

FLWO Safety Training Plan

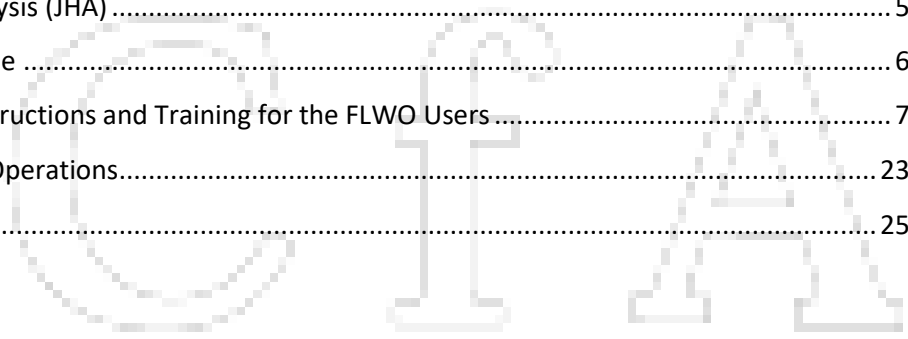
For New Employees, Observatory Scientists, Official Volunteers, and Students

This document outlines the plan at the FLWO for determining and conducting safety training as well as course of action for failure to follow safe working practices.



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Purpose and Scope

The purpose of this document is to inform personnel of work related safety hazards and provide training on recognition and mitigation of safety hazards to ensure personnel safety. In a positive safety culture all personnel should be mindful of their personal safety and the safety of their fellow employees. Ultimately at the end of the day everyone wants to be able to go home in the same condition they arrived to work.

Training

All personnel at the FLWO will be required to attend safety training pertaining to hazards they are reasonably expected to come across in the line of their day to day duties. Attending additional safety training is always encouraged. New hires, observatory scientists, official volunteers, and students will go through a training program with their Site Supervisor or the Safety Coordinator detailing expectation in regards to safety as well as general safe work practices and hazards specific to the FLWO site. All personnel will be required to review and sign Appendix D *Basic Safety Instructions and Training for the FLWO Users*. Other training will be based on the most recent Job Hazard Analysis (App B). Please inform the Safety Coordinator if there needs to be an update to your job duty hazards. Appendix A lists the various safety trainings that is required as a minimum for each specific job duty as well as periodicity of retraining.

Retraining

Retraining will also be performed if a person's duties change and they require additional training, if the Job Hazard Analysis is determined to be insufficient, or if the person demonstrates a lack of knowledge on the safety related topic.

Local Training

Safety training will be conducted by a member of the Safety Committee monthly per Appendix C. Training will be held on Tuesdays during the afternoon to accommodate the most employees schedules, and will be limited to 30 minutes. All personnel attending training will sign an attendance roster which will be filed and maintained by the Safety Coordinator. Training should include some sort of visual aid (i.e. examples, videos, Power Point presentation, etc.)

Infrequent Training

Some training will require external instructors to come to the FLWO to train staff. These events will be emailed to all staff prior to the training and should be attended by all hands if possible.

Other training will be performed onsite by personnel qualified as a trainer and should be attended by all staff that could be reasonably expected to perform these duties according to their Job Hazard Analysis.

Off-Site Training

If specific training requires travel or registration please contact the Safety Coordinator to determine how many personnel should attend and the best time to schedule the training.


Violations

Failing to follow approved safety standards will result in a three strike approach to correction.

1st Violation – Written Warning with informal retraining from your immediate Supervisor

2nd Violation – Written Warning with discussion from Safety Coordinator and Site Director

3rd Violation – Counselling form placed in employee's record with possible suspension of privileges and/or suspension from work.

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Material Review

This document and the extent of training per job description shall be reviewed annually to ensure accuracy.

Recordkeeping

Records of training event signed by all participants will be maintained as well as copies of certificates from any other safety training personnel attend.





Appendix A

Job Duty Related Training and Periodicity

	Review Periodicity	Astrophysicist	Automotive Mechanic	CDL	Computer Programmer	Electrician	Electronics Technician	Maintenance Worker	Motor Vehicle Operator	Safety Coordinator	Physical Science Technician	Physicist
Safety Culture	Initial	X	X		X	X	X	X		X	X	X
Heat Stress	Initial	X	X			X	X	X		X	X	X
Ladder	Initial	X				X	X	X		X	X	X
Mountain Driving	5 Year			X	X		X	X	X	X		
Electrical Safety	Initial		X			X	X			X		
Compressed Gas Safety	Initial			X			X	X		X		
Altitude Sickness	Initial	X		X	X	X	X	X		X	X	X
Wildlife	Initial	X	X		X	X	X	X		X	X	X
Laser Safety	Initial									X	X	X
Asbestos	Initial ¹				X		X	X		X		
Lockout/Tagout	Initial ¹	X	X			X	X	X		X	X	X
Fire Prevention	Initial ¹	X	X		X	X	X	X		X	X	X
Hearing Conservation	Initial ¹		X	X				X		X	X	
OSHA 1910 – General Industry²	Initial									X		
OSHA 1926 – Construction²	Initial									X		
PPE	Annual		X			X	X	X		X	X	X
Bloodborne Pathogen	Annual	X	X	X	X	X	X	X	X	X	X	X
HAZCOMM	Annual	X	X			X	X	X		X	X	X
Ergonomics	Annual	X			X	X				X		X
Fire Extinguisher²	Annual	X	X		X	X	X	X		X	X	X
Respirator²	Annual							X		X	X	
Fall Arrest²	2 Years					X	X	X		X	X	X
Wilderness First Responder²	2 Years							X		X		
First Aid/ AED²	2 Years	X	X		X	X	X	X		X	X	X
Forklift²	3 Years		X					X		X	X	
Rigging²	3 Years		X							X	X	
NFPA 70 – NEC²	3 Years					X				X		
NFPA 70E – Electrical Safety²	3 Years					X				X		
Welding Safety	????		X					X		X		
Aerial Lifts²	3 years		X			X	X	X		X	X	X

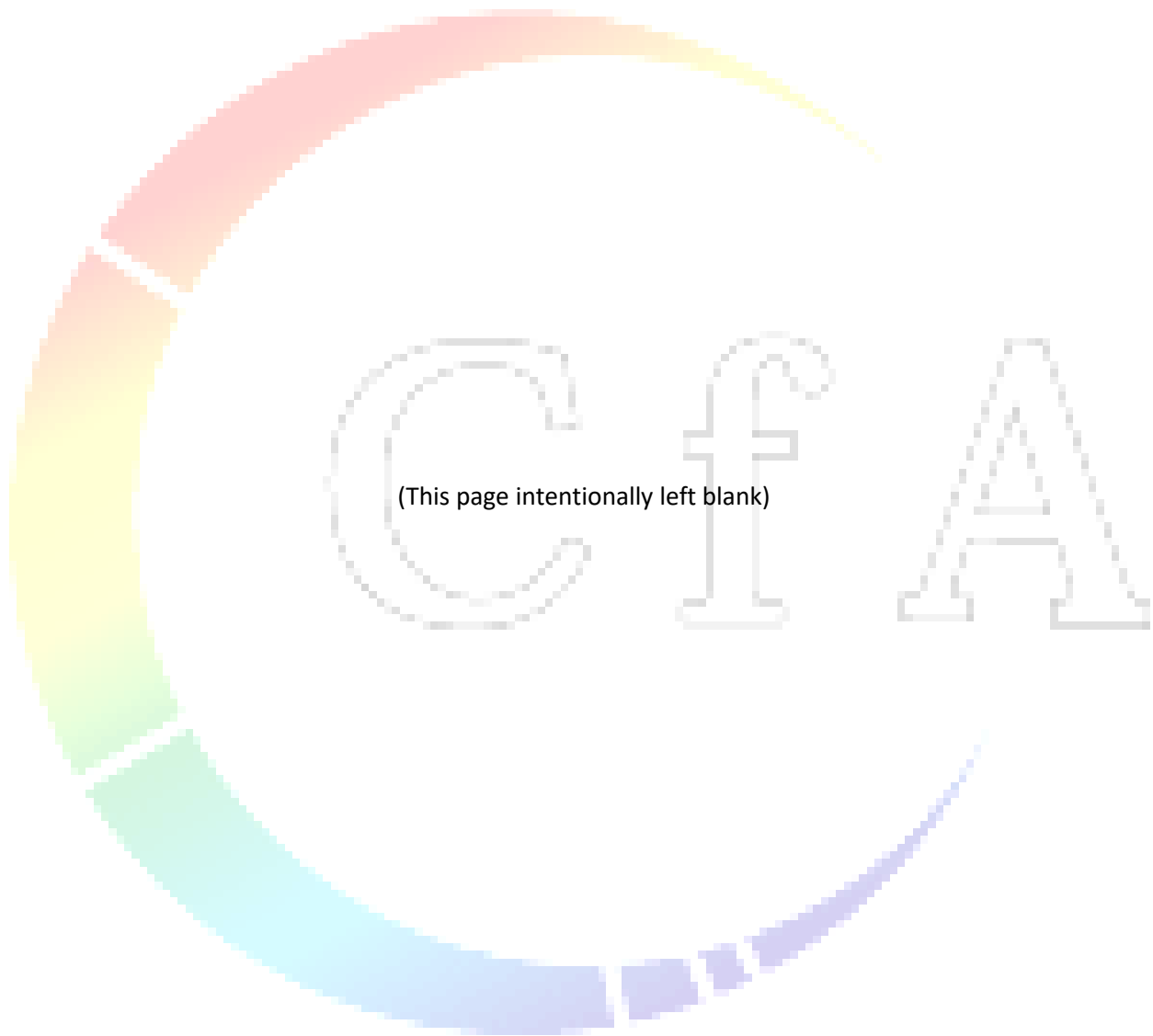
¹ Requires retraining if Plan changes

² Requires a course with a certified instructor and/or hands on experience



Appendix B

Job Hazard Analysis





Appendix C

Training Schedule

January	Safety Culture/ Motivational
February	Asbestos Safety/ Plan
March	Ladder Safety/ Slip, Trip and Fall Prevention
April	Heat Exhaustion/ Heat Stroke
May	Fire Extinguisher Training/ Fire Prevention Plan
June	Respirator Fit Test/ PPE
July	Mountain Driving Safety
August	HAZCOM
September	Lockout/ Tagout
October	Bloodborne Pathogen
November	Electrical Safety
December	Compressed Gas Safety
	Ergonomics

Table C.1 – Local Training

CPR/AED	Bi-Annual
Fall Arrest Competent Person	Bi-Annual
Forklift/ Aerial Lift Operator	Tri-Annual
Rigger/ Signal Person	Tri-Annual
Wilderness First Responder	Bi-Annual
Respirator	Annual

Table C.2 – Infrequent Training

Appendix D

Basic Safety Instructions and Training for the FLWO Users

Your safety and security are of the utmost concern to us, whether you are a full-time employee or a visiting scientist. While on-site at Mt. Hopkins facilities and at the Administrative Complex, you must follow the safety policies at your telescope project or other worksite, and be familiar with the controls and safe work practices established to protect your own safety and that of your co-workers.

The attached form needs to be completed by you and your supervisor/scientific project director and returned to the FLWO Safety Coordinator.

For additional information on the SI safety guidelines, consult the online SI manual at the following link:

http://www.ofeo.si.edu/safety_health/Safety_manual/safety_manual_toc.asp

Emergency Contacts


FLWO Safety Coordinator (Thomas Gerl)	(520) 879-4411 [w]	(520) 665-8455 [c]
FLWO Site Director (Pascal Fortin)	(520) 879-4419 [w]	(520) 288-2311 [c]
FLWO Vehicle Accident (Motor Pool)	(520) 879-4410 [w]	
FLWO VERITAS (William Hanlon)	(520) 879-4403 [w]	
FLWO Ridge Operation (Marc Lacasse)	(520) 879-4415 [w]	(520) 885-8841 [h]
MMT Summit Supervisor (Ricardo Ortiz)	(520) 879-4556 [w]	(520) 990-4444 [c]
Green Valley Hospital	(520) 393-4700	
Coronado National Forest Fire Dispatch	(520) 202-2710	
Animal Control	(520) 743-1411	

EMERGENCIES

You will be working in a remote setting, particularly on Mt. Hopkins, and you must be prepared before you arrive for self-sufficiency. There is no medical service available at the administrative complex or on the mountain. The closest emergency medical unit is in Green Valley and is approximately 15 minutes away from the Administrative Complex.

Radios

Vehicle mounted or hand held radios are your best resource for getting quick help to your location as well as being informed of other emergencies occurring on the site. Ensure your radio is turned ON. All radios should be on channel 1. To use the radios hold down the transmit button until you hear a single beep on the radio then make your statement. If you hear a continuous beeping you might not have a good signal. When you are done speaking release the transmit button. You should announce when you are departing a location the following information: number of vehicles, current location, and destination. An example would be, "One vehicle departing Basecamp for the Ridge. Any downhill traffic please advise." If you are ahead of another driver please inform them of the conditions you encountered. If you are reporting an emergency, first contact the appropriate responding agency (Fire – Coronado National Forest Fire Dispatch, Medical – Green Valley Hospital) then make an announcement on the radio stating the emergency and your location.

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Wildland Fires - Emergency Response

The threat to life and property from a wildland fire is one of the most serious hazards on the mountain. A “How to Report a Forest Fire” is posted in each building. Mountain Users shall read and be familiar with the Fire Plan posted in the buildings they occupy. After calling the Coronado National Fire Dispatch Number, please do the following:

Ridge Procedures: If you are on the Ridge, go to the MMT (provided the fire is not near the road between the Ridge and the Summit). The Forest Service will determine whether to evacuate observatory personnel by landing a helicopter on or near the Summit.

Summit Procedures: If you are on the Summit, go to the MMT (provided the fire is not near the road). The MMT first floor is the best place on the Summit to wait out a fire and receive further direction from the Forest Service. Do NOT enter the PIT during a forest fire. MMT has more instructions posted inside the building. The Forest Service will determine whether to evacuate observatory personnel by landing a helicopter on or near the Summit. The two possible Helipad locations are on the Ridge by the Support Building and at the old IOTA site.

An annual Mt. Hopkins Fire Action Plan is posted in all buildings on the mountain. The lead agency for this annual fire action plan is the U.S. Forest Service.

Building Fire Alarms and Emergency Evacuation

Upon your arrival at telescope projects and dormitories, review procedures posted on the fire alarm panels in each building. If a fire alarm goes off and you cannot immediately identify the area, go to the fire alarm panel and determine the zone area displayed on the LCD. Press “Alarm Silence” to stop the alarm. Proceed to the zone. If you have positively verified that there is no fire, you may then Acknowledge the alarm by pressing “Ack/Step” and then “Reset” the Panel.

The monitoring company will immediately contact authorities (e.g. Tubac Fire Department) for all fire alarms. The operator will then attempt to contact local personnel to confirm the fire. In case of a false alarm, you will need to provide the account number and passcode for the particular building with the



alarm. The information is posted on the front cover of each fire panel. The monitoring company can be contacted at 9-1-855-888-6587. The accounts and passcode can be found in Table 1.

Table 1: Fire Locations and Accounts

Location	Building	Account	Password
Whipple Observatory – Base Camp	VERITAS Control Bldg.	SA42-1070	85645
Whipple Observatory – Base Camp	MMT Storage Bldg.	SA42-1071	85645
Whipple Observatory – Base Camp	Admin Office & Visitor Center	SA42-1072	85645
Whipple Observatory – Ridge	Gamma Ray/ MINERVA	SA42-1073	85645
Whipple Observatory – Ridge	2MASS/ PAIRITEL	SA42-1074	85645
Whipple Observatory – Ridge	6/48" Telescope	SA42-1075	85645
Whipple Observatory – Ridge	HATS Bldg.	SA42-1076	85645
Whipple Observatory – Ridge	MEARTH Bldg.	SA42-1077	85645
Whipple Observatory – Ridge	Support/ Maintenance	SA42-1078	85645
Whipple Observatory – Ridge	Dormitory	SA42-1079	85645
Whipple Observatory – Ridge	Generator Shed	SA42-1080	85645
Whipple Observatory – Summit	MMT Support Bldg.	SA42-1081	85645
Whipple Observatory – Summit	MMT Bldg.	SA42-1082	85645
Whipple Observatory – Summit	Bowl Dormitory	SA42-1083	85645
Whipple Observatory – Summit	IOTA	SA42-1084	85645
Whipple Observatory – Summit	Common Bldg.	SA42-1085	85645

If there is a small fire, you may attempt to put it out with a fire extinguisher. Be sure to position yourself between the fire and an exit when you attempt to extinguish the fire. Also, notify someone else on the support staff or at the administrative complex first. If it is a large fire, evacuate the building and go to another building to call 9-911. Mention to the 911 coordinator that you are with the Whipple Observatory on Mt. Hopkins and NOT on the University of Arizona campus in Tucson. In the event of an evacuation ensure you know your escape routes and gathering points. Once all personnel from the building are accounted for, contact the FLWO Safety Coordinator to make a report.


Dormitory Alarms: The site director and FLWO Safety Coordinator have the capability of dialing into the dorm fire alarms to wake up sleepers when there is a reported forest fire. There are procedures posted in each dorm room and on the fire alarm panel in the utility rooms. You will want to be aware of these procedures, particularly, during high risk times of the year for forest fires (spring and summer prior to the monsoon rains).

Smoking Areas

Per Executive Order 13058, and Smithsonian Policy, smoking is prohibited when not in authorized smoking areas. For your convenience there are six designated smoking areas throughout the facility with appropriate bins for disposal of smoking materials. These areas at Base Camp located by the Warehouse south east corner, VERITAS near the fork into the Employee parking area, Ridge Dorm by the entrance to the elevator tunnel, 60/48" Building at the fork to the loading dock road, the Bowl Dorm by the lower rollup door, and the Summit by the IRF rollup doors. As a reminder smoking is also prohibited in SI vehicles.

Medical Emergencies

In the event of a medical emergency, try to contact a properly trained Wilderness First Responder to assist in aiding the injured person. If a staff member is not immediately available to help you, call 9-911 (received at the University Of Arizona Police Department). Your call will indicate an address of 933 N. Cherry Avenue on the dispatcher's monitor screen. Tell the University of Arizona Police responder that you are on Mt. Hopkins at the Whipple Observatory in the Santa Rita Mountains and then your call will be transferred to the 911 coordinator of Santa Cruz County. The Observatory is located within the Coronado National Forest managed by the U.S. Forest Service. For medical emergencies, the Santa Cruz

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County 911 coordinator will dispatch the Tubac Fire Department paramedics and determine whether an air ambulance should be dispatched to the Ridge heliport or the parking lot at the Administrative Complex.

In the event an air ambulance is dispatched, ensure the area around the landing pad located by the Ridge Support Shop is free of personnel, vehicles and debris. If the dispatch takes place during nighttime operations ensure the Heliport lights are turned on. The switch is located on the panel west of the Ridge Support Shop and is labeled.

If the air ambulance is dispatched to the Administrative Complex, ensure the area just inside the main gate is free of personnel, vehicles and debris.

For non-life-threatening, medical emergencies requiring an ambulance, the ambulance will arrive and waits at the Administrative Complex for a staff member to transport an injured person from the mountain.

First Aid

Trauma Kits and AEDs are located in several places around the FLWO site. AEDs are located in the Administrative Complex Ready Room (with Trauma Kit), Ridge Dorm (with Trauma Kit), Bowl Common Building, on the tour bus, and the MMT (with Trauma Kit). It is recommended that only trained personnel use the AEDs.


Reporting Accidents and Injuries

After any emergency response has been handled, report all accidents, injuries or illnesses to your supervisor. Also, any Smithsonian employee, fellowship student or volunteer should notify the FLWO Safety Coordinator. All Smithsonian employees and their supervisors are supposed to have access to AIRS (Automated Incident Reporting System) which is accessible on the PRISM Smithsonian Intranet. Go to the ERP HRMS link or access it from <http://ofeo.si.edu> You can initiate both a SI-2120 (SI Occupational Injury and Illness Report) and a CA-1 (Notice of Traumatic Injury) on AIRS.

When an accident/injury occurs during non-office hours and time is critical, please advise the medical provider that the occurrence is covered by the U.S. Department of Labor (applicable to Smithsonian Institution staff, stipend students and volunteers). Necessary paperwork will be completed subsequent to the accident/injury. Non-Smithsonian Observatory users should contact their respective supervisors for their institution's forms and also report the incident to the FLWO Safety Coordinator.

Stop Work Program

In the event of an unsafe condition, or perceived unsafe condition, any worker can bring the issue to the attention of the work supervisor and call for a stop to work. At this time the issue will be addressed and investigated by the Site Director, Supervisor and Safety Coordinator to determine the appropriate course of action. Once the condition has been eliminated an all clear will be issued and work may re-commence. The Safety Coordinator will follow-up with the Supervisor, and worker if appropriate, to ensure the issue has been fully abated within a week of the issue being corrected.

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Vehicle Operator's Guide

SI/FLWO vehicles may be driven ONLY by staff, official volunteers and Observatory users who have read the Vehicle Operator's Guide, possess a valid driver's license and have signed an agreement form to abide by its policies.

Safety Contacts

Your supervisor, scientific sponsor, or telescope project director is your primary safety contact. The FLWO Safety Coordinator is Thomas Gerl, office 879-4411 or cell 665-8455. Also, every project or working unit has a representative on the FLWO Safety Committee.

Safe Work Procedures

Each worksite and telescope project will conduct a hazard analysis overview and develop safe work procedures to control significant risks. These will be reviewed with you when you start work.

Safety Gear / Personal Protective Equipment

Based on hazard analyses of your project or work task, safety gear may be required (e.g., safety goggles, chemical-resistant gloves, hard hat, fall protection harnesses, etc.). These items will be provided at the scientific project on-site. Your first-line supervisor (or advisor) will have more instructions and an issuance sheet to be signed by you.

Laser Safety Alert

All laser users must be currently trained in the potential hazards and safe use of the laser system that you will be employing at respective projects. Scientists planning to bring additional lasers to FLWO for project work must first contact the FLWO Laser Safety Officer, Thomas Gerl at 520-879-4411 and submit necessary information for approval.

Restrictions on Use of Power Tools and Machine Shops

Use of any FLWO machine shop equipment (in the Administrative Complex, Ridge Support Building and Summit Shop) will be allowed ONLY after approval by a member of FLWO Staff (or authorized MMT staff for the Summit Shop) who is fully trained in their use.

Use of Chemicals or Other Hazardous Materials

No one is authorized to use chemicals until trained on the hazards and safe work practices, by their supervisor or scientific sponsor, per the FLWO Hazard Communication Program. OSHA requires that every employee receive "Right to Know" training before working in a lab or other area with chemicals.

All work sites containing hazardous materials must have Material Safety Data Sheets (MSDS) for each hazardous chemical. These sheets contain information about the hazards known to be associated with chemicals, symptoms of exposure, methods of protection etc. Employees must read these sheets before they use a chemical for the first time, and are encouraged to review them periodically.

Chemical Spills – Emergency response

Consult the FLWO Hazardous Chemical Spill and Leak Control Procedures posted in each building or call 9-911. Do not attempt to clean up a chemical spill by yourself!

Sites with the highest risk for a chemical spill include the diesel and fuel stations on the mountain and the administrative complex.



Hazardous Waste Disposal Procedures

FLWO is not a significant generator of hazardous waste but be aware of proper disposal of many items. FLWO uses an outside contractor to dispose of fluorescent light bulbs, batteries, automotive parts solvent, and used oil. Check with the FLWO Safety Coordinator regarding these and other items for proper disposal.

Elevated Work and Fall Protection (particularly at VERITAS and MMT)

Working at heights on the motorized man-lifts at VERITAS reflectors and on the MMT/OSS requires the use of special fall protection gear (full-body harnesses, tie-offs). ONLY persons who have received fall protection training, Aerial Lift Operator Safety, and are supervised by trained staff are allowed to work on these structures.

Any visiting scientists assigned to working on VERITAS reflectors with the use of motorized man-lifts will be required to be trained on the equipment and safety gear upon arrival. Contact Bill Hanlon, 520-879-4403, to schedule training.

WEATHER AND ENVIRONMENTAL RELATED CONDITIONS

Monsoon Season (Summer Thunderstorm Season): This thunderstorm season begins in either June or July and continues into September. Heavy rain and thunderstorm occur during these months.

Lightning Storm Precautions

If you are outside:

- * Seek shelter; look for a large, enclosed building. If you are in a car and not near a building, stay inside it and keep the windows rolled up.
- * If you are unable to reach a safe building or car and your skin tingles or stands on end, crouch down on the balls of your feet with your feet close together. Keep your hands on your knees and lower your head. Get as low as possible without touching your hands or knees to the ground. **DO NOT LIE DOWN!** It is best to find a low spot away from trees, metal fences, pipes, tall or long objects.

If you are inside a building:

- * Stay at least a few feet away from open windows, sinks, toilets, tubs, showers, electric boxes and outlets, and appliances. Lightning can flow through these systems and “jump” to a person.
- * Do not shower during a thunder or lightning storm.

If someone is struck by lightning:

- * People struck by lightning carry no electrical charge and can be handled safely.
- * Call for help. Call 9-911.
- * The injured person has received an electrical shock and may be burned, both where they were struck and the electricity left their body. Check for burns in both places. Being struck by lightning can also cause nervous system damage, broken bones, and loss of hearing or eyesight.



* A person struck by lightning may appear dead, with no pulse or breath. Often the person can be revived with cardio-pulmonary resuscitation (CPR).

Altitude or Mountain Sickness

Altitude illness is a result of traveling to a higher altitude faster than the body can adapt to that new altitude. It usually occurs when people reach an altitude above 8,000 feet.

In most cases, the symptoms are mild and may include: nausea or vomiting, headache, loss of appetite, fatigue, difficulty sleeping, and dizziness or light-headedness. Most cases are mild and symptoms usually improve when the person returns to a lower altitude.

For travelers to Mt. Hopkins who may tend to experience altitude sickness, it is recommended that they drink sufficient fluids and avoid alcoholic beverages.

Heat Stroke/ Heat Exhaustion

Due to the dry and hot conditions on site it is important to remain hydrated and avoid prolonged periods in the Sun between 10am and 4pm. Look for signs of heat stroke or heat exhaustion:

Heat Exhaustion

- Fatigue
- Nausea
- Headache
- Excessive thirst
- Muscle aches and cramps
- Weakness
- Confusion or anxiety
- Drenching Sweats, often accompanied by cold, clammy skin
- Slowed or weakened heartbeat
- Dizziness
- Fainting
- Agitation

Heat Stroke

- Nausea and vomiting
- Headache
- Dizziness or vertigo
- Fatigue
- Hot, flushed, dry skin
- Rapid heart beat
- Decreased sweating
- Shortness of breath
- Decreased urination
- Blood in urine or stool
- Increased body temperature
- Confusion, delirium, or loss of consciousness
- Convulsions

HANTAVIRUS (Deer Mice)

Hantavirus is a family of viruses spread mainly by rodents and can cause varied disease syndromes. In this area Deer Mice have been known to carry the disease. Deer Mice can be identified by two tone fur, large ears and eyes.

SIGNS & SYMPTOMS:

Early symptoms include fatigue, fever, and muscle aches, especially in large muscle groups. Late symptoms include coughing and shortness of breath as the lungs fill with fluid. This is passed when the droppings from Deer Mice become airborne.

Reporting and Cleanup

If rodent droppings are discovered please contact Support, the Safety Coordinator, or the Site Director. In the event you need to clean rodent droppings follow current CDC guidelines:



- Allow space to ventilate for 30 min prior to entry
- Wear rubber, latex or vinyl gloves
- Wear face covering
- Spray with a solution 1 part bleach to 10 parts water
- Allow disinfectant to soak for 5 minutes
- Use paper towels to pick up urine and droppings, and dispose of the waste in the garbage
- Re-clean and disinfect the entire area.

The incubation time for the virus can be up to 8 weeks after exposure. If you think you have been exposed seek medical attention.

WILDLIFE ON MT. HOPKINS

ARIZONA BLACK BEAR

The Black Bears often have dark, brown fur and are not necessarily black. On Mt. Hopkins, you may see bears any time during the year but they are most often seen in the summer and fall. During these seasons, the bears instinctively feel the urge to eat more and start accumulating reserves for the winter months. There are wildlife drinkers (small, man-made structures) in the bowl picnic area and by the Gamma Ray building so bears will frequently visit these areas.

Trash with discarded food or food wrappers/containers is never left outside on the mountain without being locked up. Once bears have access to human food and have been conditioned to expect food, then they lose their instinctive fear of humans and more apt to be more aggressive in a confrontational situation. "A fed bear is a dead bear" is a catch phrase used by wildlife biologists who try to educate humans about the consequences of their actions.

Some basic precautions to practice on the mountain include:

- * Never feed human food to any bear. If you eat outside on the patio or in the picnic area, be sure to take any leftover food and food containers inside the buildings.
- * Never tease a bear as you could easily provoke an attack.
- * Never allow yourself to be located between a mother bear and her cubs.

Poisonous Insects, Bugs and Snakes

There are a large variety of biting and stinging insects in this part of the desert as well as reptiles and animals. Please review the following link to familiarize yourself with potential hazards as well as what to do in the event of a bite or sting.

<http://azpoison.com/venom>

BEES

Bees have a barbed stinger at the base of their abdomen which carries their venom. The bee forces the tip of the stinger through the skin of the victim and leaves the stinger, poison sac and attached muscle in the victim's skin. It may take hundreds of bee stings to inflict a fatal toxic dose of venom in a healthy adult. However, one sting can cause a fatal allergic (anaphylactic) reaction in a hypersensitive person. Africanized bees or "killer bees" have now invaded many parts of the United States, including Arizona. Although



their sting is treated the same as other bee stings, these bees are very aggressive and much more likely to attack when threatened.

SIGNS & SYMPTOMS:

Most victims have local reactions: redness, itching, swelling and local pain, which may persist for several hours. Sensitive individuals may have more severe reactions: welts, itching palms and feet, headache, nausea, vomiting, and labored breathing.

FIRST AID:

The honey bees stinger is barbed and will frequently be left by the stinging bee. The venom sac attached to the stinger may continue to inject venom even after the bee has flown away.

For many years it was recommended that bee stingers be removed by scraping. Now we know that the bee's stinger should be removed within seconds of the sting by any possible means.

The patient should observe closely the progression of symptoms, especially in the first hour following the sting. Mild local symptoms may be relieved by taking antihistamines. More severe or rapidly progressing symptoms may require aggressive, life-supporting therapy in a healthcare facility. Patients demonstrating hypersensitivity should obtain an emergency kit to be carried at all times.

BLACK WIDOW SPIDERS

A mature female is a globe-shaped, black, shiny spider with a red or orange marking or hourglass on the underside of her abdomen. Males are smaller, brown and not a significant threat to people. A strong, irregular web indicates the presence of a black widow spider. They weave egg sacs which may contain up to 300 eggs. Removal or destruction of the egg sacs may help control the population. This spider is resistant to many insecticides.

SIGNS & SYMPTOMS:

The initial sensation may be painful, with little local reaction. Later, pain, cramping and stiffness may appear in the shoulders, back, chest or abdomen. Other symptoms include nausea, vomiting, headache, anxiety and high blood pressure.

FIRST AID:

Clean the site well with soap and water. Apply a cool compress over the bite location and keep the affected limb elevated to about heart level. Over-the-counter pain relievers may be used to relieve minor symptoms. Treatment in a medical facility may be necessary for children less than 5 years old or for adults with severe symptoms.

BROWN SPIDERS

This non-aggressive spider is found in dry, littered and undisturbed areas such as closets, woodpiles and under sinks. Bites often occur when the victim puts on clothing in which a spider has been hiding. This spider is light tan to brown with a violin-shaped marking on the back of the head-chest region. With legs extended, it is approximately the size of a



nickel to a quarter. Sometimes it is mistakenly referred to as the Brown Recluse; the Brown Recluse resides in the Midwest.

SIGNS & SYMPTOMS:

Generally, a patient experiences little or no local pain at the time of the bite. However, localized pain may develop in the first few hours. The site may become inflamed. Blister formations may develop as early as 12 hours to several days following the bite. This site will evolve into what has classically been described as a "bulls-eye lesion" with a dark center (dead skin) outlined by white and set on a red and inflamed background.

The healing process is slow, often taking months, and leaving a scar which may require reconstructive or cosmetic surgery. In addition to the local effects, systemic flu-like symptoms, including nausea, vomiting and malaise may appear in the first 24 hours.

FIRST AID:

Keep the site clean with soap and water to prevent infection.

Call **1-800-222-1222** if you think you have been bitten. Medical treatment is always advised when a brown spider bite is suspected.

CENTIPEDES

Centipedes have an elongated, segmented body with each segment bearing a pair of legs. The name inaccurately implies one hundred legs when, in fact, the number of legs varies between 20 and more than 100. They range in length from 1 to 9 inches.

SIGNS & SYMPTOMS:

A centipede bite will cause local inflammation and pain. Symptoms are frequently short-lived, lasting only a few hours. Although cases of persistent tenderness lasting for several weeks can be found, they are extremely rare.

FIRST AID:

Many centipede bites can be treated at home. If the pain is severe, or lasts longer than 12 hours, relief may be found in an emergency room or urgent care facility.

CONENOSE BUGS

Arizona has four species of conenose bugs known by many common names. These are parasites frequently residing in rodent nests. They may be attracted to our homes at night by outside lighting and take refuge inside at dawn. Once inside, they will appear at night to feed on us or our pets. They are approximately 1/2 to 1 inch in length with an elongated cone-shaped head.

SIGNS & SYMPTOMS:

Typically, no pain is felt at the time of the bite. Sometime later, a local reaction including pain, redness, swelling and itching may occur. Later bites may lead to sensitization and all levels of allergic reaction, including life-threatening ones.



FIRST AID:

Keep the bite sites clean with soap and water. Emergency allergy kits often are prescribed for patients who suffer severe reactions to use in case of future bites. These reactions require medical treatment.

TARANTULAS

These are the gentle giants of the spider world. But when adequately provoked, they will bite and their impressive fangs can produce painful puncture wounds.

Hairs located on the tarantula's abdomen act to discourage predators--these hairs can cause itching and burning if a person comes in contact with them.

SIGNS & SYMPTOMS:

Bites are unlikely to cause problems other than pain at the site. Skin exposure to the hairs on the abdomen will cause itching and a rash.

FIRST AID:

Clean the bite site with soap and water and protect against infection. Skin exposures to the hairs are managed by removing the hairs with tape. There is a risk of tetanus from a bite, so be sure your tetanus vaccination is up-to-date.

SCORPIONS

Scorpions are relatively inactive during the daylight hours. The majority of stings reported to the poison center occur at night during the warm summer months.

SIGNS & SYMPTOMS:

Scorpion stings can cause immediate local pain with minimal swelling.

Numbness and tingling are frequently reported. The injured area may be very sensitive to touch, pressure, heat and cold.

Small children are at highest risk of severe reactions. They can show jerky body and wild eye movements.

FIRST AID:

The majority of stings occurring in healthy young adults may be managed at home with basic first aid measures and follow-up.

First aid should include:

- cleaning the site with soap and water
- cool compress
- position affected limb to a comfortable position
- over the counter medication as needed for minor discomfort

RATTLESNAKES

Of all the snakes encountered in the United States, approximately 10% are venomous.

The most frequently cited statistics estimate that there are approximately 8,000 venomous snakebites each year in the U.S. -- these typically result in eight to 15 deaths.



Fortunately, fatalities from reptile bites are extremely rare when modern medical resources are available. But despite the fact that the recent death rate has dropped to less than 1%, serious symptoms are possible and **bite victims must be seen in a medical facility without delay.**

There are 17 different types of rattlesnakes in Arizona and all are venomous. Venoms are complex poisons which vary greatly in composition and potency among species and individuals. In addition to rattles, all rattlesnakes share some common physical characteristics:

- a triangular shaped head
- cat-like pupils
- foldable fangs

FIRST AID

In many cases, first aid performed in the field by the patient or companions only causes additional injury. The best first aid kit for snakebite includes your car keys and cell phone. Get help quickly if you are bitten

IF YOU ARE BITTEN,

- **Don't** use ice or electricity.
- **Don't** use constricting bands or suction. Using "extractors" does not remove a significant amount of venom and the process can increase tissue damage.
- **Don't** give alcohol or medication.
- **Don't** wait to see if you get symptoms.
- **Don't** try to catch the snake.
- The snake may bite again.
- Capture will delay your getting to the hospital.
- Treatment will be the same no matter which kind of rattlesnake bit you.
- **Do** relax and move as little as possible.
- **Do** remove tight clothing, shoes or jewelry from the bitten limb.
- **DO GO to the nearest medical facility immediately.**

MOUNTAIN LION

Mountain lions can be found throughout Arizona and are most common in rocky or mountainous terrain. Because mountain lions are shy and elusive, people do not often see them. However, the Arizona Game and Fish Department estimates the state's mountain lion population is robust and increasing at 2,500 to 3,000. Mountain lions are solitary animals with the exception of females with kittens or breeding pairs. Signs of mountain lion presence include large tracks (3-5 inches wide) without claw marks; large segmented, cylindrical droppings; food caches where a kill has been partially eaten and then covered with leaves, brush or dirt; and scrapes in soft dirt or leaf litter.

What Should I Do?

Mountain lions are predators capable of seriously injuring or killing humans. The Arizona Game and Fish Department is committed to helping people learn how to behave responsibly and live safely in proximity to mountain lions, and to removing animals that are a potential threat to the public.



The risk of attack by a mountain lion is small, but real; children are most at risk. Mountain lions may return repeatedly if food, water, or shelter is available. However, mountain lions use natural areas, such as washes, to move through populated areas to more remote areas, and such movements are necessary to prevent problems with inbreeding and local extinction associated with habitat fragmentation. If food, water, and shelter are not available, mountain lions generally move on to other areas more quickly.

If you encounter a mountain lion

- Do not approach the animal. Most mountain lions will try to avoid a confrontation. Give them a way to escape.
- Stay calm and speak loudly and firmly.
- Do not run from a mountain lion. Running may stimulate a mountain lion's instinct to chase.
- Stand and face the animal. Make eye contact.
- Appear larger by raising your arms or opening your jacket if you are wearing one. Throw stones, branches, or whatever you can reach without crouching or turning your back. Wave your arms slowly. The idea is to convince the lion that you are not easy prey and that you may be a danger to it.
- Maintain eye contact and slowly back away toward a building, vehicle, or busy area.
- Protect small children so they won't panic and run.
- Fight back if attacked. Many potential victims have fought back successfully with rocks, sticks, caps, jackets, garden tools, their bare hands, and even mountain bikes. Since a mountain lion usually tries to bite the head or neck, try to remain standing and face the animal.
- Report all mountain lion attacks to 911. All mountain lion encounters and attacks, sightings in urban areas, property damage due to mountain lions or possession of a live mountain lion should also be reported to your local Arizona Game and Fish Department office (8 a.m. to 5 p.m., Monday - Friday excluding holidays). After hours and weekends, a radio dispatcher is available at (623) 236-7201.

Possible Health Concerns

Mountain lions are at risk of getting a variety of diseases, including those common to house cats, but little is known about their rates of illness. They are also subject to death by secondary poisoning from common rodent poisons that contain blood anticoagulants.

Rabies - Symptoms of rabies can include foaming at the mouth, staggering, circling, and/or fearful, paralyzed, and lethargic behavior. If you see any wild animal with symptoms of rabies, call 911 or your local Game and Fish office immediately. Anyone bitten by a mountain lion must immediately seek medical attention for rabies shots unless the biting animal can be captured and tested for rabies. Notify the Arizona Game and Fish Department and your local health department immediately if any physical contact with a mountain lion occurs.

JAVELINAS

Javelinas are in the peccary family. Peccaries are a group of hoofed mammals originating in South America. Javelinas are common in much of central and southern Arizona, including the



outskirts of the Phoenix area, most of Tucson and occasionally as far north as Flagstaff. Javelina form herds of two to more than 20 animals. Javelina weight between 40 to 60 pounds and stand about 19 inches tall. They have very poor eyesight and may appear to be charging when actually trying to escape. Javelinas also have a keen sense of smell and travel in washes and areas of dense vegetation. They have a scent gland on the back and use scents to identify animals from different herds. Javelinas are most active at night, but also may be active during the day when it's cool.

What Should I Do?

While many people enjoy seeing Javelina and other wildlife in their neighborhoods, sometimes the pleasure of these encounters is marred by property damage or fear of a bite.

- Scare off animals by making loud noises, throwing small rocks in their direction, or spraying with water from a garden hose or large squirt gun filled with diluted ammonia (10% ammonia and 90% water).
- If the animal is confined, open a gate, have all people leave the area and allow it to leave on its own.
- If you see Javelina while walking your dog (always on leash), avoid going near the Javelina and quickly take your dog in a different direction.
- If a Javelina is acting in an aggressive manner toward people, is contained and cannot leave on its own or be let out easily, or is in human possession, please call your local Arizona Game and Fish Department regional office during weekday business hours. After hours and weekends, call the Arizona Game and Fish Department radio dispatcher at (602) 789-3201.

BATS

Arizona is home to 28 species of bats, more than almost any other state. Bats are the only true flying mammals and are valuable human allies. Worldwide, they are primary predators of vast numbers of insect pests, saving farmers and foresters billions of dollars annually and helping to control insect-spread human diseases. For example, large colonies of Mexican free-tailed bats (*Tadarida brasiliensis*) eat hundreds of tons of moths each week, especially the moths that prey on cotton crops.

Although bats play key roles in keeping insect populations in balance, they are North America's most rapidly declining land mammals. Declines are often caused by human fear and persecution, and each of us can help by learning how to live with these animals.

What Should I Do?

Bats should never be allowed to remain in human living areas. However, bats roosting on the porch, in the yard, or in a bat house are far more beneficial than harmful, and the small amount of guano can be cleaned up or used as fertilizer, in exchange for the reduction in flying insects and mosquitoes. The following ideas can help you coexist with bats or exclude them if necessary.

In an emergency:

If a person or pet is bitten by a bat, immediately wash the wound, attempt to capture the animal while wearing leather gloves, and contact your local county health department right away. The bat may have rabies and must be tested to determine whether the bite victim needs rabies shots.



If a bat is in human possession, please call your local Arizona Game and Fish Department regional office during weekday business hours. After hours and weekends, call the Arizona Game and Fish Department radio dispatcher at (623) 236-7201.

Possible Health Concerns:

Rabies - Bats are one of the known rabies vector species in Arizona, although less than 1 percent of wild bats are likely to have rabies at any given time. Symptoms of a rabid bat include inability to fly, flying during daylight, lethargy and paralysis. Most bats, even if sick, will not attack a person, but bats may bite if handled. If a live bat is on or near the ground, then leave it alone, keep pets and children away, and contact the local county health or animal control agency. Anyone bitten by a bat should immediately seek medical attention. If possible, the bat responsible for the bite should be captured and tested for rabies.

Histoplasmosis – This disease is caused by a fungus (*Histoplasma capsulatum*) that lives in soil enriched by bird or bat droppings. The fungus is rare in dry Western climates, although it has been found in Arizona. It could be present in dry, hot attics of buildings. Infection is caused by inhalation of airborne spores in dust enriched by animal droppings. The vast majority of histoplasmosis cases in humans is asymptomatic or results in only flu-like symptoms, though a few individuals may become seriously ill, especially if exposed to large quantities of spore-laden dust. The disease can be avoided by not breathing dust suspected of being enriched by animal feces.



Basic Safety Review

I, _____, verify that I have read and understand the basic safety precautions and hazards associated with working at the FLWO. I verify that upon arrival I will check-in with the Safety Coordinator or my Supervisor to complete my training. I agree to abide by the safety requirements of the FLWO.

- Wildland Fire Emergency Response
- Building Fire Alarm Procedures
- Smoking Areas
- Medical Emergency Response
- Reporting of Accidents, Injuries, and Illnesses
- Stop Work Program
- Vehicle Operator's Guide
- Safety Gear/Personal Protective Equipment Training and Issuance (use PPE issuance sheet)
- Laser Safety Alert
- Restrictions on Use of Power Tools and Machine Shops
- Use of Chemicals and Hazardous Materials
- Chemical Spill and Leak Response
- Hazardous Waste Disposal Procedures
- Fall Protection
- Wildlife on Mount Hopkins

Employee, visiting scientist, volunteer, student

Date

FLWO Supervisor or FLWO Safety Coordinator

Date

Prior to arrival email your signed copy of this form to pafortin@cfa.harvard.edu, thomas.gerl@cfa.harvard.edu and your FLWO Supervisor.



Appendix E

Helicopter Pad Operations

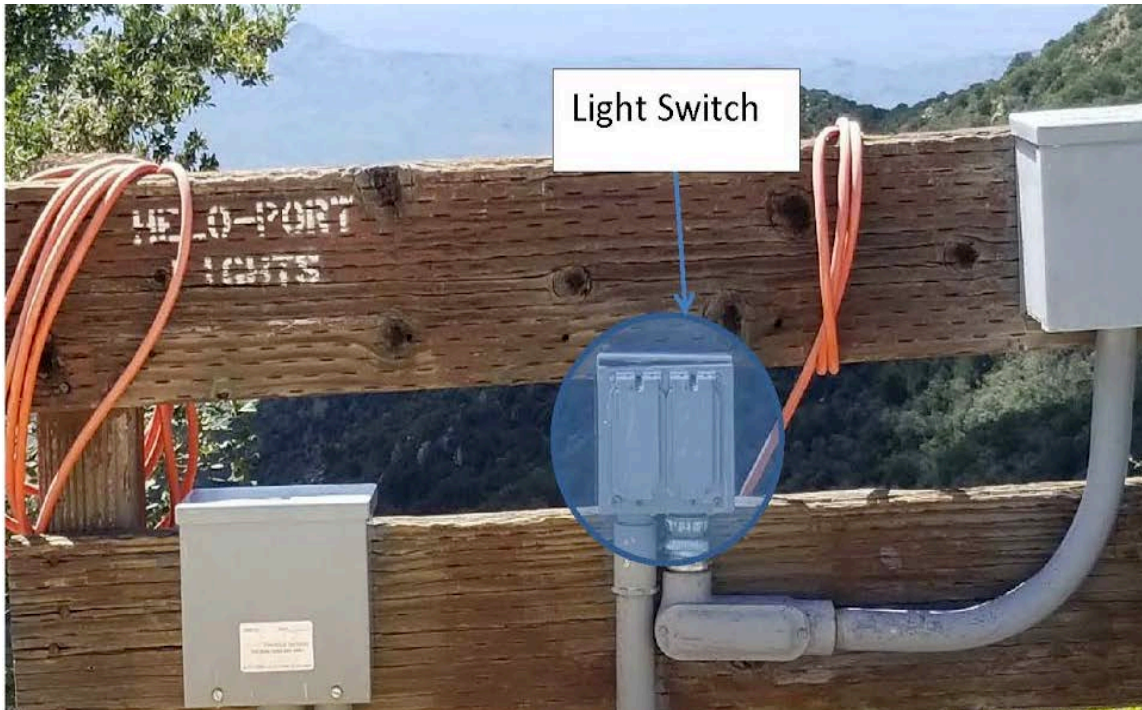
In the event personnel need to be medevacked by an air ambulance ensure the site prepared for a landing prior to the ambulance arrival. There are three potential landing sites at the FLWO. Basecamp Landing Zone (LZ) located at $31^{\circ}40'29''\text{N } 110^{\circ}57'01''\text{W}$ 1,432 m elevation; Ridge LZ (Primary) located at $31^{\circ}41'05''\text{N } 110^{\circ}52'41''\text{W}$ 2,411 m elevation; and IOTA LZ $31^{\circ}41'30''\text{N } 110^{\circ}53'05''\text{W}$ 2,651 m elevation. When placing the call for an air ambulance the pilot will need to know the GPS location and current weather conditions at the site. Weather information can be found on the FLWO Safety Webpage.

<https://sites.google.com/cfa.harvard.edu/flwo-safety/weather?authuser=0>

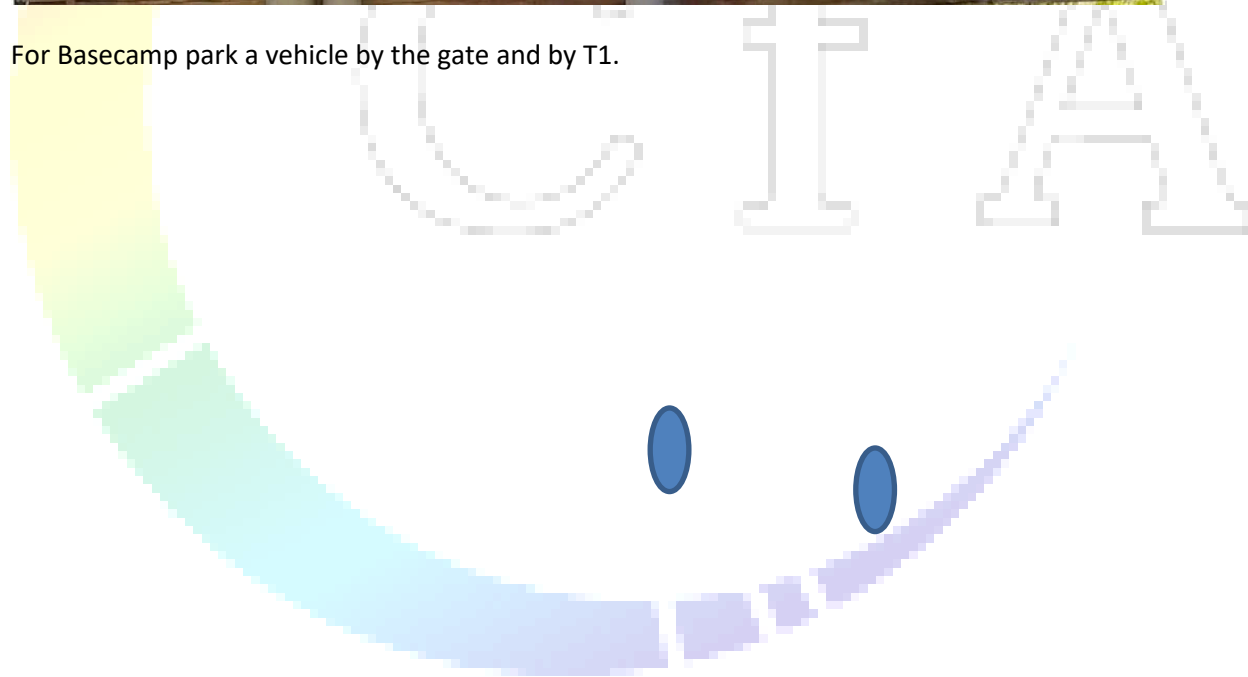
Prior to arrival ensure all personnel are outside the LZ and wearing eye protection provided in the yellow LZ box by the Heli Pad. Park a vehicle perpendicular on the road above and below the LZ to block traffic. If operation is conducted at night, turn on the LZ lights, wind sock light and blocking vehicle lights.

For the ridge Park a vehicle by the Support Shop. The Heli Pad light switch can be found mounted west of the shop. The Wind Sock Light is a flood light with an extension cord next to the Pad light switch.





For Basecamp park a vehicle by the gate and by T1.



Once the Air Ambulance lands a nurse will assess the patient and authorize transport to the ambulance.



Appendix F

Document Revision History

Date	Revision No.	Reviser Name	Summary of Changes
8/31/2015	Draft	Thomas Gerl	New Document
4/13/2016	A	Thomas Gerl	Add Animal Control Number, Add Javelins, Remove Dan West, Add Michael Daniel. Official Document.
11/8/2016	B	Thomas Gerl	Updated information on Back Bears and Wildfires.
1/17/2018	C	Thomas Gerl	Update new Fire Monitoring Procedure
5/29/2018	D	Thomas Gerl	Added Fire Panel Account Numbers and Passcodes
8/14/2018	E	Thomas Gerl	Added Smoking Areas and Helipad Instructions
11/7/2018	F	Thomas Gerl	Updated contact info and wording in Appendix D. Added Appendix E for Helipad Operations.
11/01/2019	G	Thomas Gerl	Added complete list of Fire Panel Account numbers and Passcodes
01/23/2020	H	Thomas Gerl	Added photo of Fire Alarm panel and changed wording on responding to Fire Alarms
01/15/2021	I	Thomas Gerl	Changed Fire Monitoring Company number and Fire Panel Account information
02/19/2021	J	Thomas Gerl	Removed Emilio Falco from call list and added reminder not to enter the MMT Pit during Fire
04/02/2021	K	Thomas Gerl	Added section on Hantavirus, removed Michael Daniel
10/15/2021	L	Thomas Gerl	Changed Fire Panel information to new monitoring company

Document Approval

Name	Signature	Project Job Title	Date
Thomas Gerl		Safety Coordinator	
Pascal Fortin		Site Director	