Included in this documentation is pertinent information in preparation for your visit to the summit of Mauna Kea. It is imperative that you review the contents as it will guide you in understanding the risks of working/visiting the summit of Mauna Kea.

Enjoy your visit!

Aloha and welcome to Hilo on the Big Island of Hawaii!

**PERSONAL PROTECTIVE EQUIPMENT:** Visitors are required to wear, closed-toe, sturdy (leather preferred) shoes at all times in the summit facility. Visitors working on the telescope or instruments must use safety shoes or slip-on steel toe caps. *(Please refer to HRC_IV_05_252_A Gemini North Visitor’s Safety Information)*
From Hilo, take the Puainako Extension (Hwy 2000) which merges with Saddle Road (Hwy 200). Just before the 28 mile marker, there is a road to the right and a street sign that says Mauna Kea Access Road. Make the right turn. Hale Pohaku is about 6 miles up the road on the right side of the road. The drive takes approximately 1 hour.

From the Kona side of the island, take Highway 190 heading North toward Waimea. Just before the 6 mile marker, there is a turnoff on the right for Saddle Road (Hwy 200). Take Saddle Road until just after the 28 mile marker. Turn left onto the Mauna Kea Access Road. Hale Pohaku is about 6 miles up the road on the right side of the road. From Waimea, the trip takes about 1 hour, from Waikoloa, the trip takes about 1 1/2 hours, and from Kona, the trip takes about 2 hours.
DRIVING TO THE SUMMIT

The summit access road is winding, steep and dangerous. Weather can deteriorate rapidly and ice, snow, wind, or fog are factors that require special attention. Speed limits are for passenger and vehicle safety and must be obeyed. There are grades up to 17% on the access road, and brakes will overheat if lower gears are not used on the descent. Always downshift to keep engine rpms between 3000 and 4000, and never in the “red zone”.

Driving at high altitude carries many risks. Lower oxygen can impair judgment and create fatigue. Blinding snow or white-out conditions can lead to severe vertigo. Extreme cold and wind chill can lead to serious hypothermia and frostbite. Do not take chances!

Preparing for the SUMMIT of Mauna Kea

Be prepared for the altitude and the cold at the summit of Mauna Kea. At the altitude of 13,800 feet, weather at the Mauna Kea summit can be severe, especially during the winter months. Conditions can change radically in a very short period of time. We suggest that you prepare for weather conditions to deteriorate to 20 degrees F, with 70 mph winds possibly blowing snow. Wind chill and high altitude can make it seem much colder.

The altitude may also aggravate pre-existing disease, particularly cardio-vascular and respiratory diseases. Individuals with these conditions are advised to bring the above information to the attention of his/her medical practitioner and to seek medical advice and clearance before visiting the summit. It is recommended for any visitor to Mauna Kea to seek medical advice and clearance before visiting the summit.

Under NO circumstances will Gemini allow visitors under the age of sixteen (16) to visit the Gemini site.

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AURA/GEMINI DOES NOT ACCEPT ANY LIABILITY FOR VISITORS TO MAUNA KEA WITH RESPECT TO THE POTENTIAL ADVERSE EFFECTS OF ALTITUDE. IF YOU INTEND TO VISIT THE TELESCOPE SITE, YOU ARE REQUIRED TO SIGN A DECLARATION AND WAIVER. YOU THEREFORE ASSUME ALL RISK
GUIDELINES FOR MINIMIZING RISK
AT THE MAUNA KEA SUMMIT

**DRINK WATER**...the human body shifts large volumes of body water and to help with short-term adjustments to altitude. Give your body water to work with and to cope with losses into the very dry air. If you start to get a pounding, hang-over type headache, drink three or four cups of plain water; it often works in 4-5 minutes.

**LEARN HOW TO BREATHE**...take slow, even breaths.

**MOVE SLOWLY**...always pace yourself at the summit. Sit down. Don’t stand for long periods.

**STAY RESTED**...avoid exhausting tasks/parties and short sleep the day before you are scheduled for a trip to the summit. This provides more cardio-respiratory reserves for adjustment to altitude stress.

**AVOID ALCOHOL**...for at least 10 hours prior to ascent. This avoids dehydration and irritation of the arteries of the brain that will be forced to adjust to hypoxia.

**AVOID MARIJUANA**...it stays with an individual for 5-6 days and can be an unpredictable, extremely potent constrictive agent for the coronary arteries.

**AVOID TOBACCO SMOKING**...nicotine constricts arteries and further inhibits adjustments to the need for increased blood flow. Stop smoking 48 hours before ascent to allow carbon monoxide in your bloodstream to dissipate.

**AVOID HEAVY MEALS**...before ascent to the summit, since this tends to tie up a significant part of the available blood flow for longer than light meals (of high carbohydrate items such as pasta, rice, or other starch). Avoid skipping meals or eating or drinking nothing but sugared snacks or drinks; sharp changes in blood sugar can trigger increased altitude stress.

**AVOID UNPROTECTED EYE EXPOSURE**...to glare and bright sunlight by wearing dark lenses, preferably UV-coated lenses. This reduces fatigue and will prevent the loss of 50% of night vision for up to two nights after glare exposure of only 1 hour. It also blocks out the significantly greater ultraviolet exposure that Hawaii’s ideal astronomical conditions permit, possibly leading to early cataracts. You may wish to wear sunscreen, as the sun can burn even in cold temperatures

Excerpted from:

Safety and Health are paramount at our AURA/Gemini facilities. While we work diligently to maintain a safe and healthy environment for workers, the site may still pose safety hazards. As a result, it is imperative that you proceed with caution at all times.

**If you feel the onset of any unusual feelings or symptom, let someone know immediately.**
LEVEL 2
ESCAPE ROUTES
LEVEL 5
ESCAPE ROUTES
Gemini North Visitor’s Safety Information

Aloha,

For your personal safety, please read this entire safety policy and information bulletin. Your **signature on the last page** acknowledges that you have read and understood the contents of this safety document. *(Parents or legal guardians of minors age 16 or 17 must also request a Gemini Minors’ Release Form for each child on the tour – Gemini North does not permit anyone younger than 16 to visit.)*

Please submit a **signed** Gemini Release Form for **everyone** entering a Gemini summit facility either electronically or to your tour guide 24 hours in advance of your tour. All forms must be submitted before leaving sea-level.

The Gemini Observatory consists of two telescope facilities operated by the Association of Universities for Research in Astronomy, Inc. (AURA). The Gemini South telescope is on Cerro Pachón in Chile at an elevation of approximately 9,000 ft. (2,700 meters) and the Gemini North telescope is at an elevation of approximately 14,000 ft. (4,200 meters) near the summit area of Mauna Kea in Hawai’i. Gemini works diligently to maintain a safe environment for staff and visitors, yet each person bears responsibility for their own safety.

Visiting the Gemini North telescope can pose personal health risks including potentially hazardous conditions and situations. All tour members are required to participate in a safety briefing that will provide additional details and warnings about visiting the facility.

During your visit our guests must remain with a designated guide and follow his/her instructions at all times. **Closed-toe, sturdy (leather preferred) shoes are required.** Jackets and warm clothing are recommended due to cold temperatures. Typically the interior of the telescope’s dome will be cooled as low as zero degrees Celsius (32 degrees Fahrenheit).

While visiting Gemini North, because of its high elevation, visitors are exposed to a significant reduction in atmospheric pressure and a corresponding reduction of available oxygen to the body. This can result in a variety of medical conditions and in some cases severe illness and even death can result – see the “Gemini North: Altitude Health risks and warnings” addendum for a list of restrictions and additional information including preparing for the risks of high altitude on the human body.

Aloha and enjoy a safe visit,

GEMINI OBSERVATORY
Safety Leadership Team
SAFETY CHECKLIST/ DOS & DONTS:

1. ____ DO CHECK WITH YOUR DOCTOR FIRST... Visitors to Gemini North are strongly advised to obtain their primary physician’s opinion regarding a visit to 14,000 feet (where available oxygen (pressure) is about 40% less than at sea-level). In addition, many medications are effected by altitude and can cause a significant health risk. **The nearest medical help is over 90 minutes away from the summit.**

2. ____ DO STAY RESTED... This provides additional cardio-vascular/respiratory reserves for the stress of altitude.

3. ____ DO STAY HYDRATED... The human body shifts large volumes of body water and dumps some of it to help with short-term adjustments to altitude. Give your body water to stay hydrated prior to and during your visit to help it cope with losses due to altitude and the very dry air.

4. ____ DO PROTECT YOUR EYES/SKIN FROM UV EXPOSURE... Glare and bright sunlight is common on the mountain and is easily addressed by wearing dark lenses, preferably with ultraviolet (UV)-coatings to prevent long-term eye damage such as cataracts. Sunscreen is also advised for exposed skin, even for short periods due to the intensity of UV at high elevations close to the earth’s equator.

5. ____ DON’T USE ALCOHOL, MARIJUANA, OR DRUGS... Do not drink alcohol for at least 10 hours prior to your visit. This avoids dehydration and irritation of arteries in the brain that will be forced to adjust to lesser concentrations of oxygen in the blood. Drugs of any kind can affect the body for several days and many (especially illegal types) can be unpredictable and are an extremely potent constrictive agent for the coronary arteries.

6. ____ DON’T CHEW TOBACCO OR SMOKE... Nicotine constricts arteries and further inhibits adjustments to the body’s need for increased blood flow.

7. ____ DON’T EAT HEAVY MEALS... While it is not a good idea to visit the mountain on an empty stomach, before ascent to the summit area do not eat excessively since this tends to tie up significant amounts of your available blood-flow. A light meal of high-carbohydrate items such as pasta, rice or other starches is generally advised. Avoid skipping meals or eating or drinking only sugared snacks or drinks; sharp changes in blood sugar can trigger increased altitude stress.

- Visitors to the Gemini North telescope may suffer; headaches, tiredness, irritability, lack of appetite, reduced intellectual capacity, impaired exercise/exertion tolerance, and possible vomiting. It is also possible to develop one or more of the more severe mountain sicknesses, pulmonary or cerebral edema, both of which can be fatal.

- Altitude is also likely to aggravate pre-existing conditions, particularly cardio-vascular, diabetes, and respiratory diseases (see item #1 above).

- Visitors are required to acclimatize for a minimum of 30 minutes at the midlevel facilities at 9,200’ (2,800 meters). In some cases, if a member of a group becomes ill during a tour it might be necessary for the entire group to descend from the summit area if alternate transportation is not available for the affected individual(s).

- Visitors are required to wear, closed-toe, sturdy (leather preferred) shoes at all times in the summit building. Visitors working on the telescope or instruments must use safety shoes or slip-on steel toe caps. It is required by Gemini that shoes are equipped with an ASTM F-2413-2005 or ASTM F-2412-2005 safety rating. Visitors going to the dome floor to see the telescope when no work is in progress do not require safety shoes; if engineering work is going on at the time, steel toe caps are required. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9786

- Pregnant women, anyone under 16 years of age, and scuba divers who have descended within the past 24 hours will NOT be allowed to visit the Gemini North telescope facility.
Gemini North Release Form

AURA/GEMINI DOES NOT ACCEPT ANY LIABILITY FOR VISITORS TO THE GEMINI OBSERVATORY SUMMIT FACILITIES WITH RESPECT TO THE POTENTIAL ADVERSE EFFECTS OF ALTITUDE OR FOR ANY ADVERSE EFFECTS FROM THE ADMINISTRATION OF OXYGEN, IF REQUIRED. IF YOU INTEND TO VISIT THE TELESCOPE SITE, YOU ARE REQUIRED TO SIGN THE DECLARATION PROVIDED. YOU THEREFORE ASSUME ALL RISKS.

ACCEPTANCE:

❖ I have read and understand the Gemini Visitor’s Safety Information document and further agree to abide by all safety regulations and the instructions of my guide.

❖ I have been advised to seek medical advice before proceeding and I have read and understand the Medical Alert – “Gemini North: Altitude Health Risks and Warnings” provided by Gemini Observatory concerning the potential harmful effects of altitude.

❖ Further, I give my consent for Gemini Observatory personnel to administer oxygen to me in the event I should require it and from that action, I agree to hold harmless AURA/Gemini Observatory and its personnel.

❖ I accept that AURA/Gemini shall not be held responsible for any adverse effects to me resulting from exposure to high altitude.

PRINT NAME & ADDRESS:

_________________________________________________________________________  Name

_________________________________________________________________________  Address

_________________________________________________________________________  City/State/Zip

SIGNATURE:

_________________________________________________________________________ DATE

DATE OF TOUR ______________________

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