THE UNIVERSITY OF ARIZONA

Mount Graham International Observatory

Emergency Response Contingency Plan

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Prepared By:

The University of Arizona

Steward Observatory Tucson, Arizona 85721 (520) 621-6524

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Mount Graham International Observatory Emergency Response Contingency Plan

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Mount Graham International Observatory Emergency Response Contingency Plan

The information contained herein is submitted in accordance with the requirements for a Chemical Waste Management Plan, Spill Control and Countermeasures Plan (SPCC Plan), and a Fire Response Plan, as contained in the U.S. Forest Service Special Use Permit and Management Plan for the Mt. Graham International Observatory. These plans are set forth in this document, called the *Emergency Response Contingency Plan*, also referred to as the Contingency Plan. A copy of the Contingency Plan is available at the University of Arizona Police Department (UAPD) and at the Risk Management Services (RMS) department along with strict operating and safety directives. Copies of this plan have also been provided to the U.S. Forest Service, Graham County Sheriff's Office, Southwest Ambulance, and the Department of Public Safety – Air Rescue Branch, Tucson.

I. <u>General Information</u>

This Contingency Plan is for The University of Arizona's Mt. Graham International Observatory (MGIO), located on an 8.6 acre area near Emerald Peak – a 10,500' summit in the Pinaleño Mountains, a part of the Coronado National Forest, near Safford, Arizona. The facility consists of three main buildings, a utility area and an access road:

- Submillimeter Telescope (SMT)
- Vatican Advanced Technology Telescope (VATT)
- Large Binocular Telescope Project (LBT)
- Utilities Building

In addition to the mountain facilities, a Base Camp is located outside of the forest boundary – immediately north of the Federal Correctional Institution on Arizona Highway 366 (also known as Swift Trail – milepost 114.7).

The University is a land-grant educational institution controlled by the Arizona Board of Regents for the State of Arizona.

Maps indicating the location of the MGIO in the context of Southeastern Arizona; the Pinaleño Mountains; the area surrounding the Observatory; and the Observatory site are contained in Exhibit 10 through Exhibit 15. Schematic diagrams of the on-site utilities are contained in Exhibits 16 (Electrical Power), Exhibit 17 (Propane System), and Exhibit 18 (Water Distribution). A milepost listing along State Highway 366 which ascends the Pinaleño Mountains terminating at Riggs Flat Recreation Area is contained in Exhibit 9.

The primary purpose of the Observatory facility is to provide a remote site in which to conduct astrophysical research. Operations and maintenance of the facility will require the use of small

I. <u>General Information (continued)</u>

quantities of specific chemicals (identified in <u>Exhibit 1</u>) and the transport and handling of petroleum products such as propane, gasoline and diesel fuel (identified in <u>Exhibit 2</u>).

The chemicals will be used to clean electronic parts, printed circuit boards, etc. Also the majority of the acid/base chemicals will be used to clean and strip aluminum from telescope mirrors prior to re-aluminizing them. This process of on-site mirror aluminization generates wastewater with metals in solution. This wastewater is <u>not</u> classified as a hazardous waste. The chemical analysis of the wastewater is identified in <u>Exhibit 1</u>. In addition, disposal procedures are outlined for small quantities of waste oil from maintenance operations involving internal combustion engines.

II. Emergency Coordinators

If an emergency situation develops involving chemicals or fuels at the MGIO, the discoverer (University personnel, observers or observatory staff) will immediately contact an Emergency Coordinator listed in Appendix A. The primary Emergency Coordinator is to be contacted first and, if not available, a secondary Emergency Coordinator will be called (in the order listed) until someone is contacted. The first of these individuals contacted becomes the Emergency Coordinator. The Emergency Coordinator can be contacted on a 24-hour basis through the UAPD Main Campus dispatch center. There will always be at least one Emergency Coordinator that can be contacted by pager or cell phone. The UAPD dispatchers have the phone/pager numbers of all the designated primary and secondary Emergency Coordinators.

The decision to implement the Contingency Plan depends upon whether or not an imminent or actual incident could threaten human health or the environment. It is the duty of the Emergency Coordinator to determine if the Contingency Plan is to be implemented and to direct and coordinate all activities undertaken if the Plan is implemented. As indicated in <u>Exhibit 3</u>, the Emergency Coordinator is authorized to commit the resources of The University of Arizona, as needed, to implement the Contingency Plan. The specific types of incidents that require implementation of the Contingency Plan are listed on page 3.

The Emergency Coordinators designated in Appendix A are University of Arizona personnel who are directly involved in the training and/or management and handling of chemicals and fuels, and are trained in appropriate response measures. They can be contacted directly at the phone numbers listed with their names or through the UAPD. At least one of the Emergency Coordinators is always available by pager or cell phone 24 hours a day.

III. Events Leading to Implementation of the Contingency Plan

The Contingency Plan will be implemented in <u>any</u> of the following situations:

- A. <u>Fire and/or Explosion</u>
 - 1. A fire causes, or could cause, the release of significant amounts of toxic fumes.
 - 2. The fire spreads and could possibly ignite nearby fuel storage.
 - 3. The fire could possibly spread to off-site areas.
 - 4. The fire cannot be contained immediately by the use of a fire extinguisher.
 - 5. An explosion has occurred.

B. <u>Spills or Material Release</u>

- 1. The product that has been spilled has a Threshold Limit Value recommended by the American Conference of Governmental Industrial Hygienists of less than 10 parts per million or a reportable quantity has been reached. Reportable quantities are listed in Exhibit 1.
- 2. The spilled product is a hazardous material or petroleum product with the potential for ground water or surface water contamination, or is in a drainage where it could be carried off-site via surface run-off.
- 3. The spilled product cannot be contained on-site, resulting in a potential for off-site soil contamination and/or ground or surface water pollution.
- C. <u>Medical Emergency</u>
 - 1. A person has a life threatening condition.

IV. Emergency Response Procedures

A. Initial Assessment and Notification

The University of Arizona is only responsible for emergency situations or chemical spills caused by its employees. This Contingency Plan does not address situations that are the responsibility of others.

Immediate Life Threatening Situation

For a life threatening medical emergency, alert the Emergency Medical System immediately. Telephone contact numbers are listed in Appendix B – Medical Emergency Procedures. Medical emergency contacts are summarized on a card located at each phone.

A majority of the MGIO personnel have been trained in First Responder's First Aid (40hour course). Two of the Maintenance Mechanics are certified as Emergency Medical Technicians (EMTs). UAPD Officers are certified Wilderness Medicine and Advanced First Aid Responders and/or Red Cross First Responders. One UAPD Officer is qualified as a Paramedic. Medical kits and oxygen are maintained in each building at the Observatory site. A 4x4 Suburban, equipped with basic first aid supplies and radio communication, is available on site to transport incapacitated persons to helicopter pick-up points or to a medical facility. The medical kit in the transport vehicle is composed of blood pressure and heart/lung monitoring equipment, oxygen supply, backboards, cervical collars, splints and basket stretchers. Helicopter evacuation is not possible from the site but can be accomplished from Columbine (however snow levels may make access to Columbine difficult unless a snowcat is used – transport times from the site to Columbine in a snow cat are about 50 minutes). Hospital Flat is an alternate location for air evacuation and may be easier to access in a 4x4 vehicle. Transport time to Hospital Flat via 4x4 is about 20 minutes.

Environmental, Fire or other Emergency

The first person that becomes aware of any emergency shall immediately notify, by radio or other available means, the Emergency Coordinator or by contacting the UAPD. This person will act as the Emergency Coordinator until the Emergency Coordinator arrives on-site. The UAPD will contact the RMS duty person via cell phone. Radio communication will be established with the site as shown in Exhibit 4.

The Emergency Coordinator, at the scene of the incident, will assess the possible hazard to human health and the environment that may result from the release, fire, or explosion.

If the Emergency Coordinator determines that the facility has had, or may have, an incident such as a spill, fire, or explosion which could threaten human health or the environment, as defined in the criteria listed on page 3, the following notifications/procedures will be implemented:

1. Alert on-site personnel of the emergency, and initiate evacuation procedures if necessary. The Evacuation Procedures are set forth in Appendix C.

- 2. Conduct a preliminary assessment to determine magnitude of the problem. Assessment guidelines are set forth in Section IV, C (page 6 of this Plan).
- 3. Contact the UAPD, which will notify the RM&S Emergency Coordinator. UAPD 24-hour Phone: 520-621-8273
- 4. Contact the Base Camp (928-428-2739) and the Forest Service (928-428-4150).
- 5. For explosion or fire:
 - Initiate the Fire Response Plan (Appendix D).
 - Immediately notify the local authorities (Appendix D otherwise Appendix A)
- 6. For hazardous material releases:
 - Initiate the Spill Prevention Control and Countermeasure Plan (SPCC) (Appendix E).
 - Immediately notify the local authorities (Appendix E otherwise Appendix A)
- B. Identification of Hazardous Materials

Material Safety Data Sheets containing current data characterizing the chemicals that may be at the observatory facility are posted in all areas where the chemicals are used or stored. Furthermore, the data sheets are kept by all Emergency Coordinators; on-site, at the Utilities Building; at the Site Manager's Office located at the MGIO Base Camp, 1480 W. Swift Trail, Safford, AZ; and at the Risk Management Office at 220 W. Sixth Street, Tucson, AZ. Additional references concerning hazardous materials management are available at the Risk Management Office. Material Safety Data Sheets covering the chemicals used on-site are included in Appendix G.

Material Safety Data Sheets contain pertinent hazard information for the chemicals which may be stored at the site including:

- Identification of chemical components by name, including synonyms;
- Identification of wastes' hazardous characteristics (e.g., toxicity, corrosivity, reactivity, and igniteability);
- Important chemical and physical properties for which data are available, (e.g., vapor pressure, pH, and solubility in water);
- Fire control procedures (e.g., water or chemical foam);
- Appropriate procedures to counteract human exposure (e.g., thorough washing with soap and water in the event of dermal contact);
- Spill response and disposal procedures.

Additional information on specific chemicals can be obtained by calling the Chemical Transportation Emergency Center (CHEMTREC) at their 24 hour phone number 1-800-424-9300 extension #1 (emergency hotline). They will provide immediate advice for those personnel at the scene of a chemical spill. CHEMTREC will also provide contact with the shipper/manufacturer of the chemicals involved in the incident.

Other than fuel, spills that may occur will typically be no larger than five gallons. There will be occasions however, in which MGIO staff will handle containers of up to 55 gallons. Small container sizes and small transport volumes reduce the exposure to significant spill situations. The extent of any spill will be easily approximated because of the containers involved.

C. Hazard Assessment

The Emergency Coordinator will assess possible hazards to human health and the environment that may result from the release, fire, or explosion. The Emergency Coordinator will assess the hazards posed by an incident through the following steps, as appropriate:

- 1. Identify the chemicals involved in the incident to the greatest degree possible.
- 2. Consult the appropriate Material Safety Data Sheets to determine the potential effects of exposure/release, and appropriate safety precautions.
- 3. Identify exposure and/or release pathways and the quantities involved.

This assessment will consider both the direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions).

Based on this assessment, the Emergency Coordinator will determine what risk is posed to observatory staff and the public. If University personnel cannot control the incident without incurring undue risk, the Emergency Coordinator will order the evacuation of all workers at risk, and notify the appropriate agencies of the situation. If the Emergency Coordinator determines that any persons outside of the MGIO facility are at risk as a result of incident, contact will be made with the appropriate persons to advise them of the risk and the need, or potential need, to institute off-site evacuation procedures. Local agencies and contacts for the Arizona Bible Camp and the Columbine Cabin Owners Association are listed in Exhibit 5.

D. <u>Control Procedures</u>

The initial response to any emergency will be to protect human health and safety, and then the environment. Secondary response to the emergency will be identification, containment, treatment, cleanup, and disposal assessment.

If appropriate, an Emergency Response Information Center shall be established to answer inquiries and control access to the area. Responsibilities and staffing for the Information Center are listed in Appendix F.

In the event that an evacuation of the area is required, evacuation procedures are set forth in Appendix C.

Potential accidents fall under two general classifications: (1) fire and/or explosion, and (2) spills or release of hazardous materials.

- 1. Fire and/or Explosion
 - Implement the Fire Response Plan (Appendix D).
- 2. Spill or Release of Hazardous Materials
 - Implement the Hazardous Materials/Spill Response Plan (Appendix E).

E. <u>Prevention Measures</u>

Specific actions to prevent the recurrence or spread of fires, explosions or releases include stopping all operations, containing, collecting and released chemicals, and recovering or isolating containers. When ignitable materials are involved or in the area, all ignition sources will be removed, and care will be taken to avoid introducing ignition sources into the response activity (i.e. electrical pumps, flares, light switches, etc.). Additionally, surrounding materials that could be reactive with materials spilled or released will be removed from the area.

F. Storage and Disposal of Released Material

An absorbent material compatible with the spilled waste will be utilized to neutralize, contain, divert, and clean up the spill. The material collected during the cleanup process will be containerized, handled and disposed of by RMS in accordance with all applicable local, state and federal regulations. This handling/disposal process will also apply to any equipment used in the process which either is not feasible to decontaminate (i.e. Tyvek coveralls) or is awaiting decontamination for further use (shovels, etc.).

Immediately following the response to an emergency event, the Emergency Coordinator, in coordination with RMS, will arrange for proper containerization and appropriate handling of the materials. After initial containerization and storage arrangements have been made, an appropriate decontamination procedure will be specified which will remove any remaining residue or contamination at the site of the spill or release. This procedure will include a sampling step to analytically demonstrate the adequacy of the decontamination procedure.

G. Post-Emergency Equipment Maintenance

After an emergency event, all emergency response equipment used for the incident will be cleaned and returned to proper storage for future use. Any contaminated materials will be containerized and disposed of as identified in Section F above. All expendable materials used during the emergency event will be replaced within 48 hours.

H. Emergency Equipment Availability and Location

Emergency equipment (vehicles, loaders, graders, etc.) to be operated by MGIO personnel is listed in <u>Exhibit 7</u>. Locker inventories and locations for emergency response equipment are listed in <u>Exhibit 8</u>.

I. <u>Required Reports</u>

The University of Arizona has internal reporting requirements for incidents to make them part of the operating record of the institution. An incident report will be completed and returned to the Forest Service, the UAPD and RMS for at least the following events:

- All fires and/or explosions
- All injuries except minor cuts or bruises
- Any release of a hazardous material

V. Emergency Response Team Training

The goal and intent of emergency response team training is to provide knowledge and experience through workshops, demonstrations, and on-the-job training which will enable all personnel to perform their duties in a manner which protects human health and the environment.

All new employees hired shall not work in an unsupervised position until fulfillment of all training requirements. An orientation training session (given the week of employment) provides information concerning the OSHA Employee Right-to-Know Act and specific cautions for working around hazardous materials. Further training in laboratory safety and handling of chemicals is required of all employees working with chemicals. The Mt. Graham International Observatory provides site-specific training on an annual basis with the assistance of RMS. Records documenting completed training requirements are kept on file at the MGIO Base Camp. Records will be kept for three years from the date of the individual employee's termination.

Annual training reviews are conducted on-site to determine the following:

- Status of all site operating systems
- Potential problems and effective solutions
- Minor incidents that have occurred in the past year. Identify causes and take preventive measures.

In the training process, many peripheral areas will be addressed. Some of these areas may not specifically apply to the trainee, but will provide a broader base and perspective from which the response team can function. These areas include regulatory overview, chemical hazards, operating procedures, hazard communication program, and training for emergency response.

A. <u>Regulatory Overview</u>

This section introduces and reviews important regulations as promulgated through environmental legislation. A historical perspective is provided regarding the development of legislation to this date. Significant topics include Toxic Substances Control Act (TSCA), Resource Conservation Recovery Act (RCRA), Comprehensive Environment Response Compensation Liability Act (Superfund) (CERCLA), and Hazardous Solid Waste Amendments (1984) (HSWA).

V. Emergency Response Team Training (continued)

B. <u>Chemical Hazards</u>

This section is divided into three broad areas of concern. They are the chemistry of hazardous wastes, toxicology, and hazards of specific materials. The chemistry portion will attempt to provide an appreciation for the physical characteristics of hazardous materials and how they are identified and quantified. The toxicology portion includes information on dose, routes of entry, and exposure standards. The specific material portion will discuss certain materials in detail.

C. Operating Procedures

This section will provide the employee with the information to actually handle and work with chemicals/hazardous materials properly and safely. Topics include an overview of the requirements of this application as they relate to inspections, record keeping, and this Contingency Plan. In addition, instruction is provided on the use of personal protective equipment and general accident prevention.

D. Hazard Communication Program

To comply with the State of Arizona OSHA 29 CFR 1910.1200 Hazard Communication Standard, this section will convey the importance of:

- Hazardous chemical labeling,
- Material Safety Data Sheets,
- Reviewing chemical inventories,
- Informing employees of the Hazard Communication Standard,
- Training employees to read labels, and Material Safety Data Sheets,
- Learning to obtain and use the appropriate hazard information.

E. <u>Training for Emergency Response</u>

All personnel involved in hazardous material handling are trained not only to handle hazardous materials safely but also properly respond to emergency situations. Training elements address non-routine and emergency situations for both hazardous material handlers and emergency coordinators. These procedures include:

- Use of emergency equipment,
- Initiating communication and alarm systems,
- Fire and explosion response,
- Spill containment response,
- Evacuation procedures,
- Initial first aid procedures.

CAS #	Description	<u>Concentration</u>	Volume/ <u>Weight (lbs)</u>	Annual Transportation <u>Occurrence</u>	Reportable Quantity ¹ <u>(lbs.)</u>
7727-37-9	Nitrogen Gas/Liquid	100%	gas cylinder/40	52	None
7440-59-7	Helium Gas/Liquid	100%	gas cylinder/40	52	None
124-38-9	Carbon Dioxide Gas	100%	gas cylinder/40	3	None
7782-44-7	Oxygen Gas	100%	gas cylinder/40	8	None
74-86-2	Acetylene Gas	100%	gas cylinder/40	8	None
7647-01-0	Hydrochloric Acid	37%	50 liters/132	1	5,000
67-63-0	Isopropyl Alcohol		16 liters/28	1	None
67-56-1	Methanol		8 liters/14	1	5,000
64-17-5	Ethanol		8 liters/16	1	None
78-93-3	Methyl-ethyl Ketone		8 liters/16	1	5,000
7697-37-2	Nitric Acid	70%	100 liters/311	1	1,000
7664-38-2	Phosphoric Acid	85%	17.5 liters/65	1	5,000
1310-58-3	Potassium Hydroxide	pellet	7 kilograms/16	1	1,000
79-01-6	Trichloroethylene		8 liters/32	1	1,000
67-64-1	Acetone	95-99%	16 liters/28	1	5,000
107-21-1	Ethylene Glycol Antifreeze		55 gallons/495	2	None
7758-98-7	Cupric Sulfate	(anhydrous-power)	6 kilograms/14	1	10
471-34-1	Calcium Carbonate	(anhydrous-power)	10 kilograms/22	1	None
None	Mirror Rinse Solution ²		~7,000 gallons	1	None

Chemical Requirements Mount Graham International Observatory

Notes:

1.	Reportable Quantities referenced in Appendix to 49 CFR 172.01, Table 1 - List of Hazardous Substance and Reportable Quantities.
2.	Chemical Analysis Attached - this wastewater stream is not classified as hazardous waste as defined in 40 CFR 261.30, Subpart D.



Date: August 6, 1987

To: John Ratje, Assistant Director Steward Observatory MEMORANDUM University of Arizona

Dept: Risk Management

Lloyd M. Wundrock ~. M. Chemical Waste Program Coordinator

Campus Ext: 1-5861

Subject: Mirror Cleaning Solution

Due to the fact that your cleaning is a batch type operation and that the analysis represents a concentrated solution prior to water rinsing in the amount of 15 times, I conclude the following:

- 1. The waste component concentrations are less than those of federal guidelines defining hazardous waste.
- Because of the volume of water used in the rinsing operation, the waste is also below Pima County discharge limits.

Therefore, wastewater generated by the cleaning process can be introduced into the sewer or allowed to flow onto the ground.

If you have any questions or concerns, please contact me.

LMW:kf

From:

cc: Steve Holland Martha A. Anderson

Sample Analysis	micrograms / milliliter		sample submitted on 10/16/1986
I J	Sample #1	Sample #2	
Cr	<0.2	<0.2	
Cd	0.09	0.09	
Ba	0.60	0.40	
Cu	8.0	6.5	
Pb	0.56	0.50	Lead is higher than expected (Sunnyside water has high lead content).
Ag	< 0.1	< 0.1	
pH	7.88	8.27	

Fuel and Lubricant Requirements Mount Graham International Observatory

Description	Transport <u>Volume</u>	Annual Transportation <u>Occurrence</u>	Annual <u>Consumption</u>	On-Site Storage <u>Capacity</u>
Gasoline	5 gallons	6	30 gallons	20 gallons
Diesel (#1)	3,500 gallons	3	10,500 gallons	10,000 gallons
Propane	2,000 gallons	12	30,000 gallons	6,500 gallons
Lubricating Oil	55 gallon drum	3	165 gallons	55 gallons
Waste Oil	55 gallon drum	3	165 gallons	55 gallons
Kerosene	55 gallon drum	1	55 gallons	55 gallons
Hydraulic Oil	55 gallon drum	3	165 gallons	55 gallons

Notes:

1. The above fuels and lubricants are not listed for "Reportable Quantities" as referenced in Appendix to 39 CFR 172.01, Table 1 - List of Hazardous Substances and Reportable Quantities. If a spill involves "waters of the U.S.", a reportable oil spill is any quantity that can cause a film or sheen on water (40 CFR 110).

Emergency Coordinator Authorization

July 25, 2012

Arizona Department of Environmental Quality Office of Waste Programs 2005 North Central Avenue Phoenix, AZ 85004

To Whom It May Concern:

The individuals listed below are authorized as emergency coordinators for any problems or situations involving hazardous materials at/for the Mt. Graham International Observatory (MGIO). They are authorized to direct and commit, if necessary, all available resources to implement the Mt. Graham International Observatory Emergency Response Contingency Plan on behalf of The University of Arizona.

Primary Emergency Coordinator:

R. Shane Olsen, Observatory Operations Supervisor, MGIO

Secondary Emergency Coordinators:

John R. Ratje, Director, MGIO Jeffrey S. Kingsley, Associate Director, Steward Observatory, UA

Emergency Resources:

Steven C. Holland, Assistant Vice President for Risk Management Services, UA Herbert N. Wagner, Director of Occupational & Environmental Health and Safety, UA Lloyd M. Wundrock, Health Safety Officer, UA Jeffrey G. Christensen, Hazardous Waste Supervisor, UA

Sincerely,

Signed original on file

Leslie P. Tolbert, Ph.D. Senior Vice President for Research,

Radio Communications

Each organization providing field forces will maintain contact with the Emergency Response Information Center (Appendix F) to keep it informed of existing conditions and predicted developments. All available means of communication will be used.

Mt. Graham International Observatory (MGIO) Radio System:

The MGIO has three types of VHF frequency modulated (FM) radio equipment: base stations, mobile vehicle radios and portable hand-held units.

The UAPD and the Observatory are equipped with two-way radios for internal communication as well as with external agencies such as the Arizona Department of Transportation, the Graham County Sheriff's Office, and the U.S. Forest Service. The Observatory has three cell phones, fourteen portable and eight mobile two-way radios designated for emergency use and site operations. This equipment is stored at the MGIO facility and at the Base Camp. Mobile units are permanently installed in MGIO vehicles.

Radio units from the Observatory and the Forest Service will be exchanged and available for effective coordination during any emergency response action.

The primary channel (channel #1) for the MGIO two-way VHF radio system relies on a repeater located at Heliograph Peak, an electronic site in the Pinaleño Mountains. The repeater allows communication between the MGIO site and the Base Camp located in the Gila Valley – east of the mountain range. MGIO maintains a secondary channel (simplex channel #3) for local operations and construction. There is no repeater for channel #3 and thus the communication distances are limited.

In addition, an emergency channel is provided for communication to other Steward Observatory crews in the Tucson area via a repeater system located on Mt. Hopkins -- south of Tucson in the Santa Rita Mountains (channel #13, 14). The Fred Lawrence Whipple Observatory, a division of the Smithsonian Astrophysical Observatory, operates this repeater. To access the Mt. Hopkins repeater one must be on the west slope of the Pinaleño Mountains.

Typically site operations require traffic clearance on the state highway, SR-366, during the winter snow season. Radio contact with the Arizona Department of Transportation (ADOT - channel #6) is warranted to prevent collisions with snow removal equipment. In certain emergency situations such as spotting a forest fire, radio contact with the U.S. Forest Service (USFS – channel #8) is necessary.

Frequencies used by the Observatory:

				FREQUENCY (MHz)			
Chann	el # Assigned To:	Description	RX	DEC (PL Tone)	ТХ	ENC (PL Tone)
	~						
1	MGIO Repeater (Heliograph Peak)	MGIO RPT	154.430	(114.8)	151.295	(114.8)	Priority
2	MGIO Repeater Bypass	MGIO TA	154.430	(114.8)	154.430	(114.8)	-
3	MGIO Simplex Communications	MGIO LOC	155.955	(114.8)	155.955	(114.8)	
4	Graham County Sheriff #1	GCSO 1	155.715	(141.3)	153.995	(156.7)	
5	Graham County Sheriff #2 (Heliograph)	GCSO 2	155.055	(114.8)	153.785	(167.9)	
6	ADOT Repeater (Heliograph Peak)	ADOT RPT	156.225	(103.5)	151.010	(118.8)	
7	ADOT Simplex Communications	ADOT LOC	156.120	(103.5)	156.120	(103.5)	
8	USFS Repeater Net (Heliograph Peak)	USFS RPT	169.600	none	170.525	(118.8)	
9	USFS Repeater Net (West Peak)	USFS WPK	169.600	none	170.525	(100.0)	
10	USFS Limited Range	USFS LOC	168.200	none	168.200	none	
11	USFS Fire Net	USFS NET	168.150	none	172.275	(118.8)	
12	Kitt Peak National Observatory	KPNO	164.350	none	164.350	(103.5)	
13	FLWO Repeater (Tucson Base)	SO-FLWO	169.925	(203.5)	169.050	(203.5)	
14	FLWO Repeater (SAO Ops)	FLWO	169.925	(114.8)	169.050	(114.8)	
15	State (Arizona Emergency)	STATE	154.280	none	154.280	none	
16	USA (National Emergency)	USA	155.475	none	155.475	none	
17	NWS - Weather Information (Safford)	NWS RPT	162.550	none	none	none	
18	Southwest Ambulance	SW AMB	155.175	(114.8)	155.175	(114.8)	

U.S. Forest Service Radio System:

Frequencies used by the Forest Service:

			Frequenc	y (MHz)	
Channel #	Assigned To:	RX	(PL Tone)	ТХ	(PL Tone)
1	USFS Coronado Forest Net Simplex	169.600	none	169.600	none
2	USFS Repeater (Heliograph Peak)	169.600	none	170.525	(118.8)
3	USFS Repeater (West Peak)	169.600	none	170.525	(100.0)
4	USFS Air to Ground	171.425	none	171.425	none
	USFS Fire Net	168.150	none	172.275	(118.8)
10	Limited Range (Local)	168.200	none	168.200	none
15	MGIO Repeater (Heliograph Peak)	154.430	(114.8)	151.295	(114.8)

Graham County Sheriff's Department Radio System:

Frequencies used by the Graham County Sheriff's Department:

Channel #	Assigned To:	RX	(PL Tone)	ΤХ	(PL Tone)
1	Graham County Dispatch #1	155.715	(141.3)	153.995	(156.7)
2	Graham County Dispatch #2	155.055	(114.8)	153.785	(167.9)

REVISED October 15, 2012

Local Authorities and Contractor Personnel (Telephone Contact List)

Work Home Cell or Pager

UNIVERSITY OF ARIZONA - GILA VALLEY

Operations Superintendent (Shane Olsen).	928-42	8-2927	928-428-7	505	.928-965	5-3102
Base Camp	928-42	8-2739				
Administrative Associate (Barbara Abril).	928-42	8-2739		•••••	.928-65	1-5905
Assistant Director (Craig Nance)	928-42	802739	808-345-3	842	.928-965	5-7616
Director (John Ratje)	928-42	8-2739	928-428-7	717	.928-965	5-3004
Maintenance Shop (Base Camp)	928-42	8-2927				
MGIO Duty Person					.928-965	5-3100
University Police Department MGIO	928-34	8-0001				

UNIVERSITY OF ARIZONA - TUCSON

U. S. FOREST SERVICE - SAFFORD RANGER DISTRICT

District Office	928-428-4150	
Safford District Ranger (Kent Ellett)	928-348-1974	
Fire Management Officer (Buddy Zale)	928-428-4150	
HAZ-MAT Officer (Eli Curiel)	520-388-8413	
Asst HAZ-MAT Officer (Scott Glaspie)	928-428-4150	
Forest Fire Dispatcher (24 Hour Dispatch	er)	520-202-2710 (during fire season)

GRAHAM COUNTY EMERGENCY RESPONSE UNIT

RESPONSE CONTRACTORS (Under State Contract)

State and National Authorities (Telephone Contact List)

A. Arizona Department of Environmental Quality (ADEQ)

Call in the following order until a person has been contacted:

- 24-hour Emergency After Hours602-390-7894
- Department of Public Safety (DPS)......602-223-2000 DPS On-Duty D.E.Q. Haz-Mat Officer602-771-4106

The report to the above organizations must include:

- Name and telephone number of reporter;
- Name and location of facility;
- Time and type of incident (e.g., release, fire);
- Name and quantity of materials or material involved to extent known;
- The extent of injuries, if any; and
- The possible hazards to human health, or the environment, and any clean-up procedures that are in progress.
- C. For specific information on chemicals call CHEMTREC...800-424-9300 ext#1

MGIO Emergency Equipment Assignments

The equipment and assignments listed below are for the purpose of covering emergency response actions. The University will provide operators for their equipment.

Mt. Graham International Observatory (MGIO)

<u>Operator - Title</u>	Equipment Description	Vehicle #
Primary/Emergency Coordinator	Ford Expedition 4x4	3767
Maintenance Mechanic, Lead	Chevy 3500 1 ton PU 4x4	4702
Maintenance Mechanic	Ford F-350 1 ton PU, 4x4	3804
Maintenance Mechanic	2 ¹ / ₂ yd Case Articulated Loader	Model W24C
	John Deere Grader	Model #570B
	John Deere Grader	Model#772A
Administrative Associate	MGIO Dispatcher/Communication	on Center

Reserve Personnel:

Maintenance Supervisor – Shop Maintenance Mechanic Custodial Crew (4)

Reserve Equipment:

- 2 ³/₄ ton, 4wd, Pickup Trucks
- 1 1 ton 4wd, Pickup Truck
- 1 Case Articulated 2½ yard Loader (Model W24C)
- 1 John Deere Articulated 4 yard Loader (Model 644G)
- 1 John Deere Articulated 4 yard Loader (Model 644H)
- 1 Case Backhoe (Model 580-E)
- 1 Drott 30 ton hydraulic crane all terrain
- 1 Freightliner Semi-Tractor / Low Boy Trailer
- 1 Kenworth Semi-Tractor / Water Tender (3,150 gallons)
- 1 Peterbilt Dump Truck 10 wheeler
- 1 2,500 Gallon Gray-Water Tanker
- 1 250 kW Mobile Generator Set
- 1 Snowcat

Equipment Lockers Locations and Inventories

Emergency response equipment lockers are maintained at the Mt. Graham International Observatory (MGIO). The firefighting gear is in a locker painted red and labeled "Emergency Response Locker" located in the Maintenance Storage building. The spill response gear is in a large circular white polyethylene container located in the Utility building. They contain:

Firefighting Gear	Spill Response Gear
Canteens Shovels McCloud (hoe/rake tool) Pulaskies (specialty axe) Head Lanterns Swatters First Aid Kits	Polyethylene Pails (5 gal) with locking lids and handles Acid Spill Pillows Vermiculite, Medium Grade Shovels (non-sparking) Yellow Hazard Tape Tyvek Suits Latex Gloves Neoprene Gloves Chemical Splash Goggles Over-boots
	Plastic Bags pH Paper

"Mini" spill kits will be kept in the vicinity of any chemical storage areas to immediately control spills.

In addition to the above supplies, the MGIO Service Truck, operated by the assigned duty-person, is outfitted with the following equipment:

Canteens, Shovel, McCloud, Pulaskie, Fire Extinguisher, Bolt Cutters, Hard Hats, Flashlights, First Aid Kit, Chain Saw and a Basic Tool Kit.

Exhibit 9 Swift Trail Reference Road Markers

Arizona Highway 366 (Swift Trail) provides access to within two miles of the Mt. Graham International Observatory (MGIO). Landmarks and mile posts are located along Swift Trail and are listed below:

		Miles from
	Milepost	Base
Location	Marker	Camp
MGIO Base Camp	114.7	0
Marijilda Canyon Road Intersection	116.8	2.1
4,000' Elevation Marker	117.5	2.8
Coronado Forest Boundary	118.5	
FR-861 Road Intersection (Heliport)	119.5	4.8
FR-667 Road Intersection – USFS Work Site (5,000' elevation).	120.4	5.5
Noon Creek crossing	121.0	6.2
FR-329 Road Intersection – Angle Orchard	121.4	6.4
Round the Mountain Trailhead turnout	121.5	6.5
6,000' Elevation Marker	123.3	
Wet Canyon Bridge	123.6	8.6
Arcadia Campground	125.5	
Cluff Dairy Turnout (Heliport)	126.2	
7,000' Elevation Marker	126.6	11.4
Turkey Flat (old general store)	127.9	
Twilight Campground Road Intersection	128.4	
8,000' Elevation Marker	130.1	14.9
Lady Bug Saddle (8,508' Elevation)	131.0	
Utility Corridor	132.1	16.9
Hagens Point (The Kitchen)	133.3	17.9
9,000' Elevation Marker	134.5	
Snow Flat Campground Road Intersection	135.2	
Shannon Campground & Heliograph Peak Road Intersection	135.8	
FR-507 Intersection (High Peak)	136.1	
Swift Trail (Hwy 366) Main Gate	136.2	
Treasure Park Road Intersection	137.0	
Hospital Flat Campground (Alternate Heliport)	137.2	
Grant Hill Intersection	137.8	
Grant Creek crossing	139.2	
Cunningham Campground	139.9	
Moonshine Creek crossing	140.6	
Post Creek crossing	141.4	
Ft. Grant Vista Overlook	141.8	
MGIO - Emerald Peak Access Road Intersection	142.3	26.7
Old Columbine - Bible Camp Road Intersection (Heliport)	143.2	
Public Horse Corral	143.3	27.7
Soldier Creek Campground	143.7	
Peters Flat	144.3	
Chesley Flat	145.5	
FR-287 Riggs Lake Road Intersection	147.5	





















Appendix A Emergency Coordinators

UNIVERSITY OF ARIZONA POLICE DEPARTMENT (24 HOURS)		(520) 621-8273
PRIMARY EMERGENCY COORDINATOR:		
R. Shane Olsen Operations Superintendent Mt. Graham International Observatory	Work Phone: Cell/Mobile Phone: Address:	(928) 428-2927 (928) 965-3102 1175 E. Olsen Acres Safford, AZ 85546
SECONDARY EMERGENCY COORDINATOR (1):		
Craig E. Nance Assistant Director and Site Manager Mt. Graham International Observatory	Home Phone: Work Phone: Cell/Mobile Phone: Address:	(808) 345-3842 (928) 428-2739 (928) 965-7616 Safford AZ, 85546
SECONDARY EMERGENCY COORDINATOR (2):		
John R. Ratje Director Mt. Graham International Observatory	Home Phone: Work Phone: Cell/Mobile Phone: Address:	(928) 428-7717 (928) 428-2739 (928) 965-3004 325 E Saddlehorn Drive Safford, AZ 85546
SECONDARY EMERGENCY COORDINATOR (3):		
Jeffrey S. Kingsley Associate Director UA Steward Observatory	Home Phone: Work Phone: Cell Phone: Address:	(520) 886-6412 (520) 626-3527 (520)289-0869 3687 North Camino Rio Soleado Tucson, AZ 85718
EMERGENCY RESOURCES (1):		
Steven C. Holland Assistant Vice President UA Department of Risk Management Services	Home Phone: Work Phone: Cell Phone: Address:	(520) 749-9287 (520) 621-1556—(520) 621-1790 (520) 349-4273 12561 E Sonoran Ridge Dr. Tucson, AZ 85749
EMERGENCY RESOURCES (2):		
Herbert N. Wagner Director of Occupational & Environmental Health and Safety UA Department of Risk Management Services	Home Phone: Work Phone: Cell Phone: Address:	(520) 881-5448 (520) 621-7691 (520) 349-0984 2918 E. Croyden Tucson, AZ 85716
EMERGENCY RESOURCES (3):		
Lloyd M. Wundrock Environmental Safety Officer UA Department of Risk Management and Safety	Home Phone: Work Phone: Cell Phone: Address:	(520) 240-9802 (520) 621-1590 (520) 349-1001 5307 W. Wood Owl Drive Tucson, AZ 85742
EMERGENCY RESOURCES (4):		
Jeffrey G. Christensen Hazardous Waste Supervisor UA Department of Risk Management and Safety	Home Phone: Work Phone: Cell Phone: Address:	(520) 408-4895 (520) 621-5861 (520) 349-2187 1300 W. Roller Coaster Tucson, AZ 85704

Medical Emergency Procedures

1. Alert the Emergency Medical System:

The person that alerts the Emergency Medical System assumes the duties of the Emergency Coordinator (see duties next page) until handed off to one of the primary or secondary coordinators.

Call	9-1-1
Notify UAPD Dispatch at:	1-520-621-8273

For serious injury or illness, call a helicopter <u>and</u> ambulance (in case one or the other can't make it).

Helicopter	1-877-633-7882
Ambulance	1-520-299-1411

For a non-life threatening emergency, call an ambulance and notify:

Mt. Graham Regional Medical Center 1-928-348-4177

When calling for emergency services, be prepared to answer the following questions:

- a. Your name, organization, location, and phone number.
- b. Description, number, location, and severity of injuries or medical problem.
- c. Helicopter pickup site location (you must give GPS coordinates):

-- Columbine – (primary site in summer – no snow) LAT / LONG 32° 42′ 13″ -109° 54′ 53″

-- Hospital Flat (primary site in winter – snow conditions) LAT / LONG 32° 40′ 05″ -109° 52′ 39″

- d. Landing zone conditions snowpack, condition, etc.
- e. Weather conditions wind, visibility, road conditions, etc.
- f. Are special tools required (i.e. Jaws of Life)?
- g. Telephone number and name of contact person for call back if necessary.
- h. Determine via the dispatcher the estimated time of arrival of the ambulance write it down along with the time which the call was placed.

Medical Emergency Procedures

2. Emergency Coordinator Duties:

- a. Maintain radio/phone contact with air and ground ambulances.
- b. Refer patient condition information (via UAPD) to ambulance en route.
- c. Provide routing instructions -- landing site, pickup point etc.
- d. Advise on specific staging location until safe for ambulance to enter area.
- e. Maintain log on injured and their hospital destination.
- f. Notify local authorities listed in <u>Exhibit 5</u>.

Appendix C

Evacuation Procedures

I. <u>Situation</u>

- Evacuation consists of those measures necessary to remove endangered persons from the threatened areas.
- Evacuation may be undertaken simultaneously with other emergency conditions.

II. Assumptions

- When the need to evacuate becomes apparent, many persons will leave the threatened area using Observatory vehicles.
- If the Observatory access road is blocked, hiking to a safe area may be necessary.
- At certain times of the year, helicopter airlift operations may not be viable due to low air density at higher altitudes.

III. Mission

• To remove endangered persons from a threatened area until the threat subsides.

IV. Concept of Operation

- Any evacuation will initiate the Emergency Response Contingency Plan. The Emergency Coordinator will be responsible for alerting all on-site staff, observers, and public of evacuation procedures.
- The Emergency Coordinator or the Forest Service orders the evacuation of the Observatory.
- The Emergency Coordinator will insure that all personnel have been accounted for and, if an evacuation is necessary, actually depart the site.
- The MGIO access road (FR-4556) will normally be used to evacuate Observatory personnel.
- In case the road is blocked by fire, other measures may be necessary (see next page):

A. Airlift via Helicopter. If a fire exists in the vicinity of the Observatory and actually threatens the Observatory, staff may be airlifted from a designated landing area – Columbine and Hospital Flat are designated landing areas.

Altitude density (i.e. low air density at high altitudes), at certain times of the year, can reduce efficiency and reliability of helicopter operations. Helicopter operation under certain circumstances may be curtailed.

B. Hiking off the mountain is possible, but only as a last resort. Personnel can hike down from the Observatory to the Columbine area. Trails exist on the east and west sides of the Observatory. These trails may be difficult to locate at night or in poor weather. Physical condition, footwear, foul weather clothing, weather conditions, etc. should be carefully considered before leaving the Observatory area. Anyone that will be hiking out must inform the Emergency Coordinator of their intentions and maintain radio contact with the Emergency Coordinator and/or the Emergency Response Information Center.

A topographical map of the Pinaleño Mountain area is located in the entrance corridor to the Submillimeter Telescope. Trails and pickup points for emergencies are shown on the map. Two packs – evacuation kits to use for hiking out of the area are also stored in the First Aid Shelter. Each of the two packs contain the following items:

"Hike-Out" Pack Inventory

- A. Blue Bag
 - 1. Venom Extractor
 - 2. Sting Eze
- B. Red Bag
 - 1. Emergency Poncho
 - 2. Emergency Blanket
 - 3. Drinking Water Purification Tablets
 - 4. Fire Sticks
 - 5. Waterproof Matches
 - 6. Tin Can Opener
- C. Green Bag
 - 1. Air Horn
 - 2. Magnetic Compass
- D. First Aid Kit
- E. Flash Light (2 D-cell Batteries)
- F. Highway Flare (15 minute fusee)
- G. Canteen
- H. Topographic Maps (laminated in waterproof tube)
 - 1. Mt. Graham Quadrangle
 - 2. Webb Peak Quadrangle

Appendix D

Fire Response Plan

I. Notification Procedures

Once a brief initial assessment has been made, the following persons shall be notified immediately:

	<u>Telephone Numbers</u>	
	Work	Home
1. Forest Service: 24 Hour Dispatcher (during fire sea	son) 520-202-2710	
2. Primary Emergency Coordinator: Shane Olsen		
	Cell Phone	928-965-3102
If unavailable - Alternate Coordinator: Craig Nance		808-345-3842
	Cell Phone	928-965-7616
If unavailable - Alternate Coordinator: John Ratje		928-428-7717
	Cell Phone	928-965-3004
3. University Police Department: (24 Hour Dispatcher	·) 520-621-8273	
4. MGIO Base Camp: Barbara Abril		928-651-5905

Procedure Summary:

- 1. Alert on-site personnel of the emergency, and initiate evacuation procedures if necessary. The Evacuation Plan is set forth in Appendix C.
- 2. Conduct a preliminary assessment to determine magnitude of the problem. Assessment guidelines are set forth in Section IV, C (page 6 of this Plan).
- 3. Contact the Forest Service and the Base Camp.
- 4. Contact the UAPD which will notify the RMS Emergency Coordinator.

Fire Response Plan (continued)

- II. <u>Purpose:</u> The intent of this plan is to outline channels of communication and responsibility for fire suppression and prevention activities, and to set up an aggressive attack procedure in the event a fire is discovered or reported in the vicinity of Emerald Peak. It is further intended that by advance preparation, physical damage and hazardous conditions may be reduced and an early recovery accomplished.
- III. <u>Scope:</u> To eliminate all people caused fires within the MGIO area of responsibility as shown on the map (<u>Exhibit 12</u> and <u>Exhibit 13</u>). To take prompt, aggressive action on all fires that may occur.
- IV. <u>Situation:</u> The four major buildings (Utilities, VATT, SMT, and LBT) located on the Observatory grounds are constructed of primarily concrete and steel. One building, the UAPD Office, consists of a metal covered wood frame construction. <u>Exhibits 11</u> through <u>13</u> present the location of the MGIO facilities in relation to the Pinaleño Mountains. <u>Exhibit 14</u> presents a site plan of the Observatory facilities. <u>Exhibit 15</u> shows the layout of the Utilities Area. <u>Exhibits 16 through 18</u> outline utility schematic diagrams for electrical power, propane distribution and water distribution respectively.

The Observatory is located in a coniferous forest with significant amounts of fallen and decaying wood on the ground. The Observatory site is surrounded by an area designated as critical habitat for the Mt. Graham Red Squirrel, an endangered subspecies. Because of the elevation, the area is relatively cool and moist for most of the year. However, during certain portions of the year, particularly during a drought period, the fire danger could be classified very high to extreme (high rate of spread/high resistance to control). Because of the Observatory installation and because of the critical habitat designation, the area is classified as a high resource value area. The U.S. Forest Service will aggressively pursue fire suppression activities.

Common sense and constant vigilance must apply to all activities on the mountain and along the access road. Fire on the mountain could lead to large financial losses and possible loss of life. Because the Observatory could suffer major building fire damage, it is desirable that any response is immediate, containing any fire to as small an area as possible. The possibility exists that fire could spread as a result of exploding propane or fuel tanks. The fuel storage area is localized to the vicinity of the Utilities building. <u>Exhibit 15</u> shows the fuel storage layout.

Standard Forest Service fire regulations are in effect at all times. Throughout the year, observers and visitors are cautioned against careless smoking and other actions that would contribute to a fire hazard. No open fires are permitted anywhere on the Observatory grounds.

V. <u>Concept of Operations</u>

If fire or explosion appear imminent, or either have occurred, all activity related to the operation of the Observatory will be stopped immediately. The Observatory shall immediately report all fires to the Forest Service. If appropriate, an Emergency Response Information Center may be established at the Base Camp (Appendix F).

The Emergency Coordinator will coordinate firefighting activities on-site. The Coordinator will immediately assess the severity of the situation, and determine whether the fire is or is not readily controllable with existing portable fire extinguishers and/or on-site firefighting systems. Firefighting by the MGIO staff will not be done if personnel risk appears high. If the fire conditions could in any way endanger personnel in the buildings, the entire Observatory facility will be evacuated.

If the situation appears uncontrollable, and poses a direct threat to human life, a verbal warning will be given to all personnel fighting the fire to secure their emergency equipment and immediately prepare to evacuate the area. Time permitting, all utility services (propane and electricity) should be shut off at each building. Insure that all available water sprinkler and deluge systems (if installed in the future) remain in service.

For controllable situations, the Observatory relies on its own staff and equipment for small and accessible fires. The staff and equipment are prepared to react to structural (building) fires and take initial action on fires along the road or in the forest. Forest Service personnel are not trained in structural firefighting techniques and therefore will not assist in handling structural fires.

The Observatory relies on the Forest Service for all fire suppression activities in the forest surrounding the MGIO facility. Other agencies (such as the Sheriff's office, etc.) shall be called as required. The Observatory will assist with equipment and manpower to the extent that it protects its installations. After initial attack, communication and other efforts will be coordinated with the Forest Service. The Forest Service has the lead responsibility for all fires outside the Observatory building perimeters.

The Emergency Coordinator will alert all University/MGIO personnel when it is safe to reenter the buildings. The Forest Service Fire Management Officer will make the safety determination for fires outside MGIO building perimeters.

All equipment used in the emergency will be cleaned and repaired within 48 hours for use in the event of any future emergency. Sufficient backup equipment and supplies are available at the Base Camp to provide necessary coverage during this recovery period.

VI. <u>Task Assignments</u>

1. Forest Service

- Assume authority for direction of fire suppression forces (outside of MGIO building perimeter).
- Direct mobilization of field forces as required.
- Alert all departments and agencies involved to hazardous or potentially hazardous conditions.
- Activate and check all emergency communications systems.
- Provide public information data to the news media.
- Recommend fire prevention measures to the MGIO Site Manager.
- 2. Observatory
 - Assume authority for direction of structural fire suppression activities.
 - Assist the Forest Service in fire suppression activities.
 - Insure that all Observatory staff and visitors be informed of any fire and prepare for action or evacuation. It is possible that staff personnel could be sleeping in several buildings on the mountain, unaware of advancing fire. All buildings must be checked for sleeping staff members.
 - Assist the Forest Service in the location of water tanks or other facilities that may be required.

3. University of Arizona Police Department

- Establish and identify joint command post for the management of the law enforcement function.
- In coordination with the Forest Service, control personnel and vehicle traffic to the area of the incident.
- In coordination with the Forest Service, assist with field direction and control of all forces, except fire suppression. May assist the Forest Service in fire suppression activities.

Appendix E

Hazardous Materials / Spill Response Plan

I. <u>Notification Procedures</u>

Once a brief initial assessment has been made, the following persons shall be notified immediately:

		Telephone	Numbers
		Work	Home
1.	Primary Emergency Coordinator: Shane Olsen If unavailable - Alternate Coordinator: Craig Nance If unavailable - Alternate Coordinator: John Ratje	928-428-2739 Cell Phone 928-428-2927 Cell Phone 928-428-2927 Cell Phone	928-965-3102 808-345-3842 928-965-7616 928-428-7717 928-965-3004
2.	University Police Department: (24 Hour Dispatch)		520-621-8273
3.	MGIO Base Camp: Barbara Abril	928-428-2739	928-651-5905
4.	Forest Service: 24 Hour Dispatcher (during fire season	ı)	520- 202-2710
5.	Forest Service HAZ MAT Officer (Eli Curiel): Safford Ranger District (Scott Glaspie)	520-388-8413 928-428-4150	520-444-0307 520-490-9518
Pro	ocedure Summary:		

- 1. Alert on-site personnel of the emergency, and initiate evacuation procedures if necessary. The Evacuation Plan is set forth in Appendix C.
- 2. Conduct a preliminary assessment to determine magnitude of the problem. Assessment guidelines are set forth in Section IV, C (page 6 of this Plan).
- 3. Contact the UAPD which will notify the UAPD MGIO Duty Officer and the RMS Emergency Coordinator.
- 4. Contact the Base Camp and the Forest Service.
- 5. For hazardous material releases:
 - Initiate the Hazardous Materials / Spill Response Plan (SPCC) Appendix E.
 - Immediately notify the appropriate local authorities. Telephone numbers are listed in Exhibit 5. Specific criteria are listed in the SPCC Plan.
 - If required, notify the National Response Center and the Arizona Department of Environmental Quality (ADEQ). Telephone numbers are listed in Exhibit 6

Hazardous Materials / Spill Response Plan (continued)

- II. <u>**Purpose:**</u> The intent of this plan is to outline channels of communication and responsibility for response in the event of a hazardous material release in the vicinity of the Mt. Graham International Observatory (MGIO), and/or the mountain access road. It is further intended that by advance preparation, physical damage and hazardous conditions may be reduced and an early recovery accomplished.
- III. **Scope:** To eliminate all hazardous material releases (vapor, liquid, and/or solid) within the MGIO area of responsibility as shown on the map (<u>Exhibit 12</u> and <u>Exhibit 13</u>). To take prompt, aggressive action on all hazardous material releases that may occur.
- IV. <u>Situation</u>: Five buildings and an access road comprise the Observatory grounds. <u>Exhibits 11</u> through <u>13</u> present the location of the MGIO facilities in relation to the Pinaleño Mountains. <u>Exhibit 14</u> presents a site plan of the Observatory facilities. <u>Exhibit</u> <u>15</u> shows the layout of the Observatory utilities area.

<u>SMT</u>: The Submillimeter Telescope building has a small laboratory that contains small quantities (typically a gallon of each) of solvents such as methanol, ethanol, isopropyl alcohol, methyl-ethyl ketone, and trichloroethylene. The waste chemicals will be containerized appropriately after each use. Transportation and disposal of the chemical waste will be the responsibility of the RMS.

Compressed gas cylinders (oxygen/acetylene for welding; nitrogen and helium) are stored in the SMTO building. Liquid Nitrogen (200 liter high-pressure Dewar) is maintained inside the building. A Dewar of Liquid Helium is also kept in the building.

<u>VATT</u>: No hazardous chemicals are kept in the Vatican Advanced Technology Telescope building. Small amounts of hydraulic oil (10 gallons) are stored in the basement. Compressed gas cylinders of carbon dioxide and nitrogen are stored in the observatory building. The gases are used to clean optical surfaces. Typically a Dewar of Liquid Nitrogen is kept in the dome to service instrumentation at the telescope.

LBT: Operations of the Large Binocular Telescope entail the annual re-aluminization of the two eight meter diameter primary mirrors. Essentially the mirror will be cleaned and stripped of the old aluminum coating, placed in a vacuum chamber where a new thin film of aluminum will be deposited on the mirror's surface. The stripping process will require a mild acid solution to dissolve the aluminum followed by a basic rinse to neutralize the glass substrate. Large amounts of deionized water are used in the stripping process generating a rinsate volume of about 7,000 gallons. The waste stream is essentially water with a pH of about 7.4 (the volume of required chemicals and the analysis of the rinsate stream are included in <u>Exhibit 1</u>). The rinsate solution is collected in a sump where it is stored until pumped into a tanker truck and delivered to the Safford Municipal Sewage Treatment Plant.

Compressed gas cylinders are stored on the ground floor of the LBT building – up to four 119 gallon capacity trailer mounted pressurized Liquid Nitrogen supply tanks, four 220 cubic foot compressed Nitrogen gas tanks, two 220 cubic foot compressed Helium gas tanks, six 220 cubic foot bottles of liquid carbon dioxide and one 220 cubic foot compressed Argon gas tank.

Hazardous Materials / Spill Response Plan (continued)

On level 4 of the LBT building, there are two 50 pound bottles of liquid propane for emergency generator operation. In addition to a 55 gallon drum of hydrostatic bearing oil (Mobile DTE-11), approximately 450 gallons of hydrostatic bearing oil is inventoried into the telescope's hydrostatic bearing system. Level 4 also houses the ethylene glycol system used to balance the telescope

<u>Utilities:</u> Lubricating oil (55-gallon tank) and diesel fuel (275-gallon day tank) are stored in the generator section of the Utilities Building. A 10,000 gallon above ground, double containment tank and a double containment transfer piping system is used as the main storage area and transfer system for diesel fuel.

The above ground diesel storage container meets all codes and Environmental Protection Agency specifications for above ground storage of petroleum products. For the purpose of equipment maintenance, 55 gallon drums of lubricating oil, hydraulic oil, ethylene glycol and a drum designated for waste oil will be kept in the utilities area.

A portable gas welding rig (oxygen/acetylene compressed gas cylinders) is used for maintenance on the Observatory grounds and stored in the Utilities Building.

In addition to the diesel generator room, the Utilities Building houses the potable water storage and distribution equipment. A fire pump designed for a pumping capacity of up to 1,000 gpm will maintain two fire hydrants in operation for a minimum of 15 minutes up to a maximum time of 50 minutes based on a full water storage tank.

<u>All Buildings:</u> All sewage will be contained in sealed vaults associated with the pertinent buildings. Pumps are used to transfer septic waste from the vaults to the truck. The septic waste is transported to the Safford Municipal Sewage Treatment Plant for disposal.

<u>Access Road:</u> Arizona Highway 366 (Swift Trail) emanates from an intersection with Highway 191 and ascends the Pinaleño Mountains (landmark and milepost information are listed in <u>Exhibit 9</u>). The road surface is paved to milepost 136.2 - the High Peak Road (FR-507) intersection. Environmental exposure is greatest where Swift Trail crosses perennial streams. Names and locations of these crossings are: Noon Creek (milepost 121.0), Wet Canyon (milepost 123.6), Grant Creek (milepost 139.2), Moonshine Creek (milepost 140.6) and Post Creek (milepost 141.4).

V. <u>Concept of Operation</u>: If a hazardous material release is noted, the Emergency Coordinator will be alerted immediately. Appendix A lists personnel designated to act as Emergency Coordinators. A brief assessment of the situation will ensue. If appropriate, the Contingency Plan will be promptly implemented by notifying those agencies listed in <u>Section IV</u> (page 4). A complete notification list is contained in <u>Exhibit 5</u> and <u>6</u>. The Emergency Coordinator will assess the potential seriousness of the material release by reviewing the following information:

- Material Safety Data Sheets;
- Source of the release of hazardous material;
- An estimate of the quantity released and the rate of release;
- The direction in which the release is moving;
- Personnel who may be or may have been in contact with the material released, and any possible injury or sickness resulting there from;
- Potential for fire and/or explosion resulting from the situation;
- Estimate the area under influence of the release.

In the event of a hazardous material release where evacuation is necessary, all organizations or publics within range of, or affected by, the incident will be alerted. Telephone numbers for the Columbine Cabin Owners Association and the Arizona Bible Camp are listed in <u>Exhibit 5</u>. All personnel not involved with the incident response activity will be evacuated from the immediate area, and the area around the facility will be marked off with yellow hazard warning tape. Observatory personnel, UAPD, or in certain situations the Graham County Sheriff's Office, will be stationed around the evacuated area to prevent unauthorized personnel from entering the area.

If the incident is determined to lay within the MGIO emergency response capabilities, the Emergency Coordinator will implement the necessary remedial action. The emergency spill responders are MGIO staff trained in emergency response under the direction of the Emergency Coordinator. The MGIO maintains a variety of absorbent materials to contain and clean up chemical or fuel spills. These materials are stored at the Observatory site, on Observatory vehicles, and at the Base Camp. <u>Exhibit 8</u> lists locations and inventories of Emergency Response Equipment Lockers.

If the incident is judged to be beyond the capabilities of the in-house response team, the Emergency Coordinator will call in trained response teams on state contract that are especially equipped for hazardous material cleanup operations. Telephone numbers are listed in <u>Exhibit 5</u>.

Appendix F

Emergency Response Information Center

The Forest Service and the University will jointly establish an Emergency Response Information Center. The Center will be located at the Mt. Graham International Observatory (MGIO) Base Camp, located off-forest along Swift Trail (AZ-366). The Forest Service will direct the activity with the University assisting.

Functions and Responsibilities

- Set up an information center to which all requests for news and information on the emergency situation can be channeled.
- Notify news media of location and telephone number of fire information center.
- Maintain up-to-date information on the fire and related problems.
- Arrange for personnel to accompany news media to the fire area.
- Follow up on rumors to verify or disprove.

Staff

Emergency Response Information Officer and Public Information Officer:

			Work Nu	<u>mber</u>
1.	USFS Supervisor's Office - Tucson Public Affairs Specialist, Heidi Sch	n newel		-7720
2.	Kristy Lund, USFS Fire and Safety Program Manager .			-7844
3.	The University of Arizona News S Public Information Officers:	ervices		
		Telep	hone Numbers	
		<u>Work</u>	Home	Cell or Pager
	Johnny Cruz			520-307-3362
	Jennifer Fitzenberger (alternate)	.520-621-9017		520-247-2382
4.	Mount Graham International Obser	rvatory Base Camp		
	Barbara Abril			928-651-5905

Barbara Abril	.928-428-2739	.928-651-5905
Brenda Taylor (alternate)	.928-428-2739	.928-651-7480

Appendix G

Material Safety Data Sheets

The following MSDS Sheets are kept on file in the Utility Building at the observatory site and at the Base Camp:

- 1. Nitrogen Gas/Liquid
- 2. Helium Gas/Liquid
- 3. Hydrochloric Acid
- 4. Isopropyl Alcohol
- 5. Methanol
- 6. Ethanol
- 7. Methyl-ethyl Ketone
- 8. Nitric Acid
- 9. Phosphoric Acid
- 10. Potassium Hydroxide
- 11. Trichloroethylene
- 12. Acetone
- 13 Cupric Sulfate
- 14. Calcium Carbonate
- 15. Ethylene Glycol
- 16. Carbon Dioxide Gas/Liquid
- 17. Acetylene Gas
- 18. Oxygen Gas