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1. Scope

Based on the ESO Safety Policy and Organisation (AD1) this document is to further specify the safety rules for the La Silla Paranal Observatory (LPO) sites in Paranal, La Silla and APEX, including the offices in La Serena and Antofagasta.

It applies to all members of personnel, contractors, and visitors on LPO sites at Paranal, APEX and La Silla.

2. Related Documents

2.1 Applicable Documents

The following documents, of the exact version shown, form part of this document to the extent specified herein. In the event of conflict between the documents referenced herein and the content of this document, the content of this document shall be considered as superseding.

AD references shall be specific about which part of the target document is the subject of the reference.

AD	Document Nr.	Document Title	Version	Part / Section
AD1	SAF-GEN-POL-0001	ESO Safety Policy and Organisation	2	01.07.13
AD2	LPO-PRO-ESO-20100-0003	LPO Driving Procedure	3	18.06.14
AD3	LPO-PRO-ESO-20100-0002	Hazardous Material Procedure LPO	4	05.05.12
AD4	LPO-PRO-ESO-20100-0004	Emergency Coordinator Procedure LPO	4	10.12.12
AD5	ESO-280310	Lockout/Tagout Procedure for Telescopes	2	08.07.16
AD6	LPO-PRO-ESO-20100-0009	LPO Contractor Safety Procedure	2	19.04.14
AD7	LPO-PRO-ESO-20100-0010	Personal Protective Equipment Procedure LPO	1	19.04.14
AD8	ESO-252676	LPO Medical Exam Procedure	1	12.03.15
AD9	ESO-270420	LPO Serious Accident Procedure	1	21.10.15
AD10	SAF-GEN-MAN-3444	Safety Conformity Assessment Procedure	5	10.07.15



2.2 Reference Documents

The following documents, of the exact version shown herein, are listed as background references only. They are not to be construed as a binding complement to the present document.

RD Nr.	Document Nr.	Version	Document Title
RD1			
RD2			
RD3			
RD4			

3. Introduction

3.1 Definitions, Acronyms and Abbreviations

This document employs several abbreviations and acronyms to refer concisely to an item, after it has been introduced. The following list is aimed to help the reader in recalling the extended meaning of each short expression:

ESO	European Southern Observatory
LPO	La Silla Paranal Observatory
EN	European Norm
OSHA	Occupational Safety & Health Administration
MSE	Maintenance, Support, and Engineering



4. Safety at LPO

The LPO Safety Office supports the overall mission by providing guidance and advice to management, personnel, (contractors) and visitors in all matters of Safety, and by preparing to manage emergency situations that might affect people or facilities within the observatories.

Everybody is encouraged and empowered to understand the observatory environment and to identify designs, procedures and conditions that are considered unsafe.

Everybody has the authority, without fear of reprimand or penalty, to stop work and seek technical assistance from the safety office and representatives for guidance, resolution of safety issues or disputes involving activities at LPO sites.

4.1 Organizational Structure

The current organisational structure is published at:

http://director.pl.eso.org/wiki/index.php/Organization_chart

4.2 Responsibilities

Everybody within LPO is responsible to manage their personal safety, for integrating safety into their work or visit, and support safety as established in this document.

Safety responsibilities and functions are detailed in ESO Safety Policy and Organisation (AD1). For LPO specifically:

- LPO Director/ Site Safety Responsible
- LPO Site Safety Engineer
- Department Heads
- Safety Engineers
- Supervisors
- Project Managers

- Garching members of personnel on business trips or projects have to comply with all LPO safety regulation during their stay at one of the sites.
- Contractors responsibilities are defined in ESO Safety Policy and Organisation (AD1), General Conditions of ESO Contracts (AD4), and LPO Contractor Safety Procedure (AD5)
- Visitors are responsible for their own safety and have to register and fill out a release form before the visit. They need to follow all LPO safety rules and shall always follow instructions from their guide(s).



5. Risk Assessment and Control

5.1 Risk Assessment

Risk assessment (RA) is the fundamental tool to identify possible hazards in the workplace. It shall be applied to workplaces, work activities, and equipment.

For any job activity at LPO a written risk assessment has to be performed by the according supervisor.

Most of the regular activities can be assessed once, such as regular forklift operations in the Warehouse.

Risk assessments are reviewed in general once a year. If there are no major changes it will be extended another year.

Regular activities that have a change in procedures need to be reassessed.

Other activities that are performed only in an irregular way, such as a repair activity in case of a specific failure in an instrument or a machinery, require a particular risk assessment for each activity.

Identified hazards will be assessed in probability (A – D) and severity (1 – 4), assigned a Risk Code and entered into the LPO risk register. This ensures that all risks are followed up until they are mitigated according to their priority.

The following chapters list hazards likely to occur at LPO premises.

The list does not exclude any other hazards from occurring. The responsible supervisor always shall assess the risks individually.

5.2 High Risk Activities

Due to the permanent risk of severe injuries or property damage, LPO Safety establishes a list of High Risk Activities.

The idea is to create a set of controls BEFORE the activity to avoid injuries or damages and ensure proper support in case of problems.

The minimum requirements for any High Risk Activity are

- a particular and documented risk assessment,
- two-man rule (at least two people present during the activity)
- communication means,
- appropriate Personal Protective Equipment (PPE)

If the according supervisor, for operational reasons, decides to go below minimum requirements, this needs to be documented in the Risk Assessment form and signed off.

It is up to the departments to decide if they want to include a stricter procedure, such as a second signature, or signing off by the Dep Head.

There are 4 main categories considered as high risk activities:



5.2.1 Works at Height

Main risks when working at height include falls of persons or material and falls from or through fragile roof parts or guards.

Activities with a fall height of more than 2m are considered works at height. People and equipment (including tools) should be protected from falls, either by a

- Guardrail, Safety net, or Personal fall arrest system

When working at heights is necessary, make sure

- To use appropriate equipment for the job
- Equipment is well maintained, checked, and installed properly
- Personal fall arrest system is not damaged and properly fitted
- Personnel is physically capable and qualified
- Weather conditions are evaluated

Prevention measures:

Provision of a safe access when working at heights:

Portable Ladders

- Ladders should have no damaged, loose, or missing parts
- Ladders should be properly erected and secure
- Ensure the ladder projects at least 1m above the landing place
- Ensure the ladder is set at the correct angle of 75 degrees and is on firm ground
- Always have three points of contact on a ladder: 2 feet and one hand, or 2 hands and one foot
- Don't use portable ladders as work place. Use only for activities less than 2 hours

Fixed Ladders

Design of fixed ladders shall be in accordance with EN 14122-4 "Safety of Machinery-Permanent Means of Access to Machinery – Part 4: Fixed Ladders" or OSHA, Code of Federal Regulations (CFR) 1910.27 "Fixed Ladders"

Fixed ladders shall be used only if

- by design a safety cage is around the fixed ladder when required, or
- when suitable individual protective equipment is available
- fixed ladders shall not be accessed when working alone

Provision of safe workplaces when working at height



Mobile working platforms

- Design of mobile working platforms shall meet requirements of EN 1004 “Mobile Access and Working Towers made of Prefabricated Elements” or OSHA CFR 1910.29 “Manually Propelled Mobile Ladder Stands and Scaffolds (Towers)”
- Mobile working platforms shall be set up only by qualified personnel
- Set up shall only be done according to manufacturer’s instructions
- Mobile working platforms shall only be used on even and compact ground
- It shall be protected against tipping
- Usage shall be prohibited in strong winds
- Mobile tower working platforms shall not be moved while workers or material are on the platform
- Safe access shall be provided inside the platform

Scaffolding and fixed working platforms

- Design of scaffolding or scaffolding parts shall meet with European Norm 12811: Temporary Works Equipment
- Set up of scaffolding shall only be done by qualified personnel and according to instructions of manufacturer
- Erected scaffold shall be certified and labelled with a tag, identifying name of company, maximum load and name of responsible person
- No changes shall be done to an erected scaffold unless responsible person authorizes them
- Damages should be notified immediately to responsible person
- An appropriate access inside the scaffolding shall be provided

5.2.2 Works with energy

5.2.2.1 Electrical Energy

Only persons who have received training in and have demonstrated skills and knowledge in the construction and operation of electric equipment and installations and the hazards involved, or are under such supervision as is necessary for the work undertaken shall be permitted to perform electrical works.

When working on electrical equipment, basic procedures to follow are to:

- make sure only authorized persons are working on electrical equipment
- de-energize the equipment,
- use appropriate lockout and tag devices to ensure that equipment remains de-energized
- use insulating protective equipment, and
- maintain a safe distance from energized part



Main Risks when dealing with Electricity are:

Electrical Shock, results in a convulsive response by the nervous system to the passage of electricity through the body

Electrical Burns, usually occur on the surface of the skin at points of contact where electricity passes through the body.

Fires that can be caused by

- leakage of current due to poor, damaged, or insufficient isolation.
- overheating of electrical equipment due to overloading (for example by daisy-chaining, or using multiple outlets)
- ignition of flammable vapour by electrical equipment that is not operating normally

Electric Arcs that can occur when the potential in a conductor is great enough to create a conductive path between that conductor and another which is at a lower potential. The resulting arc will be capable of crossing the air gap or insulation which separates the two conductors.

Static Electricity, which builds up of electrons on poor conductors of electricity resulting in sudden discharge. While this may only produce discomfort in the human body it might damage sensitive equipment.

5.2.2.2 Kinetic Energy

All works with large mechanism in motions, where there exists a probability of impact in particular lifting and loading works.

All works involving the use of lifting equipment, such as forklifts, cranes, hoists, etc. shall only be performed by authorized personnel.

A list of authorized people is available at <http://safety.pl.eso.org/wiki/index.php/Safety>

Lifting equipment should be secured with card-readers to avoid unauthorized usage.

Lifting activities need to be prepared thoroughly and should have a responsible who authorizes or cancels activities. Safety of personnel and equipment should be the main priority.

In case of doubt, the activity should be paused/ cancelled and reviewed again.

Further information is available in MSE Department Memo "Roles and responsibilities during an instrument movement and any load transportation" 04.09.14 at http://mse.pl.eso.org/wiki/images/1/13/Memo_instrument%26load_movement_V1.2.pdf



Mobile Lifting Platforms (MLP)

MLPs (for example a “Sequani”), shall only be operated by certified personnel that have been trained on operating procedures, safety requirements and hazards.

Main risks when operating MLPs are:

Falls of people or material

Entrapment at moving parts of the equipment or between equipment and any fixed obstruction

Overturning on uneven or soft ground; operating on a slope; operating in wind speeds exceeding those specified by the manufacturer

Prevention measures:

- Don't operate equipment if you are not certified to do
- Always wear an appropriate personal fall arrest system
- Ensure MLP is well maintained and inspected regularly
- Follow manufacturer's instructions
- Make sure equipment is levelled
- Always deploy outriggers or stabilisers and use as recommended by manufacturer
- Ensure area around working platform is cordoned off if materials can fall down

Hoists, Cranes, and Forklifts

Only qualified and trained personnel shall operate hoist, cranes or forklifts:

Main risks when operating hoists and cranes are:

Falling of load

Getting struck by load

Load hitting other objects

Prevention measures

- Ensure crane or hoist are inspected and maintained periodically
- Perform a visual inspection before each operation
- Ensure lifting area is clear and prevent access to it
- Hoists and cranes shall not be overloaded
- Only use appropriate material and equipment



Material Handling Equipment

Material handling equipment include all lifting devices made from steel chain, wire rope, metal mesh, natural or synthetic fibre rope, and synthetic web.

Equipment shall comply with according international standards.

- All materials handling equipment has rated capacities that determine the maximum weight the equipment can safely handle and the conditions under which it can handle those weights.
- The equipment-rated capacities shall be displayed on each piece of equipment and shall not be exceeded.
- The supervisor is responsible to select the appropriate material handling device for each activity.
- The operator shall visually inspect the device for damages prior to an activity
- Any damaged or defective device shall be removed from service immediately.

5.2.2.3 Heat Energy

All works in presence of high temperature, in particular hot works

Main risks involving hot works are:

Fires, Burns, Toxic fumes

Prevention Measures:

- All hot works outside of regular contractor workshops and the Mechanical workshop require a hot work permit to ensure necessary safety measures are in place
- Use the hot work permit as the risk assessment document at <http://safety.pl.eso.org/wiki/index.php/Safety>
- Operators should ensure that no flammable material is in work area
- If flammable material or covered flammable material is present in work area a fire guard needs to be present
- Provide suitable fire extinguishing equipment
- Use appropriate equipment and Personal Protective Equipment

5.2.3 Lasers

The laser is a device which produces a very intense and very narrow (collimated) beam of electromagnetic radiation in the frequency range of 200 nm (nanometers, 1×10^{-9} meters) to 1mm.

This radiation is generally in the form of intense visible light.

Lasers are used within the observatories, for example for alignment issues.

Main risks from a laser result from burns to the skin and especially the eye.

All works involving lasers shall only be executed by trained and qualified personnel. LPO has two Laser Safety Officers (LSO); they are responsible for the application of safety measures according to standards and the instruction of personnel working with lasers.



LPO observatory applies American National Standard Institute (ANSI) Z136 series and specifically Z136.1 "Safe Use of Lasers"

5.2.4 Confined Space

Confined spaces are considered any enclosed or partially enclosed space where there is a foreseeable risk of:

- Fire or explosion due to hazardous atmosphere
- Loss of consciousness or asphyxiation arising from gas, fumes or lack of oxygen
- Drowning from an increased level of liquid

These risks might arise in chambers, trenches, tanks, pipes, sewers, silos, pits

When works in confined space are necessary, a thorough risk assessment shall be done that includes

- Hazards associated with the confined space itself
- Hazards associated with the work to be carried out
- Needs to isolate the confined space to prevent dangers occurring from the outside
- Requirements for emergency rescue

5.2.5 High Altitudes (APEX, ALMA, Armazones)

Within ESO all works that take place at 3000m or higher are considered High Altitude Works, in accordance with Chilean legislation.

Due to the oxygen deprivation in the air human functions are impaired and this might have serious effects on personal health, as well as work performance.

Effects on persons might include:

Headaches, drowsiness, nausea, altered mental state, loss of balance, impaired reason, acute mountain sickness, high altitude cerebral edema, or high altitude pulmonary edema.

To prepare for working in High Altitudes all ESO members of personnel, contractors, and professional visitors require a valid medical exam or a release form of their respective insurance.

ESO cannot grant any exemptions from this rule for any professional activity.

The particular exam requirements have been established in the LPO Medical Exam Procedure (ESO-252676), according to Chilean legislation.

Anyone working at high altitudes needs to get adjusted to altitude by spending at least one day and night at a level between 2000 and 3000m.



5.2.5.1 Weather related risks when working in High Altitude (APEX, ALMA)

Inclement weather can occur in the Chajnantor Plateau area. Volatile weather can exist any time of the year, and as such, contingencies must be made to deal with such events. Inclement weather and natural events that may exist in this area include:

Earthquakes, Lightning, Thunderstorms and high winds, Heavy snow or ice storms, Flash floods, Landslides, Volcano (The risk is very low - The Lascar is at a safe distance), Heat (See Section 5-1)

Prevention measures

- Currently the APEX web page provides a source of weather information for the Chajnantor Plateau.
- During inclement weather, the APEX Station Manager or the APEX Deputy Station Manager will monitor this or similar information regularly and will decide if access to the telescope is possible or if alternately the telescope has to be evacuated.
- It is strongly recommended that each responsible individually monitors weather conditions in the area, as well as news and alerts that may be introduced via internet, radio, or television.
- Members of ESO personnel working at ALMA should refer to additional information provided in the ALMA Safety Manual.

5.2.6 Ergonomics

Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of the working staff.

Ergonomic issues comprise aspects like:

- the work environment, such as
 - Temperature, noise, lighting, vibrations
- work equipment
 - hand held tools, or workstations
- behaviour
 - repetitive forceful movements, frequently or heavy lifting, prolonged awkward positions

Activities associated with any of the mentioned aspects need to be assessed properly to avoid long term effects like Musco-Skeletal-Disorders (MSD) or Work Related Upper Limb Disorders (WRULD)

Prevention measures should include

- Use of ergonomic workstations and equipment
- Means to provide adequate temperatures and lighting at workplaces



Work activities that increase risk of above mentioned effects should be evaluated in order to:

- avoid these activities,
- applying technical measures to reduce effects
- applying organisational or administrative measures to limit exposure

5.3 General Hazards

General hazards are not limited to work related activities but might also be present in rooms or public areas within the observatories, and thus affect everybody.

5.3.1 Electricity

Usage of electrical equipment is very common not only at workplaces but also in the rooms and during spare time.

Main Risks when dealing with Electricity are:

Electric Shock which is a convulsive response by the nervous system to the passage of electricity through the body

Electrical Burns which usually occur on the surface of the skin at points of contact where electricity passes through the body.

Fires that can be caused by

- Leakage of current due to poor, damaged, or insufficient isolation.
- Overheating of electrical equipment due to overloading (for example by daisy-chaining, or using multiple outlets)
- Ignition of flammable vapour by electrical equipment that is not operating normally

Prevention measures

- Routinely check electrical appliances and wiring for damages
- Don't use damaged cables, electrical appliances, outlets, or multiple outlets
- Never touch live currents
- Don't try to fix electrical appliances unless you are qualified electrician according to definition set in paragraph about Electrical Works
- Do not enter high-voltage areas

5.3.2 Fire

Fires may occur from manifold sources; electrical circuits, combustible and flammable liquids, cooking areas, or a simple cigarette.

Main risks are:

Burns that, depending on severity, can result in major injury and/ or death

Suffocation caused by inhalation of smoke



Damages to equipment and buildings

Prevention measures:

Technical

- All buildings at LPO are equipped with smoke sensors that sound an alarm when activated
- All buildings are equipped with fire extinguishers according to the type of risk involved and labelled by Risk Classes according to Norma Chilena (NCh) 934
- Apart from fire extinguishers several locations are equipped with standpipes and hose systems
- Emergency exits are displayed by a sign and should be illuminated appropriately to ensure visibility
- Due to their remote location Paranal and La Silla observatory have an internal Emergency Brigade that will be activated in case of fire
- Brigade members consist of voluntaries among members of personnel and contractors
- Procedural
 - Smoking and open flames are not permitted in LPO facilities
 - Emergency exit routes should be kept free and unobstructed
 - All personnel should be trained on the use of fire extinguishers
 - Remove combustible material, like package material, crates, etc., as soon as possible from work areas
 - Store hazardous material in appropriate containers or cabinets
 - Ensure that combustible material is not stored or located next to heating sources

5.3.3 Ultra-Violet Radiation

Due to its locations in the deserts and the altitude exposure to sun radiation at the observatories in general is very high.

Main Risks:

- Ultraviolet (UV) radiation is a known cause of skin cancer, skin ageing, eye damage, and may affect the immune system.
- Overexposure to the sun might also lead to heat exhaustion and/ or heat stroke mainly from dehydration

Prevention measures

- Don't stay outside too long without proper protection. Look for shades; cover your skin with loose fitting clothes and a hat that also covers the face and the neck.
- Use sunglasses to protect your eyes



- Apply sunscreen to unprotected body parts (recommended SPF 50)
- Drink regular liquids like water or tea

5.3.4 Traffic

Common traffic rules apply to all LPO premises during the day. In the night the right of way changes: pedestrians have to wait until a vehicle has passed.

Reason is that vehicles are not allowed to drive with high beam within the observatory. This makes it difficult to spot people on the street. (Paragraph does not apply at APEX)

Main risks:

Getting hit by a car, crashing into another car or installations, losing control over the car

Prevention measures

- Only drive with a valid driver's license (see LPO Driving Procedure (LPO-PRO-ESO-20100-0003))
- Only use authorized vehicles
- Drive with caution, use the seat belts and follow the speed limits
- Make sure the car is maintained properly and is technical good condition
- Careful when opening doors during high winds
- Pay attention to driving restrictions during bad weather conditions
- Pedestrians shall use flashlights when walking in the dark.

- No walking on the roads after sunset!
- Vehicles are not allowed to enter the telescope platform after sunset!

- APEX drivers need to follow ALMA traffic rules when using access road

5.3.5 Sports

All observatories offer different kind of sports and/or spare time activities. Sports activities are considered PRIVATE activities, also during your stay at the observatory!

- Be aware of the altitude and be responsible with your body
- in general, there is no supervision for activities
- a health check with your physician is recommended for regular activities



6. Machinery, Instruments and Equipment

All machinery, telescope instruments and equipment present different types of hazards.

6.1 Purchasing Machinery, Instruments and Equipment

All commercial instruments, equipment, and machinery **must bear a recognised safety conformity label** (e.g. CE, UL or GS Mark), unless purchased before the entry into force of according directives.

If machinery, instruments, or equipment are custom-made by or for ESO, a “statement of conformity” in accordance with SAF-GEN-MAN-3444 “Safety Conformity Assessment Procedure” must be provided through the manager of such project, to ensure the device can be mounted, operated, maintained and discarded safely.

6.2 Maintenance

Maintenance is vital to any facility if it is to operate in a safe and effective manner. It can be a costly element of facility operations in terms of money and impact on operations. It can also be a potential workplace safety issue if not properly addressed.

Before use, any equipment or machinery shall be checked visually for damages or changes.

For each category of equipment or machinery, minimum standards and frequency of inspections and tests are set by regulations or codes of practice or manufacturer’s recommendations.

Inspections should be carried out only by competent persons, qualified and capable for the type of inspection. (For example: the annual “Revision Tecnica” for vehicles can only be carried out by authorized companies. On the other hand, a ladder inspection can be done by a skilled person.)

There must be adequate training, instruction and information for every person working with tools, equipment or machinery.



7. Personal Protective Equipment

Personal Protective Equipment (PPE) is an important element in risk prevention. However, PPE shall only be used if technical and/or organizational measures are not effective.

Each LPO members of personnel will get a basic set of protective equipment, consisting of: helmet / safety cap, sunglasses, jacket, safety shoes, as well as lotions to protect skin from radiation.

Provision of appropriate PPE is responsibility of the supervisor.

LPO Safety Office assists in selection of appropriate PPE and controls distribution within Paranal.

PPE used at LPO sites shall meet American National Standard Institute (ANSI), European Norm (EN) or equivalent international standards.

See also: PPE Procedure LPO (LPO-PRO-ESO-20100-0010) AD8

8. Hazardous Materials

Handling, transporting and storage of hazardous materials is described in LPO Hazardous Material Procedure (AD3)

9. Accident/ Incident reporting

Any incidents affecting persons, damage to facilities, equipment or vehicles must be reported in person, via telephone or e-mail to the respective supervisor and the LPO Safety Office, as soon as possible.

Investigation of incidents and accidents is essential in eliminating possible hazards and mitigation of unsafe situations. Incidents will be reviewed by the LPO Safety Office and measures for mitigation recommended.

10. Training

Training is an important component in any organization.

Professional training not only qualifies personnel for their work activity; it also improves safety by understanding the risks that are involved in activities and how to protect against them.

Certain activities require training certificates in order to be qualified, such as driving licenses, crane operators, electrical certificates.

Emergency Training is intended to prepare LPO on-site personnel for emergency situations. It can be split up in general training for every member of personnel and specialized training for emergency brigade members or individuals.

Training can be provided internal or by external organizations.



All trainings have to be requested in advance and authorized by according supervisors.

11. Emergencies

Emergencies are unforeseen situations that impact the operation of the observatory and/or jeopardize life and health of personnel. Emergency situations need to be evaluated before, during, and after the incident in order to introduce proper controls.

Emergencies are coordinated by the Safety Engineer/Emergency Coordinator; in case of a very complex situation an Emergency Committee is formed of available management on site.

11.1 Emergency Preparedness

Given to the remote locations of the observatories emergency preparedness is very important to all sites.

11.1.1 Emergency Drills

Emergency drills enable on-site personnel to practice evacuation procedures and emergency personnel to review if procedures are working.

Drills can be unannounced or announced. They will be organized and scheduled from the Safety Office.

11.1.2 Emergency Training

Training for emergencies is focused on specialised staff members within the observatory or the internal Emergency Brigade, if available.

If possible, emergency training might include regular staff.

12. First Aid

The LPO first aid stations have been established because of the distance to the next hospitals. Purpose is to cover immediate medical problems until further medical treatment is possible or if recovery is likely in a short term period.

Additional tasks are the equipment and inspection of First Aid cabinets, reporting of medical incidents and support to the Brigade.

The First Aid stations are equipped accordingly and staffed with qualified Chilean paramedics.

The LPO Safety Office is supervising the management of the Policlinics in La Silla and Paranal.



13. Communication

By setting up different means of communications LPO ensures that all levels of personnel are involved in safety matters.

13.1 ESO Safety Commission

In accordance with ESO Safety Policy and Organisation (AD1) the commission consists of the Site Safety Engineer Garching, the Site Safety Engineer LPO, the respective Site Safety Responsibles, and members of the ESO management nominated by the Director General (DG). Tasks are described in above mentioned document.

13.2 LPO Site Safety Committees

The Site Safety Committee consists of nominated representatives of the departments, representatives of the local union and the International Staff Association.

Main tasks are the discussion of proposals, improvements or general safety topics.

The Paranal committee meets twice a year while La Silla and APEX committees meet according to necessity.

13.3 Safety Inductions/ Briefings

Each member of personnel, contractor, and visiting astronomer who arrives for the first time at LPO sites will get an initial safety briefing to get basic safety information about the location.

Additional briefings related to specific subjects or groups might be set up depending on necessity.

13.4 Safety Awareness

Everybody visiting or working at LPO facilities has to complete a mandatory electronic safety induction according to the respective site.

Members of personnel/ contractors will get an additional introductory safety briefing from the Safety Engineer to become familiar with possible risks on the site.

Furthermore, the Safety Office publishes useful information on its Safety Board or its website at LPO Safety Website.



14. Environment

The protection of the environment and its natural resources should be part of any activity within LPO.

The current conditions at the sites and also the regulatory standards in the host country still don't allow to commit to 'best practices' as already used in other countries or industries.

But LPO can commit to investigate solutions on a periodic basis and implement measures as reasonable as possible.

14.1 Recycling

Recycling options are very rare, given the remote location of the observatories. Each observatory should identify local options for recycling.

Possible items for collection and recycling are: paper, glass, plastic bottles, batteries, car batteries, wood, neon tubes

LPO Safety is also investigating periodically and will notify about new options accordingly.

14.2 Hazardous Waste

All hazardous waste should be disposed of in accordance with the national SIDREP "Sistema de Declaracion y Seguimiento de Residuos Peligrosos"

A complete list of residuals considered as hazardous is published in DS 148 "Reglamento Sanitario Sobre Manejo de Residuos Peligrosos"

The system works through a national website and is the only way to dispose hazardous waste.

As a rule of thumb, all chemical substances that have a HazMat label should be considered in this category.

Contact the LPO Safety Office for further information.

14.3 Light Pollution

To preserve good conditions for observing and also to save energy, the following recommendations should be followed:

- Turn off unnecessary lights
- Close blinds in your room and office after sunset
- Drive with parking lights after sunset (Paranal, La Silla)
- Use flashlights when walking outside after sunset and point the light to the ground

14.4 Noise

Observatories are 24 hour operations. Noise levels should be appropriate.



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