



Steward Observatory operates telescopes, labs, shops and other facilities on several mountains in Southern Arizona. Each of these sites have the potential for hazardous weather conditions year around including heavy rain, flash floods, very high winds, and ice and snow, particularly in the winter months. In its effort to minimize risk to employees and visitors who must travel in the mountains, the Observatory has established the following policies and procedures:

First, employees and visitors are encouraged to either stay on the mountain for the night if they must work late, or leave the mountain in time to arrive at the bottom by sunset. If emergency situations require travel after dark, then they are required to carry a two-way radio and make arrangements with some other employee on the mountain to monitor the radio channel until the traveling person reaches the bottom of the mountain, at which time the traveling person announces arrival to flat land.

Second, each observatory department that has vehicles which are primarily used to travel to and from mountain sites, will outfit those vehicles with proper supplies that can be used in the event of accident or breakdown on mountain roads. The supplies will be kept in a duffel bag and will include at least the following:

1. Listing of all emergency telephone and radio contact numbers (updated quarterly from the MGIO web site by each department)
2. Fire extinguisher
3. Crank or shake flashlight
4. Small shovel
5. Ice scraper
6. First aid kit
7. Pocket lighter or butane mini-torch
8. Emergency blanket per passenger
9. Bag of sand
10. Snow chains
11. Tool kit which includes pliers, duct and electrical tape, screwdrivers, plastic warning sign, set of jumper cables, and a 20-foot tow strap.



Third, it is recommended that each employee or visitor who is traveling to mountain sites must be given and required to read the MGIO Orientation package or the observer guidelines on the University of Arizona website for the Mount Lemmon, Mount Bigelow, and Kitt Peak telescopes. All employees and visitors are warned/advised to take appropriate clothing such as gloves, heavy coat, hat, boots, etc. In addition, it is advised that they carry a supply of water and food. It is required (for Mount Graham) that they have a hand-held or vehicle radio that is operational, that they are trained in snow-chain application, and that they have established a contact to monitor travel if after hours. Employees and visitors are also responsible that the fuel tank on their vehicle is full before going to the Mountain, that tires are inflated properly, a spare tire and chains are on board, the wipers are operational and that there is wiper fluid in the container.

**Advice for the Mountain Traveler:** If you are an infrequent visitor (or employee worker) to any of the mountain sites then if you have a chance to ride to the mountain and leave the driving to one who is experienced, that should be your decision. If you decide to drive yourself, then you should consider and adhere to the following:

If there is snow on the ground or the possibility of snow or mud then you should only take a four-wheel drive vehicle and be sure you know how to get it in and out of four-wheel drive. Remember that going at high speed on flat land is very bad if you are in four-wheel drive. Different four-wheel vehicles go in and out of four-wheel drive with very different procedures, so know your vehicle type.

When you are driving on steep mountain grades and find that you are beginning to “ride” your brakes, shift the transmission to a lower gear. Let your engine do the braking so that you do not damage the brake system by overheating the rotors or drums.

If the road has snow cover, you should proceed slowly and cautiously and try to stay as close to the center of the road as possible. Remember that a plowed road may look to be much wider than it really is. The soft shoulder on either side of the road may not support the weight of the vehicle.

And last, if your vehicle is on ice or slippery road and it begins to skid, you should turn your wheels in the direction of the skid, provided of course, that does not take you over the edge.

**One Final Note:** All of this policy and these procedures apply to Mount Graham visitors and employees. Because the roads are more heavily traveled and the weather conditions are usually less severe on Kitt Peak, Mount Lemmon, Mount Bigelow, and Mount Hopkins, there is not a firm requirement for two-way radios and a standby radio



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monitor most of the time for traveling observers. Employees will have radios in the Observatory vehicles.

There are other concerns for employees and visitors to the telescopes and labs on the mountain sites. Some of these concerns are the prevalence of poisonous animals/bugs such as snakes and scorpions. On Kitt Peak it is not unusual to find cattle roaming across the highway and if it is dusk or nighttime, one may not have a lot of time to react and apply the brakes, but be sure to drive safely and not too fast. Also lightning is a very major concern on mountaintops and no one should be standing near corded telephones, electrical appliances, electric sockets or plumbing. Avoid water activities like taking a shower and try to get into a large, fully enclosed, substantially constructed building. Next best is an all-steel vehicle with closed windows and don't touch anything but the seat. To determine the danger, use the National Lightning Safety Institute, NSSI, 30/30 Rule. When you see lightning, count the time until you hear thunder. If the time is 30 seconds or less (9.66 km), go immediately to a safe place.

It is not unusual to see small groups of people walking along side the highways and although they usually go off in the desert, sometimes they will attempt to stop you or flag you down. If this happens you should use extreme caution and stay in your vehicle. Be sure that the doors are locked and only roll your window down part way to allow you to communicate, but does not allow them to reach into the vehicle. If the group requests assistance, evaluate the situation and determine if you can provide assistance without compromising your own safety. Offer to contact authorities for the group to request assistance. If at any time you feel threatened, immediately drive away from the area and call 9-1-1 and report the incident. [side note - we may need to determine what the legal boundaries are between providing reasonable assistance to someone in need as opposed to what might be interpreted by law enforcement as aiding illegal immigration]. Or, if you notice a small fire a short distance from the highway, but in the desert, you should approach the area cautiously, remaining in your vehicle if possible. A small fire may be the start of a brush fire that needs be reported to authorities, or it may be a campsite. As fires may spread quickly, it is important to note the location and contact authorities by calling 9-1-1, and reporting the incident, if it is determined to be a fire rather than a camp fire. If it is a camp fire and it is unattended, report it to the authorities ASAP. And finally, if you approach an obvious automobile accident that is not attended by official authorities such as an ambulance or police vehicle, and you feel qualified to be a first aid provider you should stop and render aid within the level of your training and abilities. Call for police or medical assistance as needed. Arizona has a Good Samaritan Statute (Arizona Revised Statutes 32-1471), which provides qualified immunity from liability for person rendering aid at the scene of an emergency.

For much more information and the official University of Arizona documentation and procedures on this subject, please go to:



Environment, Health,  
& Safety Manual

Subject: **Mountain Travel and Habitat**

Section: 42

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Page 4 of 4

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<http://policy.web.arizona.edu/hovmemo.shtml>

<http://risk.arizona.edu/fleetsafety/index.shtml>