GEMINI

8-M Telescopes Project

PG-HR-G0014
Revision 1.2

GEMINI'S GUIDE FOR VISITORS TO THE SUMMIT

AND

GEMINI CONSTRUCTION SITE

Melissa Welborn, Steve Hardash, Jim Kennedy

Safety Operations

August 19, 1998

GEMINI OBSERVATORY – Northern Operations Center

670 N. A'ohoku Place
Hilo, Hawaii 96720

Phone (808)974-2500

Fax (808)974-9802

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GUIDELINES FOR TOURS TO GEMINI CONSTRUCTION SITE
MAUNA KEA, HAWAII

1. All groups must be scheduled in advance. In order to coordinate your tour, you must call or e-mail Holly Novack at (808)9742536 or hnovack@gemini.edu **and** copy Steve Hardash by e-mail, shardash@jach.hawaii.edu your tour information.

2. Holly will need as much advance notice as possible. Please plan accordingly.

3. Each tour group must have a designated GUIDE. The approved Guides are Steve Hardash, Keith Raybould, Mike Sheehan, Chas Cavedoni, and Jim Oschmann, *only*.

4. Every person going up to the Gemini Construction Site *must* stop at Hale Pohaku for a minimum of thirty (30) minutes. If visitors have not previously received the **Safety Briefing,** it will be done at that time. The **Safety Briefing** includes handouts explaining the hazards a visitor may encounter and potential medical problems which may become exacerbated by the altitude. All visitors must sign the acknowledgement that they have read and understand the risks involved before being allowed on site. No exceptions.

5. Each person traveling on the summit must be issued and must wear safety glasses, a hard hat and must be wearing closed-toe, sturdy shoes, preferably of leather with good traction soles. This personal protective equipment is required to enter the construction site. No exceptions. Visitors are encouraged to wear sunscreen. Even though the temperatures may be low, the sun can still burn. An SPF of 15 or more is recommended.

6. Groups will be held to a maximum of eight (8) people. Groups of a larger number will be divided into smaller groups to meet this limit.

7. Tour Guides will ensure there are a minimum of two vehicles on the summit at all times, with a designated evacuation driver, in the event someone would need to come down quickly.

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IMPORTANT MEDICAL ALERT

Please read the following carefully, follow as necessary, sign the form and return it to your Tour Guide.

The Gemini 8-M Telescopes Project is a telescope project currently under construction and operated by the Association of Universities for Research in Astronomy. The telescope site is located on the summit of Mauna Kea, at approximately 14,000 feet.

Ascent to this altitude exposes you to a reduction in atmospheric pressure, which can result in a variety of medical conditions. In certain cases, severe illness and even death can result.

Visitors to the Gemini site may suffer headaches, tiredness, irritability, anorexia, insomnia, 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.

The altitude may also aggravate pre-existing disease, particularly cardio-vascular and respiratory diseases. Individuals with these conditions are advised to seriously consider the advisability of proceeding.

Gemini *strongly* urges all visitors to bring the above information to the attention of his/her medical practitioner and to seek medical advice and clearance <u>before</u> visiting the summit.

AURA/Gemini does not undertake a duty properly to warn or otherwise to relinquish its rights, immunities or other protections under Hawaii Revised Statutes, Chapter 520. This WARNING is given freely *without* legal obligation.

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

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 THE DECLARATION PROVIDED. YOU THEREFORE ASSUME ALL RISKS.

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GUIDELINES FOR MINIMUM RISK AT THE MAUNA KEA SUMMIT

1. ***STAY RESTED***…avoid exhausting tasks/fun 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.

2. ***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.

3. ***AVOID MARIJUANA***…it stays with an individual for several days and can be an unpredictable, extremely potent constrictive agent for the coronary arteries. It has caused sudden death by unpredictably shutting off the blood supply in the hearts of even young, healthy people without warning.

4. ***AVOID TOBACCO SMOKING***…nicotine constricts arteries and further inhibits adjustments to the need for increased blood flow.

5. ***AVOID DEHYDRATION***…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 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.

6. ***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.

7. ***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:
"High Altitude Safety Protocol"
By Mountain Medical Services

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FOR YOUR PROTECTION

The Gemini North Observatory is still under construction. This means that you will encounter many potentially hazardous conditions and situations, which are not present in operating observatory facilities. Safety is paramount at our AURA facility. While AURA works diligently to maintain a safe environment for workers, it is still a dangerous environment.

The observatory is located at almost 14,000 feet above sea level, which means that your mental capabilities and judgment will be substantially impaired due to lack of oxygen. This impairment will increase your risk of being injured in this construction zone. The following, while not an exhaustive list, are *examples* of some of the hazards that you should be conscious of while in the observatory:

- There may be tools and materials lying on the floor in traffic areas. Watch where you step to avoid tripping.
- Equipment or materials hanging down will present a hazard should you accidentally hit your head on them as you walk. Please be aware of your surroundings at all times.
- Highly flammable insulation has been applied to the interior of the enclosure dome at night. In the event of a fire, this material will emit dense and highly toxic smoke. (It was smoke from insulation similar to this which killed three workers in the Subaru Observatory fire.) Other flammable materials may include paint and paint removers.
- Workers may be working in areas above you, and there is a risk of falling tools or materials. You should be aware of what is happening above you.
- Some heavy lifting activities might be taking place. You must stay well away from any activity involving the use of a crane.
- In the event of a fire or injury, transport down the mountain may take as long as an hour and a half or similar time will elapse before any emergency services can reach the observatory because of its remote location.

You must remain with your designated Guide and follow his instructions at all times throughout the tour. Safety glasses, hard hats and closed-toe, sturdy (leather preferred) shoes are required to enter the facility. Jackets are recommended due to cold temperatures.

ACCEPTANCE: I have read and understand the Safety Guidelines and further agree to abide by all safety regulations and the instructions of my guide. I have read and understand the Medical Alert provided by Gemini 8-M Telescopes Project concerning the potential harmful effects of altitude. I have been recommended to seek medical advice before proceeding. 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: ____

SIGNATURE: ____ *DATE*____________