

AAG LAND SURVEY

HEALTH, SAFETY AND ENVIRONMENTAL STANDARDS MANUAL



AAG LAND SURVEYING

HEALTH, SAFETY AND

ENVIRONMENT STANDARDS

MANUAL

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SECTION-1

HSE Commitment:

The long term business of the company depends on its ability to continuously improve its products and services while protecting its workers and the environment in which they work and live in order to achieve this objective the company implements Health Safety and Environmental Standards in equal importance to all other business function of the company. The leadership for HSE is provided as policy commitment from the head down to field operators and office staff. The leadership

for HSE standards percolates down from senior management through line management down to employees working in the field and offices. The HSE management system is continually improved based on the inputs from staff, clients, and customers. The company adopts an continuously develop HSE management practices in line with the requirements of the company, projects, clients and the laws as applicable from time to time.

HSE Policy:

There shall be a visible management commitment to set objectives and targets; monitor, measure and publicly report the company's HSE performance. The HSE performance shall play a significant role in the overall performance evaluation of individuals as well as the organization as a whole. It is the responsibility of the organization to ensure that all the services are executed in such a manner that the health, safety and protection of employees is in line with the local regulatory requirements as well as prevailing industrial standards. Environmental protection is also a primary concern and responsibility of the organization. All activities shall be performed in compliance with the prevailing regulations and industrial environmental specifications to ensure that no damage is caused to the environment and public life.

The company shall provide a HSE Management System with specific guidelines and procedures that should be followed and reflected throughout our organization, meeting the requirements of the HSE Manual is the responsibility of every employee. Each employee is expected to be familiar with the contents of the HSE Manual, and perform every activity strictly and in compliance with the prevailing procedures and standards, with an objective of maintaining and fostering the health, safety and protection of themselves, fellow employees, contractors, customers, general public and the Environment

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MISSION GOALS & OBJECTIVES STATEMENT

“The **MISSION** of the AAG Land Survey HSE management system is to educate and employees to adopt policies, practices and procedures that prevent and relieve human and economic losses arising from accidental causes and adverse occupational health exposures.”

The following **GOALS** are the desired result of the implementation of an effective HSE system:

- Effective involvement of each and every employee which will aid in the Elimination of all hazards that create unreasonable risks of any nature resulting in injury or illness or damage to the environment or property.
- Increased employee awareness of the overall safe systems of working.
- An increase in the morale of all employees from knowing that their work environment is maintained as free, as is reasonably practical, from all recognized hazards.

The following **OBJECTIVES** will be instrumental in achieving the goals, which have been set:

- An effective Health & Safety system with a commitment for continued support from the management and every employee. Which is achievable by effective orientation and training for all employees.
- Assigned responsibilities and accountability of the necessary resources to the HSE System resulting in established lines of communication involving management and employees at all levels.
- Maintenance of effective documented measures for hazard identification, correction and control by audit activities and by the maintenance and review of records.
- Empowerment of staff to stop work when the conditions are unsafe.

DISCIPLINARY PROCEDURES

This Policy is a tool to ensure employee compliance with company Health & Safety policies and procedures. Implementation of this procedure should be coordinated with local human resource standards. The following is not to be construed as a progressive policy. Steps may be skipped depending on the history of disciplinary action or the severity of the behaviour.

VERBAL WARNINGS

Management or supervisors may issue verbal warnings to employees who commit minor infractions or violations of company Health & Safety policies and procedures. Repeated violations, or first violations that pose a severe hazard, can lead to more stringent action.

WRITTEN WARNINGS

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Management or supervisors may issue written warnings for any of the following:

- Repeated minor violations of the policies or procedures;
- Single serious violation of a policy or procedure that could have resulted in injury to the employee or co-worker or property damage;

DISCIPLINARY LEAVE

Supervisors may recommend and management may institute disciplinary leave for any of the above reasons and any of the following:

- Repeated violations or non-conformance of the policies or procedures;
- A single serious violation of a policy or procedure that results in injury to an employee or property damage.

TERMINATION OF EMPLOYMENT

For serious or repeated Health & Safety policy or procedure violations, supervisors can recommend and management may terminate the employment of any employee.

ALCOHOL AND DRUGS POLICY

This policy, which applies to all employees aims to:

- Promote the health and well being of employees and to minimize problems at work arising from the effects of substance abuse.
- Identify employees with possible problems relating to the effects of substance abuse at an early stage.
- Offer employees known to have substance abuse related problems affecting their work, referral to an appropriate source for diagnosis and treatment if necessary.
- It is the responsibility of all staff to help meet these obligations and to make and keep a healthy and safe workplace for themselves and their colleagues.

The Company Approach:

- Employees discovered to have substance abuse by means other than self-disclosure may, depending on circumstances, be offered assistance. Only a limited time off with pay will be granted.
- If the above happens as a result of a disciplinary situation, then the individual will be subject to normal disciplinary procedure.
- Searches for alcohol and drugs may be conducted where the company has reasonable grounds that such substances have been brought to the company's premises.
- Alcohol and drug testing may be required when circumstances suggest the possibility of impairment by alcohol or drugs.
- Tests will be the responsibility of the Police where there is damage to public property or personal injury and in all road traffic accidents.

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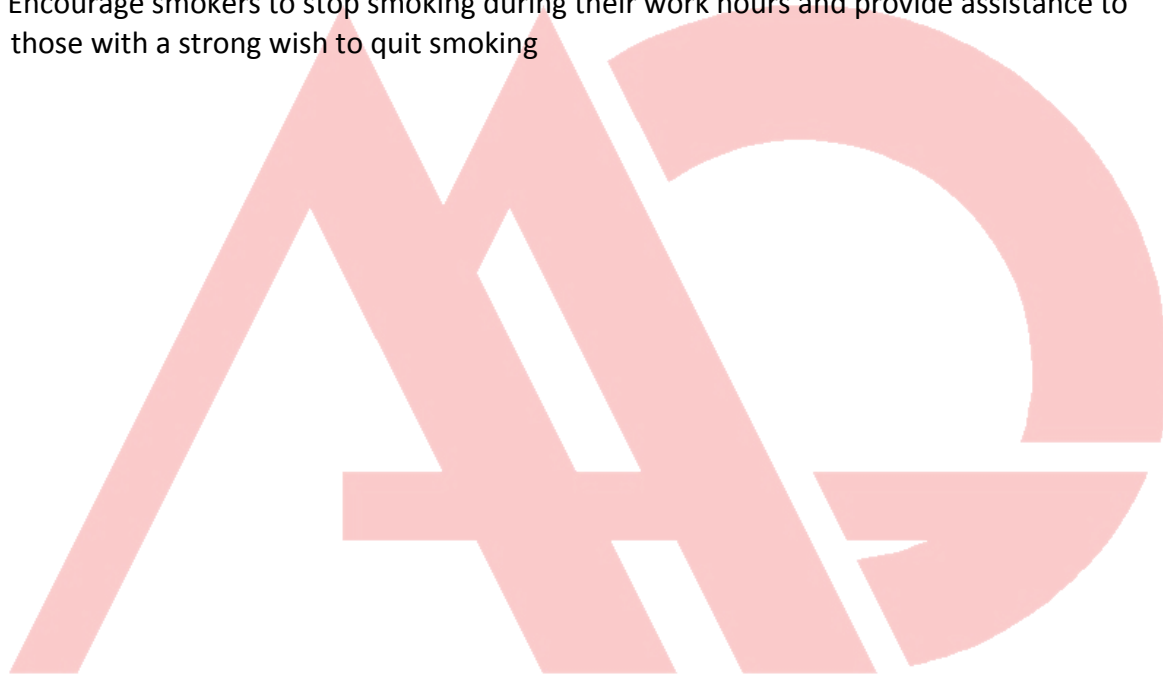
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SMOKING POLICY

“It is the Management Policy of AAG Land Survey to provide every employee with a healthy and safe working environment so far, as is reasonably practical. The Company will create a working environment where exposure to tobacco smoke is completely under control and passive smoking will not occur. Therefore smoking will be prohibited within certain areas of company operating facilities and shall include all offices, including single occupancy, meeting rooms, warehouse buildings or workshops and all other indoor seating areas“

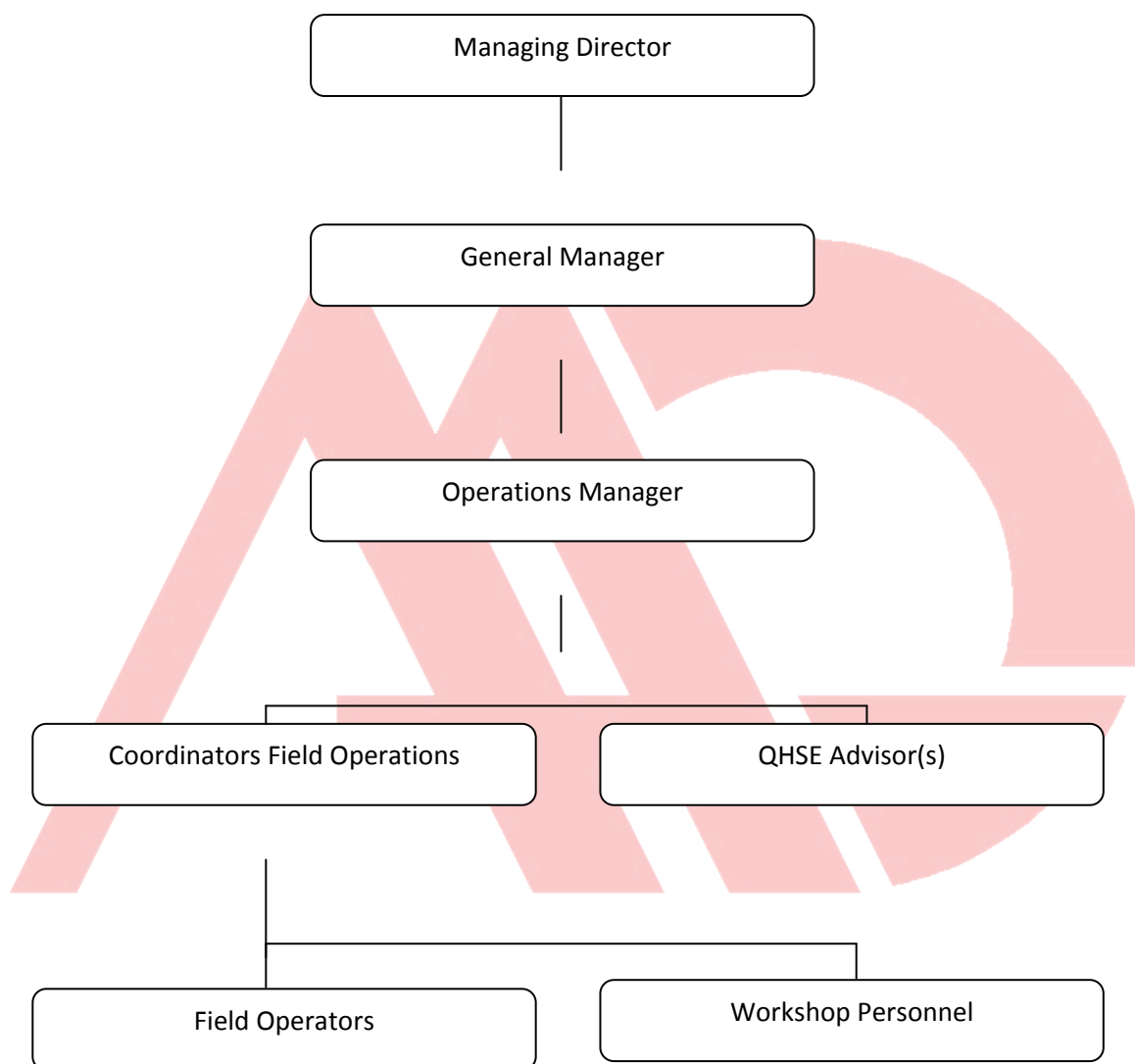
This policy aims to:

- Promote the health and well being of employees and to minimize problems at work arising from the effects of smoking.
- Control non-smokers exposure to tobacco smoke in their work environment
- Encourage smokers to stop smoking during their work hours and provide assistance to those with a strong wish to quit smoking



SECTION-2

Organization, Responsibilities:



HSE RESPONSIBILITIES

Senior Management (General Manager/Operations Manager)

- i. Implements/Maintains HSE Management System throughout the organization.
- ii. Annually reviews the effectiveness of HSESM & its implementation status and proposes revision in accordance to the changes in regulations, client HSESM etc.
- iii. Serves as liaison with clients, contractors and suppliers on HSE matters.

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- iv. Allocates human resources and funds for the Management of HSE as required.
- v. Continuously monitor HSE performance and chronic HSE Issues
- vi. Recognize successful HSE initiatives
- vii. Participate in HSE audits, workplace inspection and accident investigation.
- viii. Follow-up on the implementation of action items deriving out of HSE audits, inspections and accident investigations.
- ix. Maintain open and effective communication system and ensure client HSE concerns and requirements are appropriately disseminated throughout the organization.
- x. Develop/maintain HSE training program/plan for all level of employees as required.

Line Management (Field Operations Coordinators)

- i. Ensure the implementation of HSE Management System within the area of responsibility.
- ii. Ensure that safe workplace and equipment are provided to workforce.
- iii. Establish safe work practices and procedures within the area of responsibility.
- iv. Ensure the personnel under the direct supervision execute the tasks strictly in adherence to set-forth HSE standards and procedures.
- v. Report all the accidents/incident, irrespective of minor or major to senior management.
- vi. Ensure that appropriate HSE training is provided to all employees.
- vii. Identify hazards and control measures with respect to the activities within the sphere of responsibility.
- viii. Review HSE performance regularly.
- ix. Participate investigation and follow-up of HSE incidents as required.
- x. Periodically conduct HSE inspection of the workshop/facility.

QHSE Manager

- i. Work in conjunction with Senior Management team to implement Company HSE management system and HSE programs.
- ii. Identify and continuously monitor local regulatory, client and business requirements and ensure they are incorporated into HSE management system.
- iii. Liaise with client on HSE matters and inform the outcome/recommendations to senior management for implementation.
- iv. Prepare HSE related documents, manuals etc. to meet company as well as client's requirements and update/revise the documents periodically to cope with the regulatory and client HSE requirements/changes.
- v. Prepare yearly HSE plan and assist in the implementation of the same within the organization.
- vi. Review periodically the HSE performance and report the trends to senior management.
- vii. Assist in hazard identification and risk assessment and prepare Job Safety Analysis (JSA) for activities and tasks and communicate the same to all level of workforce.
- viii. Assist senior management and line management in organizing safety meetings, toolbox talks etc. and participate in such meetings as required.
- ix. Conduct periodic HSE inspections and audits and make recommendations for improvement.
- x. Participate in accident/incident investigation and assist in implementation of action items derived out of investigation.

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- xi. Assist senior management in preparation of HSE part of bid/tender.
- xii. Provide other HSE support to senior management as and when required.

All Employees

- i. Strictly adhere to company HSE standards, rules and procedures.
- ii. Strictly follow safety signs, warnings signs and client/customer HSE rules and procedures as required.
- iii. Report immediately to direct supervisor the client HSE concerns and requirements learned through client interface.
- iv. Report immediately the incidents, sub-standard practices and conditions to direct supervisor.
- v. Immediately report the defects of PPE, plant & machinery, equipment, tools etc. to direct supervisor.
- vi. Use personnel protective equipment as required.
- vii. Ensure the work area is maintained in a safe and healthy condition.
- viii. Perform the tasks giving priority to your own safety and the safety of fellow employees.
- ix. Participate in hazard identification/risk assessment as required.
- x. Cooperate with accident/incident investigation team.
- xi. Actively participate in HSE programs.

Objective

- i. Stipulate effective communication system to share HSE information amongst employees.
- ii. Share best HSE practices amongst the employees to prevent the occurrence of accidents/incidents.
- iii. Communicate lateral learning of accidents/incidents to all employees to enable them take necessary pre-cautionary actions to prevent the occurrence of the same within the organization.
- iv. Update employees on day-to-day HSE developments, changing HSE practices & standards, policies & procedures and programs.

Scope

The Communication standards and procedures shall apply to all service units of AAG Land Surveying involving all levels of organization, which will form a foundation for performance monitoring, handling and alerting of HSE incidents & emergencies and sharing best HSE practices.

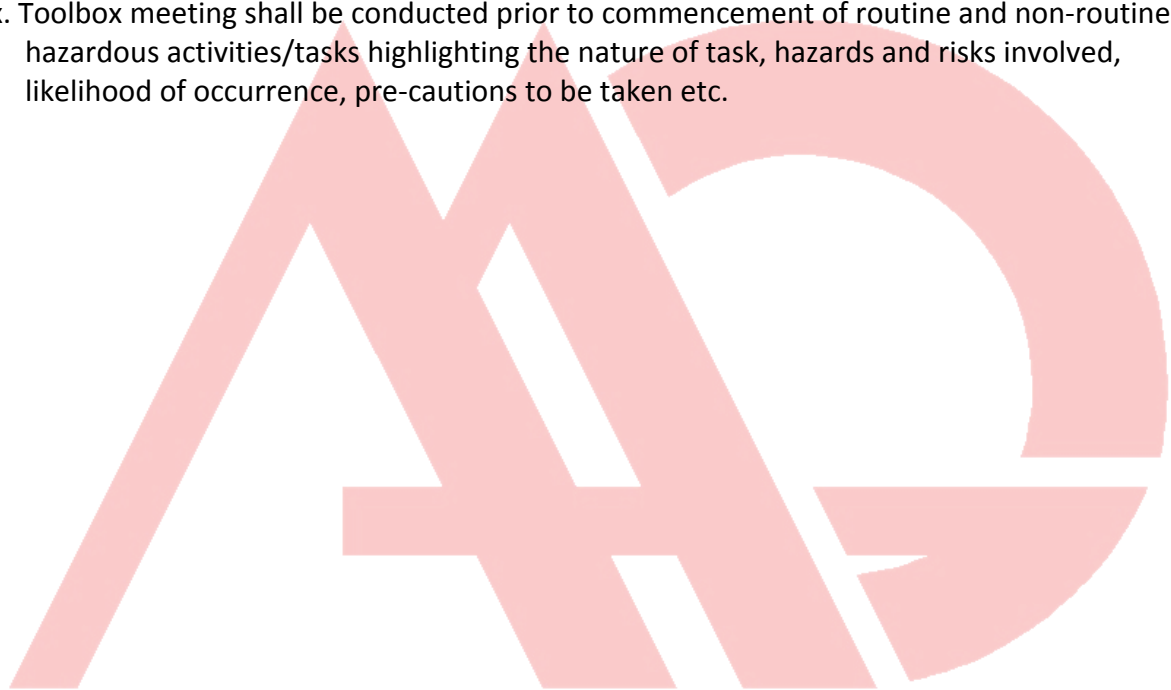
Procedures and Standards

- i. Senior management HSE Committee Meeting shall be conducted on a monthly basis involving senior management and line management personnel.
- ii. Site/Facility HSE meeting shall be conducted on a regular basis, minimum of one per month or more dependent the business activity demands.
- iii. Site/Facility HSE meeting shall be conducted during the normal working hours.
- iv. Site/Facility HSE meeting shall be chaired by line supervisors, which should be rotated time to time.

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- v. All employees, inclusive of sub-contractor and third party personnel, shall attend Site/Facility HSE meeting.
- vi. HSE Meetings shall be included the discussion of client day-to-day HSE developments, HSE alerts/bulletins/notices issued by client, accident/incident lateral learning, changing/revised HSE standards and practices etc.
- vii. HSE meetings shall be summarized and properly distributed. Minutes of the meeting shall be communicated to those employees who were not available at the time of the meetings.
- viii. Employees providing services to client locations shall attend the HSE meetings organized by clients.
- ix. Periodic HSE bulletins/notices shall be issued to all employees to alert/educate them on day-to-day HSE developments.
- x. Toolbox meeting shall be conducted prior to commencement of routine and non-routine hazardous activities/tasks highlighting the nature of task, hazards and risks involved, likelihood of occurrence, pre-cautions to be taken etc.



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SECTION-3

Personal Protection and Personal Equipment

Definitions

Personal Protective Equipment is defined as equipment designed to protect themselves from work related hazards.

For the purpose of this procedure, PPE refers to equipment worn for protection of the head, eyes, ear, feet, hands and arms. PPE also refers to protective clothing, which covers or replaces personal clothing and provides protection against one or more hazards. Fall arrest devices such as safety harnesses are included in this definition of PPE.

Objective

- i. Prevent the employees to take or use dangerous items at the workplace.
- ii. Protect employees against the exposed work related hazards, which may endanger their health and safety.
- iii. Eliminate or minimize the exposure of the employees to the risk of injury.

Scope

Personal Protective Equipment (PPE) procedures shall apply to all service units of AAG Land Survey will form foundation to prevent or minimize employee exposure to work related hazards.

Procedures and Standards

Personal Protection

Carrying dangerous items on to workplaces shall be strictly prohibited. Dangerous items include but not limited to:

- a. Alcohol
- b. Drugs (other than prescribed by a qualified doctor)
- c. Fire arms, knives or any other offensive weapons
- d. Explosive devices
- e. Radioactive, toxic, corrosive or any other hazardous substances
- f. Cigarette lighters or matches at hazardous areas
- g. Use of personal jewellery (rings, bracelets, necklaces etc.) near the rotating or moving machinery.
- h. Use of Loose fitting style clothing near and/or when working with rotating and moving machinery.

Personal Protective Equipment

- i. An assessment of the risks involved in the work activity shall be made to judge the appropriate issue and use of PPE.
- ii. The use of PPE should be considered the “last resort” as it only protects the wearer (and not other employees), full protection is unlikely to be achieved, and its use may introduce

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additional risks to the employee (for instance it may restrict visibility or mobility, and encourage risk taking).

- iii. With the exception of fall arrest devices and some specialized gloves, all PPE will be issued to the relevant employees on a personal basis. This will allow PPE of the correct size to be provided and allow the user to have the PPE readily available. The issue of PPE should be recorded in PPE distribution register.
- iv. Personnel may keep PPE at their normal work place as long as provision is made to carry it from site to site, if necessary.
- v. Site Visitors shall be supplied with appropriate PPE as and when required.
- vi. All the PPE issued/provided to the workforce should be in conformance to the international standards or specified by the Client.
- vii. Comfort and ease, suitability and correct sizing shall be considered at the time of purchase and issuance of PPE.
- viii. Employees should be trained in the use of various PPE and its maintenance shall be the responsibility of the company.
- ix. Employees shall make regular inspections of the PPE they use. Defects should be reported to the supervisor who must then make provision for repair or replacement before the work is commenced.
- x. PPE shall be replaced when shown to be defective and non-repairable or has been lost. In addition particular PPE will be replaced at regular time intervals in order that undetected defects do not compromise the effectiveness of the equipment.
- xi. **Work Wear (Coverall)** - Issue of work wear shall be in conformance to international standards (BS, ANZI or equivalent standards) or Client specified standards. Choice of work wear shall also consider requirements for visibility, the ambient working temperature etc. Work wear shall be provided as and when required.
- xii. **Footwear** - Safety boots or safety shoes supplied shall be in compliance to international standards (BS or ANZI or equivalent) of standards specified by the Client.
- xiii. **Head Protection/Safety Helmets** - Safety helmet supplied shall be in conformance to international standards (BS, ANZI or Equivalent) or the standards specified by Client. Use of metal helmet is strictly prohibited.
- xiv. **Eye Protection** - Eye protection equipment issued such as safety glasses, safety goggles, welding visors/shields, face shield shall be in accordance to international standards (BS, ANZI or equivalent) or the standards specified by Client. Prescription safety spectacles to be supplied by registered ophthalmic practitioner as required.
Note: eye protection equipment is also graded according to suitability for particular hazards, using the suffix C, D, M and G for resistance to chemicals, dust, molten metal and gas, respectively.
- xv. **Hand and Arm Protection** - Gloves provided shall be in line with international standards (BS, ANZI or equivalent) or the standards specified by Client. Gloves provided shall be

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graded for protection against mechanical hazards such as abrasion, blade cuts, tear and punctures.

Different types of gloves shall be supplied dependent the nature of activity/task.

Note: Ranges of gloves materials are available giving different degrees of protection to various types of chemicals. Specialist advice should be sought from a reputable supplier regarding protection from particular chemicals, permeation rates, resistance to abrasion, rigidity and effect on dexterity. Some individuals may become sensitized to certain glove materials, resulting in dermatitis.

- xvi. **Ear Protection** - Suitable hearing protection shall be made available to employees exposed to noise level of 85 dB (A) or above. Hearing protection provided shall conform to international standards (BS, ANZI or equivalent) of the standards specified by Client.
- xvii. **Fall Protection** - Fall arrest devices (body harness and lanyard) shall be provided to employees in conformance to international standards (BS, EN, ANZI or equivalent) or the standards specified by Client. Choice of fall protection devices should consider maximum drop permitted by lanyard, position of lanyard fitting (front, top, rear) size adjustments, freedom of movement, comfort and visibility.
- xviii. **Respiratory Protection** - When effective engineering or administrative controls are not feasible to control respiratory hazards, or while such controls are being implemented, respirators should be used to protect the health of employees. Respirators may also have to be used for emergency escape and rescue, and as a precautionary measure in areas where spills or leaks may occur. Respirators are classified according to the respiratory hazard, such as an oxygen-deficient or air-contaminated environment, or both. The two main categories of respirators are:

- **Air-purifying respirators.**

Air-supplying respirators are those, which provide a supply of breathable air different from the workplace air. They include the following:

- a. Self-contained respirators provide a transportable supply of breathable air, and afford complete protection against toxic gases and oxygen deficiency. An example is the Self-Contained Breathing Apparatus (SCBA), which has an air tank that can be strapped to the back.
- b. Supplied-air respirators receive air through an air line or air hose. The air may be supplied from a compressor or through large diameter tubing with its inlet placed in uncontaminated air. These are used where air-purifying respirators are not sufficient and where the atmosphere is not immediately dangerous to life or health.
- c. Combination self-contained and air-supplying respirators are usually certified for

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“escape only” use in atmospheres that are immediately dangerous to life or health, also referred to as IDLH. The auxiliary cylinder permits escape if the regular air line supply is cut off.

Air-purifying respirators can purify the air, but do not supply air.

They must never be used in oxygen-deficient atmospheres. These respirators include the following:

- a. Gas and vapor respirators (also known as chemical cartridge respirators) remove gases and / or vapors by passing the contaminated air through cartridges containing charcoal or other special material that traps these contaminants. Cartridges should be matched to the contaminants. These cartridges are used to protect against contaminants that have adequate warning properties of smell or irritation. This allows the wearer to judge when a cartridge is no longer usable. Some cartridges are dated as well, and should not be used after the expiration date.
- b. Particulate respirators are also known as mechanical filter respirators. Depending upon the design of the filters, they can filter out dust, fog, fume, mist, spray, or smoke by passing the contaminated air through a pad or filter. Filters should be changed at frequent intervals, when they become clogged, or when it becomes difficult to breathe through them.
- c. Powered air-purifying respirators use a blower to pass contaminated air through an element that removes the contaminant and to supply purified air to a face piece, helmet, or hood.
- d. Combination gas, vapor, and particulate respirators (gas masks) filter out gases, vapors, and particulates by passing the contaminated air through a cartridge or canister containing both a particulate filter and a gas / vapour absorbing device.

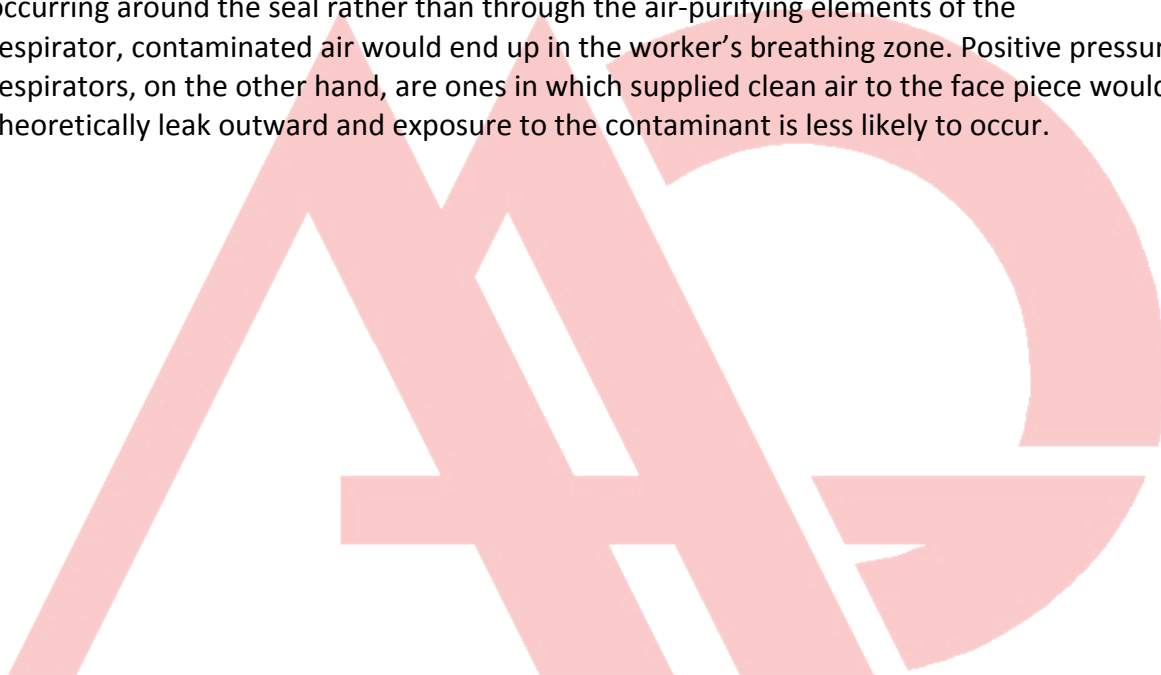
Respirators are found in either a loose fitting or a tight-fitting configuration.

1. Tight-fitting coverings are called face pieces. Face pieces are usually made of flexible molded rubber or plastic. Rubber or woven elastic head straps or headbands are attached to various points on the face piece.
 - a. The full-face piece covers the face from hairline to chin and across from ear to ear. When the proper size has been chosen, it provides the most reliable respiratory protection and usually the best seal of the respirator to the face. Full-face piece respirators, both the air-purifying and air supplying types, are designed to be used in higher concentrations of toxic materials than are quarter or half-mask respirators.
 - b. The quarter-mask covers the mouth and nose. The lower edge of the mask rests between the chin and the mouth. Good protection may be obtained with a quarter-mask but they are more easily dislodged than other types.

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c. The half-mask fits over the nose, mouth, and under the chin. It sometimes provides a more effective seal than quarter-masks.

2. Loose-fitting respirators include hoods, helmets, suits, and blouses. They generally enclose the head, neck, and shoulders. Clean, compressed air is pumped into the enclosure through a tube. The air flow must be great enough so that the clean air flows outward at the loose openings rather than the contaminated air flowing in. Another way of classifying respirators is by determining whether a respirator has negative or positive pressure. All negative-pressure respirators must have tightfitting face pieces with a good seal between the respirator and the face. If the fit is poor and a leak occurs, the outside contaminated air (at the higher pressure) will leak into the face piece (at the lower pressure). Since the leaks would be occurring around the seal rather than through the air-purifying elements of the respirator, contaminated air would end up in the worker's breathing zone. Positive pressure respirators, on the other hand, are ones in which supplied clean air to the face piece would theoretically leak outward and exposure to the contaminant is less likely to occur.



SECTION-4

Facility and Workshop Safety

1 Objective

- i. Define the minimum standards to be applied to workshops.
- ii. Evaluate and control existing workshop related hazards and communicate identified hazards and control measures to all employees to protect them from injuries.

2 Scope

- i. All of the company's workshops including temporary and mobile units
- ii. All sub-contractors.

3 Procedures and Standards

3.1 Design and Construction

All workshops shall be designed and constructed in conformance to the companies engineering and safety standards or as per the requirement of the client. The same shall apply to all electrical supplies.

3.2 Layout of workshops

- A). All workshops shall be laid out such that clear areas are defined for each activity performed in the workshop, and that the activities are segregated such that each activity does not interfere or cause hazards to others present.
- B). Hazardous activities such as welding, cutting, grinding, grit blasting, painting etc., shall be segregated from other activities, normally in dedicated booths.
- C). All hazardous materials shall be securely stored in dedicated areas, separated from work areas and, where necessary, other hazards.
- D). Transit walkways shall be clearly defined in all workshops, as shall all work areas, specifically those requiring limits on access due to the nature of activity performed.
- E). All emergency systems: escape routes; fire alarms and firefighting equipment; first aid equipment; requirement to wear personal protective equipment, etc., shall be indicated by clearly visible signs.
- F). Wherever possible, work areas, storage areas, walkways, hazardous areas and escape routes shall be indicated by means of color coding. Color coding shall follow the ISO 9001:2000 recommendation.
- G). Safety colors may be applied directly to surfaces to indicate their condition. Thus emergency walkways or escape routes should, in general, be painted green, while the flooring of a welding shop, or other permanent restricted access or hazardous area should be painted either yellow, or yellow with black stripes, depending on the level or type of hazard present. Safety colors should not, however, be overused, and normal workplace floors should be painted a neutral color such as gray.
- H). Adequate lighting and ventilation shall be provided in all workplaces. Where necessary, air conditioning shall be provided to ensure a reasonable ambient temperature.
- I). All workshops shall be provided with segregated storage areas for incoming raw materials or equipment for repair, and outgoing finalized products or repaired equipment.

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- J). Adequate storage facilities shall be provided for all tools and equipment used in any workplace and a system of control implemented such that only those tools or pieces of equipment required for the task being performed are deployed.
- K). All workbenches and working surfaces shall be fit for purpose, constructed of suitable fire-resistant materials and to a sound design, such that the work may be accomplished safely and without undue strain to the worker.
- L). Where wet processes are carried out, or where machinery is liable to eject quantities of fluid, adequate containment, in the form of channels, bunds or curbs, and drainage shall be provided. However, care shall be taken that such industrial effluents are not discharged untreated into normal drainage channels. Provision shall be made to contain, filter, or segregate all liquid industrial waste products and discharge only suitably treated water to the general drainage system, in accordance with the requirements of the Company's Waste Management Manual.
- M). Adequate provision shall be made for the collection, temporary storage, and disposal of solid scrap and waste material from all workplaces. Segregation and disposal of such scrap materials shall be made in accordance with the requirements of the Company's Waste Management Manual.
- N). Adequate toilets and washrooms shall be provided in all workplaces. Where necessary, special cleansers shall be provided, to prevent workers using unsuitable industrial solvents for skin cleansing.
- O). Adequate supplies of drinking water shall be provided in all workplaces.
- P). Personal protective equipment shall be available in all workplaces, in accordance with the provisions set by the company.
- Q). Adequate fire fighting equipment shall be deployed in all workplaces.

3.3 Electrical Installations

- A). Care shall be taken that all electrical equipment is connected to the correct voltage for which it is designed.
- B). All electrical equipment, with the exception of double-insulated hand tools, shall be fitted with a ground conductor.
- C). Plug adapters shall not be used in any industrial installation. All equipment shall be fitted with the correct plug or fit in its corresponding socket.
- D). Sockets shall be available in all industrial worksites. Multiple appliances or power tools shall not be plugged into a single socket via a multi-outlet adapter.
- E). All permanently installed electrical equipment shall be protected by a circuitbreaking device protecting against overload and ground fault conditions.
- F). All permanently installed and electrical equipment shall also be fitted with isolation switches, disconnecting both live and neutral conductors. Such isolation switches, if remote from the equipment, shall be fitted with effective lock-out devices such that they may be made safe while undergoing maintenance or repair.

3.4 Maintenance

- A). All industrial premises shall undergo regular preventive maintenance of their facilities. Such preventive maintenance shall be planned and recorded. Attention shall be given to the

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condition of all safety routes and exits, lighting, ventilation, sanitary facilities. Floor and workbench surfaces shall be repaired as required. Walls, ceilings and fixtures shall be painted on a regular basis to maintain the standards of illumination required.

B). All electrical installations shall be inspected and repaired as required, with specific attention given to integrity of insulation and earthing provisions. Likewise compressed air, industrial gas and water installations shall be inspected and repaired. Such inspections and repair shall be planned and recorded.

C). All fixed equipment and machine tools, hand tools, etc., shall be subject to regular inspection, maintenance and replacement as required, to ensure the safety of their operators. Such inspections and repair shall be planned and recorded.

3.5 Housekeeping

A). Good housekeeping shall be considered one of the fundamental defenses against accidents and injuries in the workplace and, as such, the responsibility of all personnel.

B). All supervisory personnel shall ensure compliance with the following practices.

C). All emergency walkways, passages and exits, fire doors, break glass alarm points, Fire fighting equipment, first aid and other emergency stations shall be kept clean, unobstructed and in good working order.

D). All workplaces shall be maintained clear of debris, waste and other rubbish, which shall be disposed of in segregated containers for disposal.

E). All spillage of liquids, especially of oily or greasy liquids, shall be immediately cleaned up by absorption in inert sand or other suitable materials. If rags are used to mop up spills of flammables, they shall immediately be removed to a safe place and stored in closed containers for safe disposal.

F). The minimum required amounts of any raw materials shall be brought to the workplace at any one time, and finished work removed as soon as possible to a defined storage area, such that the workplace is maintained clear at all times.

G). Tools and movable equipment shall only be brought to the workplace as required and removed to their designated stores immediately they are not further required.

H). All materials, boxes, pallets, etc., shall be stacked in such a way that they do not pose a threat to workers. All such storage shall be segregated from the work area and circulation passages. The height of stacks of material shall be such that no risk of toppling exists. Pallets, and boxes shall not generally be stacked more than three high. Drums shall not be stacked on top of each other unless palletized.

I). Adequate time shall be assigned in all work lifts to ensure that good housekeeping is maintained. If deemed necessary, in addition to the housekeeping efforts of workers specialized cleansing personnel or services may be required to maintain adequate levels of cleanliness and tidiness in some workplaces. If such work is carried out during normal working hours, adequate provision shall be made to ensure they do not interrupt the regular work patterns or distract the normal workers.

J). Likewise, if cleaning activities are carried out outside normal working hours, adequate supervision shall be provided to ensure the cleaning personnel are

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neither at risk from, nor could do any damage to, machinery or installations.

3.6 Discipline

- A). Smoking while working shall not be permitted in any workshop or industrial area, except in designated smoking zones.
- B). Consumption of foodstuffs shall be restricted to designated areas and work breaks.
- C). Horseplay of any kind shall be prohibited in the workplace.
- D). Personnel shall also refrain from the following:
- E). Running in corridors, walkways or up and down stairs.
- F). Pushing or crowding in entrances or stairways.
- G). Standing in front of closed doors.
- H). Entering or exiting a room or building by any means other than the approved access routes or doors.

3.7 Fire Protection

- A). All fire escape routes and exit doors, alarm points and firefighting equipment shall be kept clear of obstructions at all times.
- B). Fire wardens shall be appointed for all office buildings, in sufficient quantity such that marshalling and control of personnel shall be easily accomplished. Two marshals shall be appointed for each marshalling station.
- C). All personnel shall be familiar with the fire emergency procedures, alarms and equipment available, personal responsibilities and evacuation procedures in the event of fire alarm. Regular fire drills shall be performed to ensure this.
- D). All flammable liquids, such as photocopier toners, cleaning solvents, draughtsman's sprays shall be stored away from sources of heat and ignition or naked flame, in metal cabinets. Only quantities in direct use shall be brought into the workplace.
- E). Empty containers and aerosols, which have contained flammable liquids, shall be disposed of forthwith in a secure lidded refuse container.
- F). No Smoking signs shall be strictly obeyed. Where smoking is permitted, cigarettes and spent matches shall be disposed of in specifically designated ashtrays or sand containers. Ash and cigarette ends shall not be disposed of in office dustbins destined for general office waste disposal.
- G). Appliances such as electric heating rings are not permitted in normal office space, but shall be confined to designated cooking areas. However, domestic electric kettles and coffee percolators may be placed in the general office space provided they are positioned securely, and are supplied directly with a power point. They shall not be provided via an extension cord.

3.8 Furnishings and fittings

- A). Glass doors and full-length windows shall be fitted with reflective warning strips at close to eye height.
- B). Where the height of storage shelving requires these use, steps or ladders shall be provided. Shelving shall be of adequate design and strength to carry the intended loads.

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C). Storage cupboards for stationary and other flammable materials shall be metallic and, when not in a dedicated storage room, fitted with doors.

D). Loose carpets are not recommended in offices as they represent a trip hazard.

3. 9 Hand Tools

3.9.1 General Regulations

A) All hand tools shall be assigned to a responsible person. This may be on an individual basis, or a single person assigned to control the hand tools of a particular work area or shop.

B) The responsible person shall ensure that hand tools are maintained in good condition. Regular inspections shall be made of all hand tools and all defects repaired or the tool removed from service.

C) Tools shall only be issued to personnel who have the necessary knowledge and skill to operate them safely. Supervisors shall ensure that workers are competent to work safely with any tool prior to leaving them to work unsupervised.

D) Tools shall be used only for the specific purpose for which they were designed. Thus, wrenches shall not be used as hammers, screwdrivers shall not be used as levers or chisels, etc.

E) Tools designed for striking, i.e. cold steel chisels, flogging spanners, etc., will, even in normal use, suffer mushrooming around their impact surfaces. This shall be dressed off. Dressing is best done frequently with a hand file, rather than occasionally with an abrasive wheel. 'High speed' dressing with an abrasive wheel effects the hardness or the impact surface edges, resulting in an acceleration of the mushroom effect.

F) Tools shall at all times be transported from one work location to another in adequate containers. Specifically, the following practices shall be prohibited:

G) Carrying tools in the pockets of work cloths (with exception of small tools specifically designed to clip in breast pockets)

H) Carrying tools in the hand when climbing ladders.

I) Throwing tools from one worker to another.

J) When working at heights where there may be other persons passing below tools shall be secured with a line so as to prevent them falling if dropped.

3.9.2 Wrenches and Spanners

A) Wrenches and Spanners shall be used only for the work for which they have been designed and within their capacity.

B) Spanners shall be selected which enclose the nut or bolt head as much as possible in any given job. In order of preference (from both the safety and efficiency point of view), spanners should be selected as follows:

a. Socket Spanners

b. Ring Spanners

c. Open-ended Spanners

d. Adjustable Spanners (monkey wrench)

For a specific size of nut or bolt only the correct sized of spanner should be used.

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Oversized spanners or, for instance, using non-metric spanners for metric work, or vice versa, will cause damage to the nut or bolt head

3.9.3 Screwdrivers

- A). Screwdrivers shall only be used for their designed purpose, and never as levers, gouges, chisels, punches or hammers.
- B). Screwdrivers shall be selected for the work to be done, both in terms of size and screw heads type. Thus flat-ended screwdrivers shall not be used on cruciform-headed or "Phillips" type screws.
- C). Screwdriver tips shall be maintained in good condition, with the flats carefully dressed to fit the screw head.
- D). Small work-pieces shall be held in a vice or clamped to the workbench when using screwdrivers. No attempt shall be made to use screwdriver on a workplace held in the hand.
- E). Screwdrivers with plastic insulated handles are recommended for electrical works, but the handle should not be taken as sufficient protection against electric shock. All electrical machinery or circuits shall be isolated prior to work.

3.9.4 Chisels

- A). Both chisel and driving hammer shall be matched to the cutting job to be performed. The hammer shall have adequate weight to drive the chisel. The chisel shall be of the correct type for the material being worked on.
- B). Chisels shall be maintained in good condition, cutting edges should be correctly sharpened and hardened or tempered for the work. Any "mushrooming" of the head shall be dressed off regularly.
- C). Eye protection and work gloves shall be worn at all times when chipping or cutting with chisels. Other workers close by shall also be suitably protected from flying chips or splinters.

3.9.5 Files and Rasps

- A). Files and rasps shall be selected according to the material being worked on. Thus metal files shall not be used for wood or vice versa.
- B). All files or rasps shall be fitted with handle, which shall be the correct size for the file. The handle should be fitted by hand pressure, then tapping the handle on a firm surface, using the mass of the file itself to imbed it. Files shall never be hammered into the handle.
- C). Files and rasps shall never be used for other purposes such as levering or punching. The highly tempered metal is very prone to shattering if struck or twisted.
- D). Small objects to be filed shall be suitably secured to the workbench with clamps or held in a vice.

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3.9.6 Hand tools used at machines

- A). The use of hand tools with powered machines such as lathes or grinders shall be strictly controlled. Only competent personnel shall be allowed access to such powered machines.
- B). The use of hand-held tools such as chisels or files in lathe work should be avoided and correct tools, mounted on the tool post, used.

3.9.7 Non Sparking Tools

- A). The use of "non-sparking" tools is not recommended. Such tools are generally less robust than normal steel tools, and in themselves no guarantee against sparking. The preferred solution is to utilize well maintained steel tools which have been damped with heavy oil or water.
- B). When operating with hand tools in potentially hazardous areas, i.e. in the presence of flammable liquids, vapors or gases, care shall be taken not to drop them on concrete or stone floors. Damping the floor with water or covering with a suitable material is recommended.

3.10 Lifting Operations in workshops.

- a. Personnel working under or in the vicinity of an active overhead crane inside or outside shall wear safety helmets and follow all the addition procedures as set by the company.

SECTION-5

Hazard Management

1 Objective

- i. Provide the management standards to identify, assess, control and monitor risks associated with the services provided by AAG Land Survey
- ii. Evaluate and control existing workplace and service related hazards and communicate identified hazards and control measures to all employees to protect them being involved in accident/incident.

2 Scope

- i. All AAG Land Survey operation.
- ii. All the hazardous activities involved in relation to the services provided by AAG Land Survey.

3 Procedures and Standards

Risk Management

- i. Listing Activities - The workplace (inclusive of equipment and environment) and service related hazardous activities shall be determined and Hazardous activity List shall be prepared. Each activity shall be thoroughly studied/reviewed to assess the level of risks involved.
- ii. Risk Assessment – Hazards and risks involved in each listed hazardous activity shall be identified.
- iii. Risk Control – Suitable controls measure shall be developed for each listed activity to eliminate or reduce the risk.
- iv. Recovery methods – Appropriate action plan shall be identified to take necessary action in case something goes wrong resulting in accident/incident.
- v. Identification of PPE requirement – PPE requirement shall be identified for use for each listed hazardous task/activity to prevent or reduce/minimise the risk.
- vi. Hazard/Job Sheet/Job Safety Analysis – Hazard/Job sheet or Job Safety Analysis shall be prepared for each listed hazardous task/activity.
- vii. Hazard/Job Sheet or Job Safety Analysis (JSA) shall be included hazard & risk identification, severity (consequences), Probability (likelihood)population exposure, control measures, recovery methods and PPE requirements.

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viii. The effectiveness of risk management, its implementation and maintenance shall be monitored through audits and review.

ix. Risk management of identified hazardous activities shall be communicated to all employees.

Definitions

Hazard is the inherent ability of equipment, substance or task/work activity to cause harm. Harm can be defined as injury to personnel, either company employee or third parties, or damage to property or environment. The means of harm being caused will generally be via the release of energy from a system, or exposure to energy or toxicity within a system or substance e.g. explosion, fire, exposure to machinery or hazardous substances.

Consequence (Severity)

Outcome of exposure to an identified hazard.

Probability (Likelihood)

Frequency of the occurrence of the potential harm or loss through exposure to hazard.

Risk is the probability (or likelihood) of that harm actually occurring and the severity of its outcome. The extent of risk covers the population exposed and the possible consequences for them. Risk therefore is reflected in the hazard, its severity and probability of occurrence with regard to personnel, equipment or the environment that may be affected.

Risk = Consequence x Frequency

Risk Assessment Scoring Regime

The following formula will be utilized to identify the assessed risk against task.

Severity x Probability x exposure *i = Assessed Risk

	Criteria	Score
Severity	Major	3
	Serious	2
	Slight	1
Probability	High	3
	Medium	2
	Low	1
Exposure	10+(P/A/E)	3
	5-10	2
	1-5	1

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Exposure*ⁱ is a description of the numbers of person exposed to injury and also of other losses which may result e.g. Assets/Environment. For example P5, (A/E)) would describe a hazard which could cause injury to 5 employees and also cause environmental and asset damage.

ROAD SAFETY AND JOURNEY MANAGEMENT

1.1 Objective

- i. Educate and train the employees & drivers of the dangers involved in interior desert driving and transportation.
- ii. Provide standards and guidelines for eliminating road traffic accidents.
- iii. Ensure safe journey through structured and systematic journey management system.

1.2 Scope

- i. Driving, Transportation standards and safety procedures shall apply to all the services provided by AAG Land Survey and all other day-to-day business of the entire organization. All sub contactors shall follow the same.
- ii. Highlight road safety rules and procedures to be followed by AAG Land Survey drivers eligible to drive for company business.

1.3 Definitions

For the purpose of these regulations, the following definitions shall apply;

a. Medium Vehicle

Vehicle with maximum loaded weight over 3 ton and up to 7 ton.

b. Heavy Goods Vehicle

Vehicle with maximum loaded weight over 7 ton or articulated vehicle consisting of prime mover and trailer.

1.4 Drivers

Requirements to Drive

To legally drive a vehicle it is necessary to fulfill one of the following requirements:

- i. Possess a valid driving license for the type of vehicle being driven.
- ii. Possess a valid National driving certification from the authority for the type of vehicle being driven.

1.5 Procedures and Standards

- i. No employee shall be eligible to drive without valid driving license.
- ii. No interior location driving shall be permitted without proper Client recommended interior driving permit.
- iii. All the drivers designated for interior driving shall be provided with Interior Driving Skills training and all the drivers designated for coastal driving shall be provided with Coastal defensive driving skills training.
- iv. Road safety induction shall be given to all the drivers.
- v. Journey plan shall be issued for each interior location journey and destination point shall be notified of the journey plan.

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- vi. Driver and the passengers of front and rear seats shall wear seatbelts throughout the journey.
- vii. The driver shall report his safe arrival to the departure point immediately upon his arrival at destination point.
- viii. Driving under alcohol or drug influence shall be strictly prohibited.
- ix. Interior location maximum speed limit of 80 KPH and dust code shall be strictly followed throughout the journey.
- x. Ignition key shall not be kept in the vehicle when the vehicle is in parking or stop position.
- xi. Road signs shall be followed throughout the journey.
- xii. Maximum 10 hours/day driving policy shall be strictly followed.
- xiii. All the drivers shall sign Road Safety Declaration.
- xiv. Emergency number numbers shall be provided to all the drivers.
- xv. Night driving shall be prohibited in the interior location/desert unless written night driving permission or authorization is obtained from the respective client's supervisor.
- xvi. The maximum night driving speed shall be limited to 50 KPH.
- xvii. Dust Code to be followed while driving in the dust. Switch on headlights and rear intensity lights, Maintain enough distance from the beginning of the dust for emergency stops if required reduce the speed to minimum level. Hazard indicator will be on if slowing the vehicle or on Stop. If the road is not visible, stop the vehicle off the road until vicinity is clear. Never attempt to overtake other vehicles in dust clouds, junctions and intersections.
- xviii. Enough water and food shall be provided to the driver dependent the nature and distance of travel.

1.6 Vehicle

- i. The vehicles utilized for interior driving and transportation shall be equipped with client vehicle specifications and standards i.e. fitted with speed limiter, rollover bar, seatbelts for front and rear seats, fire extinguisher, first aid box, two spare wheels, jack, lug wrench, wheel chocks, jacking board, hazard warning triangle etc.
- ii. Roadworthiness Assurance Standards inspection shall be performed on all the vehicles designated for interior location services as stipulated by clients and RAS sticker shall be displayed on the vehicles.
- iii. Vehicles designated for interior location services shall be serviced in every 5000 KMS or as stipulated by client.
- iv. Vehicle Safety Inspection shall be conducted as stipulated by client transport standards.
- v. Pre-journey vehicle checks shall be conducted prior to start any type of interior journey.
- vi. Tire pressure shall be marked on all the vehicles above the wheel.
- vii. Additional fuel, radiator water, battery water etc. shall be provided to the driver dependent the distance and nature of the journey.

- viii. Mechanical/electrical defects of the vehicle shall be immediately reported and attended.

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ix. Station wagons and double cab pick-up vehicles shall have a minimum of four (4) doors

1.7 Operation

General

- i. Police traffic regulations shall be observed.
- ii. Drivers shall hold an appropriate and valid license for the vehicle / plant equipment being driven or operated.
- iii. Personnel shall not drive when unfit to do so for medical reasons or as a result of fatigue or intoxication.
- iv. All posted road signs including temporary signs relating to works or diversions shall be complied with.
- v. A maximum speed of 80 km/h shall be complied with on graded roads.
- vi. Signposted legal speed limits shall be complied with on Government blacktop roads.
- vii. A lower speed shall be observed where indicated and under adverse conditions.
- viii. Passengers shall only be carried in the passenger compartment of a vehicle.
- ix. The number of persons carried in the passenger compartment of a vehicle shall not exceed the maximum number stated on the vehicle registration document.
- x. Only two persons shall use the front seat of a vehicle unless it can be proven that a third person can be accommodated with a point inertia reel seat belt, which in no way interferes with the safe operations of the vehicle. This shall apply irrespective of the number of seats shown in the Vehicle Registration Document.
- xi. Drivers and passengers shall wear seatbelts (if provided) whenever the vehicle is in motion.
- xii. Sturdy footwear shall be worn whilst driving (slippers, flip flops or loose sandals are not permissible).
- xiii. Drivers of heavy and medium goods vehicles should wear coveralls for the duration of their shift.
- xiv. Drivers shall remove ignition keys from the vehicle when it is not in use.
- xv. Where operations cause significant disturbance to other road users arrangements should be made to control traffic by the use of flagmen or other means to minimize inconvenience to other road users.

1.8 Driving in Dust

When a vehicle travelling in the same direction is creating a dust cloud and the view of the road ahead is obscured, drivers shall observe the following instructions:

- i. Slow down
- ii. Keep a safe distance from the edge of the dust cloud, far enough back to be able to stop in the distance you can see to be clear.
- iii. If it is not possible to pass the vehicle safely in the next few kilometres, pull off the road and wait for 10 minutes before resuming your journey.

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When the vehicle travelling in the opposite direction is creating a dust cloud and the view of the road ahead is obscured, drivers shall observe the following instructions:

- i. Slow down
- ii. Pull off the road in plenty of time and keep moving slowly along the window.
- iii. Once you can see clearly in both directions, rejoin the road and continue your journey.

If, and only if, it is not possible to leave the road, then slow to a crawl, drive close to the window on the right and keep moving. If you become disoriented **STOP IMMEDIATELY**.

1.9 Driving at Night

Personnel are not permitted to drive on graded roads during the hours of darkness, with the following exceptions:

- i. In response to an emergency
- ii. For operational purposes, if prior approval has been obtained from the Company representative or department head.
- iii. Between Contractor camps in the same locality.
- iv. Between worksite and camp if these are not more than 5 km apart.
- v. A maximum speed of 50 km/h shall be adhered to when driving on graded roads during darkness.
- vi. Any journey during partial or total darkness shall be covered by the applicable journey management procedures.

1.10 Towing

- i. Vehicles fitted with manufacturer approved towing fitments shall only conduct towing of plant equipment. The use of 'D' shackles to tow equipment is forbidden.
- ii. Equipment being towed shall have an independent braking system.
- iii. Towing shall be confirmed to local "in field" areas only.
- iv. A maximum speed of 50 km/h shall be adhered to when towing.
- v. Any towed equipment that exceeds the width of the prime mover shall be fitted with indicators and brake lights powered by the prime mover.
- vi. The weight of the equipment being towed shall not exceed the weight of towing the vehicle.

1.11 Vehicle Loading

- i. Vehicle loads shall not exceed the weight limitations indicated on the vehicle registration document.
- ii. Vehicle loads shall not extend over the sides of the vehicle unless an appropriate permit is obtained from the Royal Oman Police.
- iii. Any load, which extends beyond the rear of the vehicle in which it is being carried, shall be marked with a red flag during the hours of daylight and a red light during the hours of darkness.

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- iv. All vehicle loads shall be properly secured for transport under desert conditions. Loose tools or equipment shall not be carried inside the passenger compartment of any vehicle. Such items shall be secured in position, placed behind a protective screen or secured in the load bed of the vehicle.
- v. Roll bars shall not be used to secure loads.
- vi. Loads shall not be carried suspended from the 'A' frames of trucks.
- vii. Fuel shall not be transported inside the passenger compartment of any vehicle. Fuel containers shall purpose built and secured in designed holders mounted on the outside of the vehicle or inside the load bed of a pick-up. The carriage of fuel in oil drums is prohibited.

The following color-coding shall be used for portable liquid containers:

- a. Petrol = Red
- b. Diesel = Yellow
- c. Water = White
- d. Oils = Green

Journey Management Organization & Administration

2.1 Definitions:

Authorizing Person should be designated by Operations manager for each location who shall be solely responsible for authorizing a journey. Authorizing person shall be responsible to ensure that all the journeys are organized and executed in accordance to stipulated journey management system.

Journey Manager should be designated for each location that shall be responsible for

- a. The planning, initiating, monitoring, closing out of the journeys
- b. The vehicle, driver and the passengers until a journey is properly closed-out
- c. Initiating a search in coordination client emergency procedures, in the event of vehicle accident, man lost, accident/incident etc.

Drivers

- a. Designated/Permitted driver are those who are authorized to drive company vehicles for interior location.
- b. Driver is responsible for the vehicle, loads and passenger until he reaches to destination point.
- c. He should perform pre-journey vehicle checks and carry a copy of journey plan throughout the journey.
- d. He should report the Journey Manager immediately upon arrival at the destination point and in the event of accident, lost, breakdown, overnight stay etc.
- e. It is the responsibility of the driver to ensure that front seat and back seat passengers wear the seatbelts before the vehicle is in motion.
- f. In case of an emergency he should report immediately emergency numbers or any other number provided by the client.
- g. It is also his responsibility to report Journey Manager if the vehicle is found defective or not in conformance to client vehicle specifications.
- h. Driver should strictly follow journey plan routes and should report immediately the journey manager if any deviation from proposed journey plan route.

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2.2 Journey Management

All vehicle movements shall be subject to journey management procedures, which satisfy the following minimum requirements:

- a. The drivers name
- b. The vehicle registration number / fleet number
- c. The number of passengers
- d. ETD / ETA
- e. Route details and planned stops
- f. The procedure shall apply for all journeys other than 'in field' journeys.
- g. The procedures shall apply to any journey undertaken during partial or total darkness.
- h. All journeys covered by the procedure shall be approved at senior staff supervisory level.
- i. The authorizing Supervisor shall be responsible for ensuring that the regulations for Drivers Hours of Work are not exceeded.
- j. The procedure shall require the driver to inform the destination of his departure, and to report back to base upon arrival at destination.
- k. The procedure shall include instructions for initiating 'man lost' procedures.
- l. A custodian shall be identified for the system. Terms of reference and responsibilities of the custodian shall be documented.

SECTION-6

Survey Operations Procedure

1 Objective

- i. Define the minimum safety standards to be undertaken by all members of a Survey Crew.
- ii. Provide the basic safety training for all members of a Survey Crew at the start of their work employment.
- iii. Review & revise safety procedures at the start of each survey work to ensure that in-house safety procedures meet proposed survey work requirement.

2 Scope

- iv. Project Manager
- v. Survey Operations Manager
- vi. Senior Surveyor
- vii. Surveyors
- viii. QHSE Manager
- ix. Ancillary Survey Crew Members

3 Pre-Deployment Preparation

- A. Project Manager shall evaluate terrain & climate condition for proposed survey work deployment together with Survey Operations Manager & QHSE Manager.
- B. Survey Operations Manager together with Senior Surveyors shall prepare a list of equipments & procedures appropriate for the proposed survey work.
- C. Survey Operations Manager shall initiate actions to ensure that a maintenance check be done on the survey vehicle to guarantee that the vehicle is in road worthy condition.
- D. Survey Operations Manager shall initiate actions to ensure that all communications equipments are functioning.
- E. A pre-deployment safety meeting shall be held for all members of a Survey Crew together with the Project Manager & Survey Operations Manager.

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- F. Revise any safety procedures based on results of the pre-deployment safety meeting.
- G. Actual preparation of safety equipments to ensure that they are sufficient in numbers & meet safety standards.

4 Types of Hazards

- A. Road & vehicle related accidents when working in areas with moving traffic.
- B. Construction related accidents when working in an on-going building construction sites.
- C. Hiking related accidents when working in remote & difficult to access survey work areas.
- D. Drowning and water related accidents when working in bathymetry types of survey work.
- E. Lightning rain related accidents when survey crews are caught by sudden down rain downpours & lightning storms.
- F. Survey Crew stranded in an isolated location due to failure of survey vehicles.

5 General Survey Procedures and Standards

- PPE to be issued – Safety Shoes, Hard Hat, Safety Vest, Gloves, Traffic Cones, Early Warning Device
- All Survey Crew members shall wear their PPE issued to them - Safety Shoes, Hard Hat, Safety Vest, Gloves
- A member of the Survey Crew shall be assigned to watch & control the flow of traffic around the area of the survey work.
- Traffic cones or early warning devices shall be installed at least 10 meters before & after the locations of the survey instruments used in the survey.
- Ensure that all communications devices are properly charged & functioning within the range of the survey work.
- Ensure that all survey crew members are properly rested a maximum 8 working hours for fieldwork shall be followed.
- Ensure that survey vehicle is in road worthy condition.

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6 Specific Survey Procedures and Standards

Bathymetry Survey

- PPE to be issued – Safety Shoes, Hard Hat, Safety Vest, Gloves, Life Vest
- Only qualified boat operators shall be assigned to operate the survey boat for bathymetry related survey work.
- All Survey Crew members shall wear their PPE issued to them - Safety Shoes, Hard Hat, Safety Vest, Life Vest
- Only Survey Crew members that have undergone basic swimming certification shall be assigned to bathymetry survey work.
- All gasoline or diesel fuel used in the operation of the boat shall be stored in certified fuel containers.
- No bathymetry survey work shall be conducted in cloudy & heavy wave conditions.
- Ensure that all communications devices are properly charged & functioning within the range of the survey work.

Levelling Survey

- PPE to be issued – Safety Shoes, Hard Hat, Safety Vest, Gloves
- All Survey Crew members shall wear their PPE issued to them - Safety Shoes, Hard Hat, Safety Vest, Gloves
- To avoid lightning strikes no leveling survey work shall be conducted in rainy & lightning weather conditions.
- On the first indications of an approaching lightning storm, level rodmen shall pack up all leveling equipments.
- Leveling rods made of metal may become conductors during lightning storms and these should not be touched by any survey crew.

GPS Control Survey

- PPE to be issued – Safety Shoes, Hard Hat, Safety Vest, Gloves, Climbing Gear, Camping Tent.
- All Survey Crew members shall wear their PPE issued to them - Safety Shoes, Hard Hat, Safety Vest, Gloves
- GPS Control Survey usually require the survey crew to be deployed in remote & isolated areas. Aside from the standard PPE issued, additional equipments for climbing & camping shall be issued to the survey crew.
- Every survey crew is expected to carry a basic first aid kit, insect bite ointment, snake bite kit.

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Topography Survey

- PPE to be issued – Safety Shoes, Hard Hat, Safety Vest, Gloves, Water Waders, Boots
- All Survey Crew members shall wear their PPE issued to them.
- Topography Survey usually require the survey crew to be deployed in remote & isolated areas. Aside from the standard PPE issued, additional equipments for climbing & camping shall be issued to the survey crew depending on site conditions.
- Preliminary grass clearing operations shall be carried out prior to actual survey for areas with dense grass or similar vegetation. The noise from grass clearing operations would help drive away snakes & similar animals within the project vicinity.
- Whenever possible work in marsh areas should be done during sunny weather so that ground surfaces will harden for easy traverse of the survey crew. One piece waist length water waders with boots shall be used for muddy or wet land areas.
- Survey rods made of metal may become conductors during lightning storms and these should not be touched by any survey crew. No work shall be carried out during heavy rains or during thunderstorms.
- Every survey crew is expected to carry a basic first aid kit, insect bite ointment, snake bite kit.

SECTION-7

HSE Performance Monitoring

1 Objective

- a. Evaluate/monitor HSE performance of the organization.
- b. Provide HSE performance measuring tools to identify successes and improvement areas.
- c. Identify cause, effect and potential in relation to accidents/incidents.

1.2 Scope

Performance Monitoring standards applies to all service related units, workplace /workshops. Procedures shall provide mechanism for gathering accident/incident statistical information and data that shall be closed monitored, evaluated and measured for preventing the reoccurrence of accident/incident of similar nature.

1.3 Procedures and Standards

- a. Monthly HSE Summary shall be prepared and distributed to concerned parties of company as well as client using AAG Land Survey HSE Statistics form. HSE summary shall be used to produce health & safety performance indicators that may include but are not limited
 - (i) Number of reported accidents/incidents
 - (ii) Number of lost time accidents and the time/days lost
 - (iii) Lost time injury frequency (LTIF) per million man hours exposure
 - (iv) Total recordable case frequency (TRCF) per million man-hours exposure
 - (v) Road traffic accident frequency (RTAF) per million kilometers driven.
- b. Client proposed HSE Statistics form should be used as required.
- c. Senior management shall review the HSE performance of the organization periodically through performance indicators and recommendation shall be made/implemented for the improvements of HSE performance. The performance indicator requires "what if" questions are asked in order to determine the full potential of an accident/incident. Through consideration of possible accident/incident escalating factors the potential consequences and the exposure to this risk shall be assessed and action to prevent reoccurrence shall be identified. By systematic analysis, any further action to address potential losses shall be identified.
- d. Senior management shall perform cause analysis for accidents/incidents using the axiom that "Accidents and incidents are seldom, if ever, the result of a single cause", for its immediate and basic causes to determine any underlying lack of

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control. This will include the determination of immediate causes, underlying causes; sub-standard practices substandard conditions, lack of controls etc. to prevent the reoccurrence of accidents/incidents.

- e. HSE performance shall be communicated to all employees through safety meeting, HSE bulletins, HSE notices etc.
- f. Best HSE performance shall be recognized and appropriate safety award shall be distributed to all employees as part of recognition.



SECTION-8

Accident/ Incident Reporting & Investigation.

1 Objective

- i. Outline the methods and practices to report and investigate accident/incident.
- ii. Provide guidance to all employees for reporting and investigating accident/incident in an organized and comprehensive manner.
- iii. Report and investigate accident/incident in compliance to client requirements and contractual obligations.
- iv. Provide tools to prevent the re-occurrence of accident/incident.

2 Scope

Accident/incident reporting & investigation procedure applies to all AAG Land Survey service units.

Procedures shall provide mechanism for gathering information and data related to an accident /incident that shall be used for preventing the reoccurrence of accident/incident of similar nature. This standard covers key aspects of the reporting and investigation process that includes:

- a. Reporting
- b. Investigation
- c. Follow-up
- d. Corrective/Preventive action.

3 Procedures and Standards

- A. All the accidents/incidents irrespective of minor or major shall be reported promptly and accurately to concerned company as well as client personnel.
- B. Prompt, timely and appropriate medical care shall be provided to injured employees.
- C. All the accidents/incidents shall be reported within client stipulated time frame.
- D. Client provided accident/incident reporting form should be used as required for reporting purpose.
- E. Client Accident/Incident forms shall be available all the time.
- F. The accident/incident severity and potential risk rating shall be determined to take subsequent action.
- G. All the accident/incident shall be investigated based on the severity and potential risk rating as stipulated by client.
- H. Actively participate in Client organized investigation as required.
- I. client accident/incident matrix shall be used to identify/categorize severity and potential risk rating of an accident/incident as required.
- J. Accidents/incidents lateral learning shall be communicated to all employees through safety meeting to prevent the re-occurrence of the same.
- K. Accident/incident action items shall be implemented and closed-out in a timely manner.

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4 Definition

Accident is an unplanned, undesired event which results in loss. Loss could be in the form:

- a. People through fatality, injury illness
- b. Plant/Equipment through damage, repair replacement
- c. Process through interruption
- d. Amenity through environmental pollution
- e. Goodwill through adverse publicity and reputation.

Incident is an unplanned, undesired event which under slightly different circumstances, would result in loss.

Lost Time Injury (L.T.I) Any work injury which renders the injured person temporarily unable to perform regular job or restricted work on subsequent day (s) after the day on which the injury occurred until certain period.

Restricted Work Case (RWC) Any work injury that renders the injured person temporarily unable to perform regular job, but enable to perform restricted work (light duty job etc.) on subsequent day(s) after the day on which the injury occurred until certain period.

Medical Treatment Case (MTC) Any work injury that involves neither lost workdays or restricted workdays but which requires treatment by, or under, the specific orders of a physician or could be considered as being in the province of a physician.

First Aid Case (FAC) A work injury which requires less treatment or attention than a medical treatment case, i.e. any one time treatment and subsequent observation of minor scratches, cuts, burns etc. Such treatment may be provided by a physician or registered professional person.

5 Accident/Incident Category

Level 1 - Major accident/Incident

Death of any person(s).

Uncontrolled Fire or Explosion.

Level 2 - Serious Accident/Incident

Lost Time Injury (L.T.I)

Restricted Work Case (R.W.C)

High Potential Incident.

Level 3 - Minor Accident/Incident

Medical Treatment Case.

First Aid Case.

Near Miss.

Unsafe Act/Condition.

SECTION-9

HSE Training

1 Objectives

- a. Ensure that all AAG Land Survey employees possess the necessary knowledge and skills to execute the assigned responsibilities and tasks in a safe manner.
- b. Educate employees the hazards and risks involved in IGS L.L.C operation and improve their ability to control the identified hazards and risks to protect them from accidents and injuries.
- c. Identify and communicate to employees the means of HSE training to meet company/client HSE training requirements.

2 Scope

All AAG Land Survey employees are covered by the scope of the training process as per Philippines Land Survey regulations.

3 Minimum Standards

- i. Training shall be provided to all employees and sub-contractor employees in compliance to contractual obligations and clients training specifications dependent the inter-relation of the services provided. Training requirements shall be continued to be satisfied through refresher training.
- ii. Client approved training institutions shall be utilized for providing HSE training.
- iii. HSE training needs for each employee shall be accessed on the basis of inter-related factors as
 - a. client/contract requirements
 - b. company business requirements
 - c. regulatory requirements
 - d. industry requirements
 - e. specific hazardous materials or equipment used
 - f. hazardous work activities/services provided.
- iv. Employee HSE Training Matrix shall be prepared and maintained identifying the training needs for each category of employment i.e. job classification versus training needs.
- v. Employee HSE Training Matrix shall be revised periodically in accordance to the change in legislation/clients training specifications.
- vi. Employee HSE Training Register shall be developed and maintained to monitor/evaluate employee training status. HSE Training Register shall demonstrate employee name, date of the training course attended, date of next refresher etc.

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vii. The following HSE training shall be provided to employees as a minimum requirement.

However, training shall be provided as per contract specifications to fulfil the contractual obligations.

MINIMUM HSE TRAINING REQUIREMENTS TRAINING COURSES TARGET POPULATION

HSE Induction

H2S Awareness & Escape

Interior Driver Skills

Chemicals Safety Awareness

Basic Fire Extinguishers

- All Employees
- All employees engaged in providing field services.
- All drivers engaged in interior/location driving.
- All employees engaged in chemical handling.
- 10% of total workforce

A list of Client approved training institutes/organizations shall be maintained at all time.

SECTION-10

Control of HSE Records

1 Purpose

To establish and maintain a documented procedure for identification, storage, protection, retrieval, retention time, collection, indexing, access, filing, maintenance and disposition of HSE records.

2 Scope

All HSE records relevant to HSE Management System

3 Responsibility

Operations Manager
Head of Departments

4 Procedure

HSE Records are those formats and register when duly filled with data (information)
Respective Head of Departments maintain the relevant HSE Records.

Details of Quality Records is maintained through **Master List of HSE Records**
by respective division heads / MR, which contain the following information:

- HSE Record Reference No.
- Description of the HSE Records
- Identification of HSE Record
- Storage method of HSE Records
- Responsibility to maintain HSE Records
- Retention period
- Disposition of Record

All HSE Records are maintained as mentioned in Master List of HSE Records.
Head of Departments dispose quality records suitably as per the retention period defined in the Master List of HSE Records.

SECTION-11

HSE Audit and Inspection

1 Objectives

- a. Review and evaluate the effectiveness and applicability of HSE Management System.
- b. Monitor & measure HSE Management System implementation achievements and progress.
- c. Identify non-conformance to standards and procedures.
- d. Make recommendations for improvement and set specific plans for successful completion of HSE Management System implementation.

2 Scope

All the service units of AAG Land Survey are covered by the scope of the audit and inspection standards and procedures.

3 Procedures and Standards

3.1 HSE Audits

- i. The HSE audits are a formal method of verifying conformance and to set-forth HSE standards, policies, procedures, systems and programs to determine the effectiveness of HSE Management system structured HSE audits shall be conducted to determine:
 - a. The services or facility is being managed in accordance with HSE management system
 - b. Work activities are executed in line with documented HSE standards and procedures
 - c. HSE standards are implemented effectively
 - d. Effectiveness of the HSE standards and procedures are suitable for the services provided.
- ii. A single auditor or an audit team involving senior management shall conduct internal HSE Audit annually.
- iii. Internal HSE Audit shall be combined with Client audit program where appropriate.
- iv. HSE Audit checklist shall be developed covering all the aspects and key elements of AAG Land Survey HSE Management System.
- v. HSE Audit shall include the examination of records of key elements of AAG Land Survey HSE management system.
- vi. After the HSE Audit Auditor or Audit Team shall prepare and distribute mutually agreed HSE audit report identifying strengths and weaknesses in the management of HSE.

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vii. HSE Audit report shall include the specific action items for improvements.

viii. HSE Audit action items shall be followed-up, implemented and closed out in a timely manner and the audit action close out report shall be distributed to all concerned parties.

3.2 HSE Inspection

i. A formal method of verifying the physical conditions of facility/workshop/, plant and equipment in compliance to set-forth standards and procedures.

ii. HSE inspection shall be carried out in the facility or workshop/machine shop to identify substandard practices and conditions that may arise in the course of regular or day-to-day operation.

iii. Facility/Workshop Supervisor or his designee on a monthly or quarterly basis as the discretion of senior management shall conduct HSE inspection.

iv. HSE inspection checklist shall be developed in conjunction with the nature of operation or services provided which should be used for HSE inspections.

v. Identified sub-standard practices and conditions shall be recorded in the inspection form with specific corrective and improvement action plan.

vi. Corrective and improvement plan shall be closed out in a timely manner.

SECTION-12

Environment Management

1 Objective

- a. Aims to define individual environmental responsibilities of personnel.
- b. Identify environmental standards where they exist, promote environmental awareness in relation to work and to set appropriate rules of behavior.

2 Scope

- Applicable to all the services provided by AAG Land Survey and all other day-to-day activities of the entire organization.
- All sub-contractors

3 Procedures and Standards

In order to deal with the subject in a comprehensive and systematic manner relative to normal operations and activities, it is approached from three angles.

Type of Human Activity:

- a. Driving / transport
- b. Working in the Interior
- c. Land surveying
- d. Industrial areas and workshops

Major Operations:

- a. Land surveying
- b. GIS and CAD work

Major Operational Issues

- a. Housekeeping and clean-up
- b. Waste disposal
- c. Air-conditioning and cooling equipment
- d. Fire extinguishers

4 Environmental management

- a. Environmental management is achieved through two different routes.
- b. The first is the planning and development of facilities and programs to have minimal environmental impact.
- c. The second is through responsible environmental management of all operations.

5 Instruction and supervision

Good instruction is essential for getting the work done in a safe and environmentally acceptable manner. Supervisors shall include the following environmental rules for operations in their instructions to staff. When supervising

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any work and especially when checking jobs that are completed, supervisors must make sure that the environmental aspects of the job have been adequately dealt with.

6 Major activities

6.1 Driving and transport

Off road driving can be unsafe. It can also be bad for the environment. Light vehicles make only slight marks, tracks of cars and lorries remain visible for a long time. Transport of personnel and equipment shall stay on the public and Client road networks or shall at least use existing tracks. When pulling off the road in dust clouds or to rest, vehicles should not be taken further away from the roadside than is necessary for traffic safety.

These operations necessitate off road driving, this shall be done with due care to avoid damage to vegetation and surface. Where staff and equipment are repeatedly transported off the road along with same route, tracks shall be marked and followed. Such tracks shall be laid out with care avoiding vegetation and susceptible surface stretches as much as possible.

As a general rule, litter and waste shall be taken to the final destination and disposed. This includes vehicle tires or their remains.

6.2 Working in the Interior

There is a general duty of care for the environment when working in the Interior (and elsewhere). Worksites shall be cleared of rubbish and litter and all waste shall be taken back to base for proper disposal. The standard of environmental housekeeping outside the industrial areas and Interior camps shall be fully comparable with that inside.

7 MAJOR OPERATIONAL ISSUES

7.1 Housekeeping and clean-up

Good housekeeping remains the backbone of environmental protection in day-to-day operations. If the worksheet has not been cleared after a job, the job is not completed properly. Continued emphasis shall be given to good housekeeping and clean-up to demonstrate line management commitment.

7.2 Waste disposal

To prevent pollution, waste must be segregated and each type disposed in the correct manner. Where possible, it should be taken back to base, and disposed using the waste facilities provided. Records of the amount of waste disposed should be kept. The department responsible for waste management may be consulted and additional advice may be obtained from TSE department if necessary. CLIENTs Waste Management Manual should be followed.

7.3 Chemicals

All chemicals shall be stored or hard standing and should be protected from solar

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radiation. They shall also be familiar with the correct handling procedure and with the use of personal protective equipment. At every facility where chemicals are used.

7.4 Air-conditioning and cooling equipment

Air-conditioning and cooling equipment contains freons. These man-made compounds are known to reduce the productive ozone layer in the outer layer of the Earth's atmosphere. Most countries have committed to the abolition of the manufacture and use of the so-called "hard" freons in the Montreal Protocol.

Most of the freons used in commercial air-conditioning and cooling equipment are of the "softer" variety, which are not (yet) subject to phasing out under the Montreal Protocol. However, it is important that the inadvertent release of freons to the atmosphere is minimized. Maintenance of freon containing equipment shall therefore be directed at the prevention of such inadvertent releases.

7.5 Fire extinguishers

Like freons, halons are man-made compounds that destroy the ozone layer. It is therefore also important that the inadvertent release of halons to the atmosphere is minimized. CLIENT has a policy to phase out the use of halon fire extinguishers by the year 2000. Maintenance of halon containing equipment in the interim, shall be directed at the prevention of inadvertent releases. Fixed halon systems shall be triggered for testing purposes. Portable halon extinguishers shall not be used for fire-fighting instruction or exercises. In the interim period, if a portable halon fire extinguisher has been used for fire fighting, it shall not be refilled but it shall be replaced by a CO₂, dry powder or other suitable type of fire extinguisher.

7.6 Spills and other accidents

Spills of oil and chemicals that cannot be immediately controlled by routine measures shall be reported as environmental accidents. Other environmental accidents include : justified neighbourhood complaints or claims for damages to livestock, crops or property, pollution cause by loss of containment of petroleum, petroleum or chemical products, or wastes. If accidents happen, measure shall be taken to contain and mitigate the effects as soon as possible. Staff involved in clean-up shall be aware of the appropriate procedures and use the right protective equipment. It may be required to isolate the place of the accident, to place warning signs and to provide security guards.