooming with a Drag

## Grooming Curves

- Pull snow from the outside of the curve
- The only extra snow will be on the outside of the curve, so use it





# Tips for Effective Grooming with a Drag Pull Snow to Middle of Trail

- The outside 2 or 3 feet of a trail will often be softer than the middle of trail due to the compaction
- Try to pull the outside snow to the middle by operating the drag on the outside of the trail
- If there is enough snow the front blade can be helpful



## Grooming Basics

# Take the Time to Do It Right

- Regulate the speed of the groomer & cutting depth according to trail conditions & grooming needs
- Groom the trail a second time, if there is a particularly rough area & a place to turn around



## Grooming Basics

# Remove Backup Piles

- If you back-up on the trail, never leave a back-up pile, this creates an extreme safety hazard
- Regroom trail or shovel it off





# Grooming Basics

## Beware of Dirty Snow

- Dirty snow affects firmness and trail quality
- Try to pull new snow in from trail edge with front blade to mix old & new snow
- Sometimes running track 4" over on the right outside berm will help spill new snow onto the trail



# Tips for Effective Grooming with a Drag

## Remove Debris from Trail

- Debris is a hazard
- It can attract heat causing a thawing effect on the trail



## Grooming Basics

# Don't Leave Holes in the Trail

- Holes in the trail caused by being stuck, drag malfunction or operator error are a hazard = always remove them





# Grooming Basics

## Cover Ice

- Try to cover icy spots on the trail with snow to improve safety
- Also try to process ice into snowpack



# Grooming Basics

## Groom Bridges

- Start by panning across to avoid damage; use groomer to bring snow onto bridge
- This will build enough base to groom every pass



# Reminders for Effective Grooming with a Drag

## Watch the Speed

- **Most effective speed is 6-8 mph**
- **Too slow:** rolling action in front of blade will not be adequate
- **Too fast:** will get drag bounce, a poor trail & spray snow out





# Reminders for Effective Grooming with a Drag

## Watch the Speed

- Slow down & take the time needed to get a good finished product
- Trail will stand up better to traffic



**Grooming too fast wastes fuel,  
snow and grooming resources**

# Reminders for Effective Grooming with a Drag

- Groom at night or when traffic is low
- Early in the season, pack the snow to establish a base
- Don't dump snow on the road crossings, driveways and railroad tracks
- Watch the temperature
  - Best temperature for grooming is generally in the +5 to +25 F



# Reminders for Effective Grooming with a Drag

## Don't Dump Snow on Road Crossings, Driveways and Railroad Tracks

- Always cross roads & driveways with care & raise drag
- Lower the wheels to eliminate wear and tear on the drag plastic/pan
- Remember if you leave snow, shovel it off





# Reminders for Effective Grooming with a Drag

- Don't Set Drag Blades Too Low on Smooth Trails
- Use only the rear set of blades to “skim” minimally moguled trails, this builds base
- Cut only as deep as bottom of mogul “dip”



# Reminders for Effective Grooming with a Drag

## Grooming Wet Snow

- Requires more operator finesse since snow has more surface tension & won't flow well
- Adjust drag somewhat higher & pick up speed; monitor snow to ensure it flows freely



# Reminders for Effective Grooming with a Drag

- Continually monitor drag blades
- Adjust blade height
  - **Multi-Blade:** It takes less than a “quick short bump” to adjust blades
  - Each grooming unit will be different



# Tips for Effective Grooming with a Drag

- Don't waste snow by carrying to much
  - Often a slight tap of control lever to raise blade will correct this situation



# Tips for Effective Grooming with a Drag

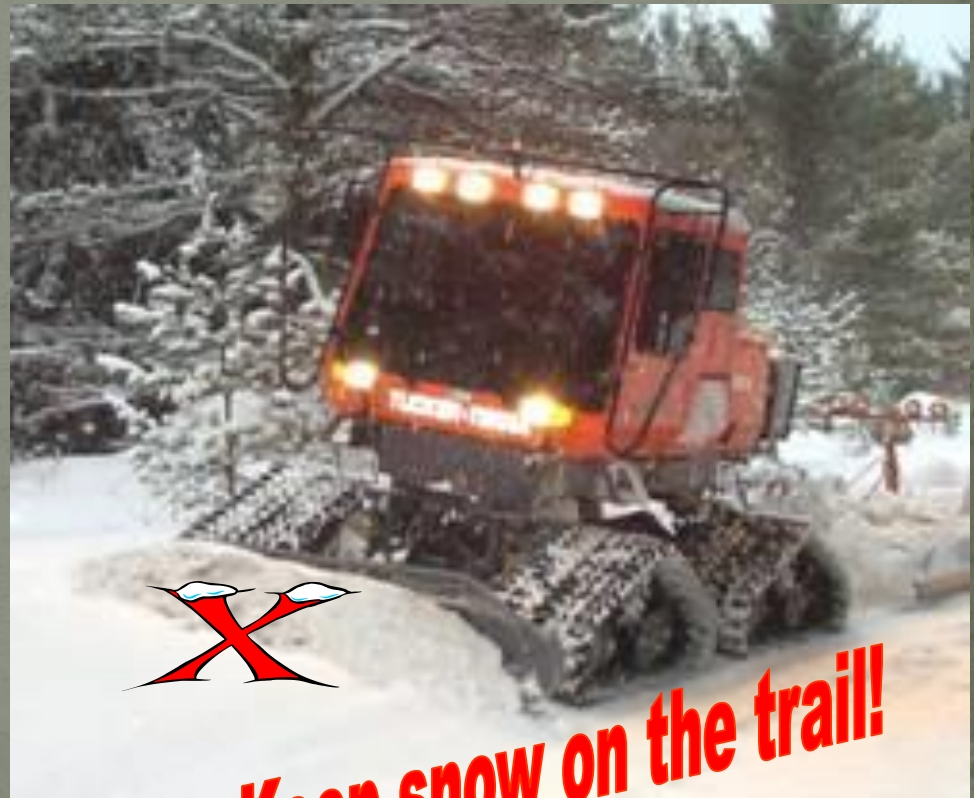
- Making a double pass on a heavily matted area if there are turn arounds



# Proper Use of the Front Blade

## Don't Overuse the Front Blade

- Best used only to level drifts or to pull new snow into trail; snow is then best processed, compressed & leveled by drag
- Continually raising and lowering the blade will cause dips in the trail



**Keep snow on the trail!**



# Proper Use of the Front Blade

## Blade Operations

- The blade on the grooming unit are **NOT** D8 Cat blades
- The blade is meant to push large amounts of snow or pull in snow from the sides

The blade  
should be 4" off  
the ground  
when operating



# **Tips for Operating Tracked Vehicles**

## **Keep Vehicle on Top of the Snow**

- Snow can have a top crust that is harder than the underlying base due to various melt-freeze or wind-packing conditions
- Try not to spin the tracks through the crust if at all possible

# Tips for Operating Tracked Vehicles If Stuck – Don't Spin

- If the groomer gets stuck  
**DO NOT SPIN THE TRACKS!**
- Remember that a groomer is rarely stuck in a level position unless it spun out while climbing a hard packed icy hill; in this case, raise implement & back down the hill.
- **Proceed with caution**





## Tips for Operating Tracked Vehicles If Stuck – Don't Spin

- More often than not groomer will be tilted to the right / outside edge of trails because it fell off compacted base
- First thing to do is get the groomer level
- If high-centered, shovel out



## Tips for Operating Tracked Vehicles If Stuck – Don't Spin

- Once groomer is level, ***gently*** rock it back & forth to help pack snow
- Unlock the drag if it won't move
- If this doesn't work; winch, shovel some more, or call a tow



# What to do if you are stuck

- If you think you are stuck, shovel the front and back of the tracks, then try to move
- If you're hung-up, shovel under the axle



**A few shovels full  
of snow will go a  
long way!!!**



# What to do in “Deep Snow” situations



**PACK THE TRAIL FIRST!!!**

# **Tips for Operating Tracked Vehicles**

## **Descend in Low Gear**

- When descending steep grades – use a sufficiently low gear & always keep the tracks revolving to permit steering
- A good rule of thumb is to use the same gear as what is required for climbing the hill

# **Tips for Operating Tracked Vehicles**

## **Raise Drag in Deep Snow**

- In deep snow or in drifts such as can occur along fence lines or in a road ditch – raise the drag to prevent too much snow buildup. Also remove accumulated snow from the pan.





# Groomer Operator Training Resource Guide

## Chapter 3: -Safety-

# Operator Safety

- **Always Wear Seat Belts with Shoulder Straps**
  - Operators & passengers can be launched into the windshield if vehicle hits fixed objects like rocks & stumps, which can cause a very abrupt, dangerous stop.
  - Remember, you are operating a state fleet vehicle. Seatbelt use is required at all times.

# Operator Safety

- **Be Visible to Snowmobilers:**  
always use reflective surfaces on equipment & operate with front & rear lights & top-mounted amber beacon or strobe light **ON** at all times (**DAY OR NIGHT**)



# Operator Safety

- **Be Prepared for Trouble:**  
grooming equipment **WILL** malfunction, break & get stuck, so be prepared for all potential problems;
- Have emergency procedures in place
- Carry tools, spare parts, supplies, first aid kits, GPS, a cell phone, fire extinguisher, etc.

# Operator Safety

- Other items recommended to carry;
  - Shovel
  - Cones or flags
  - Disabled Groomer signs
  - Chain or tow strap
  - Chainsaw
  - Water / food
  - Jack
  - Extra signs for replacement

# Operator Safety

- **Minimize Grooming Across Ice**
- Operator must check ice thickness in a minimum of 3 places every time they cross; when going onto the ice, in the middle, and the far shore leaving the ice.
- Equipment Dry Weight:
  - Tucker 173hp 12,800 lbs
  - Tucker 275hp 14,000 lbs
  - Drags 4,700-5,000 lbs



# Operator Safety

- Minimize Grooming Across Ice



12" minimum

# Operator Safety

- **Have means of communication**
- **Work the Plan:** file a Trip Plan with route & scheduled check-in times with the Trail Coordinator
  - If an emergency occurs or contact is lost; everyone should follow the plan



# Operator Safety

- **Carry Extra Signs for Replacement:**
  - Such as: stop, chevrons and blazers
  - Signs need to be replaced as soon as possible.
  - Report minor sign issues to the trail coordinator
  - The groomer operator is the most knowledgeable of where signs need to be to ensure safe operation.



# **Snowmobiles approaching from the front**

- When on narrow trail: move groomer to far right side of trail as quickly as possible and stop
- After checking to see that no traffic is coming from opposite direction; signal to riders to proceed past the groomer

## **Stops for repairing the trail or removing blown down trees**

- If you anticipate the time needed to make repair or remove obstacle will be relatively short; make sure all warning lights are turned on, quickly make the corrections & get back underway

# Stops for repairing the trail or removing blown down trees

- If the stop is anticipated to take a longer period of time, place warning devices on trail to warn riders of the groomer's presence





# Mechanical failure of groomer or being stuck on the trail

- If groomer becomes disabled or stuck on trail and cannot be move, use disabled groomer signs



# Assistance to a disabled snowmobile

- If you anticipate there will be a need to be in the location for an extended time
  - Park groomer as far right on trail as possible & also place warning devices
- If communications are available, call for assistance for snowmobiler & get underway again ASAP



# Crash Related Stop

- If you come upon the site of any crash, presume it is most likely an “unsafe site”
- **DO NOT** proceed until the site is made safe!





# Crash Related Stop

- Park groomer as far to right as possible & place warning devices
- Secure the site & assess situation for any injuries



# Crash Related Stop

- If the accident is because a snowmobile collided with the groomer. Do not move the equipment, just secure the scene





# Crash Related Stop

- Assess the situation to determine if current resources at the scene are sufficient to handle the emergency.
- If “yes,” offer any assistance you can give & stay at the site until the trail has been cleared





## **Crash Related Stop – If situation is not being handled, take control**

- A. Call dispatch, 911, or send someone for help
- B. State problem or situation
- C. Give the number of injured, if any
- D. Give the location, trail number, or trail name
- E. If known, state best way for rescue to arrive
- F. Stay calm & do not talk too much
- G. Don't move injured, but protect all victims at scene & keep them warm

# **Operator Guidelines & Policies**

- **We allow passengers in the Groomer**
- **Safety is the Key Issue**
  - **Trail Coordinator needs to know how many to rescue in event of an emergency**

# Operator Guidelines & Policies

- **Communication** is key to the success of any grooming program
- Always have a communication plan & follow it
- **Communicate** the following:
  - weather conditions
  - trail conditions
  - Hazards
  - leave times
  - grooming routes
  - safe return





# Groomer Operator Requirements

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# State Equipment

- All equipment utilized by the trail program is owned by the state
- It is a privilege to have access to state equipment
  - **ALCOHOL & SMOKING IS PROHIBITED IN STATE EQUIPMENT**
- Only certified operators can operate the equipment
- State equipment is not for personal use
- Negligence or abuse is not tolerated when operating equipment and the association is responsible for associated repair expenses
- Modifications to equipment must be approved

# Damage to State Equipment

If an operator causes damage to state equipment maliciously, use improper judgment resulting in further damage that could have been prevented, or cause a series of repairs during 1 season, the operator will be placed on probation using the following policy:

1. Operator and the trail association will receive a formal letter reflecting the probation. The letter will require the operator to have an experienced operator as a passenger for the period of 1 season. After the season, the probation is removed.
2. If damage continues to occur, a letter will be sent to the operator and trail association reflecting the operators certification is no longer valid and may not groom the trails for a period of 3 years.
3. If the operator continues to operate the equipment, the trail association will not receive reimbursement for expenses incurred during the grooming. If it is found this has occurred more than once, the trail association forfeits its right to exist as a state snowmobile trail system.



# Groomer Operators


- Certification to operate state equipment is obtained by attending classes held remotely or at the convention
- Certification lasts 3 years
- Operators must possess a valid drivers license to operate state equipment
- Must complete timecards in their entirety (DON'T SKIP INFORMATION) and be legible
- **Incomplete timecards will be returned to sender and not processed until completed correctly**
- One cannot operate the equipment for more than 12 hours during a 24 hour time period.
- Operators with a suspended grooming certification are required to complete the Beginner Groomer Operator & Maintenance Class after probation is complete.

# New Groomer Operators

- MUST complete 4 hours of training:
  - 2 hours as a passenger observing an Experienced Groomer Operator run the equipment
  - 2 hours operating the grooming equipment with an Experienced Groomer Operator observing
- Training must take place after becoming certified through SND's groomer operations class

# Groomer Operator Timecard

- All operators must have a W4 on file with SND, payroll will not be processed otherwise
- Each operator must complete a separate timecard
- Groomer Passenger's are only eligible to request the \$20 Groomer Passenger Fee twice
- Trail Coordinators that are also Groomer Operators cannot sign their own timecards



**Snowmobile North Dakota Trail Program  
State Owned Groomer Operator Timecard**

Trail Association		ICN# (refer to equipment list)		Date
Groomer Operator		Beginning Time	Ending Time	Total Operator Hours

Groomer Odometer Information				
Beginning		Ending		Total
Miles		Miles		
Hours		Hours		

PLEASE USE SEPARATE TIME CARDS FOR EACH GROOMER OPERATOR!

Pre & Post-Shift Check List									
Warm Machine Up for 30 Minutes - Complete section during Post Inspection									
E=Excellent		G=Good		F=Fair		P=Poor			
Checked By (Print Name):									
Engine Oil	Radiator	Belts	Wipers	Brakes	Flashlight				
Amt. Added			Idle Wheel	Radio	Shovel				
Main Hyd. Oil	Light		Track Condition	Fire Extinguisher	Horn				
Amt. Added	Track Tension		Fuel	Idle Wheel/Bearings	Battery/Cables				
Aux Hyd. Oil	Gauges		Back Up Alarm	Drive Line	Sprinklers				
Amt. Added	Suspension		Transmission/Leak	Starters/Engine Idle	Grease Zerk				
Transfer Case	Cooling System		Steering System	Rear End/Leak	Drag				
Tool Kit									

Snow Conditions	
Trail Conditions	
Weather Conditions	

Reimbursement Requested			
Total Operator Hours:	@ \$9.00/hr	\$	Donating Time <input type="checkbox"/>
*Please check if you are donating your time and requesting no reimbursement for operation			
*Make sure to reflect your total operator hours			

Groomer Operator Training			
Please check if you were training a new Certified Groomer Operator <input type="checkbox"/>			
Certified Trainee (Name of Trainee)			
Total Passenger (Ride Along) Hours		Total Operation Hours	
Groomer Passenger	@ \$20.00/time	\$	
Certified Experienced Groomer Operator Name			
*(Passenger must complete separate timecard from Groomer Operator and can only request reimbursement twice)*			

Groomer Operator Signature	Print Name	Phone#	Date
Trail Coordinator Signature	Print Name	Phone#	Date

THIS INVOICE APPROVED FOR PAYMENT BY (Office Use Only):

Date Received:	Date Processed:	Initials:
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# Operating Requirements

- All occupants must wear seat belts
- Alcohol and Smoking is prohibited in or on all equipment
- Trails Associations are responsible for the actions of the groomer operators:
  - Costs of repairs for damages resulting in negligence or misuse.
  - Costs of repairs for damages resulting from other than normal operations.
  - Towing costs resulting from other than normal operations.

# Snow & Ice Requirements

- 4 inch snow base is required to groom (base: compacted snow totaling 4 inches)
- Ice depths have to be at least **12 inches deep**; before crossing over any body of water
- Operators must check for ice depth 30 feet out into the water before crossing, in the middle, and 30 feet before the end of the body of water
- Additional ice checks need to be done as needed near obstructions (ex: cattails, beaver dams, snowdrifts)
- **OPERATORS NEED TO CHECK EACH AND EVERY TIME BEFORE THEY CROSS THE BODY OF WATER!!!**

# Accident Reporting

- Operators must immediately report all accidents and injury involving equipment to the association's Trail Coordinator
- The Trail Coordinator must notify SNDTP
- Incident Forms must be completed and to SNDTP within 24 hours
  - **Operator Suspension:** operators are placed on suspension immediately after SNDTP is informed of the incident
  - **Accident Investigation:** NDPRD will conduct an accident investigation on all incidents and provide SNDTP documentation within 7 days. SNDTP's Accident Safety Review Committee will review the documentation and determine if penalties are necessary within 7 days.
    - If the incident is classified as a Motor Vehicle Accident involving local law enforcement, please allow up to 10 days.



# Crash Related Stop – If situation is not being handled, take control

- If there are bystanders, ask them to either close trail or direct traffic until other help arrives
- Update emergency personnel upon their arrival
- **DOCUMENT, DOCUMENT, DOCUMENT**  
After the scene has been turned over to emergency personnel, write down everything that you observed & that transpired while you were at the accident scene. And don't talk to others about the incident.

# Incident Form

Submit  
to SND  
within  
24 Hours

## Snowmobile North Dakota Trail Program Trail Equipment Incident Form

Incident Location Description			
Trail Association Where Incident Occurred			
Date of Incident	Time of Incident	AM PM	
Address Where Incident Occurred (Physical Address, City, State, Zip)			
Location Description (Describe Terrain)			
Weather Conditions (ie: Visibility, Snowing, Fog, Cloud)			

Operator/Passenger Information			
Operator Name (First & Last Name)		Sex	M F
Operators Address (Mailing Address, City, State, Zip)		Date of Birth	Phone
Passenger Name (First & Last Name)		Sex	M F
Passenger Address (Mailing Address, City, State, Zip)		Date of Birth	Phone

Incident Description	
Description of Incident (Describe what happened)	
How Did It Happen (ie: Thin Ice, Debris on Trail)	
If Injury, Cause of Injury	

Injury Description		
If Injury, Complete Section (No Injury, skip to next section)	Operator Passenger Both	
Describe Operator Injury		
Did Operator Receive Medical Attention	Yes No	Injury Type
Contact Information for Medical Facility (Facility Name, Address, City, State, Zip, Phone)		
Describe Passenger Injury		
Did Passenger Receive Medical Attention	Yes No	Injury Type
Contact Information for Medical Facility (Facility Name, Address, City, State, Zip, Phone)		

# Maintenance Timecard & Schedule

These items must be completed according to the maintenance schedule.

Snowmobile North Dakota Trail Program  
State Owned Groomer Maintenance/Repair Timecard



Trail Association		ICN# (refer to equipment list)		Date
Groomer Mechanic		Beginning Time	Ending Time	Total Maintenance Hours

Groomer Odometer Information		Maintenance Description
Total Miles		PLEASE USE SEPARATE TIME CARDS FOR EACH GROOMER MECHANIC!
Hours		

X	Description	Hours	X	Description	Hours
<b>PODS, TRACKS, IDLERS, AXLES:</b>					
	Top Drive Sprocket Remover & Replacer (1)	3.5 Hrs		R & R Alternator Assembly	1 Hr
	R & R Rubber Track (1)	2.5 Hrs		R & R Fan Belt	1 Hr
	R & R Load Spring Assembly	2 Hrs		R & R Air Filter Assembly (8y type)	3 Hrs
	Tension all 4 Tracks	1.5 Hrs		R & R Idler Arms	1 Hr
	R & R 1 Idler Wheel and/or Bearings (#1, #3, #5)	3.5 Hrs Each		<b>MAINTENANCE</b>	
	R & R 1 Idler Wheel and/or Bearings (#2, #4)	2 Hrs Each		Change Oil, Filter, Lube Chassis	1 Hr
	<b>SUSPENSION, STEERING, TABLES, POWER TRAIN</b>			Check & Top all Oil Levels	1 Hr
	R & R Front Driveshaft & U Joints	2.5 Hrs		R & R Fuel Filter	3 Hrs
	R & R Rear Driveshaft & U Joints	2.5 Hrs		Change Automatic Transmission Fluid & Filters (filter in pan, into filter or frame)	2 Hrs
	R & R Connector Driveshaft & U Joints	4.5 Hrs		Change Oil in 1 Differential (2 per machine)	1 Hr
	R & R Front or Rear King Pins	1.5 Hrs		R & R Stroke Light Assembly	1.5 Hrs
	R & R Differential Pinion Seal	1.5 Hrs		R & R Stroke Bolt	4 Hrs
	<b>GLASS, BODY, LIGHTS</b>			R & R Front Wiper Arms or Blade	4 Hrs Each
	R & R Headlamp Assembly	3 Hrs Each		R & R Rear Wiper Motor Assembly	1.5 Hrs
	<b>CAB INTERIOR</b>			<b>DRAG</b>	
	R & R Radio Assembly	1.4 Hrs		Adjust Skags on Outside of Drag (Total of 2)	30 Minutes Each
				Adjust Internal Skags in Chain Pin (Total 3 or 4)	30 Minutes Each
				Clear Snow Filled Pins to Make Skag Adjustment	1.5 Hours Each
				Maintain Wheel Bearings (Repack)	1 Hr-Wheel

\*R & R: Remove and Replace

\*Please check mark the above work that was completed on the trail grooming equipment. If the item is not mentioned in the above diagram, please write a description in the maintenance section listed above.

Reimbursement Requested			
Thaw Timer	<input type="checkbox"/> @ \$25.00	\$	
Total Maintenance/Repair Hours:	<input type="checkbox"/> @ \$30.00/hour	\$	
Total Reimbursement		\$	
Donating Time		<input type="checkbox"/>	

Groomer Mechanic Signature	Print Name	Phone#	Date
Trail Coordinator Signature	Print Name	Phone#	Date

THIS INVOICE APPROVED FOR PAYMENT BY (Office Use Only):

Date Received:	Date Processed:	Initials:

## Daily or When Operated

Check lights, gauges, heated mirrors, wipers, heater fan  
Clean Differential Magnetic Dip Stick  
Engine Coolant Level (Radiator Cap)  
Engine Oil Dip Stick  
Drain Water Daily – Primary Fuel Filter  
Hydraulic Tank Fluid Level  
Radiator Overflow Reservoir Coolant Level  
Transmission Dip Stick

## Every Thaw

Check Brake Fluid  
Inspect Tracks for damage

## Monthly

Track Adjustment  
Transfer Case Fluid Level

## 50 Hours

Check oil filled Wheel fluid levels  
Grease Front & Rear Fifth Wheel Boss  
Grease Journals in track carrier  
Grease all Slide Blocks  
Grease Tie-Rod Ends  
Grease Track Carrier lower fitting  
Grease U-Joints & Slip Yoke  
Inspect Track Carrier for damage

## 200 Hours

Engine Oil Drain Plug  
Engine Oil Filter

## End of Season

Antifreeze Concentration Mixture  
Change Differential Fluid  
Change Hydraulic Fluid & Filter  
Change Primary Fuel Filter  
Change Secondary Fuel Filter  
Change Transfer Case Fluid  
Check Alternator charging voltage & wires  
Check Emergency Brake Cable & Handle Adjustment  
Check Leaf Spring Assembly's (Cracks, Torque)  
Check Starter for damaged cables & wires  
Check Tier III Cummins Air Restriction Gauge  
Check Wheels for damage  
Clean Battery Terminals & Load Test  
Drain, Flush & Fill Cooling System  
Grease Track Adjuster  
Grease Wheel Bearings  
Inspect Blade Cylinders for leaks & damage  
Inspect Blade Pins & Mounting Hardware  
Inspect Blade Valve for leaks  
Inspect Brake Caliper for leaks & Brake Pads  
Inspect Brake Master Cylinder for leaks  
Inspect Frame for damage  
Inspect Hydraulic Pump & Mounting Hardware  
Inspect Ring & Pinion, Check Bearing Cap Torque  
Inspect Steering Cylinder for leaks & damage  
Inspect Steering Orbitrol for leaks & damage  
Inspect Steering Swing for damage  
Inspect Tie-Rod Ends  
Inspect & Torque U-Joints  
Radiator Cap: check concentration mixture  
Transmission Fluid & Filter  
Remove, Clean, Inspect, Re-grease Wheel Bearings



# Maintenance Notes

- 2005 Groomers or newer use Fleetguard Wax Filters
- Use synthetic fluids in everything except the engine oil
- All fluids except for the transfer case and differentials must be changed once a year even if the machine wasn't used
- Every 2 years oil the idler wheels and anti-seize the spindles in the track carrier

# Equipment Repairs

- SNDTP must be notified of all repairs (repair work requires SNDTP's approval)
- Repairs Include
  - Welding
  - Tire Repair, Drag Repair, & Groomer Repair
- Repairs over \$250 must receive approval from SNDTP
  - If prior approval is not received the association is responsible for all costs associated with the expense
  - SNDTP is required to follow state Procurement procedures and need to oversee all paperwork associated with the expense

# Reminders



- Use two hands to adjust the mirrors
- Place hands at the sides of the mirror and adjust accordingly (placing the palm of your hand on the mirror surface may cause it to crack)
- **Replacement Cost: \$200**

## Please Remember:

- Always wear Seat Belts
- Groomer Operators cannot operate the equipment for more than 12 hours during a 24 hour time period



- Lift up the drag pan when crossing roadways
- Plastic is considerably cheaper than replacing a pan but needs TLC to last
- **Replacement Cost: \$1,000**



# Things To Remember

- Operator Safety comes FIRST!!!
  - Inform the Trail Coordinator of your route
  - Don't groom trails that are poorly signed
  - Don't groom in blizzard conditions
  - Don't groom in temps below -20
  - Plug in the GPS
- Carry extra gear (be prepared for the worst)
  - Breakdowns do occur, make sure you have proper clothing to keep you safe until help can arrive
  - Carry essentials (ex: food, water, winter survival/first aid kits)

# Special Thanks

Always remember we appreciate you and are grateful for all you do to continue the success of ND's snowmobile trails.

Adherence to these guidelines ensures that you will receive support, backing and assistance of SNDTP in any situation.

REMEMBER to have FUN and be SAFE

# RIDE RIGHT

# RIDE SMART!!!

# Thanks

We would like to thank you for participating in our grooming class today. Please provide input for the following questions:

- ❑ Do you like the new presentation format offering a refresher for groomer operators and a beginner section for the new operators?  
\_\_\_\_\_ ● \_\_\_\_\_
- ❑ Do you have any recommendations for information that should be covered more in depth or less? (ex: maintenance, operations)
- ❑ What do you think is missing in the presentation?

**Remember Safety First!!!**