

**MAUNAKEA OBSERVATORIES
SUPPORT SERVICES**

177 Maka'ala St. Hilo, Hawaii 96720

Phone (808) 974-4205 Fax (808) 974-4215

MEMORANDUM**January 1, 2015**

To: MKSS Oversight Committee
Maunakea Safety Officers

From: Stewart Hunter

Subject: Preparation for 2014-2015 Winter Weather - **(Revised 1/1/15) - See inspection guidelines section on page 4. Revision is in blue font.**

It's time to remind everyone of the hazards associated with winter weather and the logistics involved with the response to these conditions. The MKSS Staff and OMKM rangers will do all they can to keep the roads open and manage visitor traffic in a safe and orderly manner. But observatory staff must cooperate in this effort.

Please distribute the attached Winter Logistics package to your staff and let them know the winter weather must be taken seriously. Though there has been some bad weather in recent years, our winter weather has been relatively mild when compared with storms from the 1970s to early 1990s. During that period, the road to the summit was often closed for periods of over a week. Don't underestimate how dangerous Maunakea snowstorms can be.

Most observatory staff and observers have not experienced the severe snowstorms that were encountered on Maunakea in the past, and may not have the appropriate level of respect for potential conditions. Additionally, Hawaii County Police and Fire and Rescue services cannot reach the summit when the roads become icy and covered with snow. MKSS staff and OMKM rangers do not have winter weather rescue capability, and will not be sent above Halepohaku when the road becomes unsafe. So if the roads become impassable during a storm, anyone on the summit will be trapped until the storm passes and a path to the summit cleared. For these reasons, I need to emphasize the importance of evacuating the summit when conditions begin to become hazardous. This is especially true in the evening, when the pavement can quickly become icy, snowdrifts form in short order, and blowing snow creates zero visibility. Remember, entrapment at the summit is life-threatening as some people may develop serious altitude illness before the roads can be cleared. It is imperative that the summit is evacuated before this happens.

Please remind staff that the road may be closed to the general public while open to observatory vehicles. However, there is significant public pressure for access when they see observatory vehicles allowed up the road. During public road closures, it's important that observatory vehicles have appropriate identification logos and all passengers are official observatory staff. Family members or friends must not be transported and snow-play equipment must not be in vehicles. Once at the summit, observatory staff must not participate in snow-play activities until the road is open to the general public.

Please also remind your staff that traffic delays on the summit road may occur due to the use and transport of heavy equipment, slow vehicle movement, deliveries, road maintenance, snow removal, stalled or abandoned vehicles, hikers and bikers. All should be reminded that dust, fog and/ or snow can reduce visibility which can add to slowing of vehicles and equipment on the road.

The road-conditions email (road-conditions@ifa.hawaii.edu) is one of our important tools used to communicate the road conditions to observatory staff. This email is broadcast from an Institute for Astronomy server to one address at each observatory office. The observatory then distributes the message to their staff. Please review the distribution list for this email address with your network administrator and make sure any new staff have been added.

CC: MKSS Staff
OMKM Staff

January 1, 2015

2014-2015 MAUNAKEA WINTER LOGISTICS

(Revised 1/1/15)

For distribution to ALL Maunakea observatory Staff

Note: After the VIS closes at 10:00 p.m, there are no MKSS Staff or OMKM rangers on duty until the HP Cooks arrive at 4:30 a.m. to cook breakfast. Rangers and VIS staff normally do not come on duty prior to 8:15 a.m. unless an early morning road inspection is needed. If there is an after-hours emergency, call 911, and also please use the phone numbers on the MKSS Emergency Contact list to call the MKSS General Manager as primary contact or OMKM chief ranger as backup. Keep in mind there are NO home phone numbers listed in this document.

MAUNAKEA WEATHER CENTER (<http://mkwc.ifa.hawaii.edu/current/>) The weather center is a comprehensive source for determining the current conditions, forecasts, and links to other resources. The forecast is updated twice every weekday. Weather data, summit images, satellite images, etc. are updated continuously.

MAUNAKEA RANGERS (VIS Priority Phone: 934-9244)

The rangers will use the available resources and work with other departments to keep informed of current weather and road conditions. When conditions warrant, ranger and VIS staff will coordinate an early morning road and weather inspection. Rangers will determine when to close the road, update public messages, and communicate updated information.

VISITOR INFORMATION STAFF (934-4550, emergency: 934-9244)

The VIS is the center of operations when there are roadblocks and other emergencies on Maunakea. VIS staff will support the rangers by helping them update phone messages, send out road-conditions emails, assist at the roadblock and help with logistical support.

UTILITIES STAFF ROAD CREW (HP Office 935-0193)

The Road Crew's first priority is to establish access to the Observatories. Once that's accomplished, they will work on clearing the rest of the pavement and parking areas so that the road can be safely opened to the general public. It's important for the Road Crew to communicate with the rangers and MKSS staff so that decisions and updates can be made in a timely fashion.

HP STAFF (935-7606)

HP staff will help with the communications between the rangers/Road Crew and observatory staff. HP staff will update the "white board" in the HP lobby from 5:00 a.m. to 6:00 p.m, so observatory staff have the latest road condition status.

HILO OFFICE STAFF (974-4205)

The Hilo office staff will assist rangers & VIS staff when needed to ensure communications are updated during road closures. This includes the following: Road conditions phone message, road-conditions email, road conditions website and the white board at Halepohaku.

OBSERVATORY STAFF (see emergency phone number list)

Observatory staff are typically the first to notice changing weather or road conditions on Maunakea. It is important, and their responsibility, to communicate this information quickly via the road-conditions email. Between the hours of 10:00 p.m, and 6:00 a.m, update the white board at HP if possible.

GENERAL PUBLIC PHONE MESSAGE (935-6268)

In winter, this message is updated daily. If there are road closures or predicted road closures, the Rangers generally update this message before 6 a.m.

PUBLIC ROAD CONDITIONS WEBSITE (<http://mkwc.ifa.hawaii.edu/current/road-conditions/>)

This message is a public announcement. The message will essentially be the same as the phone message and provides another source for road information. There is a link to this site on the Weather Center forecast page and the VIS website.

OBSERVATORIES ROAD-CONDITIONS EMAIL SERVER (road-conditions@ifa.hawaii.edu) This email is an internal Maunakea advisory regarding road safety information to observatory staff and others who need to know the road conditions or other emergency situations. This email announcement is also sent to the National Weather Service, HELCO and companies with long-term contracts working on the summit. When there are road closures, the message will generally be updated by 6 a.m. Observatory accessibility during snow removal operations will be updated regularly via this message. This is a powerful communication tool and will be used by any observatory staff to report hazardous conditions they may encounter.

HP WHITE BOARD: This board is located at the HP lobby and observatory staff can use it to report hazards. When there are road closures, this board is used to update observatory staff about accessibility to their facilities. One way to keep accurate information on the board is to print and post the text of the "road-conditions" email.

HALE POHAKU WEATHER MONITOR: A monitor is mounted on the Halepohaku Lobby West wall, opposite the front desk. It is linked to the summit weather resources. The standard home page is the JAC Weather Kiosk (<http://www.jach.hawaii.edu/weather>), which formats weather source information into an easy to use page. On the top and bottom toolbars, the "Road Status" box will display the latest observatory road-conditions email message. The Mauna Kea Weather Center is also bookmarked on this monitor.

OBSERVATORY ACCESS: Generally, rangers will not close the road to the observatories but will describe the road conditions and report when they are unable to transit with chains. Each observatory must have their own set of rules that determine whether or not their staff should attempt to drive up (or evacuate). However, the summit **MUST BE ABANDONED** before conditions become severe enough to prevent evacuation. Entrapments at the summit or stranding a vehicle in the snow (to be later hit by a snow plow!) are not options to be considered. Remember, no organization in Hawaii has winter weather rescue capability.

When the weather forecast predicts snow or ice, a "soft gate" (barrier with warning sign) will often be placed across the road in order to keep the general public from putting themselves in danger. This gate is unmanned and the barrier can be moved if an observatory vehicle has good reason to go up. Please close the gate after passing through. Under no circumstances are vehicles allowed through for recreational (snow-play) or sight seeing purposes.

In the morning, rangers will coordinate road and weather information via the communications systems listed above. During snow removal operations, observatory vehicles should wait at Halepohaku until informed that their observatory is accessible and snow removal equipment have moved away. Keep in mind that should an observatory vehicle travelling uphill encounter a snow plow heading down a steep slope, there is a good chance the snow plow will not be able to stop!

It must also be emphasized that when observatory vehicles go up during road closures, passengers **MUST** be official observatory staff, and **MUST NOT** participate in snow-play activities until the road is open to the general public. There should not be any "snow-play" equipment in the official vehicles.

INSPECTION GUIDELINES FOR POSSIBLE ROAD CLOSURE DUE TO SNOW OR ICE

Time	Task	Staff
8:00 p.m.	Meeting	Rangers/VIS staff will check weather report/forecast and current road conditions. Make morning personnel assignments. If overnight snow & ice are probable based on the weather forecast, put up soft gate and close road. If snow is present on the paved road, let the Road Crew know by calling the Utilities Manager's after-hours phone number
3:30 a.m.	Check conditions	Designated ranger or VIS Staff checks road conditions. Check HP notes, MK Weather Center, observatory web pages and meteograms. Call observatory night staff and ask about summit conditions.
3:45a.m.	Decide whether conditions warrant a road inspection. ¹	If a road inspection is conducted, notify a backup staff (ranger or VIS Staff) to stand by at the VIS to receive reports and assist in case of emergencies. ² Depart towards Summit to inspect. Use a chained vehicle for the road inspection when appropriate.
4:15 a.m.	Summit Report. Close road if necessary. Inform road users of conditions. ³	Ranger calls backup staff at VIS to report conditions along Summit road and directs road closure if necessary. If ranger directs road closure, backup staff wakes up additional rangers/VIS Staff to do the following: 1. Put up barriers if not up already, and man roadblock. 2. Call utilities manager for snow removal. 3. Update phone road conditions message. 4. Send out road conditions email. 5. Update road conditions website. 6. Inform cooks. They will update white board @ HP. 7. Inform MKSS general manager of road closure.
6:30 a.m.	Clear snow/ice	Road crew has arrived and proceeds toward the summit for snow removal - the earlier the better. Once clearing begins, road crew makes periodic reports to VIS on road clearing status, as conditions change
7:30 a.m. until the road is reopened.	Update road users until road is reopened. ⁴	Rangers/VIS Staff receive road report from the road crew and update (as appropriate) the phone message, send road-conditions email, update road conditions website, inform cooks for updating the white board at HP. Rangers will conduct a road inspection or reopen the road after an all clear from the snow removal crew or as conditions warrant.
10:00 a.m.	Summit Lunch	Cooks inform Observatories of summit lunch schedule.
10:30 a.m.	Send up summit lunch	Food & lodging Staff deliver summit lunch if road is passable. crews still at HP may opt to eat at HP before going up.
11:00 a.m.	Road Crew Lunches	Food & Lodging Staff ensure road crew lunches are delivered. Cooks, observatory staff, or Rangers will deliver depending upon conditions and availability.
Rest of day	Repeat inspections and updates	All staff.
8:00 p.m.	Plan for next day	Rangers, VIS Staff and road crew start times and personnel assignments are determined.

¹ Ranger notes mile mark where snow starts, depth of snow at landmarks, traction, drifting, current snowfall, ice, etc. Report at Park 1, Park 2, UH-88, and summit circuit. Call VIS with report from UH-88 phone or cell phone.

² **If it's determined that a road inspection is warranted and only one person is available, do not conduct an inspection. Instead, skip to the 4:15 a.m. section and do steps 1-5 (road closure). If the Road crew conducts**

snow removal operations, they will call down to the VIS and report actual conditions. If not, once a second person arrives, conduct a road inspection and report results.

³Road users need to be kept informed of conditions. Updates should be made when conditions change. Update road-conditions email and HP white board as conditions change.

⁴Road will not be reopened to the public until the road crew reports that all snow removal equipment is safely stowed off the road.

MAUNAKEA WINTER RECOMMENDATIONS

1. Leave the summit well before road conditions become hazardous.
2. Chains and studded tires are very useful for driving on icy surfaces. Chains should be available for each summit vehicle and staff trained on installation.
3. Experienced winter weather drivers should be used by Observatories.
4. **If the Rangers, MKSS, or OMKM issues an absolute evacuation or road closed order, all facilities must comply.**
5. Make sure you communicate with the other observatories and your destination once you decide to evacuate. The road-conditions group email is an easy way to do this. Try to provide a reasonable estimated arrival time, so that those waiting for you don't worry unnecessarily.
6. Some conditions might make staying in the facility overnight the most attractive alternative. However, it is very important to evacuate the facility before this happens, as it is always possible that the road will not be cleared for over a week - which can be life threatening because of long term exposure to altitude. Remember, Emergency Rescue Services do not have winter weather rescue capability in this state!
7. Post the enclosed flyer at your facility, and make sure your staff and visiting astronomers understand the hazards and rules.
8. Although the summit road will be closed to the public during snow clearing operations, official observatory vehicles will be allowed to drive up as soon as access is available to each facility and snow removal equipment have moved away from that area. Only official observatory staff is allowed up at this time, and they **MUST NOT** participate in snow-play activities until after the general public is allowed to drive up the road. Skis, boards, and other snow-play equipment should not be in the vehicle.
9. Observatory vehicles will not drive up during road clearing operations until they are informed that it is O.K. by MKSS staff or OMKM rangers. Premature travel on the roads is dangerous and interferes with the snow removal activities and clogs the roadways.
10. Observatory vehicles must also be careful where they park, as the road crew needs to clear the path to the water inlets and clear the parking lots. After the main roads are cleared, staff should try to move the vehicles away from these locations.

PUBLIC ROAD CLOSURE CRITERIA

The road will be closed to the public and a road-conditions email sent out under any of the following conditions:

1. Any ice or snow on the road.
2. Winds greater than 55 mph for more than 1 hour and/or gusts greater than 65mph.
3. Visibility less than 50 feet.
4. Any emergent condition that makes the road unsafe for travel.

The road will be opened to the public when clear of snow & ice and all snow removal equipment has been safely stowed off the road.

WARNING !

WINTER ROAD CONDITIONS ARE HAZARDOUS

ICY CONDITIONS CAN OCCUR QUICKLY
AND WITHOUT WARNING

BE PREPARED TO MOUNT CHAINS ON YOUR VEHICLES

ANTICIPATE THE NEED FOR A QUICK EVACUATION

**DON'T GET STRANDED: State & County
Emergency Medical Services do not have
winter weather rescue capability!**

DRIVE VEHICLES IN THE LOWEST GEAR POSSIBLE
TO MINIMIZE BRAKING PRESSURE

BEWARE OF SNOW REMOVAL EQUIPMENT

LOOK FOR ICE EVEN WHEN IT IS NOT EXPECTED

DRIVE SLOWLY AT ALL TIMES