

March 11, 2022

Attn: Contractor,

The Saskatchewan Public Safety Agency (SPSA) is the government agency responsible for the coordination of emergency management and all-hazards emergency responses to events like wildfires, floods, and severe weather. Given our mandate, the SPSA has a focus on preparedness. The SPSA is establishing a contingent of vendors preapproved to activate and supply equipment and operators when needed. The eligibility call-up list will be used to hire equipment within the province, for any SPSA managed project and/or response for the period of April 1, 2022 to March 31, 2023.

The eligibility list will consist of vendors who have signed *Agreements for Hire of Equipment with Operator* in advance. Signing an agreement is not a guarantee of hire but will position your business to be eligible for work as part of a SPSA response, which may include wildland fire suppression, flood, and weather event mitigation and/or land reclamation.

Examples of equipment types (with operator) that the SPSA may require includes, but is not limited to: crawler dozers, skidders, equipment transports, forwarders, feller bunchers, skid steer loaders, wheeled tractors, water and fuel trucks, high volume pumps, tracked vehicles (muskeg tractors), backhoes and excavators, cranes, loaders, motor graders and gravel trucks.

In order to be placed on the eligibility call-up list, the SPSA requires the following:

- Completed Agreement for Hire of Equipment with Operator form in legible print.
- Copy of registration for each licensed unit.
- Proof of insurance (a letter or statement of coverage from your insurance agent – minimum of \$1,000,000 liability insurance).

Detailed information on the application process, requirements, terms and rates are attached.

Completed submissions received by the SPSA will be reviewed for completeness and approval. Incomplete packages will be returned.

Contractor
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If you have any questions regarding the Heavy Equipment Program, please contact the Heavy Equipment Administrator at (306)953-3400 or heavy.equipmentsupport@gov.sk.ca.

Thank you for your interest in the SPSA Heavy Equipment Program.



Submission Guide for Vendors

Eligibility List Agreements for Hire of Equipment with Operator

The Saskatchewan Public Safety Agency has included for your reference:

- SPSA Rate Guide
- Agreement for Hire of Equipment with Operator
- An example of a completed Agreement for Hire of Equipment with Operator
- An example of a completed Heavy Equipment Contractor Daily Report
- The Fireline Safety Orientation Field Reference Manual (OW-113)
- Clubroot Information Sheet

In order to be placed on the eligibility call-up list, the SPSA requires the following:

- Completed Agreement for Hire of Equipment with Operator form in legible print.
- Copy of registration for each licensed unit.
- Proof of insurance (A letter or statement of coverage from your insurance agent – minimum of \$1,000,000 liability insurance)

Be advised that:

- It is the responsibility of the contractor to ensure that equipment meets all safety standards and is in good working order.
- All equipment will be inspected upon arrival to call-up location by the SPSA.
- The contractor must provide a copy of valid registration(s) for all equipment (if applicable) upon arrival to call-up location.
- The contractor must provide proof of insurance (A letter or statement of coverage from your insurance agent – minimum of \$1,000,000 liability insurance) upon arrival. The Contractor shall have the required insurance in full force and effect prior to commencing any work under this Agreement.
- Where applicable, ROPS (roll over protection system) must be present, certified and in good working order and FOPS (falling object protective structure) must be present and in good working order.
- Contractors must adhere to WHMIS2015 and TDG guidelines.
- A contract number will be issued upon the first hired call-up.

Please print the agreement on legal landscape paper (8.5"x14"), date and sign. The submitted image or scanned copy must be clearly legible.

Please submit your completed package via email, mail or in person to:

Saskatchewan Public Safety Agency-North Base
Box 5005, 151-15th Street N.W.
Prince Albert, SK S6V 6W9
Attention: Heavy Equipment Support
(306) 953-3400
heavy.equipmentsupport@gov.sk.ca

2022 Heavy Equipment Rates

TYPE OF MACHINE	CLASSIFICATION	HOURLY RATE CONTRACTOR SUPPLIED FUEL		HOURLY RATE SPSA SUPPLIED FUEL		HOURLY RATE STANDBY
		Skidder Only	Tank Pump	Skidder Only	Tank Pump	
DOZERS						
TYPE 3	125 - 149 HP	\$257.00		\$196.00		\$142.00
TYPE 2	150 - 200 HP	\$296.00		\$226.00		\$163.00
TYPE 1	201 - 225 HP	\$336.00		\$257.00		\$186.00
TYPE 1	Over 225 HP	\$343.00		\$262.00		\$189.00
Skidders		Skidder Only	Tank Pump	Skidder Only	Tank Pump	
	Under 100 HP	\$106.00	\$120.00	\$78.00	\$90.00	\$53.00
	100 - 150 HP	\$128.00	\$144.00	\$97.00	\$108.00	\$59.00
	Over 150 HP	\$144.00	\$157.00	\$108.00	\$121.00	\$67.00
Forwarders	1000 gal tank	\$168.00		\$126.00		\$73.00
Heavy ATV's	Under 1000 gal	\$163.00		\$123.00		\$75.00
	Over 1000 gal	\$181.00		\$136.00		\$83.00
Semi Lowbeds	40 Ton	\$261.00		\$189.00		\$118.00
	50 Ton	\$273.00		\$198.00		\$124.00
	60 Ton	\$285.00		\$207.00		\$129.00
Semi-Tractors Only		\$212.00		\$154.00		\$96.00
Tandem Trucks	Gravel Box Pintle Hitch	\$113.00		\$85.00		\$53.00
Water Tenders (Trucks)	Single Axle	\$108.00		\$81.00		\$49.00
	Tandem	\$132.00		\$99.00		\$60.00
	6X6	\$141.00		\$107.00		\$65.00
	Semi	\$151.00		\$114.00		\$69.00
Septic Vacuums	Single Axle	\$106.00		\$79.00		\$48.00
	Tandem	\$137.00		\$103.00		\$62.00
Aviation Fuel Hauls	Semi	\$144.00		\$108.00		\$66.00
	Tandem	\$126.00		\$96.00		\$58.00
	Single Axle	\$104.00		\$79.00		\$48.00

Notes:

1. All rates include operator wages and crew vehicles.
2. Swampers, if required, must be pre-approved for each trip and will be paid \$28.00/hr.
3. For equipment not listed above, Hourly rate for SPSA-supplied fuel is 80% of the Contractor-supplied fuel rate.
4. For equipment not listed above, Standby rate is 60% of the SPSA-supplied fuel rate.

2022 Heavy Equipment Rates

LOADERS, EXCAVATORS, MULCHERS

TYPE OF MACHINE	CLASSIFICATION	HOURLY RATE CONTRACTOR SUPPLIED FUEL	HOURLY RATE SPSA SUPPLIED FUEL	HOURLY RATE STANDBY
Loaders – 4 Wheel Drive	Under 2 Yard Bucket	\$154.00	\$112.00	\$70.00
	Over 2 Yard Bucket	\$192.00	\$140.00	\$87.00
Loaders – Skid Steer	Under 65 HP	\$108.00	\$78.00	\$49.00
	Over 66 HP	\$119.00	\$86.00	\$54.00
Excavators with Bucket & Thumb	Under 150 HP	\$247.00	\$180.00	\$112.00
	150 - 175 HP	\$264.00	\$192.00	\$120.00
	Over 175 HP	\$282.00	\$204.00	\$128.00
Mulchers - TBD				
Notes: <ol style="list-style-type: none"> All rates include operator wages and crew vehicles. Swampers, if required, must be pre-approved for each trip and will be paid \$28.00/hr. For equipment not listed above, Hourly rate for SPSA-supplied fuel is 80% of the Contractor-supplied fuel rate. For equipment not listed above, Standby rate is 60% of the SPSA-supplied fuel rate. 				

AGREEMENT FOR HIRE OF EQUIPMENT WITH OPERATOR

THIS AGREEMENT made this _____ day of _____ 20__ BETWEEN

THE SASKATCHEWAN PUBLIC SAFETY AGENCY (the "Agency") and

Contractor Name _____
 Address _____
 City _____ Province _____ Postal Code _____
 Email Address _____

Commencement Date _____ Completion Date _____

AGREEMENT NUMBER _____
 Workers Comp Firm _____
 One Million (\$1,000,000) Liability Insurance Yes No
 Contact Person _____
 Business Phone _____
 Home Phone _____
 Cell Phone _____
 Maximum Amount Payable _____

THE CONTRACTOR HEREBY AGREES TO PROVIDE THE FOLLOWING EQUIPMENT OPERATION ON REQUEST FOR THE SASKATCHEWAN PUBLIC SAFETY AGENCY RELATED WORK WHEN REQUESTED BY AN AUTHORIZED AGENCY OFFICIAL AND TO RESPOND AND MOBILIZE IMMEDIATELY FOR ACTION AS DIRECTED, AND FOR DURATION(S) AS REQUIRED.

1. TYPE OF MACHINE	2. MAKE/MODEL/YEAR	3. DESCRIPTION	4. AGENCY ASSIGNED UNIT NO.	5. WORKING RATE/HR WITH CONTRACTOR FUEL	6. RATE/KM WITH CONTRACTOR FUEL	7. WORKING RATE/HR WITH AGENCY'S FUEL	8. WORKING RATE/KM WITH AGENCY'S FUEL	9. FLAT RATE/DAY	10. STANDBY RATE/HR (ON SITE READY FOR WORK)	11. OPERATOR ONLY RATE/HR

THE PARTIES AGREE AS FOLLOWS: Saskatchewan Public Safety Agency

1. Express Warranty of Fitness

- a) The Contractor warrants that the equipment supplied will be fit for the particular purpose of the Agency
- b) The parties agree that if the equipment delivered under this contract is not as warranted, the Agency will not be liable for any amount whatsoever.

2. Laws and Permits

- a) Prior to performing any work, the Contractor shall, at its own expense, obtain any necessary approvals, licenses, permits and authorizations required for the work. The Contractor acknowledges that the Agency has made, and makes, no representations respecting the acquisition by the Contractor of any approval, license, permit or authorization which may be required by any law of Saskatchewan, or any other right or privilege from any federal, provincial or municipal department, agency or official.
- b) The Agency will pay for over dimension permits but not for change of class permits.

3. Prohibited Use

- a) The equipment shall not be used, operated or driven:
 - i. In violation of any terms and conditions of this agreement;
 - ii. In violation of any of the provisions of the Criminal Code of Canada; or,
 - iii. Recklessly or in a manner which would endanger the safety or property of others.

4. Delivery

- a) The Agency will only be responsible for the cost of delivery from the Point of Hire to the designated work site.

5. Payment

- a) Any payment due to the Contractor shall not occur until:
 - i. The Agency is in receipt of a clearance notification concerning the status of the Contractor's file with the Workers Compensation Board.
- b) Payment will be made within 30 days after receipt of the invoice. The Government of Saskatchewan does not pay fees or interest on overdue accounts until 45 days past due.
- c) The lowest cost, most appropriate equipment closest to the work location will be hired first, circumstances permitting. The Agency reserves the right not to hire equipment placed at fires on speculation of being hired.
- d) Travel time will be paid only if accommodations are not available at the work location as identified by the Agency.
- e) The Government of Saskatchewan is a GST exempt entity and, therefore, it is the Contractor's responsibility to ensure the Agency is not charged GST.
- f) Payment by the Agency under or pursuant to this Agreement is subject to an appropriation being made by the Legislature of the Province of Saskatchewan for the services to be provided under this Agreement in the fiscal year of the Agency in which the liability to pay arises, as per section 33(2) of The Financial Administration Act, 1993 of the Province of Saskatchewan.

6. Inspection

- a) The Contractor agrees that prior to accepting the equipment the Agency may at any time conduct an inspection to determine the quality and acceptability of the equipment. All such inspections are conducted for the sole benefit of the Agency, and shall not release the Contractor from the responsibility of providing the Equipment for fitness of purpose.
- b) If the Agency identifies a deficiency, the Equipment will not be accepted and the Contractor will be required to reimburse the Agency for any delivery expense paid by the Agency unless the Equipment is subsequently rectified and accepted by the Agency.

7. Reporting of Accidents and Theft

- a) The Agency shall, as soon as possible, report to the Contractor any collision or damage and, in the case of theft or vandalism involving the equipment, notify the police in addition to the Contractor.

8. Title

- a) Title to the equipment shall at all times remain with the Contractor, and the Agency at its expense shall protect and defend the title of the Contractor and keep it free of all claims and liens other than the rights of the Agency hereunder and claims and liens created by or arising through the Contractor.

9. Labour and Wages

- a) The Contractor warrants that the Contractor and/or persons it employs is competent to perform the work, adequately trained, and meets the training standards set by the Agency.
- b) The Contractor shall pay any assessments that may be required by The Workers' Compensation Act, 2013 and shall otherwise comply with that act where applicable and shall deliver to the Agency if requested a certificate from the Workers' Compensation Board showing that the Contractor is registered and is in good standing with the Board prior to signing the contract.
- c) When the Contractor is not eligible for coverage with the Workers' Compensation Board, in accordance with paragraph b), the Agency shall deduct, from the Contractor's pay, the required premiums and submit such premiums to the Workers' Compensation Board.
- d) The Contractor acknowledges and agrees that it is an independent contractor, independent of the Agency, and has no authority to act as an agent of the Agency.
- e) The Contractor acknowledges that it is an employer as defined in The Saskatchewan Employment Act and The Occupational Health and Safety Act and that it shall, as condition of this Agreement, comply with the provisions of those acts, and any regulations from time to time made pursuant to those acts.

10. Insurance

- a) The Contractor shall, at its own expense and without limiting its liabilities herein, provide and maintain the following insurance coverage with carriers, on forms and with coverage and endorsements satisfactory to the Agency in its sole discretion:
 - i. General liability in an amount not less than \$1,000,000 per occurrence, insuring against bodily injury, personal injury and property damage including loss of use thereof. Such insurance shall include blanket contractual liability and non-owned auto liability.
 - ii. Such additional insurance policies and coverage as the Agency reasonably requests from time to time.
 - iii. The Contractor acknowledges that these are the minimum insurance requirements that have been established by the Agency. No representation or warranty of any kind is made by the Agency as to the completeness or suitability of this insurance and the Contractor shall determine and satisfy itself that it has appropriate and sufficient coverage to satisfy its own risk and insurance requirements, and to cover its obligations under this Agreement
- b) The Contractor shall have the required insurance in full force and effect prior to commencing any work under this Agreement. At the request of the Agency, the Contractor shall provide evidence satisfactory to the Agency of all required insurance in the form of a Certificate of Insurance. On request, the Contractor shall promptly provide the Agency with a certified true copy of each policy. All such insurance policies shall ensure that the coverage provided will not be materially changed or canceled until thirty days after written notice of any such change or cancellation has been given to the Agency.

11. Indemnification

- a) The Contractor shall indemnify and save harmless the Agency, the Government of Saskatchewan and all their respective employees, agents and representatives against all costs, claims and actions for bodily injury, death or property loss or damage arising from the operations or purported operations of the Contractor or its servants, employees, contractors or agents pursuant to this Agreement or from any failure by the Contractor to comply with this Agreement.
- b) Neither the Agency, the Government of Saskatchewan, nor any of their respective employees, agents or representatives shall be responsible in any way for injury to the Contractor (including death) or for loss of or damage to any property belonging to the Contractor or any other person, howsoever caused, unless such injury, loss or damage is caused solely by the willful act or gross negligence of the Agency.
- c) This section shall survive the expiration or termination of this Agreement

12. Termination

- a) The Agency may, in its sole discretion immediately terminate this Agreement in the event of:
 - i. The Contractor makes or allows a material default under any of the terms; conditions, or undertakings of this Agreement;
 - ii. When the services, as needed by the Agency, are no longer required;
 - iii. An Act of God, flood, fire, reduction or loss of access, unsuitable weather, natural disaster, withdrawal of labour in a labour dispute, inability to obtain supplies or materials, or any other cause beyond the reasonable control of the Agency; and
 - iv. The Contractor becoming insolvent or making an assignment or being petitioned into bankruptcy, or making an assignment for the benefit of creditors, or a receiver or liquidator being appointed with respect to all or a portion of the Contractor's business or property.
- b) In the event of clause 12a) i), the Agency may at its sole discretion:
 - i. Serve notice to the Contractor allowing work to proceed, giving the Contractor a deadline for compliance to rectify the default to the satisfaction of the Agency; or
 - ii. Serve notice to the Contractor stopping further work, giving the Contractor a deadline for compliance to rectify the default to the satisfaction of the Agency.
- c) In the event of termination of this Agreement, the Contractor shall be entitled to be paid hereunder for the work satisfactorily performed to the date of termination, less any amount owing to the Agency under this Agreement. The Agency shall not be liable for any expenses, damages or losses sustained by the Contractor due to any such termination, and the Contractor hereby releases the Agency and all its officers, employees and agents from all such claims.
- d) In the event of termination or expiration of this Agreement, the Contractor shall immediately return to the Agency all of the Agency's property in the Contractor's possession.
- e) In the event of termination of this Agreement, in accordance with clause 12a) or 12c), the Agency may employ such means as the Agency deems necessary to complete the work.

13. Assignment

- a) The Contractor shall not assign this Agreement or sub-contract any of the work without the prior written consent of the Agency.

14. Miscellaneous

- a) No amendment of this Agreement or waiver of any of the terms and provisions shall be valid unless effected in writing and signed by both parties.
- b) Time is in all respects of the essence in this Agreement.

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- c) When the Contractor is not eligible for coverage with the Workers' Compensation Board, in accordance with paragraph b), the Agency shall deduct, from the Contractor's pay, the required premiums and submit such premiums to the Workers' Compensation Board.
- d) The Contractor acknowledges and agrees that it is an independent contractor, independent of the Agency, and has no authority to act as an agent of the Agency.
- e) The Contractor acknowledges that it is an employer as defined in The Saskatchewan Employment Act and The Occupational Health and Safety Act and that it shall, as condition of this Agreement, comply with the provisions of those acts, and any regulations from time to time made pursuant to those acts.

10. Insurance

- a) The Contractor shall, at its own expense and without limiting its liabilities herein, provide and maintain the following insurance coverage with carriers, on forms and with coverage and endorsements satisfactory to the Agency in its sole discretion:
 - i. General liability in an amount not less than \$1,000,000 per occurrence, insuring against bodily injury, personal injury and property damage including loss of use thereof. Such insurance shall include blanket contractual liability and non-owned auto liability.
 - ii. Such additional insurance policies and coverage as the Agency reasonably requests from time to time.
 - iii. The Contractor acknowledges that these are the minimum insurance requirements that have been established by the Agency. No representation or warranty of any kind is made by the Agency as to the completeness or suitability of this insurance and the Contractor shall determine and satisfy itself that it has appropriate and sufficient coverage to satisfy its own risk and insurance requirements, and to cover its obligations under this Agreement
- b) The Contractor shall have the required insurance in full force and effect prior to commencing any work under this Agreement. At the request of the Agency, the Contractor shall provide evidence satisfactory to the Agency of all required insurance in the form of a Certificate of Insurance. On request, the Contractor shall promptly provide the Agency with a certified true copy of each policy. All such insurance policies shall ensure that the coverage provided will not be materially changed or canceled until thirty days after written notice of any such change or cancellation has been given to the Agency.

11. Indemnification

- a) The Contractor shall indemnify and save harmless the Agency, the Government of Saskatchewan and all their respective employees, agents and representatives against all costs, claims and actions for bodily injury, death or property loss or damage arising from the operations or purported operations of the Contractor or its servants, employees, contractors or agents pursuant to this Agreement or from any failure by the Contractor to comply with this Agreement.
- b) Neither the Agency, the Government of Saskatchewan, nor any of their respective employees, agents or representatives shall be responsible in any way for injury to the Contractor (including death) or for loss of or damage to any property belonging to the Contractor or any other person, howsoever caused, unless such injury, loss or damage is caused solely by the willful act or gross negligence of the Agency.
- c) This section shall survive the expiration or termination of this Agreement

12. Termination

- a) The Agency may, in its sole discretion immediately terminate this Agreement in the event of:
 - i. The Contractor makes or allows a material default under any of the terms, conditions, or undertakings of this Agreement;
 - ii. When the services, as needed by the Agency, are no longer required;
 - iii. An Act of God, flood, fire, reduction or loss of access, unsuitable weather, natural disaster, withdrawal of labour in a labour dispute, inability to obtain supplies or materials, or any other cause beyond the reasonable control of the Agency; and
 - iv. The Contractor becoming insolvent or making an assignment or being petitioned into bankruptcy, or making an assignment for the benefit of creditors, or a receiver or liquidator being appointed with respect to all or a portion of the Contractor's business or property.
- b) In the event of clause 12a) i), the Agency may at its sole discretion:
 - i. Serve notice to the Contractor allowing work to proceed, giving the Contractor a deadline for compliance to rectify the default to the satisfaction of the Agency; or
 - ii. Serve notice to the Contractor stopping further work, giving the Contractor a deadline for compliance to rectify the default to the satisfaction of the Agency.
- c) In the event of termination of this Agreement, the Contractor shall be entitled to be paid hereunder for the work satisfactorily performed to the date of termination, less any amount owing to the Agency under this Agreement. The Agency shall not be liable for any expenses, damages or losses sustained by the Contractor due to any such termination, and the Contractor hereby releases the Agency and all its officers, employees and agents from all such claims.
- d) In the event of termination or expiration of this Agreement, the Contractor shall immediately return to the Agency all of the Agency's property in the Contractor's possession.
- e) In the event of termination of this Agreement, in accordance with clause 12a) or 12c), the Agency may employ such means as the Agency deems necessary to complete the work.

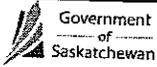
13. Assignment

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14. Miscellaneous

- a) No amendment of this Agreement or waiver of any of the terms and provisions shall be valid unless effected in writing and signed by both parties.
- b) Time is in all respects of the essence in this Agreement.

EXAMPLE



Heavy Equipment Contractor Daily Report

Date: 7-Jul-19

Daily #: 123456

Contractor

Name: Bird Construction

Operator

Name: Jamie Bird

Incident/

Org: 19PA - MOTH

Project #: 065432

TYPE /

MODEL: 1986 LGP D6D Dozer

UNIT #: D46

RECORD TIME WORKED TO THE NEAREST 1/2 HOUR

Actual START Time	Actual STOP Time	Working HRS / KMs (Not to Exceed 16 HRS)	Standby HRS (Not to Exceed 10 HRS)	Day Rate	Operator HRS	Description of Work Completed Standby or Operator Hrs	Ministry Supplied Fuel
700	1200	5				Build Fire Guard	
1200	1230					Lunch	
1230	1530		3			Fire up & rolling - not safe	
1530	2030	5				Build Fire Guard	
TOTAL HOURS/KM's:		10	3				

Meal Breaks of at least 1/2 HR must be identified. If not taken a reasonable explanation must be supplied & approved

Reason:

If meal break is not taken please identify here

Jamie Bird

Operator Signature

John Scottman

Ministry Verification of Goods & Services Received

John Scottman - Task Force Leader

Print Name & Position on Fire

WHITE - NSS (with Invoice)

BLUE - FILE

PINK - CONTRACTOR

Revised December 2018



canola
council
OF CANADA



canola
council
OF CANADA

Recommendations for high-risk areas

For growers in an area known to have clubroot, the following steps are recommended to reduce the risk of disease spread:

Follow cleaning steps 1–3 listed inside this guide. This is especially important when leaving a field known to have clubroot. If this is not possible, following steps 1 and 2 is better than nothing because the more soil you clean from the unit and leave behind in the field, the more viable clubroot spores you leave behind as well.

Work infested fields last. If a farm has only one field known to have clubroot, by working that field last, growers will reduce the risk of directly transferring contaminated soil from infested to non-infested fields and should have extra time to give equipment a thorough cleaning before being used again.

Don't work fields when the soil is wet. Wheels caked in mud are that much harder to clean.

Ensure custom operators and anyone else entering your fields follow sanitation protocols. Don't feel awkward about asking.

Be responsible. Growers should inform local authorities and also tell custom operators that clubroot has been discovered in their field. Some municipalities require this by law. In other areas, this is just a common courtesy. Consider posting "Do not enter" signs beside any of your fields known to have clubroot.

Recommendations for low-risk areas

For growers in areas where clubroot has not been reported:

If in doubt, decontaminate. Do a rough cleaning at a minimum. If you know all your fields are clubroot free and your own equipment is used exclusively on your farm, the reduced risk of contamination may make sanitizing your equipment less necessary.

Ask anyone entering your fields whether they've recently been in a clubroot-infested area. If the answer is yes or they aren't sure, ask about their sanitation protocols and check that their vehicles and equipment have been cleaned and disinfected. Don't feel awkward about asking. Some workers and equipment cover wide geographic areas.

Make sure used equipment is clean. When buying used machinery or vehicles make sure they are clean before they leave the auction site or the farm they come from. Also check that the transport truck is clean. As a precaution, you may want to pressure wash and disinfect the equipment again when it gets to your farm. Perform this task in a low-traffic area away from any cultivated soil.



Managing Clubroot: Equipment Sanitation Guide

To contact your local Canola Council of Canada Agronomy Specialist, visit www.canolacouncil.org or call toll free at 1-866-834-4378.

For more information on clubroot of canola go to www.clubroot.ca

Canola Council of Canada
400–167 Lombard Avenue
Winnipeg, Manitoba, Canada R3B 0T6
Phone (204) 982-2100 Fax (204) 942-1841
admin@canolacouncil.org
www.canolacouncil.org

CCC043 (01-10-12)



Clubroot Sanitation



Clubroot is a soil-borne disease that can lead to severe gall formation on canola roots, resulting in premature ripening or plant death. Once it infests a field, clubroot is almost impossible to eradicate, so growers should take measures to prevent accidental introduction of the disease.

Clubroot spreads with the movement of contaminated soil. Soil can move by wind and water erosion, but the most common way to transfer soil from field to field is on farm machinery and vehicle tires, including recreation and construction vehicles. Therefore, equipment sanitation is a key clubroot prevention step.

3 steps to successful sanitation

Before you start cleaning, choose an appropriate worksite.

You should clean and disinfect the unit before leaving the field, and leave all contaminated soil in that field. A low-traffic grassed area near the field exit is an ideal place to sanitize equipment.

Step 1: Rough cleaning. Use a hand scraper, wire brush and/or compressed air to remove loose and clinging soil and crop debris from openers, tires and wheels. Sweep, blow or scrape residues off of the frame. This should remove at least 90% of the soil from the unit. *Time required: 1–2 hours for a 40-foot cultivator. Larger pieces of equipment, tractors and double disk units may take longer.*

Step 2: Fine cleaning. Use a pressure washer at 2,000–3,000 psi on all areas where soil can accumulate. Turbo nozzles are generally more effective at removing soil than regular nozzles. Addition of an industrial detergent may enhance the degree of soil removal. Steps 1 and 2 in combination should remove 99% of soil from the unit. *Time required: 1–2 hours for a 40-foot cultivator. (2–4 hours total for steps 1 and 2.)*

Step 3: Disinfection. Disinfect all openers, tires and wheels with a 1% bleach solution or surface disinfectant of equivalent strength. A 3-gallon backpack herbicide sprayer will work for this job. All areas should remain wet with the solution for 15–20 minutes. Disinfecting in the early morning or in the evening slows evaporation so a second or third application may not be necessary to keep the area wet for the required time. Step 3 alone is not effective. The first two steps are required if you plan to include the disinfection step. *Time required: 2 hours or more for a 40-foot cultivator. (4 hours or more for steps 1, 2 and 3.)*



A 40-foot cultivator can accumulate 50–200 pounds of soil on the shovels, shanks, frame and wheels. Tractors and double disks can carry substantially greater amounts. Drive the equipment to a non-crop area, such as a grassed area or pasture, for pressure washing and disinfection.

Clean and disinfect the unit before leaving the field. The ideal sanitation site is a low-traffic grassed area near the field exit. If you need to clean a unit before it comes on your farm, use a tarp to catch all soil that comes off the unit, then dispose of the soil in a safe manner.



Step 1a: A rough cleaning using a hand scraper will generally remove 90% or more of the soil and plant debris from equipment.



Step 1b: A strong stream of compressed air will help remove loose soil and dust from hard-to-reach areas or near sensors and instrument clusters where it may not be safe to pressure wash.



Step 2: Once the rough cleaning is complete, go over the unit with a pressure washer to remove the rest of the soil.



Step 3: Soaking all areas with a 1% bleach solution should inactivate any remaining clubroot resting spores hidden in cracks and crevices.



How much sanitation is needed?

The clubroot risk for your location and your individual risk tolerance will determine the best clubroot sanitation practices for you. Consider your answers to the risk questions below, and then weigh the financial risk. Financial risk requires an evaluation of the potential long-term cost of allowing the spread of clubroot onto your land or throughout your farm versus the valuable time it takes to clean equipment between fields. Depending on your situation, the best choice could range from sticking with your current practices to adopting all three steps highlighted in this guide.

What is your clubroot risk?

The following questions will help determine the risk of clubroot spread to your farm, or from field to field within your farm. Your answers will help you decide how much sanitation you need and when to use it.

Do you already have clubroot in at least one field? If yes, then you are at high risk of spreading clubroot throughout the farm on vehicles, equipment and machinery. Thorough sanitation between each field may be warranted.

Have you purchased equipment that may have originated in clubroot infested areas? Go to www.clubroot.ca or search provincial agriculture department websites where the equipment was previously used. If the equipment originates from a clubroot-infested area, make sure the equipment is sanitized before it comes to your farm.

Has your equipment been used in fields in infested areas? If so, it should be cleaned and disinfected before it comes back to your farm.

Who has access to your land? Custom operators, oil and gas equipment and trucks, earth-moving and excavating machines, hunters, recreational vehicles, soil sampling trucks, and even agronomists can carry clubroot-infested soil on tires, shoes and machinery. Make sure they follow clubroot risk mitigation protocols.

Do you use tillage? Tillage or any other farm practice that increases soil disturbance or results in frequent travel throughout a field will increase the risk of transporting clubroot-infested soil. Tillage may also increase soil erosion by wind and water – which can also spread clubroot-infested soil.

Saskatchewan Public Safety Agency

Fireline Safety

Orientation

(OW-113)

Field Reference Manual

Fire Name: _____ **Location:** _____

Check-In Briefing List

1.	Incident orientation	
2.	Safety briefing	
3.	Medical plan	
4.	Organization chart briefing	
5.	My job title	
6.	Who is my supervisor	
7.	Camp orientation	
8.	Equipment requests	
9.	Communications	
10.	Transportation	

Employee Name: _____ **Date:** _____

Check-Out Debriefing List

1.	Fire debriefing	
2.	Time and commissary sheets	
3.	Equipment	
4.	Communications	

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1.0 INTRODUCTION

This guide was created to inform personnel of safety practices the Saskatchewan Public Safety Agency (SPSA) follows during the suppression of wildfires. Personnel must be informed of their rights and duties and are expected to work in a safe and effective manner to minimize accidents.

2.0 WORKERS' RIGHTS

1. The right to know the hazards and what to do to prevent injuries from those hazards.
2. The right to participate in health and safety activities in your workplace.
3. The right to refuse work that you believe to be unusually dangerous to yourself or others.

3.0 GENERAL DUTIES SASKATCHEWAN EMPLOYMENT ACT (SEA)

3.1 General Duties of Employer

3-8 Every employer shall:

- (a) ensure, insofar as is reasonably practicable, the health, safety and welfare at work of all of the employer's workers;
- (b) consult and cooperate in a timely manner with any occupational health committee or the occupational health and safety representative at the place of employment for the purpose of resolving concerns on matters of health, safety and welfare at work;
- (c) make a reasonable attempt to resolve, in a timely manner, concerns raised by an occupational health committee or occupational health and safety representative pursuant to clause (b);
- (d) ensure, insofar as is reasonably practicable, that the employer's workers are not exposed to harassment with respect to any matter or circumstance arising out of the workers' employment;
- (e) cooperate with any other person exercising a duty imposed by this Part or the regulations made pursuant to this Part;

- (f) ensure that:
 - (i) the employer's workers are trained in all matters that are necessary to protect their health, safety and welfare; and
 - (ii) all work at the place of employment is sufficiently and competently supervised;
- (g) if the employer is required to designate an occupational health and safety representative for a place of employment, ensure that written records of meetings with the occupational health and safety representative are kept and are readily available at the place of employment;
- (h) ensure, insofar as is reasonably practicable, that the activities of the employer's workers at a place of employment do not negatively affect the health, safety or welfare at work of the employer, other workers or any self-employed person at the place of employment; and
- (i) comply with this Part and the regulations made pursuant to this Part.

3.2 General Duties of Supervisors

3-9 Every supervisor shall:

- (a) ensure, insofar as is reasonably practicable, the health and safety at work of all workers who work under the supervisor's direct supervision and direction;
- (b) ensure that workers under the supervisor's direct supervision and direction comply with this Part and the regulations made pursuant to this Part;
- (c) ensure, insofar as is reasonably practicable, that all workers under the supervisor's direct supervision and direction are not exposed to harassment at the place of employment;
- (d) cooperate with any other person exercising a duty imposed by this Part or the regulations made pursuant to this Part; and
- (e) comply with this Part and the regulations made pursuant to this Part.

3.3 General Duties of Workers

3-10 Every worker while at work shall:

- (a) take reasonable care to protect his or her health and safety and the health and safety of other workers who may be affected by his or her acts or omissions;
- (b) refrain from causing or participating in the harassment of another worker;
- (c) cooperate with any other person exercising a duty imposed by this Part or the regulations made pursuant to this Part; and
- (d) comply with this Part and the regulations made pursuant to this Part.

4.0 ANTI-HARASSMENT POLICY

The Saskatchewan government has **zero** tolerance towards harassment in the workplace. Harassment will not be tolerated.

All reported incidents will be addressed. Allegations of harassment will be taken seriously and, if found true, will be addressed through corrective measures which will include disciplinary action.

For more information on the Anti-Harassment Policy contact your supervisor.

5.0 DRUG AND ALCOHOL POSSESSION AND USE BY PERSONNEL

1. Saskatchewan Government has adopted a 'zero tolerance' policy with regards to the possession or consumption of any drugs, alcohol at the workplace or worksite (includes on the fire line, or in any temporary base camp facilities connected with firefighting etc.). 'Temporary Base Camp' shall include all tents, trailers, training complexes, etc., that have been established as bases of operations for emergency firefighting efforts.

2. This policy and procedure will apply equally to Saskatchewan Government staff from other Ministries and Agencies, Emergency Fire Personnel (EFP), and all contractors, pilots, engineers, or any other individuals associated with any aspect of the suppression efforts.

3. Possession and use of prescription drugs such as antibiotics, painkillers (unless affects ability to carry out task), etc., where the individual in possession has had the drugs prescribed for his or her use by a physician, will be allowed.

4. Non-prescription drugs commonly available to the general public such as cough medicines, cold remedies (unless affects ability to carry out task), etc., will be allowed.

5. Any individual, including Agency employees found in possession of intoxicating substances on the worksite should be immediately removed from duty, and the R.C.M.P. should be notified to deal with the situations involving illegal drugs as soon as possible.

6. Any individual found under the influence intoxicating substances while on duty should be removed immediately from duty and dealt with according to the following disciplinary consequences and notification to the RCMP if applicable.

7. Individuals found in contravention of this policy should be dealt with as follows:

Saskatchewan Public Safety Agency Staff:

- Remove from duty, return to Headquarters at first opportunity.
- Disciplinary action should proceed as per Human Resources Policy – PS 805-2 and the Collective Bargaining Agreement.

Emergency Fire Personnel:

- Immediate removal from fire duties, return to headquarters, process compensation for individual, and release.
- Withdraw qualification / certification for one year from date of offence, and do not hire under any circumstances.
- On second offence, qualification / certification is withdrawn for a period of 5 years.

Contractors:

- The contractor's employee(s) shall be immediately removed from duty and released. The individual employee(s) shall be refused further work with SPSA for a period of one year from the date of the offence. Second offences

will result in a refusal to hire for a period of 5 years. If the contractor is unable to replace the employee(s) removed, the equipment shall be released.

8. All SPSA staff, EFPs, and contractors shall be made fully aware of this policy and procedure prior to transport to the fire. SPSA area staff will be responsible for properly briefing all individuals as to consequences of non-compliance.

9. SPSA staff (other than those identified in number 10) are not legally entitled to search the person or property of any individual, regardless of any suspicions that may exist as to the existence of drugs and/or alcohol concealed with personal belongings.

10. If a search of personal belongings is deemed necessary, SPSA personnel should enlist the assistance of a local conservation officer, canine unit or a RCMP detachment to handle such search and/or seizure activities.

11. Provisions of this policy and procedure dealing with consumption/possession shall apply to out of province/ country personnel exchanges.

6.0 INCIDENT COMMAND SYSTEM

The Saskatchewan Public Safety Agency has adopted the Incident Command System (ICS) as the standard management system for wildfire incidents.

The ICS is a:

standardized on-scene emergency management system specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small as well as large and complex incidents. ICS is used by various jurisdictions and functional

agencies, both public and private, to organize field-level incident management operations. (ICS 2012)

In the ICS structure, an Incident Commander is assigned to oversee two levels of staff, the Command Staff and the General Staff (Figure 1).

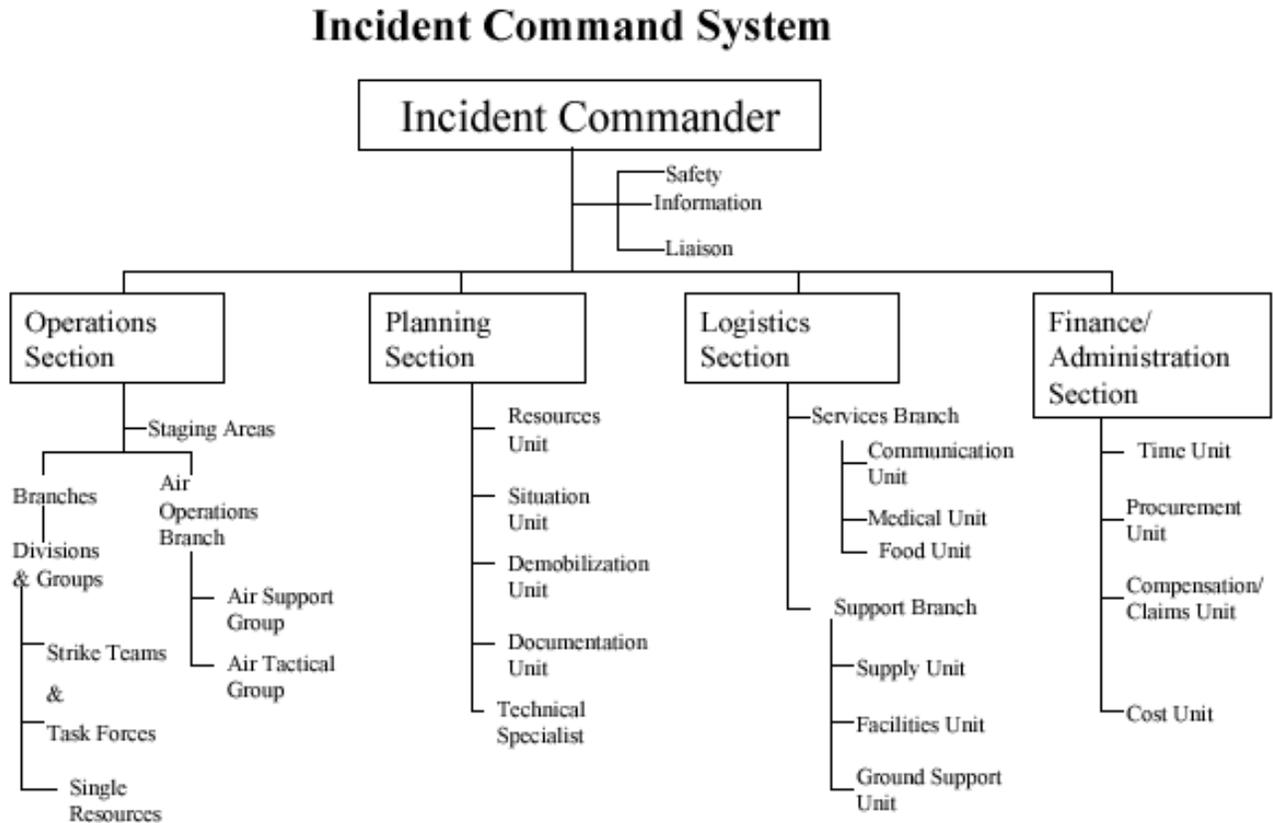


Figure 1

6.1 Command Staff

The Command Staff “consists of the Incident Commander, Information Officer, Safety Officer, Liaison Officer, and other positions as required, who report directly to the Incident Commander. They may have an assistant or assistants, as needed”.

- **The Incident Commander** is the individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources. The IC has overall authority and responsibility for conducting incident operations and is responsible for the management of all incident operations at the incident site.
- **Information Officer (IO)** is responsible for working with internal clients, the public and media and/or with other agencies with incident-related information.
- **Safety Officer (SO)** is responsible for monitoring incident operations and advising the Incident Commander on all matters relating to operational safety for all employees.
- **The Liaison Officer** is responsible for coordinating with representatives from cooperating and assisting agencies or organizations.

6.3 General Staff

The General Staff are:

[a] group of incident management personnel organized according to function and reporting to the Incident Commander. The General Staff normally consists of the Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Section Chief. An Intelligence/Investigations Chief may be established, if required, to meet incident management needs.

Chief is the ICS “title for individuals responsible for management of functional Sections: Operations, Planning, Logistics, Finance/Administration, and Intelligence/Investigations (if established as a separate Section)”.

- The **Operations Section** is responsible for all tactical incident operations and implementation of the Incident Action Plan.
- The **Planning Section** is responsible for the collection, evaluation, and dissemination of operational information related to the incident, and for the preparation and documentation of the Incident Action Plan. This Section also maintains information on the current and forecasted situation and on the status of resources assigned to the incident.
- The **Logistics Section** is responsible for providing facilities, services, and material support for the incident.
- The **Finance/Administration** Section is responsible for all administrative and financial considerations surrounding an incident.

7.0 FIRELINE SAFETY

Safety, Safety, Safety! Safety cannot be emphasized enough. It is the responsibility of all personnel assigned to an incident.

To be safe on a fireline, firefighters must be aware of hazards and safe work practices to mitigate them.

7.1 Saskatchewan Public Safety Agency Safety Rules

1. Always use safe work practice's and safety procedures established for the job being performed.
2. Must wear personal protective equipment (PPE) when hazards are present.
3. Uphold zero tolerance for harassment in this work place- meaning inappropriate conduct, comment, displayed, action or gesture by a person.
4. Report all incident, dangers occurrences, unsafe conditions or acts to your supervisor and ensure they are entered into PSC Client.
5. Any damaged equipment or missing machine guards must be reported to your supervisor immediately.
6. Never possess, consume or be under the influence of alcohol or intoxicating drugs while on duty.

7. Always ensure there is unimpeded access to safety equipment at the workplace.
8. Always hold and document job tailgate or toolbox meetings before performing any moderate or high hazard work.
9. Obey all provincial traffic laws while operating SPSA vehicles.

7.2 LACES

SPSA adopted the acronym and mnemonic LACES to help firefighters remember safety elements on a fire line. LACES stands for: Lookout(s), Anchor Point, Communications, Escape Routes, and Safety Zones.

7.2.1 Lookout(s)

Lookouts are experienced firefighters positioned at strategic vantage points to monitor wildfires and workers on them. They keep workers informed about developing dangers by remaining in persistent contact with them.

More than one lookout may be required on a wildfire.

Lookout(s) Checklist:

- Are they trained wildfire fighters with direct wildfire experience?
- Are they capable of assessing fire hazards and potential fire behaviour?
- Are they experienced, competent, and trusted, and above all, are enough of them assigned?
- Are they positioned at good vantage points?
- Do they know where the escape routes and safety zones are?
- Do they each possess a map, watch, radio, and an IAP?
- Was LACES established for them?
 - Update the lookout(s) on any changes that occur.

7.2.2 Anchor Point

An Anchor Point is “[a]n advantageous location, usually a barrier to fire spread, from which the start or finish construction of a control line” (CIFFC 2003: 2). It will likely be located at the rear flames of a wildfire; possibly at a natural or human-

made barrier to fire spread. This will reduce the risk of fire burning around control lines and trapping firefighters.

Firefighters must always select an anchor point together before they begin wildfire suppression.

Anchor Point Checklist:

- Is the anchor point a barrier to fire spread from which to start or finish construction of a control line?
- Is the anchor point, at which firefighters are starting construction of a control line, a safe location to suppress wildfire?

7.2.3 Communications

Firefighters are expected to maintain communications with other workers on a fireline to ensure that information is understood and passed on. They are responsible for warning each other of identified fire hazards. Working alone or out of earshot of workers is not allowed.

Communications Checklist:

- Are instructions and plans clear and understood by all personnel?
- Are communications prompt, clear, and to the point?
- Are situational changes being updated and relayed to all personnel on the fireline?
- Do all personnel know what radio frequencies are being used?
- Is there an established check-in schedule with lookouts and supervisors?
- Can all personnel communicate with their supervisors?
 - Speak up during face-to-face conversations and repeat messages until all parties understand them. Write down specific instructions then read them back for clarification.

7.2.4 Escape Routes

Escape Routes provide firefighters rapid access to safety zones if they need to retreat from a fireline position. The most common route is the fireline.

The effectiveness of escape routes continuously changes. Fire that jumps a fireline can severely reduce firefighters' escape route options so there must always be more than one. These must be well marked, clear of obstacles, timed to the slowest person, and known by all personnel.

Escape Routes Checklist:

- Are they clear of obstacles, timed to the slowest person, known by all personnel, and the shortest distance away from the safety zone?
- Are they marked with flagging tape so they are visible during the day or night?
- Are they natural or constructed?
- Are there multiple escape routes?
- Do they provide for rapid access to safety zones?
- Do they lead away from the fire, downhill or opposite its direction of spread?
- Were they all scouted, noting soils, rocks, slope, vegetation, aspect, and hazards?
- Were they timed to the slowest person? (Consider fatigue and temperature factors.)

7.2.5 Safety Zones

Safety Zones are predetermined locations where firefighters, threatened by fire hazards, may find adequate refuge from danger. The effectiveness of a safety zone is dependent on its ability to allow firefighters shelter from heat, smoke, rolling debris, and falling timber.

A large fully burned area is likely the best safety zone. Also consider water sources or other large areas clear of flammable vegetation.

Safety Zones Checklist:

- Are they locations where firefighters can shelter themselves from wildfire?
- Are they large enough to accommodate personnel and equipment?
- Are they close and attainable?
- Are they natural or constructed? (e.g., lakes, ponds, rivers, marshy sites, large clearings, highways, roads, or large fully burned areas)
- Are they close enough to use considering escape times?
- Are they away from hazardous terrain?
- Were they scouted for size and hazards?
 - Upslope and downwind safety zones and those in heavy fuels are greatly affected by heat. Be sure to consider these factors when selecting them.

The danger associated with firefighting is greatly reduced when firefighters keep LACES in mind.

7.3 Wildfire Entrapment Survival

1. **DO NOT PANIC.** Fear is natural for most people when they are faced with a situation like a fire entrapment. Accept the fear and channel it so that you may think clearly and intelligently.
2. **KNOW YOUR ESCAPE ROUTES.** The most common escape route is usually via the fireline. Pre-planned escape routes are the safest because you have walked them—you know they are clear and that they lead to a safety zone. This will give you the confidence you need to move quickly to safety.

Always select at least two escape routes. Do not run blindly or needlessly. Drop all tools in favour of speed.

3. **ENTER THE BURNED AREA.** In grassland fuel types the flame front is intense but relatively short lived (usually 30 seconds or less). This generally leaves a burned area safe from further fire entrapment. After covering exposed skin and holding in a breath of fresh air, move through the flame front as quickly as possible. In smoky conditions, get to the ground to obtain fresh air and to get a clear view of the burned area you are moving into.

4. **BURN OUT.** In cured grass when the approaching flames are too high to run through, burn out as large an area as possible between you and the fires' edge. Step into the burned out area, cover as much exposed skin as possible and lie in the prone position.
5. **REGULATE BREATHING.** Avoid inhaling dense smoke. Time your breathing to coincide with the availability of fresh and relatively cool air. Use a dry handkerchief over your nose.
6. **PROTECT AGAINST RADIATION.** Radiant heat is given off by the fire in all directions well ahead of the flames. Stay low and quickly find protection from the radiant heat in an area that will not burn. Shallow trenches without vegetation, crevasses, large rocks, running streams, large ponds, lakeshores, vehicles, and buildings can offer some protection. Cover your head and exposed skin with natural fiber clothing or dirt.
7. **LIE PRONE.** If you cannot move or burn out, lie as flat as possible with your head down in an area that will not burn. This will minimize your exposure to radiant and convective heat and smoke.
8. **TAKE REFUGE IN VEHICLES OR BUILDINGS.** Radiant heat can be blocked or reflected by the exterior of vehicles or buildings.

Modified from: (Davis and Mutch 2001)

7.4 10 Standard Fire Orders

1. Keep informed on fire weather conditions and forecasts.
2. Know what your fire is doing at all times.
3. Base all actions on current and expected behavior of the fire.
4. Identify escape routes and safety zones, and make them known.
5. Post lookouts when there is possible danger.
6. Be alert. Keep calm. Think clearly. Act decisively.
7. Maintain prompt communications with your forces, your supervisor and adjoining forces.
8. Give clear instructions and ensure they are understood.
9. Maintain control of your forces at all times.
10. Fight fire aggressively, having provided for safety first.

7.5 18 Situations that Shout “WATCH OUT”

1. Fire not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics, and hazards.
6. Instructions and assignments not clear.
7. No communication link with crew members/supervisors.
8. Constructing fireline without safe anchor point.
9. Building fireline downhill with fire below.
10. Attempting frontal assault on fire.
11. Unburned fuel between you and the fire.
12. Cannot see main fire, not in contact with anyone who can.
13. On a hillside where rolling material can ignite fuel below.
14. Weather is getting hotter and drier.
15. Wind increases and/or changes direction.
16. Getting frequent spot fires across line.
17. Terrain and fuels make escape to safety zones difficult.
18. Taking a nap near the fireline.

7.6 Wildland/Urban Interface “Watch Out” Situations

1. Poor access and narrow, one-way roads.
2. Bridge load limits.
3. Wooden construction and wood shake roofs.
4. Power lines, propane tanks, and HazMat threats.
5. Inadequate water supply.
6. Natural fuels 30 feet or closer to structures.
7. Structures in chimneys, box canyons, narrow canyons, or on steep slopes (grade 30% or more).
8. Extreme fire behavior.
9. Strong winds.
10. Evacuation of public (panic).
11. Underground utilities threat.
12. Structural collapse zone when structures are exposed to fire.
13. Smoke byproducts often laced with chemical compounds not found in pure wildland fires.

7.7 Personal Protective Equipment (PPE)

PPE is mandatory for all fireline personnel!

- Nomex or 100% cotton outerwear
- Head, hearing, eye protection, respiratory protection (as required)
- Approved Safety-toe boots (CSA green triangle)
- Whistle, and gloves

For more information, talk to your supervisor or Safety Advisor.

7.8 Fire Line Personnel Safety Inspection

Are all line personnel aware of and implementing LACES?

L -who is the lookout?

A - anchor point locations?

C - who do you have contact with & how?

E -how do you get to your safety zone?

S - where is the safety zone?

- 1 Did all personnel receive a daily safety briefing including suppression objectives and predicted fire behaviour?
- 2 Are all fire line personnel properly trained for the job they are doing (chainsaw, R/W safety, first aid)?
- 3 Is adequate personal protective equipment (PPE) provided?
- 4 Is the required PPE equipment being worn (Nomex, safety boots, hardhat, safety glasses, gloves)?
- 5 Are first aid kits carried and properly stocked?
- 6 Is fire line equipment properly maintained? (hand tools, chainsaws, pumps)?
- 7 Is communications from the fire line adequate in the event of an emergency?
- 8 Are personnel aware of emergency evacuation procedures?
- 9 Are personnel properly briefed on hazards (fire behaviour, root burn, bears)?
- 10 Are personnel monitored for dehydration/heat stress/fatigue?

- 11 Are adequate rest breaks being taken?
- 12 Are personnel maintaining safe working distances between heavy equipment?
- 13 Are personnel maintaining safe work distance between co-workers?
- 14 Are all personnel accounted for at the end of the day?

8.0 SOME COMPONENTS OF FIRE

8.1 The Fire Triangle

For fire to exist there must be fuel, heat, and oxygen. These components make up the fire triangle (Figure 2). Removing one or more of them shapes every firefighting method.



Figure 2

- Examples of removing fuel (e.g., trees and grasses) include: constructing a control line with a dozer; digging a trench; creating a mineral soil fuel break (sandline); and, burning-out, -off, or backfiring green fuels.
- Examples of removing oxygen include: smothering hot-spots or fire with mineral soil; and, putting water, retardant, gel, or foam on green fuels, hot-spots, or fire
- Examples of removing heat include: applying water, retardant, gel, foam, or mineral soil to hot substances

8.2 Methods of Heat Transfer

Heat is transferred by convection, radiation, and conduction (Figure 3).

- Convection is the transfer of heat from one place to another by the movement of fluids. Convection is usually the dominant form of heat transfer in liquids and gases.
 - A smoke column above a fire is an example of convective heat transfer.
- Radiation is the transfer of heat in straight lines from warm surfaces to cooler surroundings.
 - Feeling the heat of a wildfire from a distance is an example of radiant heat transfer.
- Conduction is the transfer of heat through solid matter. Fuels must be in direct contact for this type of transfer to occur.
 - A fire iron (fireplace poker) that is in the fire will transfer heat to the hand that is holding the fire iron.

It is important to remember:

In forest fires, heat transfer may also take place when burning embers or firebrands are lifted upward by the fire's convection column and are carried ahead of the main fire by the wind. The resulting fires are called spot fires. If embers still hold enough heat and land on fuel dry enough to burn, spot fires are ignited through conduction and radiation. (CIFFC 2013)

A spot fire is a new fire that burns outside the perimeter of a main wildfire.

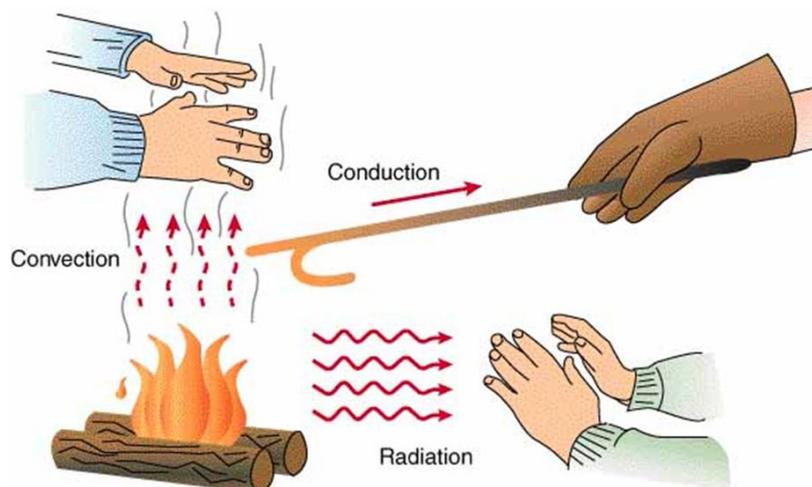


Figure 3

8.3 Fuel Arrangement

Forest fuels are generally classified by four fuel layers: Ground Fuels, Surface Fuels, Ladder Fuels, and Aerial Fuels (Figure 4).

- **Ground Fuels**, also known as subsurface fuels, “consist of all combustible material below the litter layer of the forest floor. This includes compacted organic layers (duff or peat), roots, and buried punky wood” (CIFFC 2013).
- **Surface Fuels** “consist of all combustible material above the duff layer and between the ground fuels and the aerial fuels. These fuels consist of litter (such as dead leaves, needles and twigs), grasses, herbaceous vegetation, low and medium-sized shrubs, tree seedlings, stumps and downed, dead, round wood (i.e., fallen branches and logs)” (CIFFC 2013).
- **Ladder Fuels** consist of all combustible materials “that provide vertical continuity between the surface fuels and [aerial] fuels in a forest stand” (CIFFC 2003). Tall shrubs, small to medium-sized trees, and tree limbs are examples of ladder fuels.
- **Aerial Fuels**, also known as crown fuels, “are the standing and supported forest combustibles not in direct contact with the surface fuels, including foliage, twigs, branches and comes – in other words, the upper foliage and combustible material of trees” (CIFFC 2013).

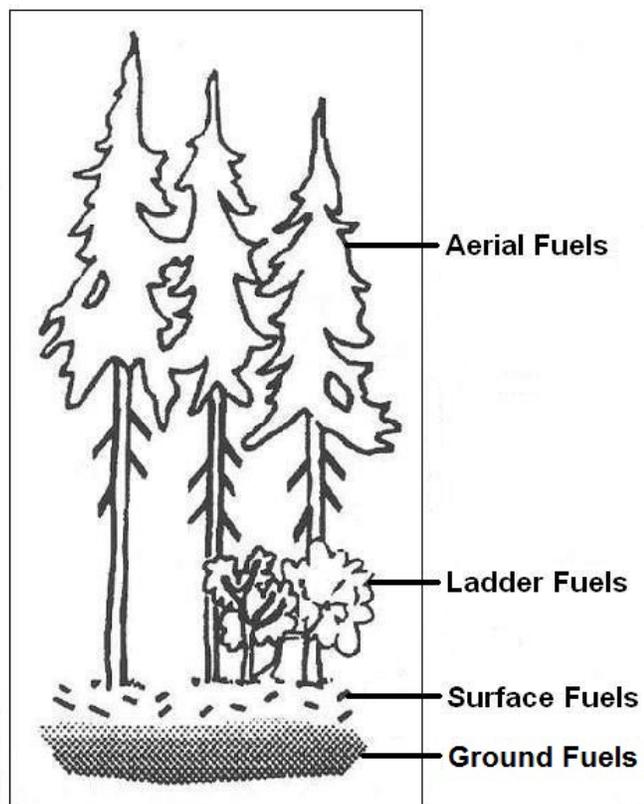


Figure 4

8.4 Parts of a Wildfire

There are generally eight main parts of a wildfire: Rear, Head, Flanks, Island, Finger, Bay, Point(s) of Origin, and Spot Fire (Figure 5).

- **The Rear**, also known as the Base, is the “portion of the fire perimeter that is opposite to the head. The rear is usually the slowest spreading part of the fire” (CIFFC 2013).
- **The Head** “is the most rapidly spreading part of the fire’s perimeter and has the greatest fire intensity. It is usually driven by the wind, the uphill effects of slope, or the flammability of the forest floor” (Ibid.).
- **Flanks**, the right flank and the left flank, are the side flames of a wildfire between the head and the rear. If personnel were to stand at the rear of a wildfire facing the head, the side flames to their right would be the right flank, and those to their left, the left flank.
- **An Island** is “[a]n area of unburned forest fuel located within the fire perimeter. [Islands] of unburned fuel may contribute to fire control problems at a later stage in the fire if they burn” (Ibid.).
- **A Finger** is “[a]n elongated burned area projecting from the main body of the fire resulting in an irregular fire perimeter. Each finger has its individual head and flanks. This fire pattern usually results from the forest fuel or slope conditions in the finger being more conducive to increased fire spread than the surrounding forest” (Ibid.).
- **A Bay** is “[a] portion of a fire edge, usually between fingers, where fire spread is slower. This pattern usually results from the forest fuel or slope being less conducive to fire spread in the area where the bay is formed” (Ibid.).
- **Point(s) of Origin**: The location a wildfire ignites.
- **Spot Fire** (discussed in Section 8.2)

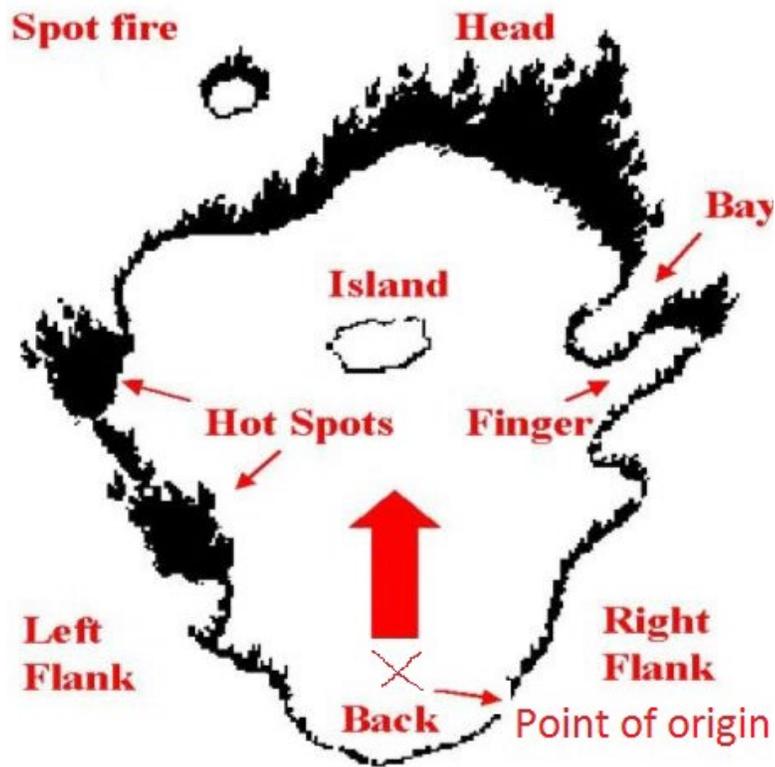


Figure 5

9.0 SOME COMPONENTS OF FIRE BEHAVIOUR

9.1 The Fire Behaviour Triangle

The fire environment is a major factor to be considered in the suppression of wildfire and fireline safety. Personnel should be familiar with the fuel, weather, and topography around them. These components make up the fire behaviour triangle (Figure 6). Each influence how fire burns.

9.1.1 Fuel

Wilson (1977:9) noted that “fire spread and intensity can change much more quickly in light fuels [(e.g., grass)] than in heavy fuels [(e.g., trees)]. Thus, finer fuels tend to be more responsive to changes in atmospheric conditions than heavy fuels.”

9.1.2 Weather

Weather is always changing and needs to be monitored and respected.

Wind is the most significant weather feature contributing to erratic fire behaviour or flare-ups. Temperature and relative humidity (RH) also influence fire behavior so they must be watched, especially when crossover conditions occur.

Crossover conditions occur when the temperature is higher than or equal to the relative humidity (RH). An example is when the temperature is 30° Celsius and the RH is 25%. Erratic fire behaviour can happen under these conditions, especially if medium to high winds occur.

9.1.3 Topography

Topography, the lay of the land, greatly influences fire behaviour. Slope, aspect, and elevation are topography features.

9.1.3.1 Slope

Slope, the degree of incline of a hillside or mountainside, influences the rate at which fire burns. The steeper the slope, the faster fire burns due to heat transferring to fuels ahead of the flames more quickly than on level terrain.

9.1.3.2 Aspect

Aspect, the direction a slope faces, influences how fuels are heated by the sun, and the amount, condition, and fuel types present. Hillsides and mountainsides with south and southwest aspects are normally more exposed to sunlight, have higher temperatures, lower humidity, and lower fuel moisture contents. Generally, they are composed of sparser and lighter fuels. All of these characteristics influence the start and spread of wildfire.

9.1.3.3 Elevation

Elevation above sea level changes the climate of a given area, influences fuel types and loadings, plant characteristics, vegetation curing dates, fire season length, and the severity of fire danger by:

- The amount of precipitation received;
- The snow melt dates;
- The temperature; and,
- The atmospheric characteristics (e.g., levels of oxygen).

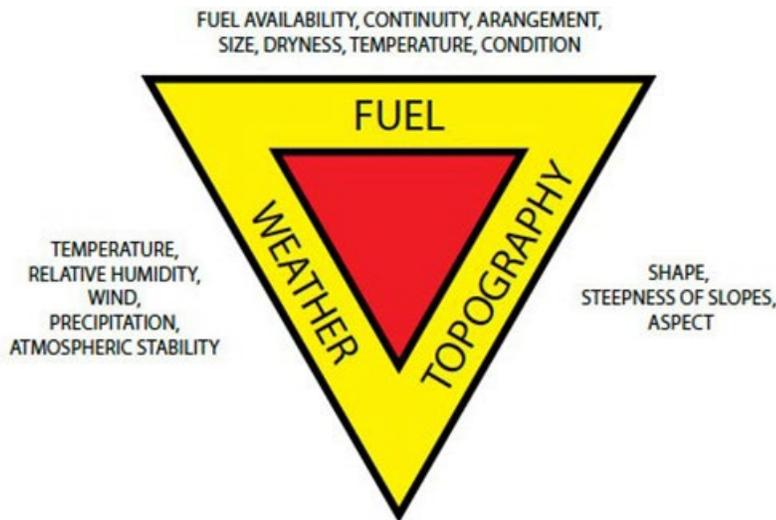


Figure 6

10.0 COMMUNICATIONS

Personnel who use radios on a fireline are expected to be familiar with radio procedures and protocol.

10.1 Priority of Communications

Mayday, Pan, Security, and Traffic are the four priorities of communication, respectively.

10.1.1 Mayday

This signal is used when the transmitter is facing a life-threatening situation and needs immediate assistance. To signal a mayday call, transmit, “Mayday, Mayday, Mayday” over the radio, then state your unit, situation, and location. If no person replies, repeat the call until it is answered. If you hear a Mayday call maintain radio silence so the call can be answered by the appropriate authority.

10.1.2 Pan

This signal is used when there is a safety concern that may progress to a Mayday. To signal a pan pan pan call, follow the same process of the mayday call, but use “Pan, Pan, Pan” instead of “Mayday, Mayday, Mayday.”

10.1.2 Security

These transmissions are usually to do with weather warnings or hazards to navigation.

10.1.3 Traffic

These transmissions are daily working transmissions.

10.2 Communication Protocol

The radio is used for fireline operations and safety concerns only. Swearing over the radio is not permitted. English is the common language preferred for all radio communications. This enables all listeners to understand all transmissions.

10.3 Operation of Fireline Radios

The radio is an important part of firefighting. It allows workers to communicate with those who are not on a fireline and provides contact between the main fire camp and crew leaders. In addition, it can be used by crew leaders to find out what is happening on a fireline and to communicate with an Air Attack Officer (A.A.O.).

A.A.O.'s are "responsible for directing, coordinating, and supervising a fire suppression operation involving the use of aircraft" (CIFFC 2003). This typically involves organizing where airtankers drop retardant, water, foam, or gel, on or beside a wildfire. Since crew leaders can communicate with A.A.O.'s using radios, they can make recommendations on where airtankers drop their loads too.

Radios also can be used by crew leaders to contact helicopter pilots to advise them where firefighting resources should be dropped off. Radios are the most used communication tool on wildfires. Ensuring your radio is functioning and has adequate battery power is essential, particularly for emergency situations.

11.0 GOVERNMENT OR CONTRACTED VEHICLES

Only authorized personnel with valid driver's licenses are permitted to operate vehicles for SPSA.

Fatalities have occurred in the transportation of personnel to and from the fireline. The law requires everyone to wear seatbelts when traveling in vehicles. Operators are to drive in a safe manner and follow all traffic laws.

If you feel unable to operate a vehicle safely, stop to rest, or let another person drive. Safety is everybody's responsibility! Report all incidents that compromise firefighter safety to supervisors and/or Safety Officers.

11.1 All-Terrain Vehicle (ATV) and Utility Task Vehicle (UTV)

Only personnel with a valid driver's license and have completed SPSA approved ATV and UTV training are permitted to operate ATVs and UTVs. An approved helmet must be worn by all operators and passengers. (not a hardhat)

All ATV and UTV incidents must be reported to a supervisor immediately.

12.0 HELICOPTERS

Personnel must be given an informational helicopter briefing prior to flight. Helicopter operations can expose personnel to hazards. Ensure you receive a Pilot Safety Briefing for the helicopter you will be travelling in prior to flight. Ensure clear understanding of how all headsets, doors and seat belts function and the location of all emergency equipment. Seating and load configuration are under the direction of the pilot. All dangerous goods must be identified to the pilot before flight. Your pilot must be familiar with local frequencies and geography. Flight following /flight watch must be utilized and maintained for all flights.

12.1 Approaching/Departing

- Do not have loose articles on your person, such as hats, that can be blown off in the rotor wash. All carried items should be held at waist level or below, in a horizontal position.
- If the helicopter is not on level ground, approach from or depart to the downhill slope (figure 7).
- Ensure eye contact with the pilot when approaching or departing the helicopter
- Approach or depart aircraft in a crouched manner for additional clearance from main rotor.
- Never proceed beyond tail boom compartment for any reason.

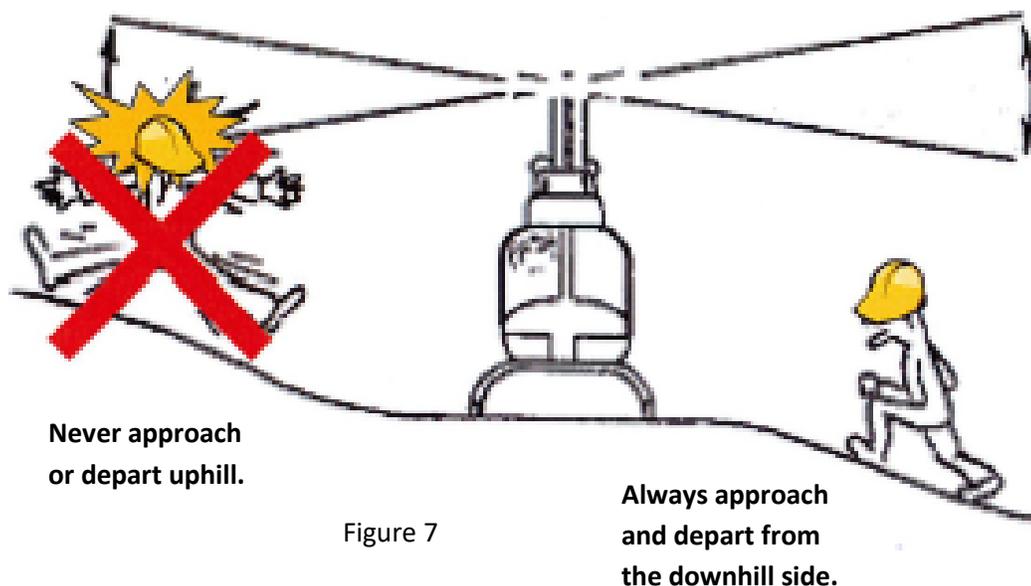


Figure 7

12.2 Transport

- Enter the helicopter one person at a time as per prearranged seating position.
- Ensure doors are securely closed.
- Fasten seat belt and shoulder harness. Both should be snug.
- Turn off portable radios.
- Put on headset if available, and check to ensure proper functioning prior to take off. Avoid unnecessary radio chatter during takeoff and landing. Utilize alternate hearing protection if headset is not available.
- Do not lean on windows and doors during flight.
- Do not remove seat belt during flight. Remain buckled in until pilot informs you it is safe to unbuckle.
- Re-buckle seat belt prior to departing helicopter.
- Notify the pilot of any hazards observed.
- Any aircraft incidents should be reported as per WFM policy SAF 502.

13.0 FIXED-WING AIRCRAFT

Personnel must be briefed on fixed-wing aircraft prior to flying in them. Fixed-wing aircraft operations can expose personnel to hazards. Ensure you receive a Pilot Safety Briefing for the aircraft you will be travelling in prior to flight. Ensure clear understanding of how all headsets, doors and seat belts function and the location of all emergency equipment. Seating and load configuration are under the direction of the pilot. All dangerous goods must be identified to the pilot before flight. Your pilot must be familiar with local frequencies and geography. Flight following /flight watch must be utilized and maintained for all flights.

13.1 Approaching/Departing

- Secure any loose articles on your person, such as hats, that can be blown off in the propeller wash.
- Ensure you have received the OK from pilot to approach the aircraft.
- Never depart aircraft until directed by the pilot.

13.2 Transport

- Enter the aircraft one person at a time as per pilot direction.
- Fasten seat belt and shoulder harness. Both should be snug.
- Turn off portable radios.
- Put on headset if available, and check to ensure proper functioning prior to take off. Avoid unnecessary radio chatter during takeoff and landing. Utilize alternate hearing protection if headset is not available.
- Do not lean on windows and doors during flight.
- Do not remove seat belt during flight. Remain buckled in until pilot informs you it is safe to unbuckle.
- Re-buckle seat belt prior to departing.
- Notify the pilot of any hazards observed.
- Any aircraft incidents should be reported immediately as per WFM policy SAF 502.

13.3 Float plane Approaching/Departing

- Secure any loose articles on your person, such as hats, that can be blown off in the propeller wash.
- Ensure you have received the OK from pilot to approach the aircraft.
- Never depart aircraft until directed by the pilot.
- Floats are often slippery, ensure footing is secure.
- Floats are marked with a danger line, often in yellow or red. Movement beyond these markings puts a person in the danger zone of a propeller strike. Never travel beyond the areas marked on the float.
- Always follow the pilot's directions. If in doubt, ask.

13.4 Float Plane Transport

- Enter the aircraft one person at a time as per pilot direction.
- Fasten seat belt and shoulder harness. Both should be snug.
- Turn off portable radios.
- Put on headset if available, and check to ensure proper functioning prior to take off. Avoid unnecessary radio chatter during takeoff and landing. Utilize alternate hearing protection if headset is not available.

- Do not lean on windows and doors during flight.
- Do not remove seat belt during flight. Remain buckled in until pilot informs you it is safe to unbuckle.
- Re-buckle seat belt prior to departing.
- Notify the pilot of any hazards observed.
- Any aircraft incidents should be reported as per WFM policy SAF 502.

14.0 AIRTANKERS

One of the most effective methods for getting a fire under control is to have airtankers place drops along its edge while firefighters work the areas where the last drop was placed.

In Saskatchewan, pilots are instructed to release their loads at least 100 feet over the canopy to allow the drop to slow up and fall gently. This improves the effectiveness of the drop and prevents tree tops from snapping off, which would be a danger for firefighters on the ground.

14.1 Siren Warning System

Saskatchewan's Bird Dog aircraft are equipped with siren systems to warn ground crews of impending drops by airtankers. Some out-of-province Bird Dogs also use siren systems on fires.

While flying the line of an intended drop, a pulsing 'yelp' signal from the Bird Dog notifies ground crews that an airtanker is going to release its load soon. Crews should be away from the drop-zone at this time. However, the yelp signal is a warning to personnel who may be underneath the Bird Dog as it completes its lead-in for an airtanker.

The yelp procedure is followed any time the drop pattern is changed.

An "all clear" signal will be delivered by the Bird Dog once airtanker work is completed. The signal is one long continuous wail. Upon hearing it, personnel will be able to work on a wildfire as directed by their supervisors.

14.2 Safety in the Drop-Zone

As a firefighter, you may find yourself in the drop-zone by mistake. Following these tips may help prevent injury.

If the drop is not coming immediately, and you have 15 or 20 seconds to get out of the way, you might be able to safely exit the drop-zone. Move from the intended drop line, keeping in mind, you should be at least 30 meters away to ensure safety. You should attempt this when an airtanker is at least one mile away from the fire. This would give you approximately 25 seconds to clear the area.

If you are unable to exit the drop-zone before the airtanker drop, the following will minimize serious injury:

- Stay calm and move away from snags or loose debris on the ground.
- Try to shelter yourself behind objects that will not be moved by the force of the drop, such as large boulders or large, solid trees (avoid dead trees or snags).
- Lie face down in a depression, with your head toward the approaching aircraft with hard hat on.
- Place your hand tools behind you (i.e., beyond your feet when lying in a prone position). The force of the drop could move them.
- Hang on to something solid.
- Exit the area immediately after the drop. This will ensure your safety if another drop occurs. Be careful where you are walking after a drop, as everything will be slippery, especially if foam or long-term retardant has been used.

Be careful not to slip on the fresh drop when you are leaving the drop-zone. If retardant or foam gets on your skin, in your eyes, or in a cut, wash it off immediately. Retardant and foam, while not toxic, can irritate skin and eyes. Take measures to prevent contact with these substances.

Appendix 1: Time Sheet

Fire Name: _____

Start Date: _____

(e.g.: Wednesday May 15th, 2013)

Hours	Sun	Mon	Tues	Wed	Thu	Fri	Sat
Week 1							
Week 2							
Week 3							

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