IN CASE OF FOREST FIRE EMERGENCY

LBTO Forest Fire Contingency Plan -- 004s001c

LARGE BINOCULAR TELESCOPE OBSERVATORY

FOREST FIRE CONTINGENCY PLAN

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WHAT TO DO IF THERE IS A FOREST FIRE NEAR LBT

The threat of a forest fire on Mt. Graham is always a distinct possibility. Major fires have occurred near the observatory in 1996 and 2004. In the event of a forest fire, never assume that you should evacuate the site. In fact, never assume anything. The Forest Service should make these decisions. Because of the rough topography of the mountain, it would be impossible to tell exactly where the fire is or if the road is clear. Even if it looks favorable, during the long trip down the mountain the fire could shift and you could easily become trapped.

Remain on site at the observatory until you are given clearance to leave.
If a forest fire threatens the site, the LBT enclosure is the safest place to be. The building should withstand a fire and keep you safe. Until the designated Incident Commander is on site, follow the instructions of the Responsible LBTO or MGIO personnel. They are trained to handle emergencies such as this. This document describes the specific emergency procedures for the LBTO in case a forest fire threatens. See the MGIO Contingency Plan for more general emergency procedures, emergency phone numbers and radio frequencies.

In the event that the Responsible LBTO member (Observatory Manager or Assistant Manager or designee) is not present; designate someone to "take charge". Also get in contact with the Responsible LBTO or MGIO member in case of a fire.

Follow the instructions in Sections I, II and III to prepare for fire approaching LBTO.

If there is additional time, use the procedures in Section IV to secure the telescope and rotating building. If chilled water/glycol from the MGIO utility building is off and/or if personnel are abandoning the site, follow the additional instructions in Section V to shut down power in the LBT building.

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I. FOREST FIRE IMMEDIATE CHECKLIST

The following is a checklist of things to do at the LBTO/MGIO site when a forest fire threatens.

1) Move as many **vehicles** as will fit, into the LBTO auxiliary building (high bay). Those that won't fit should be moved away from all buildings, downhill if possible. Also, the remaining vehicles should be parked away from each other and facing toward the escape path (access road). **Leave the keys in the ignition.**
NEVER LEAVE A VEHICLE PARKED BLOCKING THE ROADWAY.

2) LBTO staff should **turn off all outside air intake fans** by following the procedure in Section III. As time permits, make certain the fixed building is secured. (see Section III of this document for the detailed procedures.)

3) Upon entering the LBTO, follow the instructions of the LBTO staff. If a staff member is not immediately available, the first floor (Level 1) lobby is considered a safe zone. There you will find a list of emergency supplies and their locations. As soon as possible, move to the preferred safe zone, the second floor (Level 2) lounge area.

4) LBTO staff members on site should inform others of the location of available drinking water, food, blankets, oxygen supply, flashlights/ emergency lighting, fire extinguishers, first aid kit, telephone and MGIO communications radios. If there are no LBTO staff members on site, a list of emergency supplies and locations is posted in the lounge area (see Section II of this document).

5) A crown fire in the forest usually moves very quickly (depending on wind, fuel and slope of the terrain). Remain calm, monitor the radio traffic and await further instructions.

6) For communication using the radios: as long as there is electricity, use the base station MGIO radio(s). Save the battery operated hand held radios in case of a power failure. Responsible personnel, to minimize radio traffic and maintain positive communication, should be the only ones using radios.

II. LOCATIONS OF EMERGENCY SUPPLIES AT LBTO

• **LBT floor plans** are available in the lobby and on the second floor.

• In the lounge/ kitchen area on Level 2, directly off the stairs/ elevator, you will find an ample supply of **bottled water and food**. Some additional bottled water may be found in the lobby. A supply of distilled water is in the aux bay on the south wall that can be used in case of emergency, do not leave the safe area unless authorized.

• **Medical oxygen cylinders** are located in Level 1 lobby area, outside the observatory manager's office, Level 2 lounge area has 2 cylinders located against the wall, Level 5 and Level 6 outside the elevators, Level 7 behind the locked elevator door. Refer to oxygen cylinder layout map for additional locations.

• **First aid kits** are located in the lobby area on Level 1, in the pier outside high bay door 117, Level 2 in the kitchen by the windows, Level 5 outside aux control room 502, on Level 6 there is a small first aid kit with additional eye wash in the galley outside the elevator.

• In the control room, adjacent to the lounge on Level 2, you will find a **list of emergency telephone numbers, flashlights** and a base station MGIO **communications radio**.

• A **portable defibrillator unit, AED,** is located in the lounge area on Level 2 by the first aid kit and a second one in the police shack. Do not leave the safe area unless authorized to do so.

• Blankets and other comfort items can be found in the sleeping rooms located just down the hall from the lounge area on Level 2.

• Large (on wheels) Type ABC **dry chemical fire extinguishers** are located on Level 1 (lobby), Level 2 (lounge and hallway) and Level 5 (areas with windows). Medium Type A **water fire extinguishers** are located in the lobby on Level 1, and in the lounge on Level 2. Small type ABC dry chemical fire extinguishers are

located near the elevator lobbies on all levels and at other strategic places around the building. Refer to the fire extinguisher layout map for additional locations.

• The **fire pump and controller** for the LBT internal building sprinklers are located on Level 1 in Room 118, Fire Suppression Room. (On the North side opposite the instrument room) *The main fire alarm panel PP12B-12 is located in the east end of the electrical equipment room. If the horns go off, follow the instructions on the front of the panel. An auxiliary alarm panel is located in the lobby entryway.*

III. SECURE THE LBTO FIXED ENCLOSURE AGAINST FOREST FIRES

These instructions assume that the LBT building will be occupied during the fire with power on and chilled water/glycol available. These steps are intended to optimize the habitability of the fixed building as a fire burns over, and to minimize the chance of having a structure fire.

1) In the event that an LBTO staff member is not present, designate someone to "take charge". Also get in contact with the Responsible LBTO or MGIO member. Take a "head count" and make certain everyone has signed in and is accounted for. Interface with MGIO and the Forest Service as necessary.

2) Shut off power to the "Outside Air" air handler -- Unit # AH0304. This will stop smoke from being pulled into the fixed building ventilation system for Level 2. This air handler is located on Level 3 Lower, Room 305 (off the north stairwell). Circuit breaker 31 in panel PP22A in computer room B, Room 212, will also shut off AH0304.

3) Shut off power for additional air handlers:
a) AH0101, circuit breaker 38 in PP12A, located in the power distribution room 115 across from the substation transformer.
b) AH0103, circuit breaker 26 in PP11A, located in the mechanical room 112.
c) AH0102, circuit breaker 1 in PP11D, located in the power distribution room 115 across from the substation transformer.
d) AH0104, circuit breaker 2 in PP11D, located in the power distribution room 115 across from the substation transformer.
e) Close the dampers to the 2 outside air intakes, covers located in the cleaning room 116 need to have the power shut off at the disconnect and have the damper closed. This will stop smoke from being pulled into the fixed building ventilation system for Level 1. One intake is at the west end of the Auxiliary Building high bay (normally closed), and the other is on the north exterior wall (also can refer to section 5 for further details).
f) Shut off power to the exhaust fan’s EF0303 and EF0302 located on the southeast corner of the aux. bay on Level 1.
g) Make sure all bedrooms windows are closed.

4) Instruct everyone as to the location of emergency equipment and supplies. Also, instruct everyone to stay away from the windows and to remain in the lounge/ kitchen/ control room area on Level 2 until further instructed.

5) Designate two people to monitor Levels 1 and 2 for window breakage and anything else detrimental to the welfare of personnel or the structure/site. Be certain to monitor all windows from a safe distance from the windows.
Large Type "A" fire extinguishers are available on these Levels. All of the exterior windows and the hallway windows are tempered glass.

6) Move furniture and flammables away from the windows on Levels 1 and 2. Raise the dark shades.

7) Close all "fire doors" on Levels 1, 2 & 3. (Hallway doors , etc.)

8) Make certain the MGIO communications radio is turned on and set to the MGIO Repeater channel (Channel 1 = MGIO RPTR). As long as there is electricity, use the base station radio(s). Save the battery operated MGIO radios for use during a power failure. Responsible personnel, to minimize radio traffic and maintain positive communication, should only use radios. In case the Repeater on Heliograph Peak stops working, switch to the MGIO Bypass channel (Channel 2 = MGIO Bypass) for local communications.

9) Move any flammable materials away from the exterior walls of the building. Check the outside of the building as well as the inside of the exterior walls if this can be done safely. Do a good sweep of Level 3 lower.

10) Turn on the FM radio/TV to catch news broadcasts.

IV. SECURE THE TELESCOPE AND ROTATING BUILDING

As time permits, secure other telescope and enclosure systems in the LBT rotating building. It is especially important to turn off these systems if chilled water/ glycol is not available from the utility building. Otherwise they may overheat.

1) Level 5: Make certain the shutter doors are closed and latched. Make certain the observing chamber ventilation doors are closed.

2) Level 4: Close the Stealth Exhaust Louvers by turning the Local/Remote switches adjacent to the louvers to the "off" position .

3) Shutdown power to non-essential telescope and enclosure systems. These can be shut down manually from the motor control center on Level 4, simply turn off all the breakers in the motor control center – you don't need to worry about which is which.

a. Stealth exhaust fans
b. Mirror ventilation blowers
c. Chillers
d. Mirror support air compressors
e. Oil central unit for hydrostatic bearings
f. Bogie drives
g. Rotating building crane
h. Shutter drives and vent doors
i. Chamber air handlers

4) Move furniture and flammables away from the windows on Level 5. Raise the dark shades.

5) Shutdown the Telescope Computer Systems on Level 5, and the TCS and instrument computer systems on Level 2 (see separate procedure). Usually you will want to keep the networking and firewall systems running while the building is occupied.

6) The ventilation louvers in the snow melting system on Level 10 should be closed. This is their normal state, and we rarely melt snow in fire season, so this is very low priority. The key switch in the ECS remote PLC will close these.

a) On Level 4 in the ECS remote PLC located across the MCC, is a key switch inside the PLC cabinet for shutting down. You must insert the key and turn to activate shutdown mode to snowmelt, which closes the louvers on Level 10 and the plenum. This key also shuts down stealth fan's on Level 4, shuts down mirror ventilation blower's and closes damper's and shuts down fans, shuts down dome cooling air handler on Level 5, shuts down exhaust fans and closes louvers on Level 4 EF401, EF402. Key will be hanging in the cabinet.

V. SECURE THE FIXED BUILDING FOR MINIMAL OCCUPATION

These instructions assume that the LBT fixed building will be minimally occupied during the fire with power on but chilled water/glycol off.

1) If you need to shut off glycol at the **utility building** and secure the utility building:
a. You must shutdown the boiler on the first Level of the utility building by turning it to the off position, then shut down fresh intake exhaust fan EF0002 by turning off circuit breaker 27 located in panel AL in the MGIO building on the wall behind the generators.

b. Go to second Level in the utility building and turn off the power by closing the disconnect to chiller CH0001, CH0002 then turn off the disconnect to fans P2-1, P2-2, P2-3, P2-4, P2-5 and P1-1, P1-2, P1-3, P1-4, P1-5, P1-6. Shut off the disconnect for fans EF0001 and PH0001-4 also.

c. Need to roll down the screens in the utility building on Level 2 - will need ¼ screws , ¼ drill, and ¼ chuck to secure screens down .

2) All of the Computer Systems in the LBT Control Rooms on Level 2 should be shut down if the building does not have cooling water/glycol. (see separate procedure) See the breakers in panel PP22-UPS-1 in computer room A.

3) Turn OFF the circulation air handlers for Level 2 -- Unit AH0301 for the lounge and kitchen is controlled by circuit breaker 32 in panel PP22D in room 235. Unit AH0303 for the sleeping rooms is controlled by circuit breaker 31 in panel PP22D in room 235. Unit AH0302 for the control room is controlled by breaker 32 in panel PP22A in room 212, computer room B.

4) Shut off power to disconnect for the circulation air handlers for Level 1 also refer to section III for further instructions:

a. Unit AH0101 for the mechanical room has its own disconnect in room 112 (also controlled by breaker 38 in PP12A located in the power distribution room 115 across from the substation transformer).
b. Unit AH0103 for the offices and lobby is controlled by circuit breaker 26 in panel PP11A in mechanical room 112.
c. Unit AH0106 for the fixed building elevator has its own disconnect in room 112 (also controlled by breaker 37 in panel PP12A located in the power distribution room 115 across from the substation transformer). Leave AH0106 on if the elevator is in use.
d. Unit AH0105 for Storage 118 (Fire Pump Room) is controlled by circuit breaker 22 in panel PP12A.
e. Turn OFF air handlers AH0102 and AH0104 by opening circuit breakers 1 and 2 in panel PP11D located in the power distribution room 115 across from the substation transformer). Beware that turning off these air handlers or shutting down the main chillers will result in significant heating of the Electrical Equipment room.

VI. LBT ENCLOSURE POWER SHUTDOWN

These instructions assume that the LBT building will be completely evacuated during the fire with power off and chilled water/glycol off.

If time permits, carry out the shutdown procedures in Section IV above. If not, proceed directly to full power shutdown as listed below.

1) In the Electrical Equipment Room on the north side of Level 1, press the two red "trip" buttons for the "S1 Transformer Feeder" (feeds 4160VAC to the rotating building) and the "S2 Transformer Feeder" (feeds 4160VAC to the fixed building). This will shut off all the electrical power to the enclosure except for the main 25 kVAC feed coming into the Electrical Equipment Room, and the UPS units, which will drain themselves in 10-15 minutes.
The fire pump for the interior sprinkler system will still have power available as long as the utility building is distributing 25kVAC power to the site. Try to locate an authorized electrical personnel employee to do this for you.

NOTE: THIS WILL DISABLE THE DIGITAL TELEPHONE SYSTEM FOR THE ENTIRE MGIO SITE.

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