
	<p><b>Atacama Pathfinder EXperiment</b></p> <hr style="width: 10%; margin: auto;"/> <p><b>Safety Material</b></p>	<p>APEX-APX-LIS-0001</p> <p>Revision: 1.0</p> <p>Release: 2004-09-18</p> <p>Category: 2</p> <p>Author L.-A. Nyman</p>
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# APEX List of Safety Material


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### Change Record

REVISION	DATE	AUTHOR	SECTIONS/PAGES AFFECTED	REMARKS
0.1	08.07.04	Nyman	New issue	
0.2	08.11.04	Nyman	all	comments by Güsten
0.3	18.09.04	Nyman	all	Clarified the definition of APEX base and APEX telescope site
1.0	27.09.04			Approval of R0.3 by Board

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## 1 Purpose

The purpose of this document is to provide a list of safety equipment and material in the San Pedro base, in the pick-up trucks and in the installation in Chajnantor.

## 2 Scope

This document applies to all people working or visiting APEX, including staff, APEX partners, contractors or visitors.

## 3 Documents

### 3.1 Applicable documents

APEX Safety plan	AD-01
APEX List of medical examinations	AD-03
APEX Visitor Waiver Release form	AD-04
APEX Contractor Waiver Release Form	AD-05
APEX Safety Training	AD-06

## 4 Definitions

ACHS Asociación Chilena de Seguridad

LSO La Silla Observatory

SCS Site Certified Staff

*APEX Partners* – the signatories of the APEX Memorandum of Understanding:

Max-Planck-Institut für Radioastronomie (MPIfR),  
European Southern Observatory (ESO),  
Onsala Space Observatory (OSO), and  
Ruhr-Universität Bochum (RUB).


*APEX Site* – the site of APEX construction and operations in Chile that consists of

*APEX Base* located in Sequitor near San Pedro de Atacama (altitude 2440 meters)

*APEX Telescope site* located in the ALMA Science Reserve on the Chajnantor plateau east of San Pedro de Atacama (altitude 5050 meters)

*APEX Staff* – the employees of the APEX Partners who are assigned to work on APEX at the APEX Site on a regular basis.

*APEX Partner Staff* – the employees of the APEX Partners who periodically work on APEX at the APEX Site, but not on a regular basis.

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## 5 APEX base

### 5.1 First aid kits

First aid kits are implemented following the recommendations of Asociacion Chilena de Seguridad (ACHS). Two first aid kits are installed, one in the office building and the other in the cafeteria.

According to the instructions of ACHS, the kit contains a minimum of drugs to avoid the risk of auto medication. There is also a blood pressure meter located in the office building.

### 5.2 Medicines

The additional medicines to the stationary kit are:

- Perendranil (?)
- Mucaine (antacid)
- Perenteryl (antidiarrheal)
- Naprogescic (anti-inflammatory – analgesic)
- Viadil (antispasmodic)

### 5.3 Fire fighting

#### 5.3.1 Fire extinguishers

Fire extinguishers are distributed all over the APEX base. They are of the CO<sub>2</sub> type.

#### 5.3.2 Fire system

In addition to fire extinguishers, an independent water network was installed around the base. Water is extracted from a well as an independent system to overcome the limited water flow available from the normal water supply.


## 6 Cars

### 6.1 First aid kits

Cars are implemented with a first aid kit organized after the recommendation of ACHS. It is oriented mainly to bring first aid treatment in case of an accident, including devices to immobilize an injured person and auxiliary equipment for CPR.

#### *Equipment*

- Basic car first aid kit (see appendix B)
- Neck immobilizer
- Body immobilizer
- Isothermic blanket
- Manual ventilator for CPR

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## 6.2 Other material

All cars used in operations are permanently equipped with additional gear to deal with the difficulties that can be found on the way to the site.

### ***Additional Equipment***

- Fire extinguisher
- Second spare tire
- Emergency light
- Towing rope
- Snow chains
- Cord moor
- Battery jumper cables
- Shovel

## 7 APEX Telescope Site

### 7.1 First aid kits

One stationary first aid kit is installed in the kitchen/dormitory container (see appendix A). It contains a similar assortment as the ones installed in the APEX base, plus some specific medicines for high altitude sickness recommended by a high altitude specialist.

In case of a major accident, we rely on the first aid equipment always carried by all cars.

A blood pressure meter and a defibrillator is located in the kitchen/dormitory container.


The additional medicines to the stationary kit are:

- Perendranil (?)
- Mucaine (antacid)
- Perenteryl (antidiarrheal)
- Naprogesic (anti-inflammatory – analgesic)
- Viadil (antispasmodic)

### 7.2 Oxygen

All cars going to or coming from the APEX telescope site carry a sufficient amount of oxygen bottles ready to be used in case of need. At the telescope site, inside the containers, there are two additional bottles for emergency cases,

There are in total 20 oxygen bottles, 5 electronic regulators and 2 mechanical regulators. There are 8 oxygenmeters which are used to measure the oxygen saturation level in the blood.

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All containers that have people working inside for a prolonged period will have oxygen enriched air, supplied through ducts from a special chamber that contains the oxygen concentrators.

### 7.3 Fire fighting

#### 7.3.1 Fire extinguishers

All containers and antenna containers are equipped with CO<sub>2</sub> fire extinguishers.

#### 7.3.2 Smoke detectors

All containers, antenna containers and antenna cabins are provided with smoke detectors connected to an audible fire alarm and later connected to an automatic dialling device.

#### 7.3.3 Generators

A high capacity mobile fire extinguisher is installed at the generator power house.


### 7.4 Emergency equipment

In addition to the telephone system, the control container and all cars are equipped with radio communication systems. A repeater is installed on Cerro Chico to ensure the coverage during the whole trip to/from the APEX telescope site on the Paso de Jama road. Radio walkie-talkies are also used to allow people working at the APEX telescope site to be in permanent contact with the APEX base.

In case of a power cut, emergency lights will automatically switch on the in containers and the antenna, allowing people to move around under safe conditions.

### 7.5 Other material

In case of a severe snowstorm with both the Paso de Jama and the ALMA roads blocked by snow, people have to stay inside the containers. A permanent stock of food is kept at the site, as well as an emergency box with imperishable supplies. In case of a power cut which produces low temperatures inside the containers, a portable gas stove, gas heater, extra clothes, blankets, and sleeping bags are located inside the kitchen/dormitory container.

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**Appendix A. Stationary first aid kit**

Cotton  
 Adhesive bandage  
 Sterile gauze dressing pads  
 Elastic bandage 8 cm  
 Elastic bandage 6 cm  
 Fixing bandage 8 cm  
 Fixing bandage 6 cm  
 Serum  
 Hydrogen peroxide  
 Povidone-iodine  
 Paracetamol  
 Aspirin  
 Scissor  
 Tweezers

**Appendix B. Car first aid basic kit**

Adhesive bandage  
 Sterile gauze dressing pads  
 Immobilizing bandage  
 Antiseptic cleansing wipe  
 Vinyl globes  
 Eye wash  
 Aspirin  
 Scissor  
 Tweezers  
 Haemostatic tweezers