

ANNEX 3  
CONTINGENCIES AND RISK PREVENTION MANUAL

- Risk Prevention Plan for Contractor Companies. Construction Stage.
- Contingency Plan for Contractor Companies. Construction Stage.
- Emergency Plan for Cordillera Complex.
- Spillage Management Plan for Cordillera Hydro Power Complex.

RISK PREVENTION PLAN FOR CONTRACTOR COMPANIES

PHAM CONSTRUCTION STAGE

**May 2008**

## **INTRODUCTION**

The purpose of this document is to provide the regulatory provisions in Risk Prevention that will rule all contracting activities for works and/or services that AES Gener S.A., hereafter Gener, undertakes with third parties under the umbrella of construction of hydro power houses Alfalfal II and Las Lajas which are part of Alto Maipo Hydro Power Project or PHAM, in order to protect the physical integrity of people rendering services during the execution as well as to prevent risks of accident that compromise Gener's human and material resources.

The application of these provisions is mandatory for all and every person involved in the construction works of the Project, either contractors or sub-contractors. In this regard, Gener holds the right to enforce the regulatory provisions stated in the Document herein.

It is important to highlight the accuracy of the scopes included in the present document shall be defined and rendered official by Gener once each contractor is awarded the works following the bidding process and taking into account the strategies in terms of risk prevention that each contracted companies has in place. Notwithstanding the above, such provisions shall not be less restrictive than those considered herein.

## 1. OBJECTIVE

Provide provisions and measures that shall rule and guide work contractors and the workers thereof in risk prevention.

## 2. SCOPE

This Plan is applicable to all working staff participating in the contractor company at any site and/or activities or services to be performed under the construction framework of PHAM.

## 3.- DEFINITIONS

- i. Contractor Company: Legal or Natural individual who, based on a contract, assumes the obligation to perform a work and/or render services to Gener.
- ii. Risk Prevention Department: The area within Gener in charge of planning, organizing, executing, and supervising permanent actions intended to prevent work accidents and professional injuries.
- iii. Project Lead: Refers to a Gener's worker in charge of the contracted work and/or service. iv. Risk Prevention Advisor for the Project: A Gener worker responsible for supervising the different aspects related with safety and risk prevention at the work site and the service contracted
- v. Contractor Supervisor: Worker from the contractor in charge of the work and/or service contracted, who has sufficient authority and power to resolve problems arising at the work site. The supervisor shall have demonstrable experience in similar positions. Gener holds the rights to not accept the supervisor should this not meet the minimum requirements.
- vi. Hazardous Substances: Hazardous substances shall be considered as such all those defined under the official Chilean standards NCh382.Of89 and NCh2120/1 to 9 Of89.
- vii. Mutual: An organization which, as provided under Law N° 16,744, is responsible for the administration of social security covering work accidents and labor injuries and health related issues as provided by said law.
- viii. Contractor Staff: Contractor's workers.

- ix. **Project Facilities:** Every construction, land site or area where works, activities and/or services are executed under the construction phase of PHAM such as camps, erection and installation of works, working faces, etc.
- x. **Incident:** Undesired event that might affect or effectively hinders the efficiency of the operation. The most common types of incidents include:
  - o **Accident:** An undesired event resulting in physical damage to people and property, losses in processes and/or damages to the environment.
  - o **Deteriorating Incident:** An undesired event resulting in non-accidental losses such as theft, fines and penalties, and environmental damages.
  - o **Near-Accident:** An undesired event which under slightly different conditions could have resulted in physical damage to people and property, losses in processes and/or damages to the environment.
- xi. **Danger:** Any situation or source with the potential of producing a labor accident or injury or disease
- xii. **Risk:** A combination of likelihood and consequence in the occurrence of a particular event.

## 2.- GENERAL PROVISIONS BETWEEN GENER AND THE CONTRACTOR COMPANY.

Below are the general provisions governing the Company-Contractor relationship with regard to risk prevention. Typically this type of relationships is regulated firstly by applicable legal requirements and provisions and secondly, by the directives ruling the company under Company's vision and policy regarding risk prevention.

### 2.1. Legal Provisions.

- All and every contractor shall closely follow Law N° 16,744 on Labor Related Accidents and Health Issues.
- All contractors shall have a Parity Committee on Health and Safety in place with organization functions and conditions as stated under Law N° 16,744 on Labor Related Accidents and Health Issues.

- All contractors are mandated to establish and keep up to date an Internal Regulation on Health and Safety at the workplace in agreement with Title V of Supreme Decree 40/1969; "Regulation on Prevention of Labor Related Risks".
- All contractors are mandated to have a Risk Prevention Department in place with functions and conditions in compliance with the requirements provided under Title III and IV of Supreme Decree 40/1969; "Regulation on Prevention of Labor Related Risk.
- All contractors shall safeguard the compliance with the requirements from Supreme Decree 594/98 "Basic Health Conditions at the Workplace" at all work faces, installation of working sites, camps, and in every area staged to conduct works overall.
- Actions on risk prevention activities to be developed by all sub-contractor companies will be coordinated and defined as per the Special Regulation for Contractor and Sub-contractor Companies in harmony with the provisions under Art. C7 of Law 20,123 on Sub-contracting. In this regard, all contractual relationship between Genera and the Contractor and Sub-contractor company shall be ruled by such legal body, particularly regarding those matters related to the sub-contracting and work regimes used by the company providing temporary services.

## 2.2. Gener General Directives

### 2.2.1 Enrollment to a Labor Insurance Organization (Mutual de seguridad).

- All contractors shall be enrolled to a Labor Insurance Organization, and this should be informed to the Head of the Project and to the staff upon hiring. Also, contractors shall also show that payments of benefits of the workers are up to date by submitting the corresponding documentation or certificates.

### 2.2.2 Risk Prevention Manual for Contractor Companies.

- All staff of the contractor company shall know and follow the provisions included in the Risk Prevention Manual for Contractor Companies. The contractor company shall provide an explanatory briefing to its workers as to explain the scope of the manual thereof.
- For the purpose of the application of this Manual sub-contractors and their staff shall be considered as dependent staff under the contractor who holds the contract with Gener.

### 2.2.3 Safety Meetings and Inspections

- The contractor shall hold weekly safety meetings with its staff. Should any question or query arises regarding safety, the contractor shall address such as soon as possible. The contractor shall provide details of the safety meetings (in terms of the day, attendees, issues covered, and observations and remarks) in the Template of Safety and Health Meetings. Said template is to be requested to the Head of Project. A copy of the completed template shall be submitted to the Head of the Project.
- The contractor shall also conduct inspections to the activities its operators are performing at least weekly. Should any sub-standard condition arises, the contractor supervisor shall try to resolve such conditions as soon as possible. Inspections shall be documented in the Control Chart of the Contractor.
- It should include both the control measures and corrective actions taken. The supervisor in charge of the works performed for Gener shall follow-up as to ensure that all corrective actions have been implemented.

### 2.2.4 Work Accidents and Incidents.

- The contractor company shall provide a safe and healthy working environment from commencement of works until their completion.
- Prevention of accidents shall be an integrated part in the execution of the works commissioned through a Schedule of the activities that ensures the maximum protection to the physical integrity and health of workers.
- Upon occurrence of an accident or incident, the contractor's supervisor shall immediately inform the Head of Project. This information can be provided over the telephone or email. The works should be suspended until authorized by the Head of Project.
- The contractor company shall issue a written report upon any incident occurring at the worksite. The report should include at least the following information:
  - i. Type of accident or incident. (section, accident, near-accident, incident, etc.)
  - ii. Name and ID number of the worker involved (if applicable), equipment, process or environment.
  - iii. Date and time of the accident or incident.
  - iv. Date of birth and Date of hiring.
  - v. Exact place of the accident.
  - vi. A summary of what happened.
  - vii. Root cause analysis clearly explaining the originating immediate and basic causes.
  - viii. Control measures adopted to prevent a new occurrence of the event, and follow-up.

This summary should be signed by the Contractor's supervisor.

- Control measures are then obligation the contractor company has to correct those items or conditions that produced or contributed to the incident or accident and if not corrected will prevent the Head of Project granting authorization to resume works. This situation shall be charged to the contractor in its entirety and shall not consider any trade off in either price or time by Gener.
- The written Accident Report shall be submitted to the Head of Project no later than 48 consecutive hours after the accident.
- Detention of works in the event of a severe or fatal accident.

#### 2.2.5 Contractor's Supervision.

The contractor shall permanently keep at least one supervisor at the worksite for the whole duration of the work. The supervisor shall have demonstrable experience in positions similar to the position to be hold at the work and Gener has the right to accept or reject the supervisor proposed by the contractor.

#### 2.2.6 Identification of Contractor's Staff:

- All contractors shall provide the Head of Project the following background information pertaining to all and each worker to enter the facilities or worksites of Gener with at least 2 working days prior commencement of works as to prepare the corresponding entry permits to the site:
  - i. Name and Information of the Contractor Company
  - ii. Name of the work or site where the worker will be based
  - iii. Start and End dates of the work or site.
  - iv. Full name and last name.
  - v. ID numbers of workers
  - vi. Home address.
  - vii. Telephone number
  - viii. Class D Personal Background Check Certificate.
  - ix. Initial date of work at the Contractor company
  - x. Position, classification, profession or trade.
- The Contractor shall certify prior commencement of works, that its workers are in good physical conditions to perform the work. This shall be accredited by submitting medical certificates issued by the Labor Insurance Organization to which the Contractor Company is enrolled.
- These examinations shall vary depending on the risks the worker is exposed to; however they shall include medical examinations to perform works at altitude. The Head of Project from Gener shall provide the rest of examinations to request.

- Upon conducting such examinations the Contractor shall meet the provisions provided by Opinion 287 from the Bureau of Labor on January 1996 as well as to obtain the corresponding permits to be submitted to Gener.
- Also, and prior to commencement of works and providing early notification to Gener, the safety briefing as per Supreme Decree N°40 (Right to know) which states that all workers to take part in works at the worksite shall be informed of the risks they will be exposed to as well as control measures to control such risks. This safety briefing shall be documented clearly stating the date when the briefing was made, full name, ID number, and signature of those attending, topics and risks addressed at the meeting as well as the full name, ID number, and position of the facilitator of the briefing. The briefing shall be provided by an Expert in Risk Prevention or a supervisor from the Contractor company. Gener holds the right to reject the safety briefing should it considers that the person providing the briefing is not sufficiently capable to do so or that the topics addressed are not the risks or dangers inherent to the work.
- All and every staff of the Contractor company shall be demanded usage of an ID system consisting of an individual ID card with a photograph of the worker to be provided by the Contractor. This ID card will be submitted along with the rest of the documentation requested to the Head of the Project for sign-off.
- Once all the information submitted by the Contractor has been reviewed by the Head of Project, he shall submit the listing of authorized staff to Gener's Administration for validation of entry cards.

### 2.2.7 Entry to PHAM Facilities:

- Individuals showing symptoms or indications of being under the influence of alcohol or drugs as observed by the staff of the Gate or security staff shall not be allowed entry to the facilities of the Project.
- Carrying firearms of any kind is strictly prohibited within the facilities of the Project.
- All major tools, heavy equipment, input, supplies, and in general everything which is used in the Project shall be entered the facilities of the Project with the corresponding manifest of shipment from the Contractor company, hence meeting the provisions and regulations from the IRS (documents stamped by the IRS, not any other document). The Head of Project shall check that all tools and machinery are in good working conditions as per GENER standard. Then the Head of Project will file the manifest of shipment for further removal from Gener facilities.
- Entry nor removal of PACKAGES, PARCELS, ITEMS, MATERIAL, AND OTHER into or out of the facilities shall be permitted, from any building of the Project if any of the above is not accompanied with a manifest listing the content with the corresponding sign-off from Gener. Security/gate staff will control the content described in the document.
- Any person entering or leaving the facilities of the Project carrying equipment, tools, working items, etc., of their own property, or belonging to the Gener or the Contractor, shall have the corresponding manifest as well as duly authorization from the Head of the Project who generated the permits for the contractor.
- Every person is responsible for the equipment, material, tools or other, either these are allocated for use by the company or are personal. Gener shall not be responsible for machinery, tools, equipment, and personal properties lost not belonging to Gener.

### 2.2.8 Statistics

- The Contractor company shall keep statistics of accident rate up to date as provided under Supreme Decree N°40 approving the Regulation on Prevention of Work Related Risks
- On the third working day at the latest, the Contractor company shall provide the following information to the Head of Project:

- i. Total of workers for the month, as reported to the Labor Insurance Organization.
- ii. Total of man hours effectively worked.
- iii. Total of accidents and incidents occurred during the month, stating the date of the event and the day of the medical leave.

#### 2.2.9 Shifts and Working Hours:

- The Contractor shall establish the working hours and shifts regime for each of the facilities involved in the construction of the Project in compliance with legal provisions, particularly regarding the number of hours and working shift distribution.

#### 2.2.10 Environmental Conditions.

- The Contractor and sub-contractor in all the area designated for construction of the Project, shall meet all legal provisions with regard to protection of the environment as well as those provisions pertaining each individual case instructed by Gener.
- For all worksites, the Contractor company shall provide Gener, prior commencement of works, with all the information relative to the use and handling of hazardous substances as well as information regarding waste and residues generated as a consequence of the work and/or service contracted.
- All hazardous substances entered by the Contracting company to the facilities of the Project shall be clearly labeled with their corresponding safety sheet. NO entry of containers (bottles, cans, bags, spray cans and/or tanks or drums) with hazardous substances shall be allowed if they are not duly labeled as per the Chilean regulation.
- Gener holds the right to inspect and check the content of those containers as well as to grant approval of the storing conditions thereof. The Head of Project shall inform the Contractor company of any breach of any applicable laws and regulations identified. -Noncompliance with national regulations or Gener internal regulations by the Contractor company shall entitle Gener to prevent entry of hazardous substances until the non-compliance is corrected.
- The Contractor shall provide notice of those hazardous substances that need to be entered to the facilities of the Project for execution of the works. Consequently, three (3) copies of Safety Datasheets shall be submitted for review by the Head of the Project in consultation with Risk Prevention and Chemicals areas.
- When it is necessary to employ use of material or elements which might generate hazardous waste, the Contractor shall inform Gener in a timely manner stating the measures to be adopted for treating and disposing of such substances as per existing regulations.
- Once the work starts the Contractor shall inform the Head of the Project, when required, of the origin, type, storage, and final disposal of the wastes generated as a consequence of the works and tasks contracted. The Head of Project could challenge and request revisiting the waste management.

- Loitering is strictly forbidden as well as to toss any item and/or element to the ground, flushes them in the toilets, to the ocean, meadows, lakes, rivers, etc.
- Cleaning Contractor machinery and/or equipment in such a way that such activities might produce soil pollution or hazardous substances at the facilities of the Project is strictly prohibited.
- Lubrication of equipment and machinery shall be done with utmost care as to not produce spillages. In the event of a spillage the Contractor shall be responsible for the cleaning process by using the appropriate items and cleaning and disposing of such. The costs for such cleaning and disposal activities will be totally on the charge of the Contractor.
- Use of washing water that might produce entrainment of solid or contaminated matter to the sewage system is prohibited. When conducting these tasks is absolutely necessary prior authorization from the Head of Project is required.
- In the event of a spillage the Contractor shall immediately contact the Head of Project to communicate the event. Additionally, the Contractor shall immediately implement control measures as to prevent greater contamination.
- Accordingly, the Contractor company shall have the appropriate elements to control, clean, and finally dispose of the substances spilled.
- The Contractor company shall inform the Head of the Project of the destination given to items, waste or sub-products that might be generated while performing such tasks.
- The Contractor company shall be responsible for all costs and expenses involved in cleaning and final disposal of hazardous substances that belong to the Contractor company.
- The Contractor company shall clean any residues of hazardous substances used. Cleaning, recycling, and final disposal of hazardous substances waste shall be informed to the Head of Project.

### 3.- RESPONSIBILITY IN RISK PREVENTION

- In its policies, Gener considers the Prevention of Accident Risks and Work-related Health Issues as a priority and closely related activity to the productive process, being all workers, both direct hire and Contractor's, responsible for such.
- Contractor's supervision shall be responsible for preventing the risk of accidents, either existing or potential when performing works or rendering services under its responsibility as well as for adopting all necessary measures aiming to remove the causes that might produce accidents.
- The Contractor shall have in place a minimum training program for all new hires which should include the following:

- i. Training on tasks to be executed by the worker where the corresponding line of command will provide a comprehensive work preparation prior starting and commissioning a work.
- ii. Training on the standards of Risk prevention that the worker should follow and comply with while performing the works and activities. (This subject matter should be already part of the Internal Regulation of Housekeeping, Health, and Safety.)
- iii. Present the staff with the Regulation of Risk Prevention of AES Gener S.A. for Contractor Companies.
- iv. Gener shall audit compliance with these obligations and shall demand submission of minutes detailing acknowledgement of these training to the Contractor's staff.
- v. Accredited training of psychological, senses, and technical examinations for drivers and equipment operators.

#### 4.- SAFETY REGULATIONS

- The Contractor shall have the necessary facilities at worksites, work faces, and camp in compliance with Decree N° 594 from September 15, 1999 which provides the Basic Environmental and Healthy Conditions at workplaces
- The Contractor shall ensure that its staff wears the appropriate working clothing as well as the correct appearance and the corresponding personal protection equipment.
- The Contractor staff shall not nor could move through any other working zone or area other than the area where the staff is conducting its works or which access those. Any other neighboring area or section the Contractor wants to use should have a prior authorization from the Head of Project.
- The Head of Project shall inform the Contractor's supervisor of any breach to safety standards identified, so the supervisor enables the corresponding actions to solve the problem. While non-compliances and breaches are not resolved, the Head of Project might prevent resuming the works. This situation shall be charged to the contractor in its entirety and shall not consider any trade off by Gener.
- Cleanliness and housekeeping shall be kept at all times in the respective working areas as well as with regard to all locations used for tool and material storage.
- In the event of an incident or accident involving the Contractor staff, any fire or any other abnormal situation occurring in the working area, the Contractor shall immediately inform of such occurrence to the Head of Project or to the nearest Gener worker as per the procedures stated under the Emergency Plan for Contractor Companies.
- Also, an investigation report of the accident should be submitted no later than 48 hours clearly detailing the causes that originated the event and control measures implemented as to prevent a new accident from occurring.

- Contractor staff shall not block any access to fire extinguishers, hose cabinets for firefighting or any other element used for that purpose as well as emergency stations to rinse eyes and showers, emergency equipment for spillage and any other safety related equipment.
- The Contractor staff shall not block walkways, roads for fire truck and equipment lanes or fire hydrants.
- When fuel is being loaded at the Project facilities, procedures need to be followed and a prior authorization of the Head of Project should be obtained.
- In the event of an accident or beginning of a fire, the Contractor staff should act in agreement with emergency responsiveness procedures included in the Emergency Plan for Contractor Companies.
- The Contractor shall inform the Head of Project of any situation or event that might produce damages, while immediately stopping all those works affected.
- Contractor staff is strictly prohibited from operating Gener equipment or machinery without the authorization or training from the Head of Project or the person designated by the HoP.
- Working places should have natural lighting or appropriate artificial light. (The latter with sufficient power as per Decree N° 594.)
- Workers are prohibited from travel as passengers on board of heavy machinery or in parts of vehicles exclusively intended for loading purposes. The load transported by trucks should be properly rigged and balanced as per the capacity of the vehicle. No overloading or overhauling of trucks that endanger the safety people will be allowed on the site.
- Contractor companies, depending on the activities performed, shall develop procedures to control risks for the following operations:
  - \*Operation of light vehicles
  - \*Operation of surface mobile equipment
  - \*Operation of underground mobile equipment
  - \*Hazardous substances management
  - \*Performing Works on Altitude
  - \*Lifting operations (hoisting)

## 5.- OF PERSONAL PROTECTION EQUIPMENT

- The Contractor has the obligation to provide to all of its staff all personal protection

equipment as well as those items, accessories, and equipment for additional and special personal protection as per the specific risk conditions that might occur while performing the work or rendering the service.

- The Contractor shall provide -and make mandatory, the use of personal protection equipment to all of its workers when these are working at Project facilities AT ALL TIME, from the first day of work. Noncompliance with this provision shall be grounds to instruct removal from the worksite of those workers who are not wearing/or have complete personal protection equipment.
- All devices, equipment, and personal protection equipment aimed for labor-related accident risks and health issues to be used, manufactured either nationally or abroad, shall be certified by institutions, laboratories or Chilean agencies duly authorized as per Supreme Decree N°18 from March 23, 1982.
- All contractors shall provide its workers with the following equipment, as a minimum:  
Personal protection:
  - o Safety hat (other than white nor metal), with the name and/or logo of the Contractor, MSA type, V-Gard hard hat.
  - o Sweat pants or suit (pants and jacket) with the name and/or logo of the Contractor stamped, with 2 cm wide reflecting stripes (min) on the arms (around the forearm), back (around the shoulder), and legs (beneath the knee.)
  - o UVEX type, Patriol anti-fogging goggles. Any goggle equivalent to the recommended should be authorized by Gener Risk Prevention.
  - o Dielectric safety shoes with steel cap covering the ankles. Wearing tennis shoes or dressing shoes are not allowed at any time.
  - o Reflective vest to be used in tunnels.
  - o Leather gloves in the event that any type of work or task requires using such.
  - o In those areas with toxic, irritating gases or dust, breathing masks with the appropriate filters should be used. Prior using such items the HoP should sign off their use.
  - o In working areas where the level of noise exceeds 80 dB or when required by the HoP, a protection element as anti-noise ear protection of the type that is placed over the hard hat, Bilsom without metal parts should be used. Any ear protection other than the protection recommended shall be authorized by Gener Risk Prevention.

- o The corresponding full body harness should be used when working at an altitude exceeding 1.8 m above ground level or when working at a lower height when the risk of a fall is present.
  - o Any other specific item of personal protection equipment required depending on the work to be performed.
- If loads need to be handled while rendering the service or performing the work, the Contractor should provide its staff with the mechanical means for load handling as to prevent manual handling of the load. If it is essential to conduct the handling of the load, the Contractor should provide the appropriate conditions of health and safety as well as the necessary items that prevent or minimize the consequences of an accident or work related health issues. In any event, in those tasks where load handling is unavoidable and it is not possible to use mechanical means to facilitate such handling, Contractor staff qualified to perform such activity shall not carry loads exceeding 50 kg.

#### 6.- OF PREVENTION AND PROHIBITION SIGNALING

- The Contractor shall be responsible for placing all tapes, signs, barriers, and necessary signaling to safeguard all individuals, both operators of the Contractor company as well as Gener employees during the execution of works, previously informing the Head of Project in a timely manner of the characteristics of each of those items.
- Warning tapes or fences shall be placed warning about the types of risk, around ditches and excavations, holes or opening in the ground, roofing, elevated platforms as well as in areas where there is a possibility of objects falling from a height.
- The Contractor staff has the obligation of respecting the different prevention and prohibition signaling. Not respecting danger signs located in different areas of the Project facilities might cause voidance of the corresponding contract.
- As long a work is completed on equipment or facility that has danger signs, the person in charge of the team or the Head of Project will be immediately notify as to obtain approval to remove the danger warning tapes.

## 6.- RISK DETECTION METHODOLOGY

Gener has in place a methodology to detect and evaluate risks applicable to each of its facilities following the general guidelines of its policy of risk prevention (herein attached in Appendix A).

It is not possible to preliminary establish a specific methodology to assess risks for construction activities in PHAM as it will largely rely on the strategies the Contractor company follows in terms of safety. Accordingly prior to commence construction activities, both Gener and the contractors shall agree upon and define a new methodology for risk detection that allows detection, evaluation, documentation, and management of all those risks related with occupational health and safety for all workers involved in the Project in compliance with the provisions stated above and which will be applicable to all areas, equipment, and activities to be developed.

Notwithstanding of the above, Section 7 in this document lists the main procedures for risk prevention identified to date during the period of construction for the Project.

## 7.- RISK IDENTIFICATION AND SPECIFIC PREVENTION MEASURES

All risks identified for the construction project of PHAM are described below in an index card format. The same format also describes as per the type of risk identified all measures to be implemented sequentially by the contractor company as to prevent the identified risk.

In summary, the main risks deriving from the analysis conducted for each of the activities to be performed on the site are:

- Risk of explosion;
- Risk of avalanche;
- Risk of earthquake;
- Risk of spillage of hazardous substance during transportation;
- Risk of spillage of hazardous substance during handling at the site;
- Risk of material spillage;
- Risk of traffic accident;
- Risk of fall from a different level;
- Risk of fire;

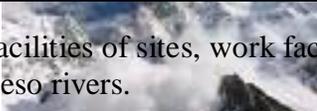
Regardless of the above, once all contracts for works are granted every Contracting company shall re-assess its respective work and potential risks associated as per the indications under Section 6 in the present Plan. Additionally, contingency and risk prevention procedures shall be supplemented with environmental documents from the environmental assessment process.

**AES GENER S.A.**  
**RISK PREVENTION PROCEDURES**

<p style="text-align: center;"><b>IDENTIFICATION OF THE RISK</b></p> <p style="text-align: center;"><b>EXPLOSION</b></p>		<p>Refers to accidents produced by explosives which might cause injuries to people and damages to equipment and facilities.</p>
<p style="text-align: center;"><b>PLACES OF RISK</b></p>	<ul style="list-style-type: none"> <li>- Transport, loading and unloading of explosives</li> <li>- Storage locations for explosives: Magazines.</li> <li>- In work faces where construction works for tunnels are being conducted.</li> </ul>	
<p style="text-align: center;"><b>SPECIFIC PREVENTION MEASURES</b></p>	<ul style="list-style-type: none"> <li>- The Contracting company in charge of the explosives to be used on the site should have in place a General Guideline for Storing, Transportation, and Handling of Explosives.</li> <li>- All staff working in transportation, storing, usage, handing, controls, and destruction of explosives should know and follow the directives and legal provisions under Law N° 17,798 and the Supplementary Regulation for Control of Weapons and Explosives as well as to be subject to enforcement by the General Bureau of National Mobilization from the Chilean Army (Dirección General de Movilización Nacional del Ejército.)</li> <li>- The Contractor should certify that staff working in transportation, storing, handling, and operation activities with explosives is duly trained and educated and that is also physically and psychologically fit to undertake such activities, and that the staff holds a valid license issued by the corresponding agency.</li> <li>- While work is being performed with explosives, smoking is strictly forbidden as well as to carry cigarettes, matches, lighters, neither wear clothing with a high content of synthetic fibers nor carrying any item likely to produce sparks or static shock.</li> <li>- All transport of explosives should be done using authorized containers certified by the Test Bank of Chile (Banco de Pruebas de Chile.)</li> <li>- The Contractor in charge of explosive magazines should keep statistics and control of reception, issuance, and stock of explosives.</li> <li>- It is strictly forbidden to have open flames in areas where loading and unloading of explosive is done.</li> <li>- Vehicles allocated to explosive transport should be duly authorized.</li> <li>- Prior doing blasting using explosives the supervision in charge should adopt all necessary measures to prevent injuries to people and damages to equipment and facilities</li> <li>- The Contractor is responsible for handling and destruction of explosives in poor conditions as per the existing legislation.</li> <li>- Explosive magazines shall be located in separated and distant locations, distant from any other building and be properly fenced and safeguarded with a surrounding firewall.</li> </ul>	

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**RISK PREVENTION PROCEDURES**

<p align="center"><b>RISK IDENTIFICATION</b></p> <p align="center">AVALANCHE</p>		<p>This risk refers to a massive movement that rapidly runs down the hills of a mountain, dragging a large amount of rocks, snow and ice.</p>
<p><b>PLACES OF RISK</b></p>		<p>Facilities of sites, work faces, and camps located in the vicinity of Volcán and Yeso rivers.</p>
<p><b>ESPECIFIC PREVENTION MEASURES</b></p>	<ul style="list-style-type: none"> <li>- Location of camps has been designed to be in areas free of risks of Avalanche and Lahars. Especially in the upper area of Volcán river, engineering design and construction of water intakes is done following the standards for high mountain construction.</li> <li>- Camps, worksite facilities, and work faces will have the appropriate high mountain safety equipment available for staff.</li> <li>- The staff shall be trained and instructed in emergency and rescue efforts according with the respective Parity Committees.</li> <li>- Facilities and camps shall be built using material specially fabricated to endure the temperature and rainfall typical of the place.</li> <li>- The Contractor shall prepare an Emergency Evacuation Plan.</li> <li>- Camps and facilities for sites and safety areas shall be defined. Also, boundaries and signaling for ways of evacuation which will be clear of any obstruction at all times will be produced</li> <li>- All and every camp, site facility, and work face will have special radio equipment. In this regard the Communication Plan shall be kept active at all times.</li> <li>- Any activity conducted on surface that generates intense vibration shall be performed only with prior authorization of the Contractor's Expert in Risk Prevention.</li> </ul>	

GENER	
RISK PREVENTION PROCEDURES	
<b>RISK IDENTIFICATION</b>  <b>EARTHQUAKE</b>	 <p>Refers to sudden land movements generally due to tectonic or volcanic movement.</p>
<b>PLACES OF RISK</b>	All areas of location of the Project
<b>SPECIFIC PREVENTION MEASURES</b>	<ul style="list-style-type: none"> <li>- Engineering design and construction of PHAM facilities follow national and international standards and directives of seismic resistance.</li> <li>- Special briefings will be conducted addressing responsiveness procedures upon a seismic event.</li> <li>- Connecting areas or storing areas of fuels or any other inflammable substances that upon a seismic event might become a risk will be identified and fenced.</li> <li>- The Contractor shall perform evacuation drills and shall inform its staff of evacuation routes and responsiveness procedures.</li> <li>- The Contractor shall prepare an Emergency Evacuation Plan.</li> <li>- Camps and facilities for sites and safety areas shall be defined. Also, boundaries and signaling for ways of evacuation which will be clear of any obstruction at all times will be produced</li> <li>- All and every camp, site facility, and work face will have special radio equipment. In this regard the Communication Plan shall be kept active at all times.</li> </ul>

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**RISK PREVENTION PROCEDURES**

<p style="text-align: center;"><b>RISK IDENTIFICATION</b></p> <p style="text-align: center;"><b>SPILLAGE OF HAZARDOUS SUBSTANCES DURING TRANSPORT</b></p>		<p>This refers to accidental spillage of hazardous substances or fuel (as detailed under the listing from S.D. 382/2004 of natural resources as water and land or constructions in general.)</p>
<p style="text-align: center;"><b>PLACES OF RISK</b></p>	<ul style="list-style-type: none"> <li>- Roads and routes where hazardous substances transport takes place.</li> </ul>	
<p style="text-align: center;"><b>SPECIFIC PREVENTION MEASURES</b></p>	<ul style="list-style-type: none"> <li>- The Contractor company responsible for the transportation of hazardous substances shall follow the provisions of the current and valid legislation.</li> <li>- The driver shall have the appropriate driver license as well as the necessary training to respond in the event of an accident involving spillage of the substances transported.</li> <li>- The vehicle used for transportation shall have in a visible area the respective safety data sheets of the substance to be carried.</li> <li>- The vehicle operator shall have all personal protection equipment as specified under the safety data sheet of the substance to be carried.</li> <li>- The transportation company should instruct the driver regarding handling of the substances carried as well as training in first aid and spillage control procedures (including training in procedures related to handling of hazardous substances.)</li> <li>- The transportation vehicle shall have all tags identifying the substance carried as provided under the Nch 2190.</li> <li>- The transport contractor should have in place a Communication Plan active at all times. Also, all and every driver should have radio-communication equipment.</li> <li>- The transportation vehicle shall have all its items and equipment in optimum working conditions (lamps, trailers, fire extinguishers when fuels or inflammable substances are carried, tachometer, etc).</li> <li>- The transportation company shall have in place inspection procedures to be applied prior starting all the routes. Upon suspicion of or detection of a failure, the service shall be suspended. Once all necessary corrections are made, the service shall be resumed.</li> </ul>	

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**RISK PREVENTION PROCEDURES**

<p><b>RISK IDENTIFICATION</b></p> <p><b>SPILLAGE OF HAZARDOUS SUBSTANCES WHILE HANDLING</b></p>		<p>This refers to accidental spillage of hazardous substances or fuel (as per listing under S.D. 382/2004) on natural resources such as water and land, or affecting constructions in general. (oil, lubricants, and painting)</p>
<p><b>PLACES OF RISK</b></p>	<p>Worksite facilities, work faces, and camps</p>	
<p><b>SPECIFIC PREVENTION MEASURES</b></p>	<ul style="list-style-type: none"> <li>- Every facility where any kind of chemicals is stored or handled shall have the respective safety datasheets attached in a clearly visible place wherein the datasheets will detail, but not limited to, the characteristics of the substance, risks of the substance and emergency procedures to be triggered in the event of an accident.</li> <li>- All staff involved in handling and storing of this type of substances shall be trained. Therefore the Contractor company shall have in place a Training Program.</li> <li>- Chemicals shall be identified and labeled as per their classification and type of risk as provided under the NCh 2.190 of.93.</li> <li>- Every working face shall have the necessary elements and items to contain and remove the substance in the event of a spillage, be those elements and items shovels, machinery, pumps, temporary storing tanks as required.</li> <li>- A special location with the corresponding signaling for storing purposes of this material will be provided within site facilities; this location shall be set up as instructed by the relevant authorities.</li> <li>- Oil and fuel drums will be place on wooden pallets or any other devices as to facilitate their transportation and prevent damages caused by humidity and rust through a direct contact between drums and the ground.</li> <li>- Change oil and other oily residues shall be stored in closed drums in appropriate locations for further commercialization, disposal in authorized locations or return to vendors.</li> <li>- Diesel oil and gasoline shall be supplied by distribution companies duly authorized and using safety items as provided under the current legislation.</li> <li>- As per Supreme Decree N° 379/86 from the Ministry of Economy, which regulates storage of liquid fuels derived from oil for use in private consumption, Contractors will be demanded to register fuel tanks in the Registries of the Superintendence of Electricity and Fuels (Superintendencia de Electricidad y Combustibles, SEC) in those cases where the volume of such tanks exceed 1,100 lt.</li> </ul>	

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**RISK PREVENTION PROCEDURES**

<p style="text-align: center;">RISK IDENTIFICATION</p> <p style="text-align: center;">LANDSLIDE</p>		<p>Refers to descending movement of a certain volume of material consisting of rock, dirt or both. The types of movement include: rock fall), toppling, landslide, spread and flow.</p>
<p style="text-align: center;">PLACES OF RISK</p>	<p>Areas where land and rock cutting works are conducted for road preparation or working platform preparation purposes, excavation and digging for construction works for ditches, troughs, bridges, siphons, sinks, inlets, etc.</p>	
<p style="text-align: center;">SPECIFIC PREVENTION MEASURES</p>	<ul style="list-style-type: none"> <li>- Prior starting the works, staff involved in the works should be trained in safe working procedures, use of required personal protection equipment, prevention and emergency measures to implement in the event of a landslide. Particularly this type of training (excavation) should be provided to workers participating in cut and fill and excavation activities.</li> <li>- Prior commencement of the works all rocks, boulders, waste, and loose material that might become a hazard to the workers participating in cut and fill and excavation works.</li> <li>- The area where cut and excavation works will take place should be duly signed and marked.</li> <li>- After a seismic event or rainfall all slope cutoff or excavation works need to be inspected. In the event that faults are detected, containment measures should be implemented as to ensure the stability of the works.</li> <li>- Areas where the land shows poor stability the Expert in Risk Prevention from the Contractor company shall study and provide the solutions or precautions to adopt as to ensure stability of cutoff works.</li> <li>- In the particular case of cutoff activities in rock or land these solutions can be containment gabions, reforesting activities and/or leveling of slopes.</li> <li>- In the case of excavations, containment and control measures include timbering, reinforcement, wedges, etc.</li> <li>- The Expert in Risk Prevention from the Contractor company shall constantly perform inspections of excavation edges for occurrence of cracks or faults.</li> <li>- No material should be piled near the edge of excavations nor any machinery or any other item that might pose dangers to the stability of the material.</li> <li>- Each of cutoff works shall be done taking into account the most convenient grade based on the stability characteristics of the land.</li> <li>- Removal of vegetation in cutoff areas in hills shall be minimized as to prevent causing erosion (creep).</li> <li>- Construction of temporary access roads presenting unstable and steep landfills shall be prevented.</li> </ul>	

GENER SAFETY PROCEDURES		
<b>RISK IDENTIFICATION</b>  <b>TRAFFIC ACCIDENT</b>		<p>A traffic accident is an accident involving at least one automobile or any other type of transportation vehicle.</p>
<b>PLACE OF THE RISK</b>	<p>In both private and public roads where trucks or light vehicles involved in the Project run.</p>	
<b>SPECIFIC PREVENTION MEASURES</b>	<ul style="list-style-type: none"> <li>- The Contractor shall implement a formal procedure to control traffic accidents as to address the emergency in a timely manner.</li> <li>- Staff to be hired for operation of trucks, buses or machinery shall be qualified with a valid driver's license. The driver's license shall be requested as provided under Traffic Law (N° 18,290).</li> <li>- Vehicles hauling machinery and material to the working site shall have the corresponding labeling and tagging as provided by the current legislation and shall be no older than 5 years.</li> <li>- The vehicles shall meet the applicable traffic legislation (technical revision, insurance, transit permits, permits for transportation of passengers, etc.).</li> <li>- The weight of trucks loaded with material or equipment shall not exceed the maximum allowable weight for roads and bridges used. Otherwise permits from the Transit Authority shall be obtained for each case.</li> <li>- Transportation of fuel and other material shall be done as per the current legislation.</li> <li>- When is necessary to transport over dimensioned load on roads, town and city streets, such action shall be coordinated along with Carabineros de Chile, and the corresponding utilities and public authorities.</li> <li>- A communication system shall be in place (radios, mobile phones) as to ensure quick communication with the different work faces.</li> <li>- Existing pedestrian crossing shall be kept duly enabled during execution of works.</li> <li>- Special signaling shall be implemented in access locations to work faces. Signs, barriers, blinking electric lights, and traffic cones shall be used for this.</li> <li>- Machinery and vehicles in operation at the different working faces shall be in optimum working conditions.</li> </ul>	

**GENER  
SAFETY PROCEDURES**

<p style="text-align: center;"><b>RISK IDENTIFICATION</b></p> <p style="text-align: center;"><b>FALL DOWN FROM A DIFFERENT LEVEL</b></p>		<p>Eliminate or remove risks of fatal accidents, disabling injuries and incidents in works conducted in height or in different levels of altitude</p>
<p><b>PLACES OF RISK</b></p>	<p>Worksite facilities and work faces.</p>	
<p><b>SPECIFIC PREVENTION MEASURES</b></p>	<ul style="list-style-type: none"> <li>- Produce a General Procedure where all different types of manual and machine-made excavations, works performed in high structures, scaffolding, portable platforms, ladders, etc., are addressed.</li> <li>- Appropriate signaling indicating areas where the risk of falls from a different level and/or slide within a vehicle.</li> <li>- Hard barriers and protection shall be placed around deep excavations done using machinery or backhoes.</li> <li>- In those areas where there is a fall potential of 1.80m the staff shall be insured and shall wear protection equipment such as safety harness and a lifeline, as minimum.</li> <li>-</li> <li>- All safety equipment for works performed on height shall meet and be used in agreement with the standards for design and should also have the corresponding certification.</li> <li>- All roads and ways shall be clear of any obstruction and free from any material in those areas or sections where excavations are being made as to act promptly in the event of emergency or accident.</li> <li>- Elevated platforms, both portable and mobile, suspended lifts and other equipment to work on height shall have the approved design standards.</li> <li>- People working on height shall secure their safety hats with the corresponding belt or bobstay.</li> <li>- There should be a Responsiveness Plan in place for a prompt responsiveness in the event of a fall</li> <li>- All equipment shall meet the intended purpose and shall be controlled and inspected by qualified staff prior its usage.</li> </ul>	

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**RISK IDENTIFICATION**  
  
**FIRE**



It is the occurrence of an uncontrolled fire that can be extremely dangerous for people, private property, and natural resources. Exposure to a fire might lead to death by asphyxia or fainting by inhaling the smoke from the fire and severe burns

**PLACES OF RISK**

Storage areas for inflammable substances, at site and camp facilities. .

**SPECIFIC PREVENTION MEASURES**

- Inflammable substances or substances easily combusting shall be stored in locations specially prepared for such purpose as stated under O.G.U.C and the guideline for storing chemicals from the Health and Sanitation Agency. Within these locations inflammable material will be kept orderly and classified as per their chemical compatibility.
- In the particular case of hazardous waste, these are to be handled and managed as provided under SD N° 148/03 from the Ministry of Health (see Annex 8 attached to the body of the EIS, “Waste Management”.)
- Inflammable substances shall be identified and labeled as per their classification and type of risk as provided under the NCh 2.190 of.93.
- The Expert in Risk Prevention on the site shall define an area surrounding the storage location for inflammable substances where burning bonfires, smoking, and/or toss items that might produce sparks is expressly prohibited
- The Expert in Risk Prevention shall conduct permanent inspections as to detecting possible failures in the way inflammable substances is handled.
- The work contractor shall keep fire-fighting and control equipment in place at all times, wherein such equipment will consist of dry chemical and CO2 fire-extinguishers for the different types of fires that might occur due to the different flammable materials or fuels existing in the location or that are handled. The total number of fire extinguishers will depend on the surface area cover as provided under Article 46 of SD N° 594/99 from the Ministry of Health (MINSAL) “Regulations for Basic Sanitary and Environmental Conditions at the Workplace.”
- The Contractor shall build a trained brigade that will be operative during the construction of the project.
- Fuel handling shall be conducted based on the procedures mandated by SEC (see Procedures for handling of hazardous substances)
- Procedures to reduce the occurrence of the risk through continuous oversight of those locations to store inflammable substances as well as with safety training to all staff.
- Evacuation routes that should be cleared and duly signaled at all times shall be established within the facilities.
- All staff shall be trained in the risk of fire
- The Work contractor shall implement internal and external communication systems as well as an alarm system capable to render emergency instructions or request help.



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**HISTORY**

Revision	Descriptio	Done by	Revised by	Approved by	Valid

Executed	DPR AES Gener	Reviewe	José Paredes F.	Approved	Enio Belmonte C.
Position		Position	Safety Sub-manager	Position	Production Manager
Signature		Signatur e		Signature	
Date	September 2007	Date		Date	

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1.  
**OBJECTIVE**

To establish the methodology to apply in AES Gener S.A. as to identify, assess, document, and manage risks related with Occupational Health and Safety.

2. **SCOPE**

This procedure is applicable to all areas, teams, and activities to be developed in the facilities of AES Gener S.A. both by direct hire as by contractors.

3.- **DEFINITIONS**

**ACCIDENT:** Undesired event resulting in death, sickness, injury, damages or any other loss. Law 16744. Art. 5.-As per this law a work related accident refers to any injury affecting an individual as a direct cause or resulting from performing a work and that leads to disability or death.

Work accidents are also those accidents that occur on the way to work, coming to and leaving the worksite, or from the dormitory to the working station.

**RISK EVALUATION:** Is a process aimed to obtaining the necessary information to estimate the magnitude of risks existing in a productive process as well as to determine whether such risks are tolerable as to use them as benchmark at organization level in the decision making process and adoption of measures (correctives/preventive.)

**IDENTIFICATION OF RISK:** Process that allows acknowledging that there is an existing danger, allowing definition of the characteristics thereof.

**CRITICAL PARTS:** Components of machinery, equipment, material, structures or areas with higher likelihood of producing an issue or loss of magnitude when undergoing wearing or are damaged, overused or used in a poor manner.

**CRITICAL INVENTORY:** Document listing all hazards and risks identified.

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**INCIDENT:** Undesired event giving origin to an accident or that had the potential to cause an accident. For this General Procedure the following incidents are defined as part of this definition:

- f* Accidents affecting people resulting in labor disability or minor injuries
- f* Near-accident.
- f* Material Damages.
- f* Environmental Damages.
- f* Operational Failure

**DANGER:** A source or situation from which it can be expected with a high degree of certainty that it might cause damages as injuries, damage to properties, the environment or a combination of all of these.

**RISK:** Is the likelihood of occurrence of an undesired event that has a significant impact on the system and which might develop in an actual danger.

**LIKELIHOOD:** A measure to estimate the possibility of occurrence of an event.

**SEVERITY:** The most likely result from an accident. The concept includes all kind of impacts or adverse effects on people, property, processes, products, population or a combination of all of those.

**SAFETY:** Risk-free condition resulting from controlling hazards and aspects that might affect the wellbeing of any worker, the administration, other involved parties or the environment.

**OCCUPATIONAL HEALTH AND SAFETY (SSO):** Conditions and factors affecting the wellbeing of employees, temporary workers, contractor staff, and visitors to the working area.

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#### 4. RESPONSIBILITIES

The following table illustrates the acronyms to identify activities and responsibilities in the supplementary exhibit as per Risk identification and evaluation.

1: Ensure the right application of this procedure	9: Approve risk inventories for all its areas
2: Define a Risk evaluation methodology	10: Disseminate/Train in Risk inventory
3: Review the Risk evaluation methodology	11: Keep Risk inventory up to date
4: Approve a Risk evaluation methodology	12: Manage risks by prioritizing those risks classified as Medium and High
5: Identify dangers and risks in the area	13: Request identification and evaluation of new
6: Conduct an initial Risk evaluation	I : Right to know (information)
7: Conduct a residual Risk evaluation	E: Perform the activity
8: Conduct the final Risk evaluation	C: Collaborate with the activity

The following table illustrates in a supplementary manner, AES Gener S.A. responsibilities in terms of the activities for Risk identification and evaluation.

Activity	Plant Manager	Area Leads	Direct Supervisor and Head of Shift	AES Gener Safety Sub-manager	Plant Safety Coordinator	All Staff
1	E	E	C	E	E	
2	I	I		E	C	
3	E	E		I	C	
4	I			E		
5		C	E		C	E
6	I	I	E	I	C	E
7	I	E	E	I	E	C
8	E	E	E	C	E	
9	E	E	C	I	C	I
10		I	E	I	E	C
11	I	I	E	I	E	C
12	I	E	E	I	C	C
13		E	E	I	E	E

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## 5. ACTIVITY DESCRIPTION

### 5.1. Methodology for Hazard Identification and Risk Evaluation

The Safety Sub-manager is responsible for defining the methodology to be used to identify hazards and ensuring that such methodology meets the minimum requirements to conduct a Risk evaluation for Occupational safety and health associated to activities, products and/or services from the company.

Once the methodology is approved, Area Leads, Supervisors, and Heads of Shifts are responsible for creating an inventory of hazards and evaluating their business risks. Then, management of those risks needs to be established by prioritizing those risks classified with an estimate of Medium and High. However, keeping the risk inventory up to date is essential to achieve good risk management.

### 5.2. Identification of Occupational Health and Safety Hazards

Preparing or reviewing a risk inventory shall be done in each of the following cases:

1. During a SGSSO implementation.
2. Execution of new projects (modifications, pushes, changes or entry of new reagents into the industrial process.)
3. Audits, general SGSSO revisions.
4. When the Risk Prevention Department deems it convenient.
5. After an incident or accident
6. Communication of stakeholders
7. Changes in legislation
8. As minimum the Risk inventory revision should be conducted annually.

Risk identification is done for those upon which the company has influence

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(Including contractor companies in the facilities), both for routinary and non-routinary activities.)

### 5.3. Evaluation of Significant Occupational Health and Safety Risks (RSSOS)

Once risks are identified the Evaluation is conducted as to classify them in order of magnitude and determine which of those risks are classified as Medium and High as well as to produce Action Plans aimed to reduce risks as low as possible.

### 5.4. Application of Acceptance criteria

The following criteria have been established to declare a risk as a significant risk:

1. The facilities shall have the RSSOS matrix ready and updated.
2. Risks from each position shall be evaluated as per activity and function.
3. Application of the Methodology developed in the next chapter.

## 5.5. DEVELOPMENT OF THE METHODOLOGY

### 5.5.1. Background

Risk identification and evaluation shall be based in the probabilistic method allowing determination of the relative severity and degree of hazard each risk entails by using a matrix to evaluate the concepts of Severity and Likelihood. To achieve this, three templates will be used to sequentially develop RSSOS evaluation.

A preliminary step to Risk evaluation is the preparation of a list of work activities to evaluate by department, briefly describing each activity and identifying its risks. 25 risks are listed (see Annex 1), which are not final, that is, other risks can be determined and added upon to this listing.

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The first template (see Annex 2) evaluates activities risks without taking into account the control measures that have been already implemented by the department or departments. The least favorable condition is set which then results in the valuation of the Initial Risk (also referred to as pure risk). If the result is Medium and High risks, these are then pass to the next stage, that is, they are to be anchored in the second template.

Once the information of Medium and High risks from the first template is transferred to the second template all control measures implemented for the activity under evaluation need to be considered and anchored in the template. Then, taking into account the control measures, the Residual Risk needs to be valued (see Annex 3). If during the evaluation these risks obtain Medium and High results, then they shall be entered in the third template.

Once the information about Medium and High risks is transferred into the second template is necessary to consider the controls that can be adopted as to minimize the risk which at that time is high or critical. These controls can be: Elimination or replacement; engineering controls; training, procedures and means to reach awareness; personal protection equipment; etc. (see 5.5.2 in this document.) Finally, the Final Risk is evaluated considering these control measures (see Annex 4.) In this stage of the evaluation all risks should be completely controlled. If regardless of the above the results obtained from this third template are still Medium and High risks, then the activity needs to be verified and stopped.

To finalize this third and last template, an Action Plan is determined based on the controls considered for the evaluated risk, setting an order of priorities as per the estimation of the risk and determining responsible(s), date of implementation, and action to take for each control measure.

Typically, Risk evaluation shall always be a continuous process. Therefore the relevance of the control measures shall be subject to a continuous review and modified when necessary. Similarly when working conditions change, and hazards and risks vary, the Risk evaluation shall also be reviewed.

The following tables describe the different criteria determining the severity of the consequences and the likelihood of occurrence of the risk as well as the corresponding estimation in order to produce a statement on the level of tolerance of the risk. Once this is completed the actions to take are defined.

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Table N° 1: Table of Severity

Severity	
Catastrophic	Death, injury or permanent disabling disease (or inability to return to work)
Severe	Injury or disease (inability to return to work for a period of time LTA) requiring more than first aid (inability to return to the same type of work, light tasks or with working restriction) with non-permanent disability.
Moderate	Injury or disease (the individual can return to work at a given point in time) that might require first aid (the individual can return to the same type of work, lights tasks or working
Minor	No injury or a slight injury that only requires first aid (no time lost in work)

Table N° 2: Table of Likelihood

Likelihood	
Very likely	It is expected to occur in most of the times
Likely	It will probably occur in most of the times and/or occurred in any given time
Unlikely	Could have occurred in any given time
Remote	It can only occur under exceptional circumstances

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Table N° 3: Significant Occupational Health and Safety Risks (RSSOS) Matrix

		Severity			
		Catastrophic	Severe	Moderate	Minor
Likelihood	Very likely	High	High	High	Medium
	Likely	High	High	Medium	Low
	Unlikely	Medium	Medium	Low	Imperceptible
	Remote	Low	Low	Imperceptible	Imperceptible

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Table N° 4: Table of Residual Risk Valuation as per RSSOS Matrix

Events that are registered and estimated shall be evaluated as per four levels established as shown in the table below along with the control actions to be set up for each level of risk. The table also shows individual efforts to control the risks and the urgency with which control measures need to be adopted in proportion with the risk.

Residual Risk	
High	Verify and STOP the activity. Requires immediate correction.
Medium	It should reduce the risk to the lowest level possible, develop strategies, goals, and objectives at department level immediately. When the risk refers to a work which is being conducted, the problem should be remediated within a time shorter than the time for low risks.
Low	More profitable solutions should be considered or improvements not entailing a significant economic burden. Requires periodic confirmation to ensure that control measures continue to be effective.
Imperceptible	Any specific action is required.

Execute	DPR AES Gener	Review	José Paredes F.	Approve	Enio Belmonte C.
Position		Positio	Safety Sub-manager	Position	Production Manager
Signatur		Signatu		Signatur	
Date	September 2007	Date		Date	

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### 5.5.2. Risk Control Measures.

As a tool to control risks a "Hierarchy" of Risk control should be considered which include:

Eliminate	Complete Elimination of the hazard
Replace	Replace the process or material with one less hazardous.
Redesign	Redesign work processes or equipment
Separate	Isolate the hazard using protection
Manage or Control	Provide controls such as training, procedures, etc.
Personal Protection Equipment (PPE)	Appropriate use of PPE when other controls are not practical

This is achieved by:

- Objectives, Goals and an Occupational Health and Safety Management Plan
- Work Instructions or Procedures
- Training
- Monitoring and Measurement

The action plan needs to be reviewed before implementation considering the following:

- a) If the new control systems for the risks will lead to acceptable levels of risks.
- b) If the new control systems have resulted in new hazards.
- c) The opinion of those workers affected on the need and operability of the new control measures.

Executed by	DPR AES Gener	Reviewed by	José Paredes F.	Approved by	Enio Belmonte C.
Position		Position	Safety Sub-manager	Position	Production Manager
Signature		Signature		Signature	
Date	September 2007	Date		Date	

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Record Control

Below are the documents associated to this procedure:

- Risk Inventory
- Initial Risk Level Evaluation Template
- Residual Risk Level Evaluation Template
- Final Risk Level Evaluation Template

REFERENCE DOCUMENTS

- Procedure PG-9.5-001 Document Control
- Procedure PG-9.4-OP-01 Task Planned Observation
- Procedure PG-9.4-IP-01 Planned Inspections

8. ANNEXES

- Annex 1: Risk Inventory
- Annex 2: Initial Risk Level Evaluation Template
- Annex 3: Residual Risk Level Evaluation Template
- Annex 4: Final Risk Level Evaluation Template

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9. CONTROL OF MODIFICATIONS

Modifications made to this Procedure need to be registered in the following table:

Revision	Date	Description of Modifications

Rev.	Prepared by	Revised by	Approved by	Date Approval	Modification
0	DPR	JPF	EBC	09/2007	
1					
2					

Execute	DPR AES Gener	Review	José Paredes F.	Approve	Enio Belmonte C.
Position		Positio	Safety Sub-manager	Position	Production Manager
Signatur		Signatu		Signatur	
Date	September 2007	Date		Date	

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ANNEX 1: RISK INVENTORY  
(25 at present)

N°	RISKS
1	Toxic Chemicals
2	Inflammable Chemicals
3	Corrosive Chemicals
4	Explosion (chemical reaction)
5	Explosion (related to pressurization)
6	Electric (shock, short-circuit)
7	Electric (fire)
8	Electric (static, ESD)
9	Electric (loss of power)
10	Fire/heat
11	Ergonomics (related to effort)
12	Ergonomics (human error)
13	Excavation (collapse)
14	Fall (sliding/skidding)
15	Fall (from a different level-height)
16	Mechanic/Vibration (friction, fatigue)
17	Mechanic failure
18	Entrapment (within)
19	Hit by
20	Hit against
21	Noise
22	Radiation (ionizing/non-ionizing)
23	Thermal (hot/cold)
24	Visibility
25	Weather phenomenon (snow/ice/rain with wind)

Execute	DPR AES Gener	Review	José Paredes F.	Approve	Enio Belmonte C.
Position		Positio	Safety Sub-manager	Position	Production Manager
Signatur		Signatu		Signatur	
Date	September 2007	Date		Date	









OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT  
CONTINGENCY PLAN FOR CONTRACTOR COMPANIES

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CONTINGENCY PLAN  
FOR CONTRACTOR COMPANIES

PHAM CONSTRUCTION STAGE

**May 2008**

## INTRODUCTION

The purpose of this document is to provide the general guidelines to control emergencies. These general guidelines rule all contracts for works and/or services that AES Gener S.A, hereafter Gener, undertakes with third parties under the framework of the construction of Alfalfal II and Las Lajas Hydroelectric power stations and which are part of Alto Maipo Hydroelectric Project, hereafter the Project or PHAM.

It is important to highlight the accuracy of the scopes included in the present document shall be defined and rendered official by Gener once each contractor is awarded the works following the bidding process and taking into account the strategies in terms of risk prevention that each contracted companies has in place. Notwithstanding the above, such provisions shall not be less restrictive than those considered herein.

### 1.- OBJECTIVE

Establish the flow of information in the event of emergencies and define the instructions guiding the actions of staff upon a situation considered an emergency in order to protect workers, property, environment, and restore the work's business as usual in the shortest time possible.

### 2. SCOPE

This procedure is applicable to all staff of the work, including Contractors, vendor and suppliers, service rendering companies, and visitors, involved in the construction of PHAM who need to be conveniently instructed as to become acquainted with their functions and responsibilities in the event of an emergency and ensuring correct actions are taken while controlling the situation.

### 3.- DEFINITIONS

Undesired Event: Any unexpected situation that alters business as usual operations.

Incident: An undesired event resulting in death, injury, disease, damages to people's health, adverse effects on the environment or community or any other loss

Danger: Any situation or source with the potential of producing a labor accident or injury or disease

Risk: A combination of the likelihood and the consequence of the occurrence of a specific event (impact on people, environment, property and/or the community)

Emergency.- Defines an undesired event that endangers the physical integrity of people, material resources or the environment; existing internal controls are not enough to control such event.

Alert.- Notification through the flow of communication imposed by the situation of attention in the organization

Alarm.- Notification through the flow of communication imposed by a situation of emergency in the organization and which determines the following:

Flow of communication.- Diagram illustrating the path information should follow through the different levels of the organization operating in a given work face, camp or site facilities.

Emergency control lead.- Supervisor in charge of planning, organization, and control of all necessary actions to control the emergency. The lead can be the head of the area affected and/or along with the resident Administrator.

Evacuation: An action or effect of removing people from a specific place; typically occurs in the event of emergencies caused by different types of disasters, either natural or accidents.

Evacuation Routes: Locations duly signaled for evacuation and movement of people in a safe, fast, and effective manner while protecting people.

Safety Zone: A predefined sector that is safe, large, with signaling, and which do not present any kind of risk to people once gathered in that area after the evacuation has been conducted.

Rescue Crew: Qualified staff with competencies to be the first line of action upon an emergency.

#### 4.- PREVIOUS ACTIVITIES NECESSARY TO APPLY THE EMERGENCY CONTROL PROCEDURE.

In order to achieve an integral development of emergency control procedures it is essential that AES Gener and the Contractor company jointly define the following activities:

- Emergency drills and activation of the Communication Plan: Drills are to be jointly conducted by the Contractor company and AES Gener for each of the facilities associated to the Project, i.e. camps, and work faces and site facilities. A drill will also be coordinated with the corresponding emergency responsiveness agencies (enforcement agencies, fire department, ONEMI, etc.) the frequency and duration of drills shall be determined by both companies based on the location and type of work to do.
- Once the drill is conducted, the Contractor company shall assess the effectiveness of the flow of communication, crisis management, and efficiency of human and material resources available. Should any failure is detected when applying the emergency procedure and the Communication Plan, the Contractor, jointly with AES Gener, shall take the corresponding actions to make the necessary improvement and optimization.
- The Contractor company shall provide all necessary resources and means for the correct implementation of emergency control procedures and the Communication Plan.

- The Contractor shall train all of his staff in the content of the emergency control procedures and the Communication Plan. The role every member of the staff plays during the execution of the procedures and Plan will be instructed as well.

Lastly, it is important to highlight the accuracy of the scopes included in the present document shall be defined and rendered official by AES Gener once each contractor is awarded the works following the bidding process and taking into account the strategies in terms of risk prevention that each contracted companies has in place. Notwithstanding the above, such provisions shall not be less restrictive than those considered herein.

## 5.- PROCEDURES FOR ACTING UPON AN EMERGENCY

In the event of an emergency the following five (5) steps sequence is defined to guide actions from the staff.

This sequence should be aligned with the flow of communications detailed in the next section.

### A.- Dimension of the Emergency

When facing an undesired event it is a top priority to correctly dimension the situation as to provide a right response. In order to make the right decision it is necessary to have clarity whether what is being faced is a direct emergency or an undesired event that could go through a controlled situation to an emergency.

### B.- Magnitude of the Event.

The following steps should be taken to determine the magnitude of the event:

- Clearly define the type of event, whether is a fire, accident, landslide, flood, etc., as to determine the appropriate resources to respond.
- Identify products and substances involved with their risks previously established in the critical inventories of the work.
- Identify the potential risks of the event.
- Classify the magnitude of the event which allows determining the scope of the communication flow. Consider the following:

Minor.- The event only produces material damages and there are no damages to third parties easily controlled using internal resources.

Serious.- People are injured and there are material damages, minor external damages and environmental effects in limited areas. Controlling the event needs using external

resources. The communication flow should reach the Risk Prevention department in AES Gener, the corresponding authorities.

Severe.- The event produces serious injuries, death and/or material damages, severe external damages, and severe alteration in the environment in extensive areas. Control is complex and all necessary internal and external resources have to be available. Communication flow needs to reach the top management of the organization.

#### C.- Response to an Undesired Event

Once the magnitude of the undesired event is defined an immediate response needs to be provided using resources available on the site where the event occurs. The following actions should be considered based on the classification of the event:

Minor: In the event of undesired events classified as Minor actions should be taken as soon as possible proceeding to:

- Completely controlling the situation with resources available on the site.
- Inform the state of the alert as provided under the flow of communication.
- Ensure total control as to avoid declaring a state of emergency.

Serious: Upon undesired events classified as Serious and if the situation is controllable it is necessary to:

- Completely controlling the situation with resources available on the site.
- Inform of the status of the alert.
- Ensure total control as to avoid declaring a state of emergency.
- Use external resources when necessary (ambulance, non-available equipment, etc.)

If the situation becomes more complex and exceeds local control it is necessary to:

- Give an immediate alarm by declaring a state of emergency.
- Evacuate to a safe place.
- Immediately isolate the area of impact by using external resources, if necessary.

Severe: Upon undesired events classified as Serious it is necessary to:

- Give immediate alarm and declare a state of emergency.
- Evacuate to a safe place.
- Immediately isolate the area of impact by using external resources, if necessary.

## D.- Emergency Response.

### D.1 Activation of the state of the emergency

The individual facing an undesired event shall properly assess the situation. Once that individual is certain that the situation is directly an emergency or that the response given to the event was not sufficient and the control in place is being rapidly exceeded, he/she shall give the alarm by activating the state of emergency. The person should:

- Identify him/her.
- Indicate the exact place of the emergency.
- Define the type of emergency (fire, landslide, flood...)
- Classify the emergency (minor, serious, severe.)
- Indicate whether there are injured people, damages to property, damages to the environment, if there is risk of explosion, as well as the actions taken to control the situation.

### D.2 Immediate Action.

Once the state of emergency is activated an immediate response needs to be provided taking into account the staff in the area. This should consider the following:

- Build rescue crews and control the situation using resources available (trained staff) in the place of the event.
- Find and act in the place or location where the problem is.
- Protect the crew members by using personal protection equipment.

### D.3 Emergency Control Procedure

To address and have a definitive control it is necessary to properly analyze the scenario and then the most appropriate procedure needs to be jointly defined as to tackle the emergency. The following needs to be take into account:

- To assess in the most accurate way the situation and conduct an estimation of the consequences.
- Once sufficient information is available actions allowing providing a step by step, methodical and sound response to the situation are defined.
- Produce alternatives to control deviations or worsening of the situation.
- Define necessary material and human resources as well as external support to conveniently face the situation.
- Decide which protocol allows the best management of information.

#### D.4 Organize a good team work

Having in place a good organization of the team that will address the emergency is essential for control. It should include people with experience, knowledge and sufficient mastery as to prevent unsafe actions that might worsen the situation. Therefore it is necessary to have the following:

- Train and educate the working team who will act in the final control of the emergency, both in-house as external staff.
- Designate responsibilities and reinforce leadership, avoiding falling in contradictions and ambiguities that hinder the control.
- Properly implement the response group with internal and external resources as per type and magnitude of the emergency.

#### D.5 Entry and Area Control of the Area of the Accident

Entry into the area of the accident should be strictly controlled as to prevent unnecessary exposure to existing risks. It's necessary to:

- Use, at all times, the appropriate personal protection equipment.
- Only allow entry to the area to the staff in charge of controlling the emergency.
- Monitor if necessary.
- In the event of a fire, a possible explosion or exhaust of toxic gas prohibit entry to the area.
- Keep constant communication.
- Not allowing that any person foreign to the working team enters the area of the accident.
- Have deep knowledge of the evacuation route in case of danger.
- Provide the necessary, sufficient information in a timely manner to the relevant authorities

E.- End of the emergency.

Conditions to declare the end of the situation originating the emergency need to be defined and once these conditions are met, it is necessary to inform the relevant parties. Finally a complete investigation of the undesired event needs to be conducted by collecting all evidence possible as to make the corrections and prevent a new occurrence.

#### 8.- EMERGENCY CONTROL PROCEDURES

Below is a detailed description of all potential emergencies identified for the construction stage of PHAM as well as the sequence of measures to be executed by the Contractor company for their

control and mitigation thereof.

Regardless of the above, once all contracts for works are granted every Contracting company shall re-assess its respective work and potential emergencies associated as well as defining the controlling measures. This reassessment by no means entails the application of less restrictive actions than those indicated herein.

**AES GENER S.A.**  
**EMERGENCY PROCEDURES**

<p style="text-align: center;"><b>IDENTIFICATION OF THE EMERGENCY  FIRE</b></p>		<p>It is the occurrence of an uncontrolled fire that can be extremely dangerous for people, private property, and natural resources. Exposure to a fire might lead to death by asphyxia or fainting by inhaling the smoke from the fire and severe burns</p>
<p><b>PLACES OF RISK</b></p>	<p>Storage areas for inflammable substances, at site and camp facilities.</p>	
<p><b>EMERGENCY CONTROL MEASURES</b></p>	<ul style="list-style-type: none"> <li>- The fire alarm will activate</li> <li>- The Communication Plan will activate.</li> <li>- The firefighting procedure including the attendance of the Emergency Brigade with the respective PPE will activate.</li> <li>- The area will be evacuated and access from any staff member will be prohibited.</li> <li>- The area will be inspected for people injured. If injured people were found they will be immediately taken to a health center.</li> <li>- The dimension of the emergency will be determined</li> <li>- The event will be classified (minor, serious, severe)</li> <li>- The Emergency Brigade will undertake actions to control the emergency by using fire-extinguishers or any other appropriated element (only if the fire is controllable).</li> <li>- If it is not possible to control the situation using own resources, notification will immediately be given to the Fire Department and workers will be evacuated to safety areas.</li> <li>- Activities will only be resumed once the fire is controlled.</li> </ul> <p>A complete investigation of the undesired event will be conducted by collecting all evidence possible as to make the corrections and prevent any new occurrence.</p>	

**AES GENER S.A.**  
**EMERGENCY PROCEDURES**

<p style="text-align: center;">IDENTIFICATION OF THE EMERGENCY  AVALANCHE</p>		<p>The risk of avalanche refers to a massive movement down the hills of a mountain which drags a large material or rock, ice, and snow.</p>
<p style="text-align: center;">PLACE OF THE RISK</p>	<p>Facilities of sites, work faces, and camps located in the vicinity of Volcán and Yeso rivers.</p>	
<p style="text-align: center;">EMERGENCY CONTROL MEASURES</p>	<ul style="list-style-type: none"> <li>- The avalanche alarm will activate</li> <li>- The Communication Plan will activate and the Emergency brigade will arrive to the place.</li> <li>- The evacuation procedure will activate and all staff will be prohibited access to the area.</li> <li>- Qualified staff will inspect the area for injured people. If injured people were found they will be immediately taken to a health center.</li> <li>- The dimension of the emergency will be determined</li> <li>- The event will be classified (minor, serious, severe)</li> <li>- Construction works will only be resumed once ONEMI (National Emergency Bureau) or the police forces informed the Head of Project that the area is free from danger.</li> <li>- A complete investigation of the undesired event will be conducted collecting all possible evidence as to make the necessary corrections and prevent a new occurrence.             <ul style="list-style-type: none"> <li>- A specialist in risk prevention will inspect the area delimiting the areas of risk. This professional will determine whether is necessary to relocate the facilities. Should that be the case, the corresponding authorities shall be informed</li> </ul> </li> </ul>	

**AES GENER S.A.**  
**EMERGENCY PROCEDURES**

<p style="text-align: center;">IDENTIFICATION OF THE EMERGENCY LANDSLIDE</p>		<p>Refers to a descending movement of a volume of material comprising rock, dirt or both.</p> <p>The types of movement include rock fall, toppling, slide, spread, and flow.</p>
<p style="text-align: center;">PLACE OF THE RISK</p>	<p>This is present during land and rock cutting activities, to enable roads and working platforms as well as during excavation activities to build ditches, troughs, bridges, siphons, inlets, etc.</p>	
<p style="text-align: center;">EMERGENCY CONTROL MEASURES</p>	<ul style="list-style-type: none"> <li>- The Communication Plan will activate.</li> <li>- The evacuation procedure will activate and all staff will be prohibited access to the area.</li> <li>- Qualified staff will inspect the area for injured people. If injured people were found they will be immediately taken to a health center.</li> <li>- The dimension of the emergency will be determined</li> <li>- The event will be classified (minor, serious, severe)</li> <li>- Depending on the magnitude of the landslide all works shall be immediately stopped and, if necessary, all staff will be evacuated to safe areas. Construction works will be resumed once the expert in Risk prevention from the work has informed the Head of Project, after consulting with the experts (engineers, geologists) that the area is free from danger.</li> <li>- A complete investigation of the undesired event will be conducted collecting all possible evidence as to make the necessary corrections and prevent a new occurrence.</li> <li>- The specialist in risk prevention will inspect the area and will limit the areas of risk, recommending modification of the boundaries of the work or its relocation as necessary.</li> </ul>	

**AES GENER S.A.**  
**EMERGENCY PROCEDURES**

<p style="text-align: center;">IDENTIFICATION OF THE EMERGENCY EARTHQUAKE</p>		<p>Earthquake or tremor produced by internal forces.</p>
<p style="text-align: center;">PLACE OF THE RISK</p>	<p>All the facilities of the Project.</p>	
<p style="text-align: center;">EMERGENCY CONTROL MEASURES</p>	<ul style="list-style-type: none"> <li>- The Communication Plan will activate.</li> <li>- The Evacuation procedure will activate.</li> <li>- The staff should go to the safety area and wait for instructions from the qualified staff.</li> <li>- Once the event is passed, qualified staff will inspect the the area for injured people. Should that be the case, injured staff will be immediately taken to a health center.</li> <li>- The dimension of the emergency will be determined</li> <li>- The event will be classified (minor, serious, severe)</li> <li>- Depending on the damage all works shall be immediately stopped and, if necessary, all staff will be evacuated outside the working areas.</li> <li>- Construction works will only be resumed when the expert in risk prevention at the site has confirmed that the facilities are free from danger and have not suffered any damage after consultation with the corresponding specialists.</li> <li>- In the event of an earthquake Gener shall assess the damages suffered in the physical structure in works to collect, transport, and store water as well as roads and other buildings and shall set the corresponding repair works.</li> <li>- A complete description of the response to the emergency will be provided by collecting all possible evidence as to make the appropriate corrections and improve the procedures.</li> </ul>	

**AES GENER S.A.**  
**EMERGENCY PROCEDURES**

<p style="text-align: center;">IDENTIFICATION OF THE EMERGENCY SPILLAGE OF CHEMICALS</p>		<p>Refers to the accidental spillage of hazardous substances or fuel (as per the listing in S.D. 382/2004) on natural resources such as water and land, or affecting constructions. (Oil, lubricants, and painting)</p>
<p style="text-align: center;">PLACE OF THE RISK</p>	<p>Worksite facilities, camp, and work faces.</p>	
<p style="text-align: center;">EMERGENCY CONTROL MEASURES</p>	<ul style="list-style-type: none"> <li>- The Communication Plan will activate.</li> <li>- The Evacuation procedure will activate.</li> <li>- Qualified staff will inspect the area for injured people and environmental damages. If injured people were found they will be immediately taken to a health center.</li> <li>- The dimension of the emergency will be determined</li> <li>- The spillage will be classified (minor, serious, severe)</li> <li>- The area affected will be immediately cleaned and the ground removed.</li> <li>- All facilities shall have the necessary elements and items to remove the spilled substance, e.g. shovels, machinery, pumps, temporary storing tanks as required. Also, the procedures listed in the Safety datasheet need to be followed.</li> </ul> <p>While is expected that any accidental spillage will be low or minor in magnitude, and considering the type and amount of hazardous materials existing at the site, responsiveness items shall be available to address these events as to have the least impact possible.</p>	

**AES GENER S.A.**  
**EMERGENCY PROCEDURES**

<p style="text-align: center;">IDENTIFICATION OF THE EMERGENCY TRAFFIC ACCIDENT</p>		<p>A traffic accident is an accident involving at least one automobile or any other kind of transportation vehicle.</p>
<p style="text-align: center;">PLACE OF THE RISK</p>	<p>Public routes and services roads built by the Project.</p>	
<p style="text-align: center;">EMERGENCY CONTROL MEASURES</p>	<ul style="list-style-type: none"> <li>- The Communication Plan will activate.</li> <li>- Qualified staff will inspect the area for injured people. If injured people were found they will be immediately taken to a health center.</li> <li>- The dimension of the emergency will be determined</li> <li>- The traffic accident will be classified (minor, serious, severe)</li> <li>- The affected area will be delimited and access to the area of the accident will be prohibited.</li> <li>- Once the situation is controlled traffic will resume.</li> </ul> <p>A complete description of the response to the emergency will be provided by collecting all possible evidence as to improve the procedures.</p>	

**AES GENER S.A.**  
**EMERGENCY PROCEDURES**

<p style="text-align: center;">IDENTIFICATION OF THE EMERGENCY</p> <p style="text-align: center;"><b>EXPLOSION</b></p>		<p>A sudden release of an enormous amount of energy trapped within a relative small volume producing a sudden and violent increase in pressure, generating heat, light, and gases..</p>
<p style="text-align: center;">PLACE OF THE RISK</p>	<ul style="list-style-type: none"> <li>- Transportation of explosives</li> <li>- Storage locations for explosives: Magazines.</li> <li>- In work faces where construction works for tunnels are being conducted.</li> </ul>	
<p style="text-align: center;">EMERGENCY CONTROL MEASURES</p>	<ul style="list-style-type: none"> <li>- In the event of an accidental activation of explosives due to handling or storage, Gener shall evacuate all staff from the areas under risk and all works will be halted in the area affected until the expert in risk prevention at the site determines after being informed by the company specialized in explosives that there is no more risk.</li> <li>- The Communication Plan detailing the magnitude of the accident and whom to report will activate.</li> <li>- Specialized sub-contractor staff will inspect the area and determine whether there is a potential risk and will implement the necessary safety measures as to prevent future accidental explosions             <ul style="list-style-type: none"> <li>- It will conduct inspections to determine if people were affected by the explosion.</li> </ul> <p>The appropriate elements to safeguard first lives and health of injured people when required. Every work face will have the necessary first aid elements for this purpose..</p> </li> </ul>	

AES GENER S.A. EMERGENCY PROCEDURES		
IDENTIFICATION OF THE EMERGENCY		Accident occurred by working in different altitude level or in heights. Depending on its magnitude this type of accident might produce injuries, disabilities or even death.
PLACE OF THE RISK	Worksite facilities and work faces.	
EMERGENCY CONTROL MEASURES	<ul style="list-style-type: none"> <li>- The Communication Plan will activate.</li> <li>- Qualified staff will inspect the area for injured people. If injured people were found they will be immediately taken to a health center.</li> <li>- The dimension of the emergency will be determined</li> <li>- The event will be classified (minor, serious, severe)</li> <li>- Works will be stopped if the magnitude of the event determines so.</li> <li>- The affected area will be delimited and access to the area of the accident will be prohibited.</li> <li>- Once the situation is controlled works will resume.</li> </ul> <p>A complete description of the response to the emergency will be provided by collecting all possible evidence as to make corrections and improve the procedures.</p>	

## 6.- COMMUNICATION PLAN

The Communication Plan refers to actions and measures aiming to provide all and each of the workers with the information procedures to be implemented in the event of an emergency.

### 6.1- COMMUNICATION DIAGRAM

A flow of communication is established based on the classification of the emergency as to achieve an effective and efficient exchange of information according to each situation. Below is an illustration of the flow of communications:

INSERT GRAPH 1

The following function and roles are associated to the flow of communication:

- A.** Person who gives the alarm Informs the work Supervisor upon an emergency.
- B.** Supervisor of the work
  - Once the alarm is received communicates immediately to the Site Lead as well to the power plant operator of the Contractor company, reporting of the type and magnitude of the emergency.
  - Attends to the location of the emergency.
  - Assumes leadership until the Site Lead arrives.
  - Jointly with the Site Lead defines the most convenient procedure according to the type of emergency.
  - Applies the procedure to overcome the emergency.
  - Keeps updated information of the situation.
- C.** Lead Site
  - Once the alarm is received immediately contacts the Contractor Supervisor, the Risk prevention expert, and the power plant operator of the Contractor company
  - Attends to the location of the emergency.
  - Determines de magnitude of the situation and provides complete information:
    - i) Emergency type and classification
    - ii) Type of injuries and/or possibility of new injured
    - . iii) Identity of injured.
    - iv) Type of material damage and possibility of new damages.
    - v) Environmental damages and possibility of damages.
    - vi) Degree of control of the emergency.

- Assumes leadership and defines the creation of the work team that tackles the emergency.
- Takes over the situation, takes the first measures, and conducts the first coordination activities to control the emergency.
- Jointly with the Work Supervisor defines the most convenient procedure according to the type of emergency.
- Considering the severity of the situation, requests the external necessary support to control the emergency (Police dept., Fire dept. Mutual, etc.)
- Keeps updated information of the situation.
- Jointly with the Expert in Risk prevention and the Contractor Supervisor defines the conditions as to consider the emergency over.

#### **D. Power plant**

- Once the first alarm is received immediately contacts the Expert in risk Prevention of the company, thus activating the flow of communication.
- Depending on the type and classification of the emergency communicates with the Work Admin office, which on its turn contacts the Police department in the area, the Fire department in the area, and the family/relatives of the injured person.
- Based on the information received communicates the following:
  - i) Emergency type and classification
  - ii) Type of injuries and/or possibility of new injured.
  - iii) Identity of injured.
  - iv) Type of material damage and possibility of new damages.
  - v) Environmental damages and possibility of damages.
  - vi) Decree of control of the emergency.

#### **E. Contractor Supervisor**

- Attends to the location of the emergency.
- Depending on the type and classification of the emergency communicates with the Risk Prevention of the Company.
- Depending on the type and classification of the emergency, contacts the Head of Project of AES Gener, whom then informs the AES Gener Department of Risk Prevention and the General Management.
- Together with the Work Supervisor and the Site Lead defines and designates the most convenient procedure according to the type of emergency.
- Jointly with the Site Lead defines the material and human resources necessary.
- In coordination with the Expert in Risk Prevention defines the external information protocol complying the projects established by the Owner.
- Provides the official information, when required, to the media after consultation with the General Management.
- Informs to whom it may concern about compliance with the conditions that indicate the emergency has been controlled

- Conducts the investigation and prepares the final report for the emergency with the Expert in Risk Prevention at the site.

#### F. Expert in Risk Prevention at the Site

- Once the alarm is received immediately contacts AES Gener Head of Project.
- Attends to the location of the emergency.
- Considering the classification of the emergency informs the Admin Agency (Chilean Safety Association, Labor Insurance Organization or any other similar agency) and the admin office of the Contractor company. Also informs AES Gener Risk Prevention Department.
- Make all necessary coordination, closely following the Owner's procedures with:
  - Environmental authorities.
  - Health Services authorities.
  - Community authorities.
  - Fire department.
  - Police department (Carabineros).
  - Other emergency control relevant services and agencies.
- In coordination with the Contractor Supervisor defines the protocol for external information following the Owner's procedures.
- Participates in the definition of the conditions to be met as to consider the emergency is controlled.
- Coordinates the measures to overcome the situation with the lead in charge.
- Conducts the investigation and prepares the final report for the emergency with the Contract Supervisor.

#### 6.2 EMERGENCY TELEPHONE NUMBERS

Below is a listing of contact numbers in the event of an emergency. This listing is to be supplemented and updated prior commencement of the construction stage of the Project.

Unit	Address	Telephone
Asociación Chilena de Seguridad (ACHS)	Ramón Carnicer 201 Providencia (Emergency) Teniente Bello N° 135,	685 3000 850 00 23 <b>1404(AMBULANCE)</b>
Mutual de Seguridad	Avda. Lib. Bdo. O'Higgins N° 4848, Santiago	7764795-6775322
Instituto de Salud del Trabajador (IST)	IST Santiago, Placer 1410	5569266-8107821
Hospital San José de Maipo	Comercio N° 838	861 22 56-8611104
BOMBEROS	2ª Compañía San José de Maipo 14ª Compañía Los Leones 1875	8611530 - 8611052
CARABINEROS	Subcomisaría Camino El Volcán N°19333 Retén San Gabriel Camino el Volcán S/N	8611088 – 8612290 8611946
Aerorescate	Km. 11, Ruta 68, Pudahuel	800-8011131-6409313
ONEMI	Beaucheff 1637/ 1671, Santiago	252 4200



CORDILLERA COMPLEX EMERGENCY PLAN

MARCH 2006

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# Emergency Preparedness

## 1. INTRODUCTION

as it is known by all staff working at Cordillera Complex, there is a variety in the risks present in the different facilities thereof, hence the variety in the emergencies that we might face, with different levels of danger according to their nature.

Therefore there is the essential need of having an Emergency Manual available as a way to have the staff prepared to act in a safe and right manner upon any unfavorable event.

Due to this reason it is the **obligation** of all staff members working at the complex, both in-house as external, to be aware of this manual.

In the case of external staff, each Contractor company shall receive this manual, signed-off, which indicates agreement and approval by such companies.

## 2. OBJECTIVE

The objective in creating a Manual to use in the event of emergencies is to provide the necessary information to workers as to prepare them on how to act when facing this type of events, thus protecting them and the equipment from major damages that might be suffered by not knowing the emergency guidelines and procedures.

## 3. GLOSSARY

- Cavern: Area in Alfalfal where the engine room is located.
- Emergency: Manifestation of conditions which are out of control and not the way they are desired to be.
- PPE: Personal Protection Equipment
- POS: Dry chemical powder (as per Spanish acronyms)
- Control Room: Area where Cordillera Complex facilities are controlled and operated.
- Engine Room: Area where primary generation equipment is installed.

## FIELD OF APPLICATION.

This manual can be used to address the following emergencies:

- Fire
- Earthquake
- Landslide
- Floods
- Severe accidents affecting people, facilities or equipment.

## 5. CONSIDERATIONS

It should always be consider that when facing an emergency you should not act by yourself. Therefore once facing an emergency, assistance should be requested to the Control Room using the EMERGENCY HOTLINE 3100 and/or the radio.

Any worker going to the worksite -inlet, roads, etc., should always carry a radio as to inform of any abnormal situation.

Minimum PPE should be wore at all times when going to the worksite that is, steel toe shoes, hard hat, and goggles.

## 6. GENERAL PROCEDURES

Any officer of the Complex who detects an emergency should immediately contact the Control Room operator of the Power plant by calling 3100 (an emergency only number) or by radio. On the other hand the Control room operator should prioritize the calls from this number.

The officer detecting the emergency should inform the following:

- Location of the emergency
- Nature of the emergency
- Presence of people and/or equipment involved
- Magnitude

With all this information the Control Room operator should assess the emergency and regardless of its nature should communicate with the most senior person present at the Complex and jointly, will both make the decision to call the emergency brigade by using the emergency siren to be triggered by the operator and which marks the beginning of the Emergency Plan

On the other hand, the Control room operator should have the following emergency contact numbers -closer to the Power plant office, available: Ambulance, Fire dept., Police department. Also, the following people need to be informed of the situation at all times:

Emergency Lead (designated at that time) for the events occurring at that moment.  
Then, the following actions to take, either by the person detecting the emergency or by the Control room operator.

The Emergency brigade will include the following:

As the number of people working at the complex varies and in many occasions manning will be minimum, the brigade will be assembled based on the order of arrival of staff to the Lobby in the Control Building of Alfalfal once the emergency siren is triggered.

The first six (6) people listening to the siren or the radio call shall go to the meeting place already mentioned and wear the special colored safety hats that identify the brigade. These persons will have the responsibility to lead the emergency actions.

The following colors identify the roles of each brigade member:

- Red: Brigade lead
- Yellow: The rest of the emergency crew.

Person detecting the emergency

- 1) Using the closest telephone, he/she should dial the emergency number 3100 and provide detailed information about the event to the operator. If the person carries a radio he/she will be able to communicate with the Control room operator using Frequency # 5 (on field) or Frequency #2 (internal.)
- 2) Wait for backup and/or act by him / herself depending on the circumstances.
- 3) Once the emergency is controlled, inform and the operator updated about what is happening.

Control Room operator

- 1) Receives the emergency notification and assess the magnitude of the notification.
- 2) Depending on the situation, contact staff over the radio to activate the Emergency Plan (or the second person in charge if the Lead is not present.)
- 3) In agreement with the Brigade Lead the operator will inform the staff at the Power plant by activating the emergency siren, three (3) times for 10 seconds with a 5 second interval in between.
- 4) If necessary the operator should request external assistance.
- 5) Shut-down, power off or give instructions to isolate -power, hydraulic, equipment compromised under an emergency if the situation thus requires.

6) Keep the Head of the Complex informed of the situation.

7) Try to have all telephone lines available during the emergency.

Emergency contact numbers to request external assistance

- Fire Department (Bomberos San Jose de Maipo):
- Central 8611530
- 2<sup>nd</sup> Crew 8610052
- Police Department 8611008 / 8612290
- Hospital, Emergency Room 8611004

## 7. GENERAL GUIDELINES IN THE EVENT OF AN EMERGENCY

The procedure to follow in the event of an emergency at Alfalfal-Maitenes Power plant is divided in two areas for optimization purposes as such procedures largely depend on the area where the event occurs.

The areas are: Area W1 Premises outside the Power plant. Premises  
Area W2 inside the Power plant.

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Below is a list with all the emergencies already mentioned sorted under the two areas above defined.

*Jr* **FIRE**

In the event of a fire there are things to bear in mind that will never change:

- When operating a fire alarm in the Control room panel of any premise in the Control building, the operator should request that the information is verified immediately. If the information is verified, staff located at the power plant will be notified as to immediately activate the brigade.

Once the fire alarm is triggered, all persons attending to assist fighting the fire should wear the PPE as per the emergency as well as carrying self-breathing masks.

There are 3 Fire Box with nozzle and 3 hose carts located in the warehouse 25, building H and cafeteria. The keys are both at the gate and the Control room.

Depending on the nature and magnitude of the fire it should be controlled using portable POS, CO2 extinguishers or the POS portable cart.

Area N2 1: Premises external to the Power plant (water intakes, roads, land): As this is a working procedure, every person on the field should carry a radio and in the event of a fire should immediately inform the Control room operator at his/her Power plant.

Once the fire alarm is triggered the Control room operator should notify the power plant staff as to build the Emergency brigade which will mobilize to the area where the fire is occurring.

If the worker who gave notice of the fire has a fire extinguisher at hand, he/she should use it provided it can be used to fight the type of fire in the area as otherwise it might worsen the situation.

The worker should be cautious as not to expose his/her life should the emergency equipment be not available yet and he/she starts rescuing if human lives are at stake.

The Emergency Brigade attending the area should wear the appropriate PPE and the appropriate POS extinguishers (anti-flame for Class A, B, and C types of fire) as well as self-breathing masks. Anti-fire loop hoses and hydrants shall only be used if the situation demands it.

In the event that the flames increase and control is lost, the closest Fire department will be contacted, in this case San José de Maipo, phone number 8611530- 8611052, to provide assistance with the situation.

Area N2 2: Premises within each power plant (powerhouse cavern, Control room, building):

In the case of fire in indoor premises there are specific situations that need to be addressed pointedly. Below are the details about addressing fires in 3 indoor areas.

### Powerhouse Cavern (Alfalfal):

Any fire in this area should be treated with utmost caution as each piece of equipment is powered and could release toxic concentrated gases as the cavern is a confined area. In certain occasions depending on the gas nature, the gas may displace oxygen.

Also, it should be noted that the automatic fire system powers-off the HVAC system of the cavern when this type of emergencies take place. Therefore the brigade needs to carry self-breathing masks. Once inside the cavern preference will be given to rescuing people affected by the fire (asphyxia, burns, etc.) before any other action. Under any circumstance should the members of the brigade remove their self-breathing masks to apply it to a victim rescued as this might lead to have two individuals rather than one affected with asphyxia. It would be preferable to transfer the person to a safe area with sufficient air. Depending on the nature and magnitude of the fire, it should be controlled using portable extinguishers PQS, CO2 or the portable PQS cart.

If the fire is located in the access tunnel (cable or vehicles), it should be controlled using portable POS fire extinguishers and **always using** the 50 kg PQS cart located upon entry to the tunnel.

Should the circulation/walking areas were not enabled for use within the cavern due to the fire, emergency escape routes that are duly signaled inside the cavern should be used. Annex N° 3 shows this in more detail.

It should be noted that once the fire is extinguished the HVAC system within the cavern need to be restored as to allow toxic gases produced during the fire to disperse.

### Control Room and Building:

In the specific case of the Control room the extinguisher located there should be used as it is the most convenient for the kind of fire that could occur at the engine room.

On the other hand, any worker who is not part of the brigade or who is not participating, should be immediately evacuated as to prevent major negative effects.

## **EARTHQUAKE**

When experiencing seismic movement it is very important to remain calm and to try to think in a serene manner.

Area N2 1: Premises external to the Power plant (water intakes, roads, land):

Should the earthquake takes place when working on the field, the first thing the staff should do is to go/stand in an area where the risk of rocks falling or landslide is minimum. Then and periodically the staff should use the radio to provide information of their exact location to the Power plant Control Room as such information will be essential should the staff be trapped or isolated due to the earthquake.

If on the other hand the earthquake occurs while a vehicle is being operated, it should be halted and as in the similar case, it is necessary that the person moves to the area with less exposure to rocks falling or landslides as well as to be constantly attentive to the conditions in the surroundings. Also, as in the previous case, it is necessary to have a permanent contact with the Control room.

Area N2 2: Premises within each power plant (powerhouse cavern, Control room, building):

When experiencing any seismic movement, the staff should look for shelter in safety areas which are far from the hillsides (hazard of rock falling) and also away from windows, sills, shelves, high and low voltage cables and wires, trees, and lighting posts.

It is necessary to remain calm, not to run to the safeguarded or shelter areas, to wear hard hat at all times, and help those who are in need.

In the case of the powerhouse cavern the staff should go to safety areas, which can include under a door threshold, under access escalators or staircase between floors, etc. The staff should never remain in areas close to shelves as they might fall or collapse due to the movement or the objects thereof might also fall.

Special caution should be have when exiting the tunnel as rock might have fallen both inside or outside of the tunnel. It is recommended to walk out of the building using the side door of the building.

## **LANDSLIDES (Avalanche):**

Area N9 1: Premises external to the Power plant (water intakes, roads, land). When facing an imminent danger of landslide, be it snow, mud or rocks, all movement and traffic of vehicle and people should be restricted on the external area of the power house. Also, the staff should be kept clear from the windows facing the hill.

It is essential that the staff of the Cordillera Complex is totally aware of the Winter Program for Alfalfal which includes more detailed information regarding landslides.

Area N2 2: Premises within each power plant (powerhouse cavern, Control room, building):

Landslides will not affect the premises indoor. However special care should be had when exiting the access tunnel to the powerhouse cavern as well as when exiting the buildings if the snow built up is considerable.

## **FLOODS**

Area N2 1: Premises external to the Power plant (water intakes, roads, land):

In the event of a flood, all movement and traffic of people and vehicles through the external section of the power plant. Should staff be on the field, notification should be immediately given to the control room as to organize the activities for their rescue.

Area N2 2: Premises within each power plant (powerhouse cavern, Control room, building):

In the event a flood is detected in the tunnel or cavern, notification shall be immediately given to the Control room operator who will analyze the magnitude and the feasibility of controlling it. Otherwise, if the situation cannot be controlled, units need to be powered-off as well as all equipment.

If the staff within the cavern notices that they are losing control of the situation, they should immediately leave the place until the emergency is controlled.

If the flood affects the control room or the building inside, facilities need to be powered-off and the staff should be evacuated.

## SEVERE ACCIDENTS AFFECTING PEOPLE, FACILITIES OR EQUIPMENT:

The procedure to follow in the event of severe accidents involving people, facilities or equipment is the same regardless the location, inside or outside the power plant. Therefore this point will not be addressed in terms of area division as with other points.

Accidents involving people include vehicle accidents wherein the following procedure should be followed:

After the Control room operator is notified of the event, the operator shall immediately call for the Emergency brigade using the appropriate radio channel.

The Emergency brigade should promptly gather to the place of the accident carrying portable fire-extinguishers should the vehicle is on fire; stretcher, and all necessary elements to provide first aid to the victims.

When the brigade arrives to the place it will evaluate the magnitude of the injuries and will inform the operator as to proceed with the notification to the closest medical center and arrange the ambulance. The emergency contact number from Hospital in San José de Maipo is 8611004.

When reaching the area of the accident, the area need to be closed to prevent other vehicles to be involuntarily affected and that an even major accident occurs.

While the ambulance arrives, the Emergency brigade will provide first aid to the people injured and will instruct about the steps to take.

If there are people injured by the accident and the accident occurs off working hours, the procedure addressing that type of situation must be followed. (See annex 1)

### HIGH WATER (RIVER)

When facing an unexpected rise the existing written procedure defining the action plans to implement should be followed. (See Annex

### ESCAPE ROUTES IN ALFALFAL POWERHOUSE CAVERN

When emergencies occur within confined premises they usually end up in tragedy given the characteristics of those places. There is one of these premises at Cordillera Complex which is extremely important for business as usual: Alfalfal powerhouse cavern. Accordingly there is a procedure in place which instruct on which actions to take when facing this type of event. (See Annex 3)

## COMMUNICATION OF STAFF ON DUTY.

The staff operating the power plants follows certain parameters of a communication procedure in order to quickly detect possible accidents that might occur during the different work shifts as to provide effective and prompt assistance. (See Annex 4)

### 8. Miscellaneous

#### **Heliport**

It should be clear that the physical space designated to land helicopters is at Aguas Ricas at the exit of the gate toward water intakes. The area has the corresponding signaling.

Arrival of helicopters need to be coordinated and scheduled beforehand as to prepare the area (needs to be watered in the summer months and snow needs to be cleared out in winter time.)

#### Winter Program

The Winter Program supplements this Emergency Manual for both Alfalfal-Maitenes and Queltehues-Volcán and it includes certain safety standards when facing emergencies, particularly in the access areas to water intakes.

It is mandatory that all and each worker and officer of the Complex knows and complies with the standards detailed therein. (See Annex 5)

#### Permanent Mobilization

The Complex has a vehicle (with a driver) available 24 hr. all year round to be used in the event of emergencies, especially during office hours.

This vehicle is available to the Control room operator.

#### Vehicles Parked within the Powerhouse Cavern

All vehicles entering the cavern should be parked facing the tunnel exit as to have a faster and easy evacuation in the event of an emergency.



## Stretchers

There are 10 stretchers to transport injured within the facilities of the Complex

Below are the locations of these:

1. Alfalfal Control Building Powerhouse Cavern (Alfalfal)
3. Colorado water intake (Sector Gate CR4)
4. Control room Forebay (Colorado)
5. Water intake Control room Olivares
6. Engine Room Maitenes Power plant main
7. Engine Room Queltehues Engine Room Volcán
9. Maipo Water intake
10. Volcán Water intake

## First Aid Kits.

There are 13 first aid kits with items installed within the Complex facilities. These are located at:

1. EDC Control room Alfalfal
2. Powerhouse cavern Control room (Alfalfal)
3. Warehouse 25 (Alfalfal)
4. Mechanical Workshop Alfalfal
5. Control room Forebay (Colorado)
6. Control room Olivares water intake
7. Control Room Maitenes main
8. Engine Room Maitenes secondary
9. Control Room Queltehues
10. Mechanical Workshop Queltehues
11. Volcán Plant
12. Maipo Water intakes
13. Volcán Water intakes

These first aid kits shall be periodically checked for expiration date of medication

## Rescue Gear

Alfalfal has a rescue gear in place that has the complete rescue items for two people with anti-fire suit and self-breathing masks.

This gear is stored in a locker next to the inner side of the lateral entry door to the Control building toward the cavern.

The Emergency brigade staff is trained to correctly use this gear.



# ANNEXES

1. PROCEDURE FOR INJURED OFF WORKING HOURS.
2. EMERGENCY PROCEDURE IN THE EVENT OF HIGH WATER.
3. ESCAPE ROUTES FROM ALFALFAL POWERHOUS CAVERN.
4. SAFETY PROCEDURES FOR STAFF ON DUTY (COMMUNICATION).

WINTER PLANS:

- >ALFALFAL-MAITENES
- > QUELTEHUES-VOLCÁN

## PROCEDURE FOR STAFF INJURED OFF WORKING HOURS

Working hours are from 08:00 AM-06:00 PM, Monday to Thursday, and from 08:00 AM-01:00 PM on Fridays.

Should an accident occurs at Cordillera Complex outside of these hours wherein an employee is affected with injuries preventing him/her from work, the Control room operator shall follow the procedure below:

1. As possible verify the severity of the injury.
2. Provide first aid as necessary.
3. Communicate with the Head of Operation or the Head of the Complex.
4. Contact by telephone or radio the driver designated to the emergency vehicle as to transport the injured to 1ST (address: Calle Placer N° 1410), and if injury is more severe, call an ambulance from 1ST, Phone numbers: Ambulance 5569266, Exchange 5551894 - 5551702; in this case the driver of the emergency vehicle of the complex needs to go with the injured.
5. The Mobilization contractor in Puente Alto Mr. Pedro Contreras, telephone number: 8533523 or 9-2396566, and if not available, M. Renán Valderrama, telephone number: 8114336 or 9-3384271 should be contacted to indicate that the worker who will replace the injured needs to be picked up.

## EMERGENCY PROCEDURE IN THE EVENT OF HIGH WATER

### OBJECTIVE

- > Under an emergency of a sudden rise in the flow of the rivers the following objectives shall be considered for this procedure:
  - Prevention of injuries to people.
  - Reduce losses in equipment and material.
  - Effective emergency responsiveness.

### 11- FIELD OF APPLICATION

This plan is applicable to all staff conducting works at the facilities of Alfalfa and Maitenes and the associated water intakes.

If necessary application of this procedure will be conducted from the 15th of November and 15th of March every year.

### 111- ACTION PLAN

Meeting the previous objectives requires the following Action Plan:

#### 3.1 BEHAVIOUR MONITORING OF THE RIVERS:

- The staff in charge of monitoring the rivers needs to know the area very well as well as changes in flow rates during this time of year (thawing period.)
- It is necessary to verify that the staff to be posted in this area should have the necessary gear for long stay monitoring.
- Two people must be at least available for monitoring, taking turns as to monitor the water for 24 hr.
- The monitoring staff should carry a radio as to keep constant and frequent communication with Alfalfal Control room. The radio will transmit in channel five (5) and should always be on.

#### 3.2 ALARMS

Giving an alarm consists of saying "Alarm one" or "Alarm two" (depending on the case) over the radio at least three times while every worker carrying a radio shall keep silence and be attentive to the communication between the monitor and the staff at Alfalfal Control room. Tap into the communication is strictly forbidden.

ALARM ONE: Also considered as Early alarm, is given by the monitoring staff to Alfalfal control room staff and to all individuals located downstream when: A loud noise is heard within the canyon (resulting from material or ice falling), the flow rate suddenly decreases, and there is a sudden increase in the flow rate and/or with avalanches in the area.

ALARM TWO: Is given by the monitoring staff when the previous situations are assessed and the Control room is contacted; depending on the evaluation, the following actions should be taken:

- ./ Evacuating staff: Decision made by the most senior person present at that time at the Complex.
- ./ Keeping the state of the alarm longer: Decision should be made by the monitoring person if necessary; however the control room needs to be informed permanently.
- ./ Closing the alarm cycle: The monitoring staff shall inform that the situation of danger has been removed and that works at the Complex might resume as business as usual.

All staff walking or moving outside the boundaries of Alfalfal, that is Aguarrica and outside of the main gate to the site, shall always carry a radio tuned in channel five (5).

### 3.3 EVACUATION OF STAFF

The decision to evacuate the facilities shall be made by the most senior person present at the power plant at that time. People located in the building should leave the premises considering:

The evacuation signal will be given using the siren which will sound three times, 10 seconds each with 5 second between each siren.

The most senior person at that time will designate the person in charge of the evacuation who will verify the building is evacuated in a safe and orderly way. This person will also verify that no one remains inside the building.

The Control room operator is mandated to inform: Alfalfal powerhouse cavern staff as to make them leave the facilities; staff at Maitenes; and Carabineros de Chile. The evacuation will be lead to the Evacuation Meeting Point (PEE.) People living in the town of Alfalfal will be informed through the gate staff.

Once is verified that all members of the staff are at the PEE they should take the road to Ventana 3 in a quiet and orderly manner. There is approximately one hour available before the high water reaches Alfalfal Power plant while the distance is approximately 500m from the entry gate to the Power plant.

In transit staff to the water intakes will need to go to the highest elevations in the hills and remain there until being informed; information about the exact location should be given to the control room while informing of the behavior of the river flow rate.

- : Once risks are evaluated the most senior person will determine when to return to the facilities. Returning to the facilities should be done in a safe and ordered manner.

When back in the building an immediate evaluation will be conducted for injured people, isolated and trapped people, structural damages, start-up of equipment, etc.

### 3.4 SHUTTING DOWN OF EQUIPMENT

Once the order to evacuate the building is known, the Control room operator shall inform the Load Dispatch center of the situation and will inform whether the units will be placed out of service; the same will be done at Maitenes.

Once all generation equipment are stopped the powerhouse cavern staff will evacuate using the available vehicles and will go to the access road to Ventana 3 to be at the service of those in charge of the evacuation.

If there are people at Maitenes they are to leave open the doors to the engine room and will then leave the high areas informing the staff at the gate as to prevent people from entering the Power plant.

### 3.5 PEOPLE ISOLATED/TRAPPED

If staff is trapped or isolated it should immediately give notice using the radio as to coordinate the operations of rescue with the Public agencies.

## IV FLOWCHART

### Escape Routes from the Powerhouse Cavern

All ladders and escalators at the CDM, due to their construction and design, are clear from fuel material that might obstruct movement and traffic in the event of an emergency besides being the fastest way to evacuate the powerhouse cavern.

In the event of a fire, the sensors will detect it. Also the OCYEO 1 panel will register and announce the fire and it will be signaled through the panel OCYEO 3. People who are near the focus of the fire shall first give notice to the CDM operator or to EDC who will then inform the Head of the Emergency brigade which will try to combat the fire as possible by using the closest extinguishers available.

In the event that a fire is produced within the Transformers or Generators room, halon gas tanks will be automatically released. This situation shall be announced by light and sound instructions. In this case, the powerhouse cavern shall be immediately evacuated.

Evacuation of the CDM shall be done in a safe and orderly manner following the instructions of Operator 2° on duty as this operator is responsible for knowing all escape routes and evacuation exists as well as the procedure to follow in this case.

Below is a list of some situations of danger that might occur within the Powerhouse cavern:

1. Use of Escape Door N° 1 (floor of injection fans)

If the need to evacuate arises when works are being conducted on the injection fans floor and it is not possible to use the escalators, escape door N° 1 should be used.

When works are being done in the area and it is necessary to evacuate while the escalator is unusable, this door shall be used. There are two wall ladders at the exit: One leads to an emergency exit of the local control room while the other directly leads to the opposite side to the powerhouse cavern.

Risk conditions are when the fans are out of service and a current of air is produced which suddenly activates the doors when opened; wall ladders have no protection.

## 2. CDM Control Room Emergency Exit

As it is not possible to leave the local Control room using the normal ways (stairs - main door), emergency door should be used (designated as N° 3 in the general plan (room 201.))

The exist goes directly to the main access of the powerhouse cavern through a wall ladder; the area's illumination is done through a KOLFF emergency lighting system.

There is a general alarm speaker inside and panel to activate the fire alarm.

No conditions of danger exist when evacuating the room using this emergency door however caution is necessary when using the ladder.

## 3. Evacuation from the Excitation Floor.

Normal exit will always be using doors N° 4 or 5 leading to the main access lobby. Should this door was unusable and using its presents risk, door N° 8 located in the level immediately down (lockers area) should be used; therefore the escalator located in the area of unit N° 2 and running through aisle 201 should be used. This will lead to the emergency door and then directly to the lobby in the first floor; always use the wall ladder located next to the emergency door. There is another door located at the end of the hall but is partially blocked which hinders its usage.

As a last resource, if any of these 3 ways can be used, use the access door to the tank for cooling water and go through the bridge crane ways to the other side of the building where is possible to use the air injection nozzle room as an escape door (point N° 1).

Remember, never use other doors other than those indicated as emergency exits as they do not lead out, have poor lighting, and there is a risk of falling from a height.

## 4. Evacuation from Lower Levels (Generators-Controller-TSV floor)

As it has been mentioned before, exits in the case of emergency will always be staircases in the building; should these be blocked go to emergency door N° 8 (Locker room); if it is not possible to use these, to the access door of the tank of cooling water (location described in the previous point)

## REMEMBER:

1. Keep calm, think and analyze the situation.
2. Inform the operator (EDC) of the location of the fire, the level of severity and whether there are injured.
3. Activate the fire alarm (if you can't communicate.)
4. Try to extinguish the fire (provided you are not under any risk).
5. If any of halon gas batteries is activated you should leave the powerhouse cavern.
6. Be careful when using any escape way.
7. In these cases the CDM operator will be the person with more authority.

## **SAFETY PROCEDURES FOR STAFF ON DUTY**

The staff operating the power plants should follow this communication procedure in order to quickly detect possible accidents that might occur during the different work shifts as to provide effective and prompt assistance.

### **./ Procedures for Alfalfal**

Usually there should be three (3) operators on duty. One should be posted at the control room in Alfalfal power plant while the remaining two at the CDM, while one would be in on the field.

For this procedure Operator 1 is the one staying in the control room, Operator 11 is who stays at the powerhouse cavern, and Operator 111 is who goes to inspect works on the field.

Every time Operator 111 goes on field should carry a radio (after verifying is fully charged) as to immediately give notice to Operator 1 of the place he is heading to, the task to develop in that place, and the estimated time to do that task. Once this is completed, he/she should report every 30 minutes to Operator 1. If this report is not received Operator 1 should try to contact Operator 111. If no communication is possible, it will be assumed that Operator 111 is undergoing a situation of pre-emergency.

O the contrary, Operator 11, who is at the Powerhouse cavern should report to Operator 1 every hour (max) as to provide information about the status and whether everything is normal.

### **./ Procedures for Queltehue**

There will always be two (2) operators per shift. One who will be based in the Control room, Operator 1, while the other, Operator 11, will be conducting field inspections and works, going to the different water intakes (Maipo and Volcán, Volcán Power plant) and conducting inspections in Queltehues water tank among others.

Every time Operator 11 is on the field should verify that base radio in the pickup truck is in place as well as the batteries of the radio he/she should carry at all times. Once all these operations are completed, Operator 11 should inform Operator 1 of the day's itinerary and once at the place of destination, he/should report indicating the area currently visited as well as the estimated time to do the job.

He /she should also report every 30 minutes with Operator 1. If this report is not received, Operator 1 will try to contact Operator 11. If that is not possible either, it will be assumed that the latter is undergoing a situation of pre-emergency.

./ Procedure to follow in the case of a Pre-emergency.

First of all and for the purpose of this procedure, Pre-emergency is defined as any situation where an Operator (11 or 111) is on the field and after one hour is passed no report is given to Operator 1, who is posted at the Control room of the respective power plant (Alfalfal or Queltehues).

Once a pre-emergency situation is detected, it is recommended to wait for a reasonable time, 10 min. approx., as to try to reestablish communication with the operator on the field who is the person who triggers the pre-emergency situation. If after this time no communication is achieved, it will be assumed that Operator 11 or 111 is undergoing a severe problem preventing him/her to communicate, thus the alarm will be activated.

The alarm notification consists of giving notice to the driver of the Complex of the situation and requesting verification on the field.

At that moment, the driver on duty will leave immediately along with the housekeeping staff on duty at that time, and carrying a radio, to the area where the Operator is supposed to be present and should explore the area until finding the Operator. Also, the driver will report every half hour indicating his location and estimated time of journey to the quadrant where the injured person is. Once this is done, the driver will contact Operator 1 and should report the condition the Operator is (11 or 111), as well as to await the corresponding instructions.

If it is the opinion of Operator 1 that the other operator needs to be assisted at that very moment, the driver along with the housekeeping staff will provide first aid. On the other hand if it is necessary that other staff attend the injured, Operator 1 will send staff from the Emergency brigade to the place.

If all efforts conducted are not successful in finding the person who triggered the alarm within 45 minutes, the Head of Operations will be given notice.

## WINTER PROGRAM

### ALFALFAL-MAITENES POWER PLANTS

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## 1. OBJECTIVE

This program defines the procedure to implement in the event of any emergency resulting from weather conditions in Winter and is mainly aimed at safeguarding people's safety and protection of vehicles, machinery, and equipment.

## 2. GENERAL RULES

Winter time is considered the period of time from April 15 to September 15.

The points under this program will be valid all Winter in the period of time indicated or during any other time in the year should the Administration of the power plant so decides, or depending on the circumstances or if special cautions required so.

The rules provided under this program will be in force during this period of time. This program is a regulation with provisions applicable to AES Gener S.A. staff, Contractors, Associates, Visitors, and people attending the facilities of the Alfalfal-Maitenes Complex.

All drivers and all vehicles shall meet the provisions of the Traffic Law used as a building block to set up this program as well as the instructions of the barrier.

Noncompliance with the instructions given by the staff at the barrier or any operator on duty will not be considered justification and the person not complying will be sanctioned as decided by the Head of Alfalfal-Maitenes Complex in accordance with the Procedure for "Vehicle Control" of AES Gener S.A.

## 3. BARRIER

The barrier used by this program is located at the entry of the premises of Alfalfal Power plant.

People moving upstream the barrier shall meet the following:

- > AES Gener S.A. staff should have the appropriate authorization and the operator on duty should be aware of the situation.
- > Third parties or any other, should have the respective authorization as necessary, from:
  - o Ejercito de Chile.
  - o Bienes Nacionales.
  - o Minera Río Colorado.
  - o Dueño Fundo "La Ermita".

Authorizations to third parties or any other should be signed off by AES Gener S.A. The document should indicate the area to be visited, the reason for the visit, and the list of people authorized in the visit.

At the barrier gate they should complete and sign the corresponding document created for the visit. Also, the ID card of the driver or person responsible for the group will be held at the barrier to be claim when returning as to control the time of the visit and issuing an alert if the time is exceeded.

The Control room operator on duty will inform the barrier of the following on a daily basis during the winter period:

- ;. Weather conditions
- ;. Current day and next 24 hr. weather forecasts.
- ;. Alert in force
- ;. Condition of the roads and the need of using chain.

Staff at the barrier will provide all the information about the place where to put and remove the chains on the tires to the drivers going to Olivares and/or Colorado.

Important information collected by the staff at the barrier from drivers coming down from Olivares and/or Colorado should be transferred to the Operator on duty at the power plant.

The staff on duty at the barrier will record the following information under any condition:

- ;. Name of passengers in the vehicle.
- ;. Vehicle type and license plate number.
- ;. Time and day of crossing of the barrier.
- ;. Approximate time of arrival to destination.
- ;. Time and day of return.
- ;. Internal control sheet signature.

The information stated in the previous point needs to be transmitted to the Head of the Complex, and if that is not possible, to the Head of Operations. Outside of normal working hours, this information should be communicated to the Control room operator.

Maintenance staff or contractors going to the water intakes or any intermediate location in Olivares or Colorado and/or in the road to Los Almendros should carry a radio and should inform the Power plant operator on duty of the entry and exit as well as keeping a constant contact with the control room of Alfalfal (EDC) by radio.

Staff at the barrier gate will not authorize passage to vehicles not carrying the items listed under point 5.

#### **4. DRIVERS**

- All drivers going to any location in the area during the winter months shall ensure that the vehicle is equipped with the items listed under point 5 as well as the personal equipment for harsh conditions.
- Drivers shall follow these special rules when driving:
- If you are not experienced driving on snow, do not drive.
- Keep your speed below the limit stated in the signs as this speed has been determined for roads under normal conditions; be utmost cautious if there's snow on the road, specially ice.
- Avoid tailgate other vehicles and keep a minimum clearance of 50 m between your vehicle and the vehicle in front of you and the same distance for machinery in operation on the road. In this former case, wait for the driver of that equipment to yield, blinking the lamps/beam or any other manual signal.
- Always yield to heavier vehicles or vehicles with more wheels.
- Respect strictly the road traffic signs as they can be permanent or temporary.
- If it is necessary to stop on the road, choose a safe place and not areas exposed to the risk of avalanche or rocks falling (the drawing attached identify those areas.)
- Do not apply the brakes excessively. Rather, use the gears and/or decrease your speed. Bear in mind that sudden change of gears lead to skid, the same effect that sudden breaks have.
- Always wear sunglasses when snowing or with sunshine.
- Should the road be blocked with boulders or storms, do not risk by continuing the journey. Use areas dedicated for rest listed under point 11.

#### **5. VEHICLES**

During the months of winter all vehicles on the roads of Olivares and Colorado should be all wheel drive.

The vehicles should be equipped with the following support:

Break-ice chains with tensors in good conditions or special tires for ice and snow, wire rope or sling, Jack, Wrench, Spare tire in good conditions, Shovel, Flash light, Extinguisher, First Aid kit, Triangle road signs, Portable radio.

The vehicle should have anti-freezing liquid for the cooling water and that contact surface of tires has to be in good conditions.

During winter only secondary roads will be authorized for use, company vehicles and contractor's vehicles authorized by AES Gener S.A., vehicles authorized by Minera Río Colorado and those meeting the conditions of this program.

## 6.- PROCEDURE FOR ALERTS

The procedure for alerts is a set of measures applied to people's safety and ensure protection of properties when weather conditions are not favorable.

**Alert** is a special notification issued if there is a risk of avalanche, storms, rainstorms or rock falling. In this situation traffic using secondary roads is subject to the regulations from each alert.

There are three (3) alerts that can be issued depending on the magnitude of the upcoming risk and which are transmitted to the barrier gate.

**End of alert:** Operations return to normal and use of secondary roads will depend on their conditions. This is done after the person in charge of this plan evaluates the conditions at each point.

Alerts, their meaning, and signaling are described under points 7 and 10.

In winter time or bad weather, the Operator on duty at the Power plant will obtain information about the weather from the web page of the national weather agency (Dirección Meteorológica de Chile) regarding forecasts for the current day and the next 24 hours with a "zero" isotherm position. If there is no Internet access this information will be directly requested to the agency or to Onemi.

## 7.- REGULATION FOR ALERTS

Applicable to all areas of work with the descriptions described under each of the alerts.

### 7.1 First Alert: Green Flag.

Meaning: Upcoming bad weather conditions

Pedestrian crossing: Normal in the areas of water intakes and offices

Pedestrian crossing using secondary roads: Prohibited

Vehicle traffic through secondary roads: Normal

### 7.2 Second Alert: Yellow Flag.

Meaning: Snow, bad weather in the area, no risk of avalanche or receding bad weather.

Pedestrian crossing: Normal in the areas of water intakes and offices.

Pedestrian crossing using access roads to water intakes: Prohibited.  
Traffic through secondary roads: Restricted, only vehicles authorized by AES Gener S.A.

Third Alert: Red Flag.

Meaning: Heavy snow, increasing, "Avalanche warning."

Pedestrian crossing: Restricted (water intakes and Los Almendros line).  
Pedestrian crossing using secondary roads: Prohibited.  
Traffic through secondary roads: Prohibited, roads closed.

No cleaning works will be done (removal of snow) on the roads to the water intakes. The road contractor will only keep clear the main access road to the power plant to facilitate staff arrival or evacuation.

Cleaning works can be done in the areas of offices, EDC, machine shops, and lockers (removal of snow.)

#### 8.- USE OF CHAINS

Chains will be always used when using roads with snow and/or ice.

Noncompliance with the instructions about the use of tire chains will be sanctioned by AES GENER.

## 9.-RESPONSIBILITIES

### 9.1.- AES Gener S.A., Alfalfal – Maitenes

Comply with and ensure the compliance with this regulation as well as to sanction breach and non-compliances that are confirmed.

Issue and manage the alerts provided under this regulation.

Move winter period start or end dates forward or backward.

Keeps a meteorological log including the characteristics of the snow falling and on the ground.

Use the barrier gate to control that vehicles meet the instructions provided under this and other regulations.

Roads cleaning and signaling in their area of responsibility.

Analyze and interpret every individual directive under this regulation case by case.

### 9.2.- CONTRACTORS

- Take into account the appropriate prevention measures to be taken in the event of storms, avalanche, and other weather phenomena that might impact the development of works.
- Build and keep rescue crews.
- Keep a log of staff present in the area during the winter period.
- Setup time schedules for vehicles as to make possible their arrival to Alfalfal barrier gate no later than 05:00 PM.
- Road signaling in their areas of responsibility.
- Signaling for all stopped equipment.
- Cleaning of access and roads in their areas of responsibility.
- Have the necessary machinery to meet the previous point.
- Schedule and train its staff in situations of risk and bad weather conditions.
- Meet and ensure that the directives of this and other regulations are comply with.
- Manage alerts in their areas of responsibility.
- Perform all necessary actions to control risks inherent to the winter period, regardless being included in this regulation.

## 10.- SIGNALING SYSTEM

ALERT	SIGNALING	MEANING
FIRST	GREEN	Bad weather approaching the area
SECOND		Snowing Bad weather in the area. No risk of avalanche. Mandatory use of chains.
THIRD	RED	Heavy snow. Bad weather in the area. Increasing risk avalanche Mandatory use of Chains
END OF ALERT ■	SIGNALING IS REMOVED	Operations resume 4 hr. after the third alert

## 11.- SHELTERS AND SAFEGUARDS

### Use of Shelters

In the event that the staff is trapped due to bad weather conditions or boulders on the road, both water intakes at Olivares and Colorado have shelters equipped to hold 4 people during 15 days.

### Shelter Gear and Equipment

Shelters have the necessary food and amenities to face situations of emergency which are reviewed and replaced April each year.

### Safeguard in Emergency Situations

In the event that drivers are trapped by boulders on the road or snow storms in areas where is not possible to return to the water intake or continue to the Power plant, and considering that it is not possible to receive assistance or be rescued immediately, the following places can be used as shelters:

Tunnel Ventana 5	Km39	Branch Olivares
Tunnel Ventana 4	Km36.5	Branch Olivares
Tunnel Ventana 7	Km35.5	Variant Branch Olivares
Tunnel Ventana 8	Km36.5	Branch Colorado
Tunnel Cuesta Tambillo	Km40.5	Branch Colorado
Tunnel Ventana 9	Km 46.5	Branch Colorado
Control Room Btma Colorado	Km 51.5	Branch Colorado

Drivers should try to reach those places in their vehicles as to be protected only walking when visibility allows for.

Should bad weather conditions continue for one or more days and it is still not possible to assist them, people at the shelter should remain calm until conditions change, they should not leave the shelter; they should always be aware that all efforts will be made early on the situation to try to locate them using land patrol or helicopter; in the latter case it is recommended that when listening to the helicopter they should go out and wave using colorful clothing or make a fire using a piece of fabric or cloth using oil and/or grease.

If drivers can not to reach these shelters for being trapped between two areas in a snow storm, they should not leave the vehicle under any circumstance or park near ravines regardless how small they are; the vehicle should be parked as closer as possible to a natural rock wall or large rock, taller than the vehicle as to be protected from rocks falling or snow avalanche.

#### 11.1.- Regulation for the use of Shelters

Shelters at Colorado and Olivares water intakes are buildings designed and equipped as shelters for the staff that can be trapped due to weather emergencies.

Canned servings and other food kept in the case of "EMERGENCY" should not be used under any other normal situation.

When leaving the shelter, main switches for power and gas should be closed, and water faucets should be closed. If the chimney has been used, double check that there is no wood burning. When leaving the shelter all the furniture should be organized.

When leaving the shelter do not leave food and take out all garbage produced while using the shelter as to prevent bad odors and appearance of pests.

## 12. ZONES OF BOULDERS

A record of all boulders existing in the canyons of rivers Olivares and Colorado that affect the access roads to both water intakes and that present high risk in the winter period.

### 12.1. MAIN BOULDERS

1.- Between the bridge La Gloria and Confluencia, from Km 26 to Km 30, this area is characterized for being a very narrow road with high summits which has all along the road the risk of toppling of rocks and landslides from a great height, especially during rainstorms and during summer showers. Snow boulders are not frequent. Drivers should be attentive to the noise produced by this type of landslide.

2.-Between Confluencia and Olivares water intake.

2.1.-Boulder Tres Puntas, at Km 31 falling from a great height, reaching the road and the bridge with the same name; snow boulder.

2.2.-Boulder Los Lunes bridge, at Km 32, snow boulder.

2.3Boulder Cuesta Los Lunes, at Km 35; this boulder reaches bridge El Coironal, also affecting access to ventana N°7; snow boulder.

2.4.-Boulder El Piedrero, at Km 35,300; not always reaches the road; snow boulder.

2.5.-Boulder Los Maitenes, at Km 36; snow boulder opening in a fan type structure also affecting access to Olivares crossing.

2.6.-Boulder Estero los Maitenes, at Km 37; not always reaches the road; snow and rock boulder.

2.7.-Boulder El Frío, Km 40; snow and rock boulder opening in a fan type structure.

2.8.-Boulder Olivares, Km 43; not always reaches the road but does affect access to T-8.

3.-Between Confluencia and Colorado water intake.

3.1.Boulder Los Ranchos, Km 31; snow, rock, and mud boulder.

3.2. Boulder Las Pataguas, Km 35,500; snow boulder.

3.3.Boulder Los Caballos, Km 35,800; snow boulder.

- 3.4. Boulder Salinilla, Km 36; this boulder opens in a fan type structure; snow boulder.
- 3.5. Boulder Espinoza, Km. 36,400; rock and snow boulder.
- 3.6. Boulder El Hospital, Km 37M snow boulder crossing the river to the road.
- 3.7. Boulder Quintana Km 37,500; snow boulder.
- 3.8. Boulder Las Yeguas, Km 38,500; big magnitude and load snow boulder opening in a fan type structure.
- 3.9. Boulders Tambillo Km 41; small structures of snow falling from low height to the hill near the road.
- 3.10. Boulder El Encabritao, Km. 46M large magnitude and load snow boulder.

Remember that during the months of very low temperatures (August-September), landslides occur when the snow starts melting.

## "DO READ THE FOLLOWING"

EVERYTIME YOU GO TO A PLACE OUTSIDE ALFALFAL POWER PLANT (WATER INTAKES-VENTANAS, ETC.), REMEMBER THE FOLLOWING RECOMMENDATIONS:

1. Go with a driver who knows the area.
2. Review the vehicle and confirm that all the elements and parts are in good working condition (tires, front lamps, rear lamps, jack, chains, shovels, etc.).
3. Drive at a speed equal or lower than the speed limit in the signs; always drive defensively.
4. Carry a radio in good condition; verify the batteries are charged; communicate regularly with the control room.
5. If you do not know the area, ask instructions to someone with experience and who knows the area.
6. Never work or visit a place by yourself; when there might be a risk, ask for help.
7. Never intervene equipment if you do not have the corresponding authorization from the operator on duty or the area coordinator. Be certain that the equipment to service is totally powered off.
8. Every time you work or enter any window you should wear your PPE (hats, steel cap shoes, gloves, etc.), as well as verify the environmental conditions within the window.
9. Remember to carry at least a flash light in good working conditions (if you are going to use it for an extensive period, carry spare batteries.)
10. When inside confined areas no gas powered vehicles if ventilation conditions are not appropriate. Preferably use diesel vehicles. If it is not possible to use diesel vehicles, adopt some of the following measures:
  - a) When possible carry a self-breathing mask or similar.
  - b) Do not stay long at the place when observing that the air is dense.
11. All vehicles entering a window and reaching the destination should turn off the engine as to prevent polluting the environment.

AS YOU WILL SEE, SAFETY IS EVERYBODY'S JOB.

AES Gener S.A. Risk Prevention Department,

## WINTER PROGRAM

### QUELTEHUES - VOLCAN POWER PLANTS

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AES Gener S.A. Risk Prevention Department

## 1. OBJECTIVE

This program includes the procedure to implement in the event of any emergency resulting from weather conditions in Winter and is mainly aimed at safeguarding people's safety and protection of vehicles, machinery, and equipment.

## 2.- GENERAL RULES

Winter time is considered the period of time from April 15 to September 15.

The points under this program will be valid all Winter in the period of time indicated or during any other time in the year should the Administration of Queltehues-Volcan power plants so decides, or depending on the circumstances or if special cautions required so.

The rules provided under this program will be in force during this period of time. This program is a regulation with provisions applicable to AES Gener S.A. staff, Contractors, Associates, Visitors, and people visiting the facilities and premises of Queltehues - Volcán power plants.

All drivers and all vehicles shall meet the provisions of the Traffic Law used as a building block to set up this program as well as the instructions from Cordillera work unit.

Noncompliance with the instructions will not be considered a justification and the person not complying will be sanctioned as decided by the Administration of Cordillera Work unit in accordance with the Procedure for "Vehicle Control" of AES Gener S.A.

## 3.- DRIVERS

All drivers going to any location in the area during the winter months shall ensure that the vehicle is equipped with the items listed under point 4.2 of this regulation as well as the personal equipment for harsh conditions.

Drivers shall follow these special rules when driving:

- 1°. If you are not experienced driving on snow, do not drive.
- 2°. Always keep your speed below the limit stated in the signs as this speed has been determined for roads under normal conditions; be utmost cautious if there's snow on the road, particularly ice.
- 3°. Avoid tailgating and keep a 50 m distance between your vehicle and the vehicle in front of you and the same distance for machinery in operation on the road. In this former case, wait for the driver of that equipment to yield, blinking the lamps/beam or any other manual signal.
- 4°. Always yield to heavier vehicles or vehicles with more wheels.

- 5°. Respect strictly the road traffic signs as they can be permanent or temporary
- 6°. If it is necessary to stop on the road, choose a safe place and free of avalanche or boulders
- 7°. Do not apply the brakes excessively. Rather, use the gears and/or decrease your speed. Bear in mind that sudden change of gears lead to skid, the same effect that sudden breaks have.
- 8°. Always wear UV polarized sunglasses when snowing or with sunshine.
- 9°. Should the road be blocked with boulders or storms, do not risk by continuing the journey; find a safe protection area.

#### 4.- VEHICLES

During the months of winter all vehicles on the roads of Olivares and Colorado should be all wheel drive. The vehicles should be equipped with the following support:

- Break-ice chains with tensors in good conditions or special tires for ice and snow.
- Wire rope or sling
- Jack
- Wrench
- Spare tire in good conditions
- Shovel
- Flash light Fire-extinguisher
- First-aid kit
- Triangle road sign

The vehicle should have anti-freezing liquid for the cooling water and that contact surface of tires has to be in good conditions.

During winter only vehicles authorized meeting the conditions of this program will use the working areas.

#### 5.- PROCEDURE FOR ALERTS

The procedure for alerts is a set of measures applied to people's safety and ensure protection of properties when weather conditions are not favorable.

Alert: A special notification issued if there is a risk of avalanche, storms, rainstorms or rock falling. Under this situation people activities are subject to the regulation of each alert.

Once information about the weather conditions at Alfalfal power plant, three (3) alerts are issued depending on the risk to the workers at the Work unit. The workers then are responsible for transmitting the information to Contractors, associates, and visitors at the working area.

End of alert: Operations are back to normal once conditions in the area are evaluated.

Alerts, their meaning, and signaling are described under points 6 and 10.

In winter time or during bad weather conditions the power plant operator will request the forecast for the day and the next 24 hours to the operator on duty at Alfalfal power plant that will have the information for the area every day at 06:00 AM and 07:00 PM.

## 6.- REGULATION FOR ALERTS

Applicable to all areas of work with the descriptions described under each of the alerts.

### 6.1.First Alert: Green Flag.

Meaning: Upcoming bad weather conditions

- Maintenance and Operation Staff traffic:
- Pedestrian crossing: Normal in the areas of water intakes, Volcan power plant, workshops, and offices.
- Traffic in access roads to work areas: Normal.

### 6.2.First Alert: Yellow Flag.

Meaning: Snow, bad weather in the area, no risk of avalanche or receding bad weather.

Maintenance and Operation Staff traffic:

Pedestrian crossing: Normal in the areas of water intakes, Volcan power plant, workshops, and offices.

-Traffic to water intakes:

Restricted: only vehicles authorized by the operator on duty.

### 6.3. First Alert: Red Flag.

Meaning: Heavy snow, increasing, "Avalanche warning."

Maintenance and Operation Staff traffic:

Restricted.

Vehicle traffic to water intakes:

Prohibited.

No cleaning works will be done (removal of snow) on the roads to the water intakes or access roads.

Cleaning works can be done in the areas of SDM offices, and machine shops (removal of snow.)

## 7.- USE OF CHAINS

The operator on duty at the power plant will determine when to place or remove the chains to the emergency pickup truck. In the case of staff transportation, the users will make that decision.

Noncompliance with the instructions about the use of tire chains will be sanctioned by AES Gener S.A.

## 8.- RESPONSIBILITIES

### 8.1 AES Gener S.A., QUELTEHUES- VOLCAN.

- Comply with and ensure the compliance with this regulation and sanction breach and non-compliances that are confirmed.
- Issue and manage the alerts provided under this regulation.
- Move winter period start or end dates forward or backward.
- Keeps a meteorological log including the characteristics of the snow falling and on the ground.
- Control -through workers from the Work unit, those vehicles meet the instructions provided under this and other regulations.
- Roads cleaning and signaling in their area of responsibility.
- Analyze and interpret every individual directive under this regulation case by case.

### 8.2.- CONTRACTORS

Take into account the appropriate prevention measures to be taken in the event of storms, avalanche, and other weather phenomena that might impact the development of works.

Keep a log of staff in the area during the winter period.

Setup time schedules for vehicles as to make possible their return to Queltehues power plant no later than 05:00 PM and inform their departure time from the area.

Signaling for all work in progress that affects normal crossing of people and/or traffic.

'Schedule and train its staff in situations of risk, emergencies, and bad weather conditions.

'Comply with and ensure compliance with this and other relevant regulations.

Manage alerts in their areas of responsibility.

Perform all necessary actions to control risks inherent to the winter period, regardless being included in this regulation.

## 9. SIGNALING SYSTEM

ALERT	SIGNALING	MEANING
FIRST	GREEN	Bad weather conditions in the area approaching.
SECOND		Snowing Bad weather in the area. No risk of avalanche. Mandatory use of chains.
THIRD	RED	Heavy snow Bad weather in the area Increasing risk of avalanche Mandatory use of chains
END OF ALERT	ALERT SIGNALING REMOVAL	Operations resume 4 hours after third alert

## 10. SHELTERS

Use of shelters.

In the event that the staff is trapped due to bad weather conditions or boulders on the road, water intakes at Maipo, Volcan and Queltehues power plant have shelters equipped to hold 4 people during 15 days.

Shelter Gear and Equipment

Shelters have the necessary food, supplies, and amenities to face situations of emergency which are reviewed and replaced April each year.

Emergency Situations.

In the event of being trapped by boulders on the road or snow storms in the water intake areas and when is not possible to receive assistance or be rescued immediately, maintenance and operation staff can use the equipped shelters.

Should bad weather conditions continue for one or more days and it is still not possible to assist them people at the shelter should remain calm until conditions change, and should not abandon the shelters.

They should always be aware that all efforts will be made early on the situation to try to locate them using land patrol or helicopter; in the latter case it is recommended that when listening to the helicopter they should go out and wave using colorful clothing or make a fire using a piece of fabric or cloth using oil and/or grease

If drivers can not to reach these shelters for being trapped between two areas in a snow storm, they should not leave the vehicle under any circumstance or park near ravines regardless how small they are; the vehicle should be parked as closer as possible to a natural rock wall or large rock, taller than the vehicle.

#### 10.1. Regulation for the use of Shelters

Shelters at Maipo and Volcan water intakes as well as the shelter at Queltehues power plant are buildings designed and equipped as shelters for the staff that can be trapped due to weather emergencies.

Canned servings and other food kept in the case of "EMERGENCY" should not be used under any other normal situation.

When leaving the shelter after the emergency, it should be checked that all gas piping and appliances are turned off and closed as well as all drinking water system. Lights should be turned off and electric appliances should be unplugged.

When leaving the shelter all the furniture should be organized, and used bed sheets should be set apart to be removed and washed.

When leaving the shelter do not leave food and take out all garbage produced while using the shelter as to prevent bad odors and appearance of pests.

#### 11.- ZONES OF BOULDERS

There is a record of all boulders present in the canyons of rivers Maipo and Volcan affecting access roads to both water intakes and that present high risk in the winter period.

## 11.1 MAIN BOULDERS

### 1.- Branch Maipo Water intake:

- 1.1. Boulder "Santa Rita", falling approx. at Km. 1. Dragging mud and rocks; obstructs road shoulder.
- 1.2. Boulder "El Loro", falls between Kms. 3 and 4. Drags rock and snow and reaches the road.
- 1.3. Boulder "Las Melosas", falls in Km. 5 at the entry of Las Melosas shelter; mostly mud; occasionally blocks the road.
- 1.4. Boulder "Los Helados", falling approx. at Km. 6; mostly rock and snow; blocks the road.
- 1.5. Boulder "El Zorro"; falls on the shoulder located around Km. 9; rocks and mud; blocks the road.
- 1.6. Boulder "Los Caballos", falling approx. at Km. 12 between the settling ponds and Maipo water intake; mostly snow; blocks the road.

### 2.- Branch Volcán Water intake:

- 2.1 Boulder "El Cobre"; ravine before the town of El Volcán (downstream). Drags mud and rocks; blocks the road.
- 2.2. Boulder "La Greda"; upstream ravine to the town of El Volcán; mostly snow and rocks; reaches and blocks the road.
- 2.3. Boulder "La Tenca"; upstream ravine to La Greda, 1.5 Km. approx.; drags snow and rocks; blocks the road.
- 2.4. Boulder "El Salto"; upstream ravine to La Tenca, 2 Km. approx.; drags rock and snow and reaches the road.
- 2.5. Boulder "El Yesillo," upstream ravine to La Tenca, 1.5 Km. approx.; drags rock and snow and reaches the road.

Remember that during the months of very low temperatures (August-September), landslides occur when the snow starts melting.

¡DO READ THE FOLLOWING!

EVERYTIME YOU GO TO A PLACE OUTSIDE FROM THE POWER PLANT, WATER INTAKES, PONDS, SHELTERS, ETC.), REMEMBER THE FOLLOWING RECOMMENDATIONS:

Go with a driver who knows the area.

Review the vehicle and confirm that all the elements and parts are in good working condition (tires, front lamps, rear lamps, jack, chains, etc.).

Drive at a speed equal or lower than the speed limit in the signs; always drive defensively.

Carry a radio in good condition; verify the batteries are charged; communicate regularly with the control room.

If you do not know the area, ask instructions and/or advise to someone with experience and who knows the area.

Never work or visit a place by yourself; when there might be a risk, ask for help.

Never service equipment if you do not have the corresponding authorization from the operator on duty and/or the area coordinator, and check the equipment before servicing.

Every time you work in any of the facilities of the work unit: You should wear your PPE (hats, steel cap shoes, gloves, etc.).

Remember to carry at least a flash light in good working conditions (if you are going to use it for an extensive period, carry spare batteries.)

PROCEDURE ANNEX EMERGENCY PLAN  
Rev.1  
CORDILLERA HYDROELECTRIC COMPLEX

1. OBJECTIVE
2. SCOPE
- 3.- RESPONSIBILITIES
- 4.- DEFINITIONS
- 5.- PROCEDURE
- 6.- MODIFICATIONS TO THE DOCUMENT
- 7- RECORDS
8. ANNEXES

## 1 Objective

Establish mitigation measures for potential significant environmental impacts deriving from emergency situations identified at Cordillera Hydroelectric Complex.

## 2 Scope

The scope of this procedure is to mitigate environmental impacts resulting from the emergency situations identified at Cordillera Hydroelectric Complex.

## 3 Responsibilities

3.1 Those defined under the Emergency Plan for Cordillera Complex, Rev. 1

3.2 Those defined under the Spillage Management Plan

## 4 Definitions

Not applicable.

## 5 Procedure

Situations of emergency identified under the Emergency Plan for Cordillera Complex, Rev. 1 includes

Fire Earth

wakes

Landslides

Floods

Severe accidents affecting people, facilities or equipment.

Out of the emergency situations already identified that might lead to potential environmental impacts are Fire and Earthquakes.

### 5.1 Fire

5.1.1 Both the description of the emergency caused by fire and the modus operandi are included in the Emergency Plan for Cordillera Complex, Rev. 1

### 5.1.2 Mitigation of Environmental Impacts due to Fire:

5.1.2.1 Once the emergency is controlled solid and liquid waste produced on the place of the fire will be collected. The following steps should be considered when disposing wastes and recovering the area affected:

- Request coordination with the Expert in Risk prevention and EMS Coordinator.
- Isolate the area affected by the emergency by using signaling elements (cones, tapes, people, etc.)
- All people participating in mitigation works and waste management should wear the appropriate PPE depending on the type of waste to be treated, cleaned, and disposed of.
- Sort and classify waste by area (metal structures, scrap, wood, liquid solutions, contaminated soil, etc.).
- Once waste is separated, disposal should be done in accordance with the Waste Management Plan in place.
- Clean the area affected or cover the area using clean dirt, soil or gravel if the emergency had directly affected the soil. Otherwise, if the area is covered (concrete slab, asphalt, etc.) clean the area and dispose of the waste as defined under the Waste Management Plan.

## 5.2 Earthquakes

5.2.1 Both the description of the emergency caused by earthquakes and the modus operandi are included in the Emergency Plan for Cordillera Complex, Rev. 1

### 5.2.2 Mitigation of Environmental Impacts due to Earthquakes:

5.2.2.1 Once the emergency is controlled solid and liquid waste produced on the place of the fire will be collected.

The following steps should be considered when disposing wastes and recovering the area affected:

- Request coordination with the Expert in Risk prevention and EMS Coordinator.
- Isolate the area affected by the emergency using signaling elements (cones, tapes, people, etc.)
- All people participating in mitigation works and waste management should wear the appropriate PPE depending on the type of waste to be treated, cleaned, and disposed of.
- Sort and classify waste by area (metal structures, scrap, wood, liquid solutions, contaminated soil, etc.).
- Once waste is sorted, disposal as provided under the Waste Management Plan.

### 5.3 Emergencies resulting from Chemicals

5.3.1 Emergencies resulting from chemicals are described under the procedure Chemicals Management Plan.

5.3.2 Actions and mitigations measures for spillage of chemicals or materials regulated by AES are described under the Spillage Management Plan.

### 6.- Modifications to the Document

Version	Description of Change

### 7- Records

7.1 Incident Reports.

SPILLAGE MANAGEMENT PLAN CORDILLERA  
HYDROELECTRIC COMPLEX

1. OBJECTIVE
2. SCOPE
- 3.- RESPONSIBILITIES
- 4.- DEFINITIONS
- 5.- PROCEDURE
- 6.- MODIFICATIONS TO THE DOCUMENT
- 7.-RECORDS
- 8.-ANNEXES

## 1 Objective

Establish responsive actions to spillages by controlling in the least time possible spillage of any AES-regulated material; minimizing damages to the environment, injuries to people, and normal business operation.

## 2 Scope

This procedure is applicable to all Cordillera Complex facilities, processes, and staff.

## 3 Responsibilities

### 3.1 Head of the Complex

3.1.1 Allocate necessary resources for the correct implementation of the Spillage Management Plan at Cordillera Complex.

### 3.2 EMS Coordinator

- 3.2.1 Identify the necessary elements to contain spillage, the amount of these items, and the areas to place them.
- 3.2.2 Define how the ground / floor will be remediated when the need to replace it arises.
- 3.2.3 Report online all major spillages to AES
- 3.2.4 Report and keep constant communication with the authorities in the event of spillages resulting in significant environmental damages.
- 3.2.5 Train staff in Spillage Management
- 3.2.6 Produce and implement corrective measures in the event of a spillage, if necessary

### 3.3 Risk Prevention Expert

- 3.3.1 Should prepare the safety data sheet for AES-regulated material, hazardous and/or special waste stored, handled and/or produced at Cordillera Complex.
- 3.3.2 Produce and implement corrective measures in the event of a spillage, if necessary

### 3.4 Head of Operations / Head of Management

- 3.4.1 If EMS Coordinator is not available, report AES of any major spillage.

- 3.4.2 Generate the actions and/or measures for rainfall management at the facilities equipped with secondary collection.
  - 3.4.3 Generate and implement corrective and/or preventive measures in the event of a spillage, if necessary.
  - 3.4.4 In the event of a spillage inform the EMS Coordinator and the Head of the Complex
- 3.5 Head of Section / Head of Shift
- 3.5.1 Inform the EMS Coordinator of the needs of absorbing material for spillage in their areas.
  - 3.5.2 Coordinate planning in the event of a spillage with EMS Coordinator.
  - 3.5.3 Designate the staff that will manage the spillage.
  - 3.5.4 Generate and implement corrective and/or preventive measures in the event of a spillage, if necessary.
  - 3.4.4 In the event of a spillage inform the EMS Coordinator and the Head of the Complex.
  - 3.5.6 Verify the correct waste disposal in the event of a spillage
- 3.6 Control Room Operator
- 3.6.1 Inform the Head of Shift of the spillage.
  - 3.6.2 Coordinate planning activities with the Head of Shift and the EMS Coordinator in the event of a spillage.
  - 3.6.3 Help the Head of Shift prepare the report of the spillage
- 37 Electricians, Mechanics, Instrument staff, Safety staff
- 3.7.1 Know the Spillage Management Plan
  - 3.7.2 Communicate any spillage detected
  - 3.7.3 Actively participate in spillage management
  - 3.7.4 Actively participate decontaminating the area of the spillage
  - 3.7.5 Use spillage absorbing material rationally placed in the working areas.
  - 3.7.6 Dispose of wastes resulting from spillage in accordance with the Waste Management Plan
- 3.8 Cordillera Complex Admin Staff
- 3.8.1 Know the Spillage Management Plan
  - 3.8.2 Communicate any spillage detected

### 3.9 Contractors and/or Service Providers

- 3.9.1 Know the Spillage Management Plan when conducting works at the facilities of Cordillera Complex.
- 3.9.2 Communicate any spillage detected at Cordillera Complex.
- 3.9.3 Implement corrective and/or preventive measures.

## 4 Definitions

- 4.1 Spillage: Release of any AES-regulated material, hazardous or special waste or liquid special waste outside a storage bulk tank resting on the ground, equipment reservoir, container or process of an AES business.
- 4.2 AES-Regulated Material: A chemical or raw material which when released into the air, surface or underground water and/or soil might endangered workers and/or general public or cause damages to the surrounding environment. Example: Products from Oil. Hazardous substances and extremely hazardous substances (not considering, drinking water, water for fire-fighting purposes, some process water, and waste material)
- 4.3 Spillages to be reported by AES: Any liquid spillage of AES-regulated material, hazardous waste special waste or PCB to be reported to the authorities and/or is spilled at an AES site to the environment in a volume greater than 210 lt. Spillages causing significant environmental damage or that draw attention from the public should be immediately reported to AES Corporative Department of Environmental Affairs.
- 4.4 Above Ground Bulk Storage Tank (ABST): Bulk storage tank that has less than 10% of its volume, including secondary piping below ground level, with capacity to hold 2500 lit or more and that holds hazardous material and/or special liquid waste.
- 4.5 Underground Storage Tank (UST): Tank system, including secondary piping, with 10% of its volume below ground level; capacity for 2500 lit or more and holds AES-regulated material, hazardous waste and/or special liquid waste.
- 4.6 Container: Drum, can, cylinder, bin or storage tank with capacity to hold liquid or solid in volume greater than 210 lt. Piping and piping system are not considered containers.

- 4.7 PCB: Polychlorinated bi-phenyl in concentration greater than 500 ppm. This includes liquid, equipment, and waste resulting from cleaning PCB.
- 4.8 Hazardous Substance: Substances which due to their nature produce or might produce temporary or permanent damages to human, natural or vegetal health, as well as to facilities, machinery, buildings, etc. (NCh 382. Of 98).
- 4.9 Safety Datasheet: Provides information regarding different aspects related with safety, health, and protection to the environment; essentially provides basic knowledge of the product and about measures for protection and treatment in the event of an emergency (NCh 2245.0f93).
- 4.10 Transportation Datasheet (HDST, as per Spanish): Summary information sheet with all major characteristics and how to act when facing an incident involving hazardous substances. HDST needs to be carried by the driver of the vehicle used to transport hazardous substances (NCh 2353.0f96).
- 4.11 Hazardous Waste: Waste that has particular characteristics such as explosives, flammable material, oxidant, poisonous, infectious, corrosive, toxic and/or eco-toxic, which if not handled and disposed appropriately will result in significant damages for the general public and/or the environment.
- 4.12 Special Waste: Include used oil, light bulbs/switches containing mercury and batteries.
- 4.13 High Risk for Water Bodies: A potential source of spillage from AES located less than 30m from a drainage or open way directly leading to water bodies outside from the site (e.g. pond, lake, creek or river)
- 4.14 PPE: Personal protection equipment

## 5 Procedure

### 5.1 General

- 5.1.1 Spillage management will be conducted at Cordillera Complex as provided under the current legislation. Compliance with the regulation should be in the record.
- 5.1.2 Spillage management will be conducted at Cordillera Complex as provided under the Environmental regulation of AES "Spillage Prevention and Containment."
- 5.1.3 Every container, storage tank, and/or equipment shall be regularly inspected to prevent physical deterioration and, therefore, spillage and/or leaks.
- 5.1.4 All staff involved in transportation, handling, storage and/or transference of AES-regulated material, hazardous and liquid special waste should be trained in spillage management.
- 5.1.5 All facilities where AES-regulated material, hazardous and/or liquid special waste is stored and/or handled should have available the safety datasheet and when those materials are transported, there should also be available a transportation datasheet (HDST).
- 5.1.6 All areas where AES-regulated material, hazardous and/or liquid special waste is stored and/or handled should have all necessary items to contain and/or absorb potential spillages as defined under the respective safety datasheets.
- 5.1.7 All staff involved in spillage control shall use at least the following PPE: Safety gloves, steel cap shoes, safety goggles, and other necessary items as stated in the safety datasheet of the product, when necessary.
- 5.1.8 In the event of a spillage, the area should be closed and isolated as to prevent contact with the material spilled.
- 5.1.9 In the event of a spillage, all possible sources of ignition should be unplugged or powered-off.

## 5.2 Classification of Spillage

At Cordillera Complex spillages are defined in two types:

5.2.1 Small Spillages: Spillage under 210 lt. of AES-regulated material, hazardous and/or special liquid waste.

5.2.2 Large Spillages: Spillages greater than 210 lt. of AES-regulated material, hazardous and/or special liquid waste.

## 5.3 Identification and Communication of a Spillage

5.3.1 The person detecting a spillage must:

- Identify the material spilled
- Identify whether the spillage is small or large.
- Immediately inform his/her superior or to the Head of Shift of the Complex; or the Control Room Operator of the respective Power plant.

5.3.2 Then, the person receiving the information or the person designated by the Head should immediately plan the activities to control the spillage verifying on site the measures to be taken as provided under the safety datasheet and will also determine the staff to be involved in the emergency.

5.3.3 The superior or the person receiving the information should inform the EMS Coordinator, the Head of Operations, Head of Maintenance, and the Head of Cordillera Complex of the incident.

## 5.4 Control of small spillages (planning):

5.4.1 Small spillages on a surface (slab, asphalt, tiles, etc.)

- When possible material spilled should be recovered and added to its container.
- The spillage is to be controlled using the absorbing material defined under the safety datasheet of the product available in the area.
- When absorbing the spillage the surface needs to be decontaminated using water or any other substance defined under the safety datasheet within 72 hr of the spillage.
- Resulting waste should be handled (sorted and temporary disposed of) as defined under the Waste Management Plan.
- Report the spillage.

#### 5.4.2 Small spillages on the ground, soil, gravel, sand, etc.

- In the event of a spillage the area needs to be decontaminated by removing the soil within 72 hr of the spillage.  
Remediation should be applied to the soil, ground, gravel, etc., removed.  
Resulting waste should be handled (sorted and temporary disposed of) as defined under the Waste Management Plan.
- Report the spillage.

#### 5.4.3 Small spillages on stagnated water

- Review the safety datasheet of the material spilled as to identify if the product is water soluble. If it is so, reporting the spillage is sufficient.  
In the case that the material spilled is hydrocarbon, contaminated water needs to be re-circulated using the water/hydrocarbon separator.  
If the material spilled is not water soluble and is not a hydrocarbon, it should be absorbed using the material available in the area.  
Resulting waste should be handled (sorted and temporary disposed of) as defined under the Waste Management Plan.
- Report the spillage.

#### 5.4.4 Small spillages over surface water (rivers, ditches, gutters, intakes, etc.)

- In the event of a spillage on surface water, the source of the spillage should be eliminated (broken seals, hoses, etc.) and an immediate corrective action should be generated on site,
- Report the spillage.

### 5.4 Control of large spillages (planning):

#### 5.4.1 Large spillages on a surface (slab, asphalt, tiles, etc.)

- Spilled material should be recovered using manual pumps, vacuums or any other, and should be placed in containers.
- Once most of the material is recovered it should be controlled using the absorbing material defined under the safety datasheet of the product spilled available in the area.

- When absorbing the spillage the surface needs to be decontaminated using water or any other substance defined under the safety datasheet within 72 hr of the spillage.
- Resulting waste should be handled (sorted and temporary disposed of) as defined under the Waste Management Plan.
- Report the spillage.

#### 4.2 Large spillages on the ground, soil, gravel, sand, etc.

- In the event of a spillage the area needs to be decontaminated by removing the soil, ground, gravel, etc. within 72 hr of the spillage. Remediation should be applied to the soil, ground, gravel, etc., removed. Resulting waste should be handled (sorted and temporary disposed of) as defined under the Waste Management Plan.
- Report the spillage.

#### 5.5.4.3 Small spillages on stagnated water

- Review the safety datasheet of the material spilled as to identify if the product is water soluble. If it is so, reporting the spillage is sufficient. In the case that the material spilled is hydrocarbon, contaminated water needs to be re-circulated using the water/hydrocarbon separator. If the material spilled is not water soluble and is not a hydrocarbon, it should be absorbed using the material available in the area.
- Resulting waste should be managed as defined under the Spillage Management Plan.
- Report the spillage.

#### 5.5.4 Large Spillages on surface water (rivers, gutters, water intakes etc.)

- In the event of a spillage on surface water, the source of the spillage should be eliminated (broken seals, hoses, etc.) and an immediate corrective action should be generated on site,
- Report the spillage.

## 5.6 Reporting/Communicating Spillages

- All spillages should be reported using the near-accident format as provided the Internal Communication procedure.
- Large spillages should be immediately reported on line to AES by the Environmental coordinator or the Head of Operations as defined under the Communication procedure.
- Every spillage report should clearly provide information about the corrective and/or preventive measures necessary to prevent a new occurrence of the spillage
- Small spillages should be reported to AES online in every occurrence no later than the 10<sup>o</sup>calendar day in the subsequent month after the spillage occurred
- In the event of a spillage causing significant damages to the general public and/or the environment, it should be reported to the respective local authorities, or those authorities requesting the report, following the procedure for External Communications.

## 5.7 Spillage Prevention Plan

### 5.7.1 Training

Training instances should be facilitated to all staff involved in handling AES-regulated material, hazardous and/or special waste from Cordillera Complex, such as meetings, briefings, courses, etc., addressing:

Safe handling of AES-regulated materials, hazardous and special liquid waste (working procedures, waste management procedures, chemicals and raw material handling, etc.), Management of responses to spillages.

Other topics necessary to prevent potential spillages.

### 5.7.2 Minimum Infrastructure Requirements

- As of January 2009 all tank for bulk storage on the ground presenting a high risk for water bodies should have a secondary waterproof containment.
- As of January 2009 any tank for bulk storage on the ground not presenting a high risk for water species should have at least a secondary containment technically devised or an alternative system.
- All new underground storage tank installed at Cordillera Complex should have a design of double walls with double wall piping and an automatic leak detection system or a single wall design located within a containment vault; and overflowing protection with light and sound alarms.
- As of January 2009 single wall tanks for underground storage with cathode protection should have a leak detection program including regular complete tests.
- As of January 2012 single wall tanks for underground storage at Cordillera Complex without cathode protection will be physically removed.

- All new bulk storage tanks above ground to be installed at Cordillera Complex should have waterproof secondary and light or sound alarms.
- All new loading and unloading areas to be installed at Cordillera Complex should have waterproof secondary containment.
- As of January 2009 all equipment holding AES-regulated material identified as high risk for water bodies should have at least a technically devised secondary containment or an alternative system.
- All new equipment to be installed at Cordillera Complex that has any AES-regulated material should have at least a technically devised secondary containment or an alternative system.
- As of the implementation of this new procedure all equipment holding any AES-regulated material and that has any leak, should be repaired and a waterproof secondary containment should be installed or should be drained
- As of the implementation of this procedure storage tanks for equipment holding any AES-regulated material shall be located in areas not presenting high risk for water bodies.
- As there areas, sections, tanks, etc., with secondary containment actions need to be produced as to allow draining water from rainfall thereof as to avoid any environmental impact.

### 5.7.3 Inventory of Sources of Potential Spillages

- An inventory of ABST, UST, permanent storage areas for containers and equipment holding AES-regulated material should be made and maximum storage amount and specific location should be recorded.
- An inventory of the location of AES-regulated material, hazardous and/or special liquid waste and maximum amounts stored and/or managed should be available.
- Products necessary to contain and/or absorb spillage should be identified in all areas where products that might generate a potential spillage are handled, stored and/or disposed of.

## 6.- Modifications to the Document

Version	Description of Change from the Previous Version
01	Removal of Document code
01	Modification of point 3.3, Replacement of Advisor in Risk Prevention with Risk Prevention Expert.
01	Modification of point 6: Removal of references; Modifications are made to the document.
01	Removal of record 7.2, Inventory of Hazardous Wastes generated
01	Change in Corporative logo

## 7.- Records

7.1 Near accident Report

8. Annexes

8.1 Flowchart of a Spillage

Annex 8.1 Flowchart of a Spillage

