HEALTH, SAFETY AND ENVIRONMENT MANAGEMENT SYSTEM

Corporate HSE Department
GAIL (India) Limited
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Introduction

GAIL (India) Limited, a Govt. of India undertaking, is India’s flagship Maharatna company dealing in hydrocarbons, integrating all aspects of the Natural Gas value chain (including Exploration & Production, Processing, Transmission, Distribution and Marketing), LPG process plants and pipe line transmission, Petrochemical Plant, Telecom bandwidth provider, CNG and PNG transmission and distribution etc. GAIL, after having started as a natural gas transmission company during the late eighties, has grown organically by building large network of Natural Gas Pipelines covering over 10000 Km with a capacity of more than 200 MMSCMD; two LPG Pipelines covering above 2000 Km with a capacity of more than 4 MMTPA of LPG; six gas processing plants for production of LPG and other Liquid Hydrocarbons, with a production capacity of more than 1.4 MMTPA; and a gas based integrated Petrochemical plant of over 410,000 TPA polymer capacity which is further being expanded to a capacity of 900,000 TPA.

In an economic environment of rising cost of various inputs to the industry, in the form of man, material, machine, increasing cost of health care and stringent environmental regulations it is vital for an organization to effectively manage occupational Health, Safety and Environment through a well-defined HSE Management System. Health and Safety of everyone who work for GAIL (India) are of paramount importance and all these attributes are embedded within the core values of the organization.

In this regard, GAIL’s Corporate HSE Policy’ and ‘HSE Management System’ (18 Elements) provide the sound foundation by integrating safe work practices in every activity of the organization. It may be mentioned that HSE Management System of GAIL has been prepared in line with OISD-GDN-206 “Safety Management System in Petroleum Industry”. Initially, the HSE management system and guidelines were introduced in GAIL in year-2002. Subsequently, same were revised in year 2008.

Keeping in view of growth of business activities of GAIL and introduction of policy/guidelines like Fire & Safety Policy, Fire Protection Manuals Volume-I & II, Environment Management Guidelines, Occupational Health Guidelines, Incident Reporting System, Maintenance Policy & Guidelines, HSE Management System (18 Elements) has been taken up incorporating the present and future envisaged requirements suitably. The revised HSE Management System is divided into three parts:
• Elements
• Guidelines
• Sample Formats

In the earlier HSE Management System; the guideline for certain elements and also the required formats were not available. The HSE Management System (Revision- II) provides a set of requirements against each element in form of Objective, System requirement, Guidelines, sample formats, list of relevant regulations/ OISD standards etc. in order to standardize the practices across GAIL.

It is expected that the above system shall help in development of comprehensive HSE Management System and various SOPs at individual units/locations addressing all the 18 elements appropriate to their scale of operational activities benefits of which would be reflected in the form of increased productivity and morale of all those associated with the business activities. These benefits are a direct consequence of the reduction in workplace accident, injuries and illness.

The HSE Management System Elements and Guidelines shall provide minimum requirements to across GAIL Installations on Health, Safety and Environment functions and focus on uniform implementation. The HSE Management System does not cover any statutory or legal compliances pertaining to installations. The HSE Management System is not intended to override the compliances of various Central and State Government Rules and Regulations. GAIL Installations are abide/bound with applicable legal compliances pertaining to site specific and it shall be prime responsibility of sites to comply with.

The effective implementation of HSE Management System is key to Safe Operation and Maintenance of our installations. Management has committed to provide adequate resources and deployment of manpower to meet the requirement duly laid down in Heath, Safety and Environment Policy of GAIL.

The revised HSE Management System Operation & Maintenance: Elements & Guidelines (18 Elements) does not cover E&P activities for which a separate HSE manual exists. The same shall be taken up for revision in due course of time.
Element No. 1.1

HSE Leadership and Commitment

**OBJECTIVE**

The site Management shall define HSE policy in line with Corporate HSE Policy appropriate to nature & scale of operations/activities, set the quantifiable and measurable goals, provide resources for its successful implementation, display visible commitment, review the corresponding HSE Management system at planned intervals to ensure its continual improvement, adequacy and effectiveness.

**SYSTEM REQUIREMENT**

1. Formulation of Health, Safety and Environment Policy Statement at Unit Level reflecting management commitment on Health, Safety and Environment during construction, operation and maintenance of its business segments.

2. Health, Safety and Environment Policy shall be approved by Local Management at respective Work Centers and shall be updated.

3. Respective OIC/WIC shall delegate the responsibilities for implementation of HSE Management System effectively.

4. Procedures shall be established to meet the requirement of HSE Management System and translated into operational practices through a process.

5. Local Management shall review HSE Plans, resources to support the set goals, targets, and their progress (Six Monthly).
6. Visible Management commitment like: establishing practical HSE plan, controlling risks, encouraging 2-way communication, personal demonstration for commitment to HSE by example, attitude & behavior, immediate communication on unsafe acts with constructive advice, incorporating relevant safety topic/films in routine meetings, encouraging people to participate in safety trainings & programs, Tool Box Talks, safety suggestions, encouraging reporting of near miss incidents etc shall be demonstrated including formulation of reward programs.

7. Hazard/risk assessment of various O&M activities shall be ensured and information shall be provided to all concerned about risk mitigation measures available at site including accident prevention and protection system.

8. Local Management shall ensure compliance of all applicable statutory rules and regulations and strive to go beyond while setting internal targets.

9. Information on HSE shall be shared and disseminated throughout the Work Centers. Occupier and Factory Manager/ OIC/WIC shall review the HSE Practices for strengths and weaknesses for further improvement, periodically.

[Please refer to guidelines for details]
**Element No. 1.2**

**Employee Participation**

**Objective**
To involve all employees of GAIL for effective implementation of the HSE management system and its continual improvement.

**System Requirement**

1. Development of written action plan approved by management to encourage employees’ participation in development and ongoing implementation of all elements of HSE Management System.

2. Formation of One Tier/Two-tier Safety Committee – Unit Level and Plant Level with appropriate representation of workman to review the HSE related issues of the facility.

3. Dissemination of HSE procedures and instruction.

4. Individual and teams shall be recognized for their contribution in improving personnel safety.

5. It shall be ensured that all employees are trained in HSE matters including contact workers, visitors etc. at work center.

6. OIC/WIC shall have responsibility of Implementing of Behavior Based Safety across the Work Centers.

[Please refer to guidelines for details]
Facility Design, Construction and Pre-startup Safety Review

OBJECTIVE

The facilities shall be designed by using sound standards, codes, procedures and management systems in a manner that ensures minimum HSE risks and adequate public safety under all conditions likely to be encountered during installation, testing, commissioning and operating conditions.

SYSTEM REQUIREMENT

1. The design of the facility shall be established on National and International Codes and Standard.
2. Procedure shall be established for identification of process hazards before finalization of design.
3. Necessary statutory approvals shall be obtained before taking up construction activities.
4. System shall be established to ensure the Health, Safety and Environment compliance in line with requirement, during design, construction, procurement, inspection, pre-start up activities, testing, commission and operation etc.

[Please refer to guidelines for details]
Element No. 1.4

Process Safety Information

**Objective**

Process Safety relates to operation of facilities that handle, use, process or store hazardous materials in a manner free from catastrophic incidents. Under Process Safety Information emphasis is to equip Engineers/operators with knowledge of process chemicals, process technology and process equipment to facilitate safe operation of facilities and to manage risk effectively.

**System Requirement**

1. Complete and accurate written information shall be documented, maintained and communicated in respect of process technology, process equipment and process chemicals in order to manage risks.


3. Details shall be available for all process chemicals, raw materials, intermediate/finished products and their inventory, Physical properties; Fire & explosion hazards, Reactive hazards; Health hazards, Corrosive properties of the chemical; run away reaction; over pressure hazards; Information on fire-fighting media, use of PPE, emergency treatment for exposure and release/spill containment etc.

4. Process Equipment design details shall be made available for equipment like columns, vessels, heat exchangers, reactors, pumps & compressors, valves, piping, drilling rigs & work over rigs, cross country pipelines, tanks, loading & unloading facilities and other equipment that contain process chemicals.
5. It shall be ensured that statutory requirements consent to operate, codes, standards; practices and also operating requirement are documented and communicated to all concerned.

6. The SOPs shall be made available to the Operator’s level and the personnel deployed for the process operation shall to be adequately trained/made conversant.

[Please refer to guidelines for details]
Element No. 1.5

Risk Analysis and Management

Objective

Hazard identification for various activities & associated risk analysis to be carried out considering their severity, likelihood and the consequences to health, safety and environment with necessary management controls.

System Requirement

1. System shall be developed for identification of hazards, analyzing the risk from the hazards and evaluating ways either to eliminate the hazards or to manage the risk.

2. Risk Analysis/Assessment shall be based on scientific and empirical information which reflect thorough understanding of the hazards of operation of facilities.

3. Occupational health & safety hazards shall be identified and risks related tasks or activities, which are anticipated shall be established and documented and its recommendations shall be implemented before beginning of tasks or activities.

4. Experts/qualified personnel shall be engaged for hazard identification/risk analysis or assessment at installations and processes.

5. Adequate methodology shall be in place for rating or ranking the risk associated with operations or tasks to understand the severity and formulation of necessary control approach to lower the risk at acceptable level for risk management.
6. The implementation of the risk analysis or assessment recommendations shall be ensured through established procedures.

7. Risk Analysis or assessment findings shall be made accessible to concerned employees.

[Please refer to guidelines for details]
Element No. 1.6

Third Party Services

Objective

The performance of contractors and suppliers shall be consistent and compatible with GAIL’s HSE management system and business objective. HSE system adopted by the Third party shall be compatible and complimentary with GAIL.

System Requirement

1. System shall be developed to demonstrate Management Commitment to ensure that the consideration of Health, Safety and Environment requirements is consistently integrated in third party services i.e Services/Purchase.

2. Procedure shall be made to communicate Contractor on associated hazard of work and adherence to HSE requirement of GAIL.

3. System shall be made for control of entrance, presence and exit of contract employers, employees, equipment and materials.

4. System shall be made to obtain Health, Safety and Environment information for machinery, equipment or material to be procured.

5. Procedure shall be made to review the HSE aspects of contractor during work for effective implementation.
6. Contractors and suppliers’ performance shall be monitored and evaluated by the group deploying the agency through surprise checks as required. Deficiencies, if any shall be communicated to concerned supplier or contractor and corrected. Repeated violations shall be addressed as per guidelines.

[Please refer to guidelines for details]
**Objective**

Injuries shall be prevented through focus on the human element and the interface between people and their work environment.

**System Requirement**

1. Establish systems for personnel safety management and communicate the same throughout work center.
2. Local Management shall demonstrate commitment through visible and active involvement in the personnel safety management system.
3. Personnel behavior towards safety at workplace shall be monitored at during work, recorded and analyzed. The results of the same shall be used to improve safety performance.
4. Protect people from injury at workplace, with suitable design of the facilities, work plans, procedures and training.
5. For carrying out assigned tasks each employee shall be trained and evaluated to inculcate competency towards their individual safety responsibilities, the nature of hazards and preventive measures including selection & use of PPEs necessary for the specified job.
6. Formulation of detailed specification for personal protective equipment shall be made by CO to Standardize PPEs across GAIL and site shall ensure provision of appropriate Personal Protective Equipment to all employees including contract workers.
7. Safety rules, safe operating procedures and standards shall be documented and made accessible to employees/others, implemented and reviewed at regular intervals and suitably updated (Once in a year).

8. Establish system and procedures for control of entry of personnel and materials into the work site and restricted areas.

9. Propagation of “off the job safety” importance and training at work centers.

[Please refer to guidelines for details]
Element No. 1.8

Control of Defeat and Reliability of Critical Systems and Devices

Objective

For management of risk to personnel, equipment and the environment; reliability of safety critical and environmental critical systems and devices to be ensured.

System Requirement

1. System shall be established to develop the appropriate procedures for maintaining Critical Systems and Devices at Work Center.

2. List of Critical Safety and Environment Systems and Devices shall be prepared and updated (Once in a year).

3. Procedures shall be in place for maintenance and testing of Critical Safety and Environment System and Devices in accordance with Standards and Codes.

4. The defeat of critical systems and devices by temporary disarming/deactivation/isolation shall be made through a well-established system.

5. In order to safeguard personnel, equipment and the environment alternate protection system shall be specified and implemented prior to defeat of critical system/device.
6. The personnel whose job or task could be affected by the defeat of a critical system/ device shall be communicated about the defeat and the alternate means of protection, put in place.

[Please refer to guidelines for details]
Element No. 1.9

Work Permit System

OBJECTIVE

To establish, implement and maintain a system of work permits to ensure that jobs are adequately planned and work is performed free of incidents by exercising necessary control over all maintenance/construction activities inside the facilities through such system.

SYSTEM REQUIREMENT

1. System shall be in place to ensure that a documented work permit procedure is established, implemented, maintained, periodically reviewed and properly followed in Operation and Maintenance activities.

2. System shall be developed, documented with procedure for issue/receiving/implementation/closing of work permit online.

3. Work permit system for pipeline installation i.e sectionalizing valve station, intermediate pigging stations, consumer terminal shall be established.

4. OIC/WIC of work center shall authorize personnel for issuing, receiving and Fire & Safety representative for implementation of work permit system.

5. Concerned employees shall be imparted formal training, refresher training as required regarding the work permit system and the same shall be evaluated to inculcate competency so that they can identify hazards involved with the work and specify precautions needed to control the hazards.
6. Gas testing and hazardous material monitoring shall be done as required for all work situations needing such attention like hot work, confined space entry or situations where combustible or toxic materials can be present.

7. Procedures shall also establish to carry out the job through work permit in odd hours or holidays.

8. OIC/WIC shall declare the Non Permit Area.

9. Local Management shall periodically verify the activities associated with the work permit requirement for its correct execution in the field to control the hazard.

[Please refer to guidelines for details]
Element No. 1.10

Operation and Maintenance Procedures

OBJECTIVE

To establish, implement and maintain effective operation and maintenance procedures that facilitate incident free operation and maintenance of GAIL facilities.

SYSTEM REQUIREMENT

1. OIC/WIC shall implement and maintain “Maintenance Policy & Guidelines” of GAIL as updated from time to time for achieving sustainable excellence in operation & maintenance of asset under them with focus on high level of system availability & reliability. Various practices and procedures shall also be streamlined in line with this policy to achieve uniformity & consistency across the organization.

2. Operation & maintenance activities having higher risks shall be identified (with reference to Hazop, HIRA & EAI studies) and necessary procedures for the same shall be made involving concerned employees. The same shall be duly approved by OIC/WIC:

A. Operation to give focus on the following in addition to normal activities:

• Initial and subsequent startup of facility
• Emergency operation
• Normal shutdown and emergency shutdown
• Temporary operation
• Operations involving hazardous substances
B. Mechanical Activities to give focus on the following in addition to normal activities:

- Those that involve the interfacing of different plants, process units etc.
- Work on in-service equipment
- Lifting
- Temporary repair

3. Procedures shall be designed with a focus to reduce potential for human error.

4. Procedures shall be updated with the changes in technology, equipment and regulations keeping in view advice of process licensers/OEMs/ Regulators.

5. The operation and maintenance procedures shall be reviewed every 2 Years/ as required by a committee of experienced employees (who may have discussions with concerned employees suitably) for its consistency and effective usage.

6. These procedures/ Manuals so developed shall be made available to all the employees and communicated to enhance knowledge, awareness and effective implementation.

[Please refer to guidelines for details]
Element No. 1.11

Inspection and Maintenance

Objective

To establish, implement and maintain a system to inspect and maintain the integrity of all machinery and equipment in the facilities so as to prevent any failure of these equipment due to lack of maintenance.

System Requirement

1. System shall be established for inspection and maintenance of all equipment, machinery, tools and tackles, to identify those whose function is primarily health, safety or environment to ensure the integrity of the equipment in sound condition.

2. List of such equipment, machine, tools and tackles etc. shall be prepared and updated (Once in a year).

3. System shall have procedure for systematic approach to identification of Pre Use Equipment Inspection.

4. The master equipment used for inspection shall be verified for its accuracy from accredited third parties.

5. Procedure shall also be made to inspect the equipment brought by Contractor for inspection of GAIL’s equipment, machine etc or his own equipment, machine etc for the purpose of inspection.

6. Records of Inspection and Maintenance shall be well documented for corrective action, if any.

Please refer to guidelines for details}
Element No. 1.12

Management of Change

Objective

Any change in operations, procedures, layouts, facilities or personnel shall be evaluated and managed to ensure that safety, health and environmental risks arising from these changes remain at an acceptable level.

System Requirement

1. System shall be established for continuous modifications to achieve higher efficiency, improve operability and safety, and improve reliability, improvement of the plant machineries and equipment and to accommodate technical changes.

2. The Management of Change procedure shall be well defined and documented.

3. Local Management shall constitute a committee for reviewing the proposal of any modification before approval.

4. Any Management of Change shall only be considered completed, once the approved changes are incorporated at work place and in SOPs and P&IDs.

5. Employees shall be made aware of changes incorporated.

[Please refer to guidelines for details]
Training

**Objective**

Training need identification procedure shall be established, implemented and maintained to enhance knowledge & competency of the employees to facilitate safe operations, environmental practices, health of employees and required compliance of laws and statutory regulations.

**System Requirement**

1. Training need identification procedure shall be established, implemented and maintained to provide initial and ongoing trainings to meet the job requirements.

2. Training modules for different levels shall be prepared in line with the provisions of OISD STD-154 “Safety Aspects in Functional Training” and also keeping in view those specified in ‘Fire & Safety Guidelines of GAIL’.

3. Training system shall be established for all newly engaged or rotated/reassigned employees including HSE personnel to suitably equip them handle normal & emergency procedures, appropriate safety, health and environmental work practices before assuming duties.

4. Refresher training shall be carried out based on assessment of employees’ knowledge and skill related to their job requirements.

5. Training evaluation records shall be kept and utility of the training shall be assessed for its effectiveness.

[Please refer to guidelines for details]
Element No. 1.14

Incident Reporting, Investigation and Analysis

Objective

To establish, implement and maintain procedures for incident reporting, investigation and analysis so as to identify root causes of incidents and to implement effective corrective measures or systems to prevent recurrence.

System Requirement

1. Management Systems shall be in place for timely reporting, investigating, analyzing of incidents & documentation.

2. Management shall establish the appropriate system to report Near Miss Incident (An incident which does not result any injury or damage to property but has the potential to result in injury and/or property damage) or probable failure and their investigation.

3. Management shall constitute appropriate Committee for investigation of incidents. The personnel responsible for investigation of accident/incident shall be imparted formal training in accident/incident investigation techniques.

4. System shall be developed for remedial action and follow up as suggested by Investigating Team. In order to determine the common causes of incidents information from all incidents shall be periodically analyzed and necessary actions to be taken to prevent future incidents.
5. The feedback of all incident investigation like incident description, lessons learnt and action taken to prevent future incidents shall be shared with plant employees/ all concerned and also other units of GAIL.

[Please refer to guidelines for details]
Element No. 1.15

Occupational Health

Objective

To identify, evaluate, control occupational health hazards and to protect the health of employees, customers, contractors and the public from any adverse effects that may result from GAIL's activities and products.

System Requirement

1. System shall be established for monitoring of Occupational Health of employees at work place.
2. OIC/WIC shall constitute a committee of monitoring the Occupation Health aspect of employees and further improvements.
3. System shall be established to provide adequate infrastructure/resources to Occupational Health Center to take care of medical management at work center.
4. System shall be established for monitoring of Occupational Hygiene Monitoring at work center.
5. Procedure shall be made for pre-employment/pre-placement medical check and periodical occupation health checkup of employees at work centers.

[Please refer to guidelines for details]
Element No. 1.16

Environment Management

Objective

To understand the significant environment aspects—impact of site’s activities, products and services on environment and community like water pollution, air pollution, land contamination, hazardous/non-hazardous waste generation etc and mitigate the same with focus to continually improve the performance to facilitate sustainable business development in line with declared HSE policy.

System Requirement

1. System shall be established for Environment Management to identify various aspects (causes) like water pollution, air pollution, land contamination, hazardous/non-hazardous waste generation etc and its effective control.

2. System shall be established for environmental aspect and impact analysis periodically.

3. System shall be in place to reduce waste generation and to dispose off waste in a safe and environmentally sound manner.

4. Procedure shall be established for carry out Green House Gas Accounting of unit periodically.

5. Long term Pollution prevention plans shall be drawn with focus on continual improvement.

6. Procedure shall be made to inculcate awareness on Environment Prevention and Protection among employees and their family member at large.

[Please refer to guidelines for details]
Element No. 1.17

Emergency Planning and Response

Objective

The site shall establish, document, implement and maintain procedures to identify the potential situations leading to emergency and to appropriately respond to such emergencies to prevent or mitigate associated adverse OH&S consequences facilitating protection of the public, site personnel, contractors the environment and assets.

System Requirement

1. Emergency Plans (Onsite/Offsite) and ERDMP shall be documented, updated and communicated to all concerned in line with applicable rules and regulations.

2. Adequate resources both internal and external shall be provided/linied up to respond to an emergency situation in line with Emergency Plans.

3. System shall have procedures to familiarize Employees and others with Emergency Response Plan, their roles and responsibilities to respond emergency.

4. Fire Defense System shall be established, maintained and ensure continual improvement through effective laid down procedures.

5. Emergency Plans shall have integration with all concerned civic authorities, neighboring industries and concerned GAIL units/offices.
6. Neighboring communities, concerned civil authorities and public en-route of pipelines shall be informed of the potential hazard of the gas/chemicals and the way to respond during such emergency situations.

7. Emergency Preparedness Exercise shall be carried out periodically for evaluate the strengths and weaknesses of emergency plan for further action. Records of all such emergency preparedness exercise shall be maintained at site.

[Please refer to guidelines for details]
**Element No. 1.18**

**Compliance Audit**

**Objective**

Periodic HSE Audit shall be conducted at regular intervals to verify and ensure that all intended provisions of HSE management system are being complied with.

**System Requirement**

1. The internal HSE audits shall be conducted by a multidisciplinary team of auditors drawn from the unit itself.
2. A multidisciplinary team drawn from different units formed by Corporate HSE Department shall carry out audit of all major units periodically. This is to be termed as “Inter Unit Safety Audit”.
3. External HSE audit of the process plants and pipelines shall be carried out by third party.
4. System shall be in place to comply with the HSE audit observations/recommendations in a time bound manner.
5. Training on “How and What to Audit” shall be provided to all members of internal and corporate HSE audit teams.

*Please refer to guidelines for details*
### HSE Management System Guidelines

#### Operation & Maintenance

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Element No.: 1.1 G

HSE Leadership and Commitment

GUIDELINES:

1. Corporate HSE Department is responsible for formulation of Health, Safety and Environment Policy of the organization, which demonstrates the management commitment toward Health, Safety and Environment. Based on the Corporate HSE Policy, detailed HSE Management System shall be established at Work Centers in line with the guidelines.

2. The HSE Policy of Work Centers shall be based on the approved Corporate Policy with emphasis on specific business area of operations of the work center and it shall be signed by Occupier and Factory Manager.

3. Site specific Health, Safety and Environment Policy shall be reviewed in line with review of Corporate HSE Policy. However, Site HSE Policy shall be updated or reviewed immediately upon changes in site management structure i.e. change of Occupier or Factory Manager etc.

4. OIC/WIC shall delegate the HSE responsibilities to all concerned at work center. Head of Fire & Safety Department irrespective of level shall report to OIC/WIC of respective Work Center.

5. The ‘Annual HSE Plan’ along with the quantifiable and measurable goals shall be prepared by individual work centers on yearly basis (April–March) by January every year and a copy of the same shall be sent to Corporate HSE Department after due approval of the same by OIC/WIC.

6. The ‘Annual HSE Plan’ shall be reviewed periodically (every 6 months) to ensure that it remains relevant and appropriate to the operation & maintenance activities of the work Centre. Sample copy of Annual HSE Plan with objectives/goals and targets in attached as Annexure 1.1.1 & Annexure 1.1.2.
7. Occupier or Factory Manager/OIC of respective Work Centers shall review the HSE Plan and provide necessary resources to meet the set goals and targets. The HSE performance of Work Centers shall be reviewed by Occupier or Factory Manager/OIC on monthly basis on prescribed Performa of Corporate HSE Department.

8. The Corporate HSE Department shall be responsible for reviewing and measuring the HSE Performance of Work Centers through HSE Indexing System. The overall HSE Performance of organization shall be put to Board of Director for top management review. The approved HSE Index, shortcoming and area of improvement shall be communicated to Work Centers for implementation.

9. Safety Performance of Work Centers shall be reviewed by Top Management Official like organizing Sub Committee Meeting etc., coordinated by Corporate HSE Department.

10. Schemes shall be prepared to encourage involvement of all employees including contract workers in HSE activities at Work Centers by formulating reward methodology for activities like identification of unsafe condition, unsafe act, safety suggestion, active contribution etc.

11. Risk of various O&M activities shall be identified through latest hazard/risk assessment method and technique and adequate system approach needs to be taken to mitigate the risk at large extent by application of prevention and protection method.


13. HSE information shall be shared and disseminated through display of safety posters, information, SOPs etc. and imparting training to employees including contract workers.

14. OIC shall conduct Random Site Safety Tour:
   - In case of Pipelines, the site visits must be scheduled so as to cover the entire spread in the jurisdiction of OIC at least once in a Quarter.
   - In case of Plants and Compressor stations, ensure daily site visits.

15. OIC/WIC shall ensure the compliance of Safety Rules and Regulations at respective Work Center of GAIL in TOTO.
Element No. 1.2 G

Employee Participation

GUIDELINES:

1. Occupier and Factory Manager/OIC shall develop the written procedure to encourage employees’ participation in HSE matters. The participation of employees shall include:

   • Observance of National Safety Week, Fire Services Week, World Environment Day
   • Reporting of Incident/Accident/Near miss
   • Safety Suggestion Schemes
   • Rotating employees through nomination in Safety Committee Meeting
   • Encourage employees to impart training to others as faculty member
   • Nomination of employee as team member in Internal Safety Audit
   • Nomination of employees as team member in Hazard Identification Process etc.

   a) Observance of Monthly Safety Day:

      10th of every month shall be observed as a monthly safety day. Programmes like weekly safety review meeting, tool box safety talk to employees, inspection of safety features etc. shall be carried out by the designated employees. Records regarding these event is shall to be maintained.
b) **Observance of Life Saver:**

- Life saver safety campaign for a quarter on a particular topic is found to be useful tool for creating safety awareness and improving safety culture within organization and employees. The topic for life saver safety campaign shall be circulated by Corporate HSE department.

- During the life saver safety campaign, following activities shall be carried out by all the installation:
  - Allocation of resources for organizing or conducting Life Saver Campaign.
  - Displaying of banners with topics of life saver safety campaign at the prominent location of the plant.
  - Life saver safety campaign shall be formally inaugurated by OIC in presence of senior officers and representative of GAIL and contract worker.
  - Awareness training program on the topic throughout the month shall be conducted for employees.
  - Screening of Video Film on relevant topic.
  - Slogan /Essay Competition on topic.
  - Relevant leaflets and handouts are to be distributed among workers.

c) **Observance of National Safety Week, Fire Services Week and World Environment Day:**

- Safety week, Fire service week and World Environment Day shall be observed every year by all sites in the month of March, April and June respectively.

- Various programs shall be conducted during the week with active involvement of GAIL and contract employees as well as family members of employees. Some of the programs are:
  - Slogan, quiz, essay writing, hunt the hazard, plant housekeeping, best safe process plant competition etc. among the employees
  - Poster / Drawing competition for children
  - Training & Quiz competition for family members of employees
  - Firefighting and drill competition for employees and fire & safety personnel
  - Slogan, quiz, hunt the hazard, Firefighting drill competition etc. for contract employees
  - To encourage and motivate the employees, winners of each competition shall be suitably awarded. Also employees/contract employees shall be rewarded for reporting best near misses, unsafe condition & act, best safe operator etc.
d) Safety Suggestion (Unit Level):

- System for submission of safety suggestion shall be developed at site with F&S representative acting as co-coordinator. All suggestion received at site shall be examined on \textbf{quarterly basis} by committee duly approved by OIC.
- Out of received suggestions, best of suggestions (for GPU & Pipeline-02 nos., Petrochemical – 03nos.) shall be awarded.
- Safety suggestion shall be recorded/collected at fire & safety department.

e) Reporting of Incidents/Accidents:

- To involve employees in safety improvement system more & more, a structured system for reporting of near misses, unsafe condition & act, incident shall be developed at all sites.
- Each near miss shall be investigated by Fire & Safety department and Corrective Action and Preventive Action (CAPA) shall be taken.
- Valid Near-miss incident reporter shall be awarded with a token gift for motivation.

2. To meet the statutory requirement of the Factories Act 1948, prescribed under section 41 (G) as well as to improve the safety standard in day to day working activities in each plant/section, constitution of plant safety committee is mandatory.

- 
  ✔ Petrochemical Complex and Gas Process Plants shall have two tier Safety Committee i.e Plant Level Safety Committee and Unit Level Safety Committee.
- ✔ Other location shall have one tier Safety Committee i.e Unit Level Safety Committee.

A. The members of safety committee shall include:

a. A plant senior official like OIC / WIC/ DGM / GM / Area In-charge, who by his position in the organization can contribute effectively to the functioning of the committee, shall be the chairman.

b. A Safety Officer and a Factory Medical Officer wherever available and the safety officer in such a case shall be the secretary of the committee.

c. A representative each from the process, maintenance, C&P, medical, security and welfare department.

d. One or two worker’s representative(s) shall be included in this committee meeting. In every meeting worker representatives may be selected randomly among the running contract workers.

e. Fire & Safety department shall be the coordinator.
f. Compliance shall be done by concerned department; however, up for compliance shall be done by F&S representative.

g. Tenure of the safety committee shall be two years

B. Agenda of Safety Committee Meeting:

a. The agenda of meeting shall be comprising of:
   ✓ Start with a small safety talk preferably on recent happening
   ✓ Review of Accident/Incident Status
   ✓ Status of Legal Compliance
   ✓ Major HSE activities undertaken
   ✓ HSE Training
   ✓ Pending observations of Safety Audits
   ✓ Review of last minutes of Safety Committee Meeting
   ✓ Safety Suggestions received if any
   ✓ Other points with the approval of Chairman

b. The proposed agenda of meeting shall be circulated to all members prior to meeting.

c. Additional agenda shall also be incorporated based on feedback of employees.

C. Validity of Safety Committee and frequency of meeting:

a. The members of the Unit Level Safety Committee shall meet as often as necessary but at least **once in every quarter**. The minutes of meeting shall be recorded, maintained and produced to statutory authority on demand.
b. The members of Plant Level Safety Committee shall meet once in a **six months**. The minutes of meeting shall be recorded, maintained and produced to statutory authority on demand.

c. The time venue and date of safety committee can be postponed with the consent of committee chairman or in case the presence of staff members is less than fifty per-cent of their total strength.

d. The minutes of Safety Committee Meeting shall be reviewed by Coordinator on **quarterly basis** to ensure the compliance of observations/recommendations in time bound manner.

**D. Function and Duties of Safety Committee:**

a. Assisting and cooperating with the management in achieving the aims and objectives outlined in the “Health Safety & Environment Policy”

b. Dealing with all matter concerning health, safety and environment and to arrive at practicable solutions to problems encountered.

c. Creating safety awareness among all workers.

d. Undertaking educational training and promotional activities

e. Discussing reports on safety audits, risk assessment, emergency and disaster management plans and implementation of recommendation made in the reports.

f. Carrying out health and safety surveys and identifying causes of accidents.

g. Looking into any complaint made on the likely hood of an imminent danger to the safety and health of the worker and suggesting corrective measures.

h. Reviewing the implementation of recommendations made.

i. Submit the safety related points for the agenda of safety committee meeting.

j. Suggest the technique to improve safety standard.

k. Active participation.

l. To eliminate unsafe acts and unsafe conditions.

m. Assist to mitigate emergency like fire, hazardous gas leakage and accident / injury.

n. Keep a watch for off the job safety and report in unsafe acts / condition for rectification.
E. Authority to Review Committee Constitution:

a. Committee can be reconstituted with permission of OIC / Committee Chairman in case of transfer of any member.

b. Members shall be rotated, preferably after completion of tenure of committee.

3. HSE information shall be shared and disseminated through display of safety posters, information, SOPs etc. and imparting training to employees including contract workers.

- Critical procedure and instructions identified shall be made available to operator in English, Hindi & local language may be in the form of Pocket Manual. However for details main manual shall be referred. The brief procedure and instructions shall be displayed at prominent locations.

- SOP of critical activities shall be made by concerned respective department and made available to shop floor level in the form of Pocket Manual.

- Concerned employees shall read and sign to conveying their understanding of SOP, once in every six months.

- Shop floor/ operator level employees shall also be involved in identifying the hazards associated with their work area and mitigation measures shall be decided involving them.

- General HSE related poster and messages shall be displayed at prominent location for better understanding of hazardous condition and necessary precautions.

4. Appropriate Award/Reward Scheme shall be formulated and implemented for motivation of employees in HSE matter for their contribution.

5. A special mention shall be made in PMS of employees for their specific positive contribution in enhancing safety in their/other area of work.

6. The training coordinator shall have the responsibility of scheduling and structuring HSE training programmes both initial and refresher for regular and contract employees.
Facility Design, Construction and Pre-startup Safety Review

GUIDELINES:

1. The design of the facility shall be based on all applicable codes, petroleum rules, OISD standards, GAIL practices, PNGRB regulations, statutory/regulatory requirements, conditions mentioned in approvals accorded by concerned authorities and applicable procedures.

2. Identification of process hazard through techniques like Hazop and Risk Analysis shall be carried out before freezing the P&IDs.

3. All required approvals like MOEF, State Pollution Control Board, PESO, BOCW, Factory License etc envisaged with mitigation measures shall be in place on recommendation given before taking up construction activities.

4. Inspection, quality control system, HSE system shall be made in place to ensure the facilities are designed, procured and constructed/dismantled as per approved project standards, specification and procedures.

5. The systems and procedures for transition from construction to startup shall be developed viz.:

   • Responsibilities and steps for handover
   • Pre-commissioning and Commissioning
   • Tests records of pre and post startup & inspection records
   • Statutory permissions
6. Pre-start up safety review shall be carried out by a group consisting of PMC, Projects, Operations, Inspection, Fire & Safety Department and report shall be sent to ED /GM of the unit with a copy to Corporate HSE. ED/GM shall apprise Director (Projects) regarding the same.

   The group shall carry out the review with a view to observe that:

   a. Construction is carried out as per specification.
   b. Operation and maintenance, emergency, HSE procedures are available.
   c. Recommendations of risk analysis& conditions of approval of statutory authorities are complied.
   d. Adequate training is imparted to the personnel and evaluated suitably to inculcate competency.
   e. The observations pertaining to Pre-commissioning audit are compiled before the handing over of the facility for post commissioning operations.

7. The facility shall be got inspected from OISD and their clearance shall be obtained before commissioning. Similarly electrical installations, high pressure boilers, other such systems shall be got inspected from concerned authorities and their approval obtained before commissioning.

8. “Safety in Construction” shall be ensured by giving due consideration to layout, technique, equipment and skills during design stage itself. The project execution shall be carried out preferably by properly trained, qualified and experienced personnel keeping in view “HSE Management System Part II- Construction Safety Elements & Guidelines”. The HSE Management System Part II is addressing issues related for various construction activities based on 13 relevant elements of Health, Safety and Environment Management System in accordance with OISD Standard 192 (Safety Practices during Construction).
Element No. 1.4 G

Process Safety Information

Guidelines:

1. Information pertaining to the technology of the process.

   a. Documented process information shall be made available at Control Room of respective unit. All data sheets, drawings, specifications and other documents should be updated/revised based on the present condition of the process.

   b. Information should be so located that it can be easily available at the time of need. Computerization of the information should be made available at Local Area Network. It facilitates easy updation and retrieval.

   c. Maximum inventory levels for process chemicals shall be stated and a qualitative estimate of the consequences or results of deviation that could occur if operating beyond the established process limits.

   d. Block flow diagram (BFD) showing major process equipment and pipelines is a preliminary tool for understanding about the process. Flow rates, pressures, temperatures and stream composition may be indicated for better clarity.

   e. Documented information should be made available for defined acceptable upper and lower limit of:

      • Temperature
      • Pressure
2. **Information pertaining to the process chemicals.**

a. A list of process chemicals being used shall be prepared along with their processing capacity & inventory. It should include all raw materials, intermediates/finished products and chemicals used in the process.

b. Data pertaining to process chemicals should help in assessing fire and explosion characteristics, reactive hazards, safety and health hazards to workers and the corrosion and erosion effects on the process equipment. Complete inventory of the process chemicals should be prepared. For each process chemical, following information should be available wherever applicable:

- **Physical properties:**
  - Physical state, calorific value, heat of vaporization, Boiling point, Vapor pressure, Melting/Freezing point, Vapor density & specific gravity

- **Fire & explosion Hazards:**
  - Flash point, Auto-ignition Temperature, Explosive limits, Burning rate

- **Reactive Hazards:**
  - The tendency of the material to react violently when subjected to heat or the presence of other process chemicals, water, air (oxygen) or other possible contaminants.
  - Hazardous combustion/decomposition products.

- **Health Hazard Data:**
  - Personnel exposure hazard properties (long term & short term)
- Information of toxicity of the material and exposure limit values such as Threshold Limit Value (TLV), Short Term Exposure Limit (STEL), Permissible Exposure Limit (PEL), Lethal Dose 50 (LD 50), Lethal Concentration (LC50) etc.

- Guidelines for emergency handling like Information on firefighting media, use of personal protective equipment (PPE), emergency treatment for exposure and release/spill containment.

- Guidelines for transportation, storage and disposal

Material Data Safety Sheet (MSDS) for all chemicals should be made available to all employees including contract workers. **OISD-STD-114 on ‘Hazardous Chemicals and Their Handling’ may be referred for preparation of Material Safety Data Sheet (MSDS).**

c. Material Safety Data Sheet (MSDS) of all chemicals should be displayed at prominent location for better understanding the properties and hazard associated with the chemicals before its handling and use.

3. **Information pertaining to the process equipment**: Process equipment include columns, vessels, heat exchangers, reactors, pumps & compressors, valves, piping; drilling rigs & work-over rigs; cross country pipelines; tanks, loading & un-loading facilities and other equipment that contain process chemicals.

a. The information pertaining to process equipment and piping design and specifications must be documented. In other words, what were the codes and standards relied on to establish good engineering practice.

b. These codes and standards are published by such organizations as the American Society of Mechanical Engineers, American Petroleum Institute, American National Standards Institute, Oil Industry Safety Directorate, Petroleum and Natural Gas Regulator Board Regulations etc shall be made available for design reference.

c. For existing equipment designed and constructed many years ago in accordance with the codes and standards available at that time and no longer in general use today, the unit or installation must document which codes and standards were used and that the design and construction along with the testing, inspection and operation are still suitable for the intended use.
d. Where the process technology requires a design which departs from the applicable codes and standards, the installations must document that the design and construction is suitable for the intended purpose.

e. Piping and instrument diagrams (P&ID) are the detailed representation of the plant. Each and every piece of equipment, pipelines, valves and instrument along with their interconnection are shown with relationship between equipment and instrument. P&IDs should be updated whenever any modification is carried out.

f. Field verification of P&ID shall be carried out **once in a two year** by nominated group of people to ensure the incorporation of all modification with the actual process philosophy.

g. Electrical area classification drawing for units or installations should be documented and displayed.

h. List of pressure relief system should be made available along with design basis for the pressure relief system should be documented.

i. Information on shut-down, interlock system, OWS system, detection and suppression etc. must be documented and updated.

j. Design and drawings of Fire Water System of installations should be made available.

**Process Safety Information as mentioned in 1, 2 & 3 shall be reviewed by multi-disciplinary group once in two years for proper documentation and necessary updating, if any which could not be done in time of modification and adoption of new equipment.**

4. Statutory permissions like Factory License, Environment Consent for Operation, Hazardous Waste Authorization, Electrical License, PESO approval etc. shall be obtained, implemented and documented.

5. The Standard Operating Procedures should be available and displayed. And the personnel deployed for the process operation need to be trained on SOPs. Kindly refer the requirement of SOPs in element Operation & Maintenance.

*(Procedures for formulation of SOPs for activities are mentioned in Guidelines of Element 1.10 – Operation and Maintenance)*
Guidelines No. 1.5 G

Risk Analysis and Management

GUIDELINES:

1. Installations shall establish the procedures for identifying the hazards and risks associated with the operation and processes to be performed. The following procedures or techniques should be used for identification of hazards and risks:

   a) Checklist
   b) Safety Audit
   c) Preliminary Process Hazard Analysis
   d) Hazard and Operability Study
   e) Event Tree Analysis
   f) Consequence Analysis
   g) Fault Tree Analysis
   h) Failure Modes and Effect Analysis
   i) What if Analysis etc.

The risk assessment process has mainly five steps i.e (i) Identification of Hazards through mentioned above techniques, (ii) Assessment of Risk, (iii) Decision on measure to control the risk by elimination, substitution, engineering controls, (iv) administrative controls, and (v) use of personnel protective equipment. Plant stages vis a vis Hazard Identification techniques are summarized as under:
<table>
<thead>
<tr>
<th>Plant Stages</th>
<th>Hazard Identification Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-design</td>
<td>Hazard Indices</td>
</tr>
<tr>
<td></td>
<td>Preliminary Hazard Analysis</td>
</tr>
<tr>
<td></td>
<td>What if Analysis</td>
</tr>
<tr>
<td></td>
<td>Checklists</td>
</tr>
<tr>
<td>Design/Modification</td>
<td>Checklist</td>
</tr>
<tr>
<td></td>
<td>Hazop Study</td>
</tr>
<tr>
<td></td>
<td>Failure Modes and Effect Analysis</td>
</tr>
<tr>
<td></td>
<td>Fault Tree Analysis</td>
</tr>
<tr>
<td></td>
<td>What if Analysis</td>
</tr>
<tr>
<td></td>
<td>Event Tree Analysis</td>
</tr>
<tr>
<td>Commissioning</td>
<td>Checklist</td>
</tr>
<tr>
<td></td>
<td>Safety Audits</td>
</tr>
<tr>
<td></td>
<td>What if Analysis</td>
</tr>
<tr>
<td>Operation and Maintenance</td>
<td>Checklist</td>
</tr>
<tr>
<td></td>
<td>Safety Audit</td>
</tr>
<tr>
<td></td>
<td>What if Analysis</td>
</tr>
<tr>
<td>Shutdown</td>
<td>Checklist</td>
</tr>
<tr>
<td></td>
<td>What if Analysis</td>
</tr>
</tbody>
</table>

2. The basic procedures in Qualitative Risk Analysis shall be as follows:

   a) Identify the potential failure or incidents (including frequency)

   b) Calculate the quantity of material that might be released in each failure, estimate the probability of such occurrences

   c) Evaluation the consequences of such occurrences based on scenarios as most probable or worst case events
d) The combination consequence and probability will allow the hazard to be ranked in logical fashion to indicate the zone of important risk. Criteria should be then established with the quantified level of risk that may be considered acceptable.

e) The appropriate approach should be adopted to keep risk ALARP ‘As Low As Reasonable Practical’ and least impacting the neighborhood.

![IRPA (Individual Risk per Annum)](image)

**NOTE** – a risk of 10 per million per year, or 10^-5/year, effectively means that any person standing at a point of this level of risk would have a 1 in 100 000 chance of being fatally injured per year.

3. The Hazard identification and Risk Assessment (HIRA) under OHSAS 18001 & Job Safety Analysis necessary controls based on recommendation shall be documented and employees should be made conversant with the methodology adopted for assessing Occupational Health and Safety risks apparent or inherent associated with the tasks and activities (also includes C&P, Civil, HR etc) related to his /her area of work. *Annexure 1.5.1 & 1.5.2*

The purpose of Job Safety Analysis is to ensure potential hazards related to a specific project or activity, are anticipated and implemented before beginning work. It should be used to prevent employee exposure to health and safety hazards.
Steps for Job Safety Analysis

1. Clearly define the Task or Job
2. Break down the Job/Task into Basic Steps
3. Identify the Hazards for Each Step
4. Establish Controls
5. Check effectiveness of Controls
6. Establish Residual Risk
7. Establish additional Controls and amend JSA
8. Communicate JSA to all involved in job/task
9. Implement addition Controls and Communicate
10. Do Job as per JSA
11. Monitor for other Hazards
12. Review of effectiveness of Controls while performing Job

JSA and HIRA shall be reviewed once in a year to add the new activities if any and incorporate of addition control and lower the risk respectively.

4. OIC/WIC should nominate or constitute multi-disciplinary group to conduct Hazard Identification and Risk Assessment in respective work centers. The nominated group members should have imparted training on Hazard Identification Techniques and Risk Assessment. **However, Quantitative Risk Analysis shall be conducted through reputed third party with latest tools available in National/International market.**
5. Adequate methodology should be adopted for formulating Risk Rating or Risk Matrix by determining the consequence and frequency value corresponding to particular hazard during Hazop Study, HIRA etc. The sample methodology is given below:

**Table – A**

**Grading scheme adopted for severity of Hazards**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Rank</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Very low</td>
<td>1</td>
<td>No fatality, no injury, only material loss.</td>
</tr>
<tr>
<td>2.</td>
<td>Low</td>
<td>2</td>
<td>No fatality, non-reportable injury, material loss, may or may not be equipment damage.</td>
</tr>
<tr>
<td>3.</td>
<td>Medium</td>
<td>3</td>
<td>No fatality, minor injury, material loss, equipment damage.</td>
</tr>
<tr>
<td>4.</td>
<td>High</td>
<td>4</td>
<td>Single fatality.</td>
</tr>
<tr>
<td>5.</td>
<td>Very high</td>
<td>5</td>
<td>Multiple fatalities.</td>
</tr>
</tbody>
</table>

**Table – B**

**Grading scheme adopted for probability of Occurrence**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Rank</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Very low</td>
<td>1</td>
<td>Once in 10 years</td>
</tr>
<tr>
<td>2.</td>
<td>Low</td>
<td>2</td>
<td>Once in 5 years</td>
</tr>
<tr>
<td>3.</td>
<td>Medium</td>
<td>3</td>
<td>Once in 3 years</td>
</tr>
<tr>
<td>4.</td>
<td>High</td>
<td>4</td>
<td>Once in an years</td>
</tr>
<tr>
<td>5.</td>
<td>Very high</td>
<td>5</td>
<td>Once in 6 month</td>
</tr>
</tbody>
</table>

**Note:** The probability of occurrence is categorized based on chances of occurrence accidents due to deviation in performing the normal activity.

In addition, prioritization of all the risks to identify the significant risks based on the above risk ranking scheme & matrix is given in the tables – C & D:
### Table – C

**Risk Ranking Scheme**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Rank</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>H</td>
<td>High</td>
</tr>
<tr>
<td>2.</td>
<td>M</td>
<td>Medium</td>
</tr>
<tr>
<td>3.</td>
<td>L</td>
<td>Low</td>
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</tbody>
</table>

### Table– D

**Risk Ranking Matrix**

<table>
<thead>
<tr>
<th>Probability</th>
<th>5</th>
<th>L</th>
<th>M</th>
<th>M</th>
<th>H</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>L</td>
<td>M</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>H</td>
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<td>1</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>M</td>
<td>H</td>
<td></td>
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**Residual Risk Ranking:** After ranking of all OHS Risks based on the above grading and ranking criteria, a review on adequacy of existing control measures were carried out to find out tolerable risks and re-ranked them as residual risks using the ranking scheme High (H), Medium (M), Low (L).

*Sites may also adopt others methodology which is acceptable at large for carry our risk ranking.*
6. Quantitative Risk Analysis & Hazop Study to be carried out for all installations once in five year and after any change and modification. Hazop Study shall be the part of all Change of Management Process across the organization.

7. The recommendation of Hazard Identification and Risk Assessment shall be implemented in time bound manner. Status of implementation of Risk Analysis and Assessment shall be reviewed by OIC on quarterly basis.

8. The detailed outcome of Hazard Identification and Risk Analysis should be well communicated to employees for their understanding and necessary training/briefing/instructions must be given to them time to time.
Element No. 1.6 G

Third Party Services

GUIDELINES

1. Health, Safety and Environment requirements are duly integrated in “Section X – Safety Code” of General Condition of Contract of GAIL. Site shall also specify Health, Safety and Environment requirements in Special Condition of Contract to ensure management’s HSE commitment on third party services. This shall include:
   • Past HSE Performance
   • Ability to comply with HSE requirement of GAIL (Salient points of HSE requirement shall be given in brief)
   • HSE requirement for perform the job
   • Compliance of legal or statutory rules and regulations etc.

2. Site shall develop procedure to communicate through pre job/work meeting with Contract Employer or In-Charge along with Engineer In-Charge, C&P, HR, Operation and Fire & Safety representative, mandatorily. The agenda of meeting shall be:
   • Nomination of Site Coordinator/In-Charge for the contract
   • Hazards associated with Installation’s Operation and Maintenance
   • Formulating HSE requirement for assigned job
   • Safety to work permit system
• Competency and HSE Training
• Deployment of safety equipment and machineries
• Personal Protective Equipment
• Emergency Planning
• Penalty on violation of Safety Procedures
• Health Checkup of Contract Workers etc.

The minutes of meeting shall be prepared to record the discussion and circulated to all concerned for implementation.

3. Engineer In-Charge of Works or Services shall responsible to conduct meeting with Contractor Site In-Charge on quarterly basis along with Operation and Fire & Safety representative on HSE requirements and implementation.

4. Site shall be made for control the entrance, presence and exit of contract employers, employees, equipment and materials in line guidelines of security department at respective site. This shall include:
   • Approval for entry shall be obtained by Contractor from OIC/WIC through EIC and copy of same forwarded to F&S department
   • Fire & Safety training to all contract workers prior to job initiation and its documentation
   • Checking of basic safety gadgets like Cotton Uniform, Safety Shoes and Safety Helmet
   • Issue of Contract Safety Card/Pocket Safety Manual
   • Physical and documentary checking of healthiness of equipment and material

5. Site should specifically mention in purchase/work order to obtain Health, Safety and Environment information for machinery, equipment or material to be procured. For example like procurement of chemicals is mandatorily requires Material Safety Data Sheet of Chemicals.
6. Site specific procedure shall be made by OIC/WIC to review the HSE aspects of Contractor during carrying out the job at site. This shall includes:
   • Issue of Work Permit of all activities inside plant premises
   • Issue of permit to EIC or representative of EIC only
   • Safety talk/pep talk to contract workers on regular basis before initiation of job
   • Job should be carried out in presence of GAIL employee at appropriate level only
   • Inspection of site before initiation of job
   • Appropriate cleanup of site and disposal of waste after completion

7. Contractors and suppliers' performance shall be monitored and evaluated by the group deploying the agency through surprise checks as required. Deficiencies, if any shall be communicated to concerned supplier or contractor and corrected. Repeated violations shall be addressed as per guidelines. The HSE performance of suppliers or contractors *(Refer Annexure 1.6.1)* at end of contract shall be available for future reference by all concerned.
Guidelines No. 1.7 G

Personnel Safety

GUIDELINES

1. OIC/WIC shall implement personnel safety management system in line with “Fire & Safety Policy” of GAIL with appropriate involvement of employees/contractors communicate effectively and maintain the same.

2. The most effective way of controlling a hazard is to eliminate the same by better design, change in process, engineering revision, or guarding by mechanical means. While operating/working at GAIL installations, there are many inherent dangers to the life, limb and health of the plant personnel, especially at Petrochemicals and Gas processing plants. Hazards may arise during handling of hydrocarbon in large quantity at high pressure and difficult work environment which expose employees at a risk of bodily injury or chronic diseases.

Work Centers or Installations shall demonstrate commitment in Personnel Safety Management of employees including contract workers and visitors through various Workplace Safety Programs, Procedures, Bulletins, and Briefings etc. This mainly includes:
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<th>Category</th>
<th>Personnel Safety Management</th>
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<tr>
<td>Employees including Contract Workers</td>
<td>Dissemination of hazards and risk pertaining to O&amp;M.</td>
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<td>Safety Briefing and Tool Box Task</td>
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<td>Display of Caution Boards/SOPs</td>
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<td>Pocket Safety Manual</td>
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<td>Provision of PPEs &amp; matrix to using them</td>
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<td>Emergency Procedures</td>
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<td>Safety Card for Contract Workers</td>
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<td>Fire &amp; Safety Campaigns</td>
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<td>Visitors Safety Briefing through Video</td>
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<td>Emergency procedures – Dos’ and Don’ts i.e Visitor Information Card</td>
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<td>Personal Protective Equipment</td>
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3. Personnel behavior towards safety at work place should be monitored on **daily basis** on visiting site by Operation and FS representatives during work and corrective action must be taking accordingly. **Monthly report** shall be generated and analyzed to improve the safety behavior of personnel at site. Implementation of Behavior Based Safety Program by formulation of Steering Committee, Lead Trainer and Observers in one of latest methodology adopt and accept for improving personnel behavior at work sites.

4. JSA (Job Safety Analysis) and HIRA (Hazard Identification and Risk Assessment) as required shall be done to protect people from injury at work place, preventive measures to be identified and same to be incorporated in design/improvement of the facilities, work plans, procedures and in training.
5. System to be establish to evaluate the competency level of each employee and each employee including contract worker shall be briefed on nature of hazard, preventive measures, use of appropriate PPEs and his responsibilities through tool box talk/pep talk/safety briefing before initiating the job. Necessary documentary evidences shall be maintained through entries in Work Permits or Log Books which are mandatory.

6. In-spite of best design and good operating conditions, some situations need the use of personal protective equipment (PPEs). Judicious use of personal protective equipment appropriate to operations facilitates safe handling of operations.

   • It must be always remembered that any type of personal protective equipment serves as the last thin line of defense. The personal protective equipment, though, does nothing to reduce, minimize or eliminate the hazard, it definitely setup a barrier against the hazard. It is very essential that this barrier must always be properly maintained.

   • Corporate HSE Department is responsible to formulate Standard Specification of majority of Personal Protective Equipment, used across GAIL installation. Specification of Personal Protective Equipment shall be reviewed by nominated members at Corporate HSE Department, once in two years.

   • Identification of Personal Protective Equipment need for respective installations shall be carried based on their Operation and Maintenance Philosophy. Sites shall procure the Personal Protective Equipment in line with Standard Specifications only to meet their identified need of PPEs. (Need/Availability) taking consideration of Fire and Safety Policy of GAIL)

   • Personal protective equipment matrix shall be made at all respective work centers for various jobs. 

Annexure 1.7.1

7. Health, Safety and Environment Policy, Safety Manual, Standard Operating Procedures etc. should be made available to all employees. HSE Policy and SOPs should be displayed at prominent location.

   • Pocket Safety Manual containing major HSE aspects, approved by Occupier or Factory Manager/OIC to be distributed & briefed among the employees including contract workers.

   • Safety and Pocket Safety Manual shall be reviewed for updation at least once a year.
8. Procedures to be available to control of entry of personnel and materials in to work site and restricted area.

- Entry of personnel and equipment only shall be done after obtaining the approval from Competent Authority i.e OIC or Official nominated by OIC with following stipulated rules and regulations of Security Department.
- Fire & Safety training to be made compulsory to all new personnel before initiation of work at installations. Details of training module are made in element 13.
- All equipment must be checked to ensure its healthiness and safe to work inside the installation.

9. To identify off-the job safety issues like road safety, safe use of electricity & cooking gas at home etc., increase awareness by providing suitable information, trainings and encouraging involvement of employees and their family members through safety quiz, contests and competition.
Control of Defeat and Reliability of Critical Systems and Devices

GUIDELINES

1. OIC/WIC shall established system for maintaining Critical Safety and Environment Systems and Devices in line with updated “Maintenance Policy and Guidelines” and shall nominate experienced personnel from the plant (who shall also involve the concerned employees as required) for identifying various Safety critical and environmental critical systems and devices provided in the plant.

2. The up to date list of critical systems and devices shall be prepared and duly approved by OIC. The list of critical systems and devices shall be updated once in year or inclusion of new system or devices.

3. Procedures of maintenance and testing of critical systems and devices shall be prepared and schedule must be incorporated in annual testing and maintenance plan in line with “Maintenance Policy and Guidelines”.

   Maintenance and testing procedures for the reliability of these safety critical systems or devices to be documented and the results of maintenance and testing shall be tracked and analyzed for corrective actions and records maintained.
4. A critical system or device is defeated only if it is determined that the defeat is necessary to prevent a greater problem or to repair or test the device/system. Top most priority is to be given to restore back the system/device to service. OIC/WIC shall authorize defeat of any critical system/devices. If the defeat continues beyond a specified period a record note mentioning necessity for the same shall be approved by OIC/WIC and higher level shall be kept informed.

5. The records for bypassed or inactive critical systems and devices shall be kept at control room for ready reference and necessary communication to be made about the defeat and the alternate means of protection to respective departments. *Annexure 1.8.1*
Guidelines No. 1.9 G

Work Permit System

Guidelines

1. Documented work permit procedure shall be established in line with guidelines of OISD 105. The basic purpose of the work permit system is to ensure that work is carried out in the safest possible manner to prevent injuries to personnel, protect property from damage, avoid fire etc. The work permit system shall deal separately with different categories of work viz.

   a. Cold Work Permit: Work falling under the category of cold work such as opening process machinery, blinding & de-blinding, tightening of flanges, hot bolting, inspection, painting etc. shall be performed through Cold Work Permit.

   b. Hot Work Permit:

       • Hot Work: All hot work such as welding, grinding, gas cutting, burning, shot blasting, soldering, chipping, excavation, open fire, use of certain non-explosion proof equipment etc. shall be carried out through Hot Work Permit. Entry and operation of petrol or diesel driven vehicles or equipment in hazardous area also falls in the category of hot work, and shall be performed under the hot work permit.

       • Excavation Work: For excavation work regardless of the depth, permission from various sections shall be obtained with precautions to be taken for the underground facilities viz; sewers, telephone lines, cables, pipelines etc. Copy of permission for excavation shall be attached to the work permit.
A feedback system shall be in place to inform all the concerned department/section about the completion of work.

- **Confined Space:** This is required for the protection of personnel entering a confined space such as Vessels, boilers, storage tanks, large diameter piping etc against hazards such as oxygen deficiency, toxic and flammable materials, falling objects, power driven equipment etc. Excavation more than 1.2 meter deep, entry on floating roof tanks when the roof are more than 3 meter down from the top, space located below ground level such as pits, drain channels etc. also fall under the confined space.

- **Working at Height** – Working at the height more than 1.8 Meters.

- **Vehicle Entry** – Entry of Vehicle inside battery limit of plant.

- **Radiography with X-ray machine shall be carried out under hot work permit**

  c. **Electrical Lock Out Permit:** It is essential that the equipment/facility to be worked on, is electrically safe and electrical power is isolated to the extent necessary for the safe conduct of the authorized work, before issuing any work permit. Electrical Lockout Permit for electrical isolation and energisation shall be obtained through SAP only.

2. **Work Permit System must be established online through SAP at all Petrochemical Plant, Gas Processing Plants, Compressor Stations, LPG Pumping Station and Pipeline Installations. No permit can be issued offline except in pipeline installations and project site.**

  a. **Work notification/order shall be generated by executive department to issuer department i.e Operation Department.**
b. Shift In-Charge of Operation Group representative shall visit the work area for inspection and necessary preparation along with Executive Department representative before initiating the issue of Cold Work Permit.

c. Shift In-Charge of Operation Group or his representative shall visit the work area for inspection and necessary preparation along with Executive Department representative and Fire & Safety representative before initiating the issue of Hot Work Permit.

• Shift In-Charge shall prepare Work Permit by verifying the explanatory note and incorporating the recommendation made by Fire & Safety representative after work area or equipment inspection.

• Cold work permit shall be issued by Shift In-Charge after getting approval in SAP and duly signed in hard printed Work Permit to Executing Department for executing the job valid for single shift only.

• Hot work permit shall be forwarded to Fire & Safety representative in SAP for approval after preparation of Work Permit.

• Fire & Safety representative shall approve the permit in SAP with some additional remarks and forward it to Shift In-Charge for further approval and issue of permit.

• Hot work permit only shall be declared approved when Shift In-Charge i.e Issuer, Executive Department and Fire & Safety representative signed the hard copy of permit after fulfilling the recommendation of permit. Also, hot work permit shall be issued for a shift only.

• Permit shall be extended in SAP for next shift after verification of area of work or equipment by issuer in case of cold work permit and issuer & Fire and Safety in case of hot work permit.
• Permit shall be submitted to Shift In-Charge after completion or stoppage of work. Shift In-Charge shall visit the area of work for verification and necessary inspection before closure of permit in SAP.

• Other condition of work permit system shall be inline with OISD 105.

3. Safety work permits for work done in Pipeline terminals and Pipeline SV Stations/IP’s:

   a. Gas supply pipeline terminal manned by single executive

      **Cold Work:** Cold Work will be carried out by the GAIL employee posted at terminal after generation of Cold Work Permit System in the SAP. However, in this case, same GAIL person will be the issuer as well as receiver of the cold work permit.

      **Hot Work:** In case of hot work, GAIL employees posted at the terminal will receive the hot work permit to be issued through SAP by the office under whose jurisdiction terminal lies. Further, Fire & Safety Personnel from nearest HQ will also be deployed for any hot work at such locations. In case Fire & Safety department does not exist in that location, the issuer will act as Fire & Safety Officer, will sign off on behalf of Fire & Safety Officer in the work permit and ensure that all required safety measures are in place.

   b. Gas supply pipeline terminal manned by two GAIL employees

      **Cold Work:** Cold Work will be carried out by the GAIL employee posted at terminal after generation of Cold Work Permit System in the SAP. The same person can be allowed to be issuer as well as receiver of the cold work permit.

      **Hot Work:** In case of hot work, Junior GAIL employee will receive the hot work permit and the same will be issued by the senior GAIL employee. Further, senior GAIL employee will also act as Fire & Safety Personnel for any hot work at such locations and he will sign the permit as Fire & Safety Officer as well and ensure that all required safety measures are in place.
c. Pipeline SV Stations/IP’s/Unmanned gas supply terminals. Maintenance works are carried out in pipeline locations like SV stations, IP stations and some gas supply terminals where no GAIL manpower is stationed. The maintenance personnel travel to those locations from their base and perform maintenance activities on Routine/Need basis. Normally such works are performed by only one GAIL employees, assisted by outsourced employees.

**Cold Work:** Cold Work permit will be issued through SAP by authorized person and received by the GAIL employee deputed for the execution of cold work.

**Hot Work:** In hot work, permit issuer, usually – HOD (Pipeline/Control Room (SIC) and Receiver (deputed person for the job) are required to be separate persons, as per standard practice. To ensure safety in the work procedures, it is suggested that the while issuing permit, the HOD (Pipeline/Control Room (SIC) may prepare a check list and hand over to receiver (pipeline personnel). The concerned maintenance personnel may start the work only after ensuring the compliance of the checklist points at field and confirming the same over telephone to the HOD (Pipeline/Control Room (SIC) and the permission be given telephonically by HOD (Pipeline/Control Room (SIC) after receiving the confirmation. Such permission are recorded in log book of pipeline department. Further, the checklist may be filled by the maintenance person before start of the job and the same should made part of pipeline maintenance records. Considering this as special case, recommend to use manual work permits for the day of execution of the job and same is to regularized next day in SAP.

Further, Fire Safety personnel will be deployed at the site for the hot work. In case, Fire & Safety Officer is not deployed at a pipeline maintenance base, then at least two executives will be deployed for the hot job. Senior executive will act as issuer as well as Fire & Safety Officer for the hot work permit and ensure all required safety measures.

**Cold Work Permits for Urgent Requirements:** Many times, pipeline personnel have to go the unmanned pipeline installations in odd hours to attend the urgent jobs in non-office hours. In such a situation, it is recommended that HOD (Pipeline) can depute the person to attend the job with manual generation of Safety Checklist. However, same should be generated and regularized in SAP in next working day.

*Annexure 1.9.1*
4. The authorization of personnel for implementation of work permit system shall be regulated below:

**Process Plant:**

a. Employees at level of Manager (E-4) and above shall be authorized by name to issue of work permits.

b. Employees at level of Sr. Engineer (E-2) and above shall be authorized by name to receive the work permits.

c. Employees at level of Sr. Officer (E-2) and above shall be authorized by name to counter signed the permit as Fire & Safety representative.

d. In no case Employees at level of Engineer (E-1) and below is authorized by name for issuing or receiving of permit. Employees at level below Engineer (E-1) only can be authorized to receive the permit with approval of OIC based on his competency.

e. For any exception mentioned above, necessary approval shall be accorded by competent authority not less than GM and DGM as OIC only.

**Other Installations:**

f. Employees at level of Sr. Engineer (E-2) and above shall be authorized by name to issue of work permits.

g. Employees at level of Engineer (E-1) and above shall be authorized by name to receive the work permits.

h. Employees at level of Officer (E-1) and above shall be authorized by name to counter signed the permit as Fire & Safety representative.

i. In no case Employees at level of Engineer (E-1) and below is authorized by name for issuing or receiving of permit. Employees at level below Engineer (E-1) only can be authorized to receive the permit with approval of OIC based on his competency.

j. For exception mentioned above, necessary approval shall be accorded by competent authority not less than GM and DGM as OIC only.

5. For effective supervision under work permit system, not more than two critical jobs should be supervised by one official from maintenance/construction at a time except in case of urgency. In case of urgency or site condition of respective units and in shutdown necessary deliberation should be done by Operation,
Maintenance and Fire & Safety Department on work permit system before obtaining approval from competent authority not less than GM and DGM as OIC only. But in no case any job, which work permit is obtained not be left unattended from supervision by GAIL personnel.

6. The procedures as followed in Operation and Maintenance, same will be applicable for annual turnaround of Process Plants/Pipelines.

7. **One day training** on Work Permit System shall be imparted to personnel, who authorized for issuing of permit, receiving of permit and countersigning of permit. Authorized personnel shall be evaluated for their competency by conducting formal test. Also, refresher training shall be imparted at least once in two years.

8. Only trained and authorized employees shall carry out gas testing and hazardous materials monitoring. Up-to-date list of such employees shall be available in the unit, preferably fire & safety personnel.

9. Extension of Hot work/vessel entry/work at height permits: Extension of this permit up to two hours beyond general shift to be done with the approval of the HOD-Operations and beyond that by Plant In-Charge/OIC. In other words, extension of such permits would require approval of HOD-Operations between 5:45 PM to 7:45 PM and approval of Plant In-Charge/OIC beyond 7:45 on working days or on any holiday for full day.

10. Surprise visits as required shall be conducted by concerned Operation area in-charge / OIC/WIC to examine the activities associated with the work permit requirement for its correct execution in the field to control any hazardous situations. The learning points of same shall be discussed and recorded in the safety meeting held in the unit.

Inspection of Work Permit System shall be conducted by nominated employees (Representative from Operation, Maintenance and F&S for Process Plant and representative from Operation and F&S for Other Installations) **once in a quarter** for checking the same for its adequacy and also for further improvements.
Element No. 1.10 G

Operation and Maintenance Procedures

Guidelines

1. OIC/WIC shall implement and maintain “Maintenance Policy & Guidelines” of GAIL issued in September 2010 for achieving sustainable excellence in operation & maintenance of asset under them with focus on high level of system availability & reliability. Various practices and procedures shall also be streamlined in line with this policy to achieve uniformity & consistency across the organization.

2. Standard Operating Procedures shall be developed for various operation & maintenance activities duly approved by OIC/WIC, which shall be effectively implemented and maintained

General Guidelines for SOPs:
- SOPs to be prepared for all activities.
- Every SOP should have its unique number for ease of unambiguous reference.
- Each equipment, mentioned in SOP must be specified with particular name and tag number for ease of identification at site.
- Abbreviations should be avoided.
- SOP has to be written in actionable points,
- Specific action has to be clearly mentioned replacing the general words such as “As Required”, “As necessary” in SOP.
- Reference of GAD drawings, P&ID diagrams and Electrical drawings should be made in SOP as note for ready reference.
• Display of critical SOP at field area
• Preparation of film on critical SOPs to train of familiarize to employees preferably.
• SOPs shall be reviewed by multi-disciplinary group of employees, nominated by OIC/WIC in once in a year.

The system requirement mentioned at Sr. No. 2 calls for development of special procedures for activities with higher risks. In order to judge whether special procedure is required or not for a particular job following guidelines may be used.

• Job Safety Analysis should be done for the job not done frequently. To avoid mistakes memory refreshing is required.
• Identification of hazards and risk pertaining to process, equipment or human.

To maintain integrity proper sequence of activities of the job is identified /understood.

• Strict measurement of parameters should be done, exceeding of which would lead to loss of integrity.
• Whether the job involves maintenance of safety- critical devices
• Whether the jobs demands emergency action to prevent loss in integrity
• Whether the job requires special PPE
• Whether to perform the job, coordination of three or more persons is required
• Whether to perform the job, a large no. of steps are involved which may be difficult to remember

Examples for special procedures
a. Loading / unloading of tanks/containers/portable containers of hazardous chemicals.
b. Hazardous waste storage and disposal.
c. Hazardous chemicals or waste shipment.

Operating Procedure Contents

The operating procedures involving highly hazardous chemicals needs to cover following items in their management system:

1. Process description
2. Start-up procedures
3. Normal operating procedure
4. Temporary operating procedure
5. Emergency shutdown procedure:
a. Criteria for emergency shutdown
b. Steps for emergency shutdown
c. Flow chart for complex high risk emergency operation

6. Procedure for emergency operation

7. Procedure for normal shutdown

8. Start-up procedures following an annual shutdown other than normal shutdown or emergency shutdown.

9. Operating limits from Safety, Health and Environmental considerations:
   a. Consequences of deviation
   b. Measures to correct or avoid deviation

10. Considerations from Safety, Health and Environmental point of view:
   c. Non-hazardous/hazardous properties of the chemicals used in process.
   d. Engineering, administrative controls and PPE necessary to prevent exposure of the people.
   e. Control measures required in case of physical contact or airborne exposure.
   f. Control of hazardous chemical inventory levels and quality control of raw material.

11. Safety, Health and Environmental protection system – Functional description:
   a. Shutdown, overrides, interlocks, vibration trip.
   b. System to break reaction
   c. Safety/emergency relief system.
   d. Fire water system.
   e. Leak detection system

12. Auxiliary System description:
   a. Instrument air system
   b. Utility air system
   c. Steam system
d. I G system
e. Electrical system
f. Sewer system
g. Hot oil system
h. Hot water system
i. Cooling water system
j. Fuel gas system

13. Procedures for storage & handling of chemicals
   a. Selection and use of containers for transportation of chemicals.
   b. Proper documentation for transportation
   c. Unloading and loading of chemicals
   d. Safe handling of waste residues

These procedures/Manuals so developed shall be made available to all the employees and communicated to enhance knowledge, awareness and effective implementation.

3. Effective procedures shall be designed with a focus to reduce potential for human error. Formulation and preparation of Standard Operating Procedures for routine work and JSA for non-routine work respectively are one of the key factors for Safe Operation and Maintenance. Also, it is important that procedures are developed for familiarization of these SOPs and JSA to personnel involved in activities to reduce potential for human error.
   a. Structured training to be imparted to involved personnel on Standard Operating Procedures **once in a year**.
   b. To ensure that all involved personnel have understood the laid down Standard Operating Procedures.
   c. Necessary undertaking that the concerned has on read and understood (familiarization) SOP shall be obtained once in six **months**.
   d. Tool box/pep talk/safety briefing shall be made mandatory for all involved employees including contract workers for non-routine work before initiation of job by Executing Department to familiarize them on hazards associated with work, mitigation methods in place and also use of appropriate PPEs. Special mention of the same shall be done at work permit for necessary record.
4. The Operation and Maintenance procedures shall be reviewed **once in two years** by nominated group of members for its relevancy and effective usage.

5. The Operation and Maintenance procedures shall be communicated to all level of employees of respective department. These procedures should be kept at Local Area Network for easy accessibility to concerned employees.

6. The procedures shall be also made available for management of loading/unloading, handling and storing materials by O&M/C&P Department, which involves diverse operation from using crane/hydra/forklift/trolley etc. to manual handling.

7. The procedure for inspection of such appliances/tools and tackles shall be carried out in line with guidelines as mentioned in 1.11G.

8. Standard Operating Procedures for such loading/unloading, handling and storing materials also should be made for effective operation and avoid injury to personnel while manual handling.
Element No. 1.11 G

Inspection and Maintenance

GUIDELINES

1. Site shall established structured procedures for Inspection and Maintenance of all equipment, machinery, tools and tackles etc. at define internal to ensure the integrity of the equipment based on vendor manual, national and international codes and practices, regulations and organizational requirement. This shall include:
   - Emergency Communication System
   - Emergency Lighting System
   - Emission/leak Monitoring System
   - Fire, Smoke, Heat and Gas detectors
   - Fire/Security Alarms
   - Emergency Shutdown System
   - Rotary Equipment
   - Mobile Equipment
   - Tools and Tackles etc.

2. Inspection and maintenance of all equipment, machinery, tools and tackles etc. shall be carried out by GAIL or by third party witnessed by GAIL personnel.

3. The up to date list of such equipment, machine, tools and tackles etc. shall be prepared along with frequency of inspection and duly approved by OIC. The list of such equipment, machine, tools and tackles
etc. shall be updated once in year or inclusion of new system or devices. Procedures of inspection and testing of equipment, machine etc. shall be prepared and schedule must be incorporated in annual testing and maintenance plan in line with “Maintenance Policy and Guidelines”.

4. All equipment, machinery, tools and tackles etc. as per approved and updated list shall be physically checked during Internal HSE Audit, once in a quarter by multi-disciplinary team.

5. Site shall also ensure the pre use inspection (Inspection prior to use) of all mobile and material handling equipment, other equipment like Crane, Hydra, Slings, hooks, welding equipment, power tools, Detector, Breathing Apparatus etc. Records of such inspections are to be documented to keep information on healthiness of equipment updated before any use.

6. The testing and monitoring equipment used for the purpose of inspection of equipment machine etc. to be identified and shall be verified/calibrated for its accuracy from accredited third party once in a year.

7. Site shall also establish the procedures to inspect the equipment brought by Contractor for inspection of GAIL’s equipment, machine etc or his own equipment, machine etc for the purpose of inspection (not belonging to GAIL). These equipment, machine etc. shall be inspected physically as well as the related documents shall be verified for their safe condition before being used at site.

8. Inspection and Maintenance records of equipment, machine, tools and tackles etc should be documented and shall be reviewed with original or design parameter for its evaluation and correction action if any.

   Inspection data should be identified with the following information:

   • Identification tag number of equipment inspected/tested;
   • Date of inspection/test;
   • Description of inspection/test performed and results of activity and
   • Name of individual who performed the inspection/test.

   Also inspection and testing date and due date of inspection or testing shall be displayed at equipment or near equipment with parameter
Element No. 1.12 G

Management of Change

GUIDELINES

1. Site shall establish the procedures for identification of hazards due to change management. The hazards associated with any changes shall be identified and controlled effectively. The changes shall include:
   - Process/technologies,
   - Hardware excluding replacements (of same specification and kind),
   - Personnel,
   - Chemicals and Catalysts
   - change of catalysts,
   - Operating Procedures
   - Work Environment etc,

2. Management of change procedure shall be defined for temporary, minor and major changes. There shall be a formal procedure which requires all modifications to be authorized by competent persons and a standard method of making the safety assessment. Any modification in installations shall minimum cover as under:
   - Origination of modification proposal with technical, financial, safety, standard and codes justification
   - Design philosophy
   - Scrutiny by designated team and approval procedure/safety assessment
• Execution of the modification job
• Training of the operating/maintenance personnel on proposed modification
• Commissioning
• Updating of documents like P&ID etc in line with the modification
• Approved handing over/taking over procedure
• Post commissioning review
• As built record

3. OIC/WIC shall constitute a multi-disciplinary group of employees preferably from Operation, Mechanical, Electrical, Instrumentation and Fire & Safety to review/scrutinize the modification proposal. Multi-disciplinary group may vary based on type of management of change. The management of change approval shall be given by OIC/WIC.

4. Site shall establish the procedures for all probable changes which might be expected at installations. Every management of change has new hazards and these hazards should be controlled by adopting relevant approach for effective implementation of changes. This shall include:
   • Changes due to Modification of Plant/Facilities
   • Additional checks for changes in Normal Operations
   • Start-up, Shutdown and Emergency Procedures.
   • Additional Checks for introduction of new Catalyst Additive, Corrosion Control Agents etc.
   • Additional checks for changes in Solvents in the Extraction Process.
   • Additional checks for Carrying out changes of Logic of Interlocks, Set Point, and Process Conditions
   • Additional checks for carrying out Changes in Software
   • Changes of Personnel etc.

5. Necessary formats shall be developed for implementation of management of change for effective control and documentation. Each management of change process should have unique identification number and associated documentation shall be made available to all concerned for reference.

Sample formats in this regard are attached as Annexure 1.12.1 & 1.12.2.
Element No. 1.13 G

Training

GUIDELINES

1. A Training Needs Assessment should be done for listing the F&S training needs at individual sites of GAIL. This is an analysis of the gap between the knowledge, skills and attitude vis-à-vis requirement aspects towards Fire & Safety that employees at particular work center require. HSE Training need assessment of employees including contract worker shall be carried out at the end of financial year for formulation of training modules and schedule for next financial year by March every year. Annexure 1.13.1

Planning of F&S training programs should be once in a year by the HOD of F&S Dept. based on following inputs/ data source at their respective work centers:-

• In consultation with OIC and HODs of various departments.
• New/upcoming Equipment/Projects.
• Interviews/surveys with contract supervisors/managers
• Sample interviews/surveys with employees
• Risk Analysis/HAZOP Study reports
• Critical incident recommendations
• Programs being planned at GTI
• Trend analysis of near misses/incidents etc.
Employee working at respective work center should be assigned a F&S training program as per the requirement (as per list mentioned in paragraph given below) to be organized at site during the year.  

**Annexure 1.13.2**

2. Site shall prepare a training module in accordance with OISD 154 and guidelines issued vide latest Fire & Safety Policy.

Board topics to be covered for each of following are mentioned in the table subsequently:

a. F&S Training for newly engaged & rotated/reassigned employees
b. Refresher F&S Training for existing employees
c. Breathing Apparatus Set & PPEs Training for O&M personnel
d. Training for Emergency handling team members
e. F&S Training program for Contract workers
f. F&S Training program for Hydrocarbon Tanker loading Drivers/ Operators
g. F&S Training program for Security Personnel.

<table>
<thead>
<tr>
<th>Broad Topic Coverage</th>
<th>(a)</th>
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<th>(c)</th>
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<td>Broad Topic Coverage</td>
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<td>Fire Fighting Equipment &amp; their applications</td>
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<tr>
<td>Practice session on use of various fire protection equipment (portable extinguishers/hose reels/hydrant/monitor etc.)</td>
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<td>✓</td>
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<td>Process Unit wise – familiarization of SOPs, Process Safety &amp; Site Visit</td>
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<tr>
<td>Practice session of BA Sets &amp; PPEs</td>
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<td>Working at Height</td>
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<td>Know Your Plant &amp; its Safety Features</td>
<td>✓</td>
<td>✓</td>
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</table>

Above listed topics broadly explain the contents of the specific training program depending upon the target audience. However, the detailed modules should be developed based on the duration of the program and inputs/depth of coverage of topic required for participants. The topic of program or module on other aspects like Environment Management, Occupational Health etc. may be extended based on employees training need assessment at installations. Training program on new modules shall be of minimum duration of 90 minutes. Further, attempts should be made at all sites to create F&S awareness in nearby villages by organizing short duration awareness programs and records for the same shall be maintained.

A copy of the detailed modules should be forwarded to Corporate HSE Department and GTI, Noida.

**F&S Training at Work Centers:**

In addition to specific site requirements, Training calendar for F&S training programs should contain following F&S training programs to be organized at each work center of GAIL:
<table>
<thead>
<tr>
<th>Topic of Program</th>
<th>Target Employees</th>
<th>Minimum Duration</th>
<th>Minimum Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>F&amp;S Training for newly engaged</td>
<td>Newly joined employees</td>
<td>03 days</td>
<td>For all such employees, within 3 months of joining GAIL</td>
</tr>
<tr>
<td>F&amp;S training for rotated/ reassigned employees.</td>
<td>Transferred employees</td>
<td>01 day</td>
<td>For all such employees, within 3 months of joining Transferred location</td>
</tr>
<tr>
<td>Refresher F&amp;S Training of employees</td>
<td>O&amp;M employees</td>
<td>½ Day</td>
<td>For all employees, once in 1 Year</td>
</tr>
<tr>
<td>BA Set &amp; PPEs Training</td>
<td>All employees</td>
<td>½ day</td>
<td>For all O&amp;M personnel once in 2 years. (only for locations where BA Sets are installed)</td>
</tr>
<tr>
<td>Working at Height Training</td>
<td>All Employees working in Mechanical, Electrical &amp; Civil Dept.</td>
<td>½ day</td>
<td>For all Maintenance personnel once in 2 years (Process Plants) on regular basis.</td>
</tr>
<tr>
<td>Training for Emergency handling team members</td>
<td>Employees having roles defined in ERDMP</td>
<td>1 Day</td>
<td>For all such employees, once in 2 years or within 1 month of revision of ERDMP whichever is earlier.</td>
</tr>
<tr>
<td>Certified First Aid training</td>
<td>Employees working in shifts</td>
<td>As per Agency</td>
<td>Validity of certified or 3 years whichever is less</td>
</tr>
<tr>
<td>F&amp;S Training program for Contract workers</td>
<td>All Contract Workers</td>
<td>02 hours</td>
<td>To be organized once a week (once in a month for P/L installations) covering maximum participants.</td>
</tr>
<tr>
<td>F&amp;S Training program for Hydrocarbon Tanker loading Drivers/ Operators</td>
<td>Road Tanker Drivers/ Operators</td>
<td>90 Minutes</td>
<td>To be organized once in a month with maximum intended participation.</td>
</tr>
<tr>
<td>F&amp;S Training program for Security Personnel.</td>
<td>All Security Personnel</td>
<td>½ Day</td>
<td>For all security personnel, once in 2 years.</td>
</tr>
</tbody>
</table>
F&S Department at Work Centre:

a. F&S Dept. at Petrochemical/GPU/Compressor Stations/Pumping Stations should prepare a training calendar, in the month of February/ March, each year and get the same approved by the respective OIC.

b. Scheduling of the training programs should be done considering the compliance of the above said frequency of various F&S training program to cover employees/contract workers.

c. Faculty for conducting the training programs should be drawn from various departments at work centre based on the work experience and competency. Small work centers may also invite some faculties from large work centers/corporate office.

d. Records of all Fire & Safety training (attendance of participants) should be maintained by F&S dept. for at least 3 years’ time. **Annexure 1.13.3**

3. Evaluation of Training Program: The effectiveness of training program shall be evaluated through comprehensive procedures. All training programs having during 1 day or more, written feedback shall be obtained from participants and evaluate the effectiveness of the same. **Annexure 1.13.5**

4. Training Report: Training Report along with training attendance and feedback shall be prepared after completion of training program by Training Coordinator for further review of OIC.

*(Refer “Fire & Safety Policy” for detailed procedures)*
Element No. 1.14 G

Incident Reporting,
Investigation and Analysis

Guidelines

1. Work center shall establish the procedures for reporting, investigation and analysis of incident in line with Corporate Guidelines. OIC of work center shall categorize the emergency in Level I (High Potential Incident/Near Miss), II (High Potential Accident) & III (Major Accident) in guidance of ERDMP code. Also, it shall be primary responsibility of OIC/WIC to identify the reporting procedures of other legal statute.

   • All incidents shall be reported by the concerned in line with following guidelines:

   • Incident Reporting System issued by Corporate HSE Department

2. Near-miss is defined as the sequential happenings that haven’t resulted in loss and/or injury but has the risk to do so. Loss can be a personal injury, loss of property or environmental damage. These losses can prevented by a fortunate break in the chain of events In view of its definition, reporting near-misses gains an important role in learning from mistakes, preventing accidents and suffering from their serious consequences.

   It is important to establish procedures for the reporting and investigation of near miss together with the implementation of corrective actions. This includes:
• Work Center shall develop its own near miss reporting system either a paper reporting procedures or a computer system.

• Near miss reporting system shall have detailed procedure for reporting of near miss, its investigation and record of corrective action taken.

• Procedures should also be made for contractor workers to report near miss incidents.

• Work centers shall encourage reporting of near miss through reward scheme.

• Investigation of near miss shall be carried out by nominated official or multi-disciplinary team (based on near miss reported) within 7 days of reporting.

• Efforts shall be made to compliance of recommendations in time bound manner in work center for prevent reoccurrence of similar type of incident.

• Near Misses” shall be reported to corporate office on monthly and quarterly basis.

• All near misses reported should further be analyzed to identify the key potential factors associated to formulate structured approach of incident prevention, once in a year. Annexure 1.14.1 & 1.14.2

3. All incident/accident shall be investigated with in stipulated time bound manner by multi-disciplinary team nominated by OIC of respective unit.

• In house capability to investigate and analyze incidents to be developed through nomination of multi-disciplinary group and personnel responsible for investigation shall be imparted training in the techniques of investigation for Level I, II & III including how to conduct interview of witness, assemble needed documentation, analyze and write reports.

• However, major incident/accident shall be also be investigated by multi-disciplinary team of top management official to identify the root cause of incident/accident and its preventive measure for re-occurrence.

• The cooperation of the employees is essential to an effective investigation. The focus of the investigation should be to obtain facts and not to place blame.

4. OIC/WIC shall establish the procedure for compliance of recommendations/observations given by Investigation Team in time bound manner. Compliance of all types of incidents/accidents shall be reviewed by OIC/WIC on monthly basis. Detailed action plan shall be forwarded to Corporate HSE Department for further review.
5. The feedback of all incident investigation like incident description, lessons learnt and action taken to prevent future incidents shall be shared with plant employees/ all concerned and also other units of GAIL for awareness through various media like

- Local Area Network
- Intranet
- Presenting Case Study in training
- Discussion in Management Review Meeting
- Agenda Point for Safety Committee Meeting etc.

(Refer “Incident Reporting System” for detailed procedures)

Note: GAIL has various installations that include mainly pipelines, terminals, Compressor Stations, Pumping Stations, SVs, IPs, and Process Plants & Petrochemicals Complex. On the basis of present legal compliances at site, it is very much understood that some installations like Process Plants, Petrochemicals Complex, Compressor Stations, Pumping Stations, Terminals etc. comes falls under the Factory Act or PNGRB Regulation or combination of both, whereas Pipelines, SVs, IPs etc. falls under the PNGRB Regulations only. Reporting of incidents shall be complied in line with stipulated regulations and both regulations have different criteria on incident reporting to external or State/Central Authorities. Also schedule 9 of ERDMP on requirements under other statues is clearly specifying that:

It shall be necessary to comply with statutory rules, regulation and Acts, such as, the Environment (Protection) Act, 1986, the Factories Act, 1948, the inflammable Substances Act, 1952 etc. It shall also be necessary to comply with the relevant statues, provisions and guidelines of the Disaster Management Act, 2005 and National Disaster Management Guidelines Chemical Disasters (Industrial), April 2007. These regulations are not intended to override the requirement of other statutory bodies.

It is mandatory to comply with these regulations in toto. Reporting of Incidents under PNGRB regulations and other statues are dealt by NGMC/Corporate HSE Department and individual sites respectively. However, all incidents comes under the category of other statues are also reported to Board of Directors.
Element No. 1.15 G

Occupational Health

Guidelines

1. OIC/WIC shall establish system for monitoring of Occupational Health of employees at work place.
   - System shall be established for compliance of statutory rules and regulations.
   - Job/tasks shall be evaluated for identify potential health hazards through (HIRA).
   - List of Occupational Diseases anticipated during Operation & Maintenance shall be prepared.
   - Work place shall be designed with suitable controls keeping health hazards in mind to facilitate improved performance of employees.
   - Training shall be provided to employees/others on nature of hazard to which he or she is exposed and on the engineering, work practice, and personnel protection measures in place to control the hazard with their role towards the same.
   - Work place illness and injuries shall be treated; the illness and injury shall be evaluated to assess possible causes for the same.
   - Action shall be taken for medical recommendations as required for health protection, documented and communicated to the concerned.

2. A committee shall be constituted by OIC/WIC to monitor Occupational Health aspects of employees including contract workers. The committee shall consists of HR, O&M, F&S, Medical representatives & others, meet on quarterly basis to discuss various issues of health of employees and work place.
3. OIC/WIC shall responsible to provide adequate infrastructure/resources at work center in line with recommendations of ED Level Committee, duly approved by top management.

4. Training system shall also include imparting First Aid Training to employees by covering each and every section/department. Refresher training shall also be imparted to employees.

5. System shall be established for monitoring of Occupation Hygiene Monitoring at Work Center. This shall include:
   - Work Environment Monitoring and Hygiene
     - Industrial Hygiene Survey by competent person
   - Monitoring of Physical Hazards
     - Heat Stress
     - Noise
     - Illumination
     - Radiation
   - Chemical Hazards
     - List of chemicals and their properties
     - Threshold Limit
   - Biological Hazard
   - Ergonomic Hazard

6. Pre-employment/pre-placement medical check shall be carried out to determine the health status or medical fitness of employees at time of joining. Thereafter, periodic Occupational Health Checkup of all employees, working at process plant or pipeline installation shall be carried out once in a year in prescribed format to compare the health status of employees. Trend analysis of result obtained through annual health checkup shall be conducted by doctors.

(Refer “Occupational Health Guidelines” for detailed procedures)
Element No. 1.16 G

Environment Management

GUIDELINES

1. OIC/WIC shall establish the system for Environment Management to identify various aspects of environment pertaining to Operation and Maintenance of installations. This shall include:
   - Compliance of conditions – Consent to Operate under Air and Water Act
   - Air Quality Management
   - Water Management
   - Waste Water Management
   - Waste Management
   - Noise Management
   - Green belt development
   - E-Waste Management
   - Statutory Compliances applicable to sites etc.

2. Environmental aspect and impact analysis of existing and new activities shall be carried out by multidisciplinary group, once in six months at site and necessary corrective action to be taken accordingly.

3. Procedure shall be made for categorization and segregation of waste at source. List of hazardous and non-hazardous waste to be prepared and quantity generated shall be maintained and updated on quarterly basis.
4. Green House Gas Accounting of work center shall be carried out once in a year by in-house team at Petrochemical Complex, Process Plants, Compressor Stations, LPG Pumping Stations. Site shall consider the initial accounting data for base year. Subsequently, efforts shall be made to minimize the emission in respect base year calculation by adopting latest techniques and well operation and maintenance practices. Sites may also put efforts to accounting of Green House Gas at Terminals where TEG is used.

5. Work Center shall draw activities pertaining to Environment Management as part of Annual HSE Plan, shall be approved by OIC/WIC. This shall include:
   - Opportunities for rain water harvesting
   - Scope for bore well recharging
   - Applicability of Vermi Composting for Environmentally safe disposal of bio-degradable waste
   - Suitability for conversion to Solar Powered System
   - Concept of “Birth Day Garden” or minimum one tree per employee every year etc. to promote tree plantation
   - Reduction on fugitive emission etc.

6. World Environment Day shall be observed on 5th June every year as part of inculcating awareness among employees on Environment Protection:
   - Various programs shall be conducted during the week with active involvement of GAIL and contract employees as well as family members of employees. Some of the programs are:
     - Slogan, quiz, essay writing, etc. among the employees
     - Poster / Drawing competition for children
     - Training & Quiz competition for family members of employees
     - To encourage and motivate the employees, winners of each competition shall be suitably awarded
     - Display of banners
     - Display of hoarding on Environmental Protection for mass awareness
     - Tree Plantation etc.

(Refer “Environmental Guidelines” for detailed procedures)
Element No. 1.17 G

Emergency Planning and Response

Guidelines

1. Emergency plans (on-site; offsite) as per applicable standards/regulations/Acts and PNGRB’s (Petroleum and Natural Gas Regulatory Board) Codes of practices for Emergency Response and Disaster Management Plan (ERDMP) regulations, 2010 shall be established, documented, implemented and reviewed at an interval of every three years or change of process or capacity enhancement, updated and communicated to all concerned.

In line with PNGRB ERDMP, 2010 Emergencies shall be categorized into three broad levels on the basis of seriousness and response requirements, namely:

Level-1: This is an emergency or an incident which
  • can be effectively and safely managed and contained within the site, location or installation by the available resources;
  • has no impact outside the site, location or installation

Level 2: This is an emergency or an incident which
  • cannot be effectively and safely managed or contained at the location or installation by available resource and additional support is alerted or required;
• is having or has the potential to have an effect beyond the site location or installation and where external support of mutual aid partner may be involved;
• is likely to be danger to life, the environment or to industrial assets or reputation;

Level-3: This is an emergency or an incident with an off-site impact which could be catastrophic and is likely to effect the population, property and environment inside and outside the installation, and management and control is done by district administration. Although the Level-3 emergency falls under the purview of District Authority but till they step in, it shall be responsibility of the unit to manage the emergency.

Level-I & Level-II shall normally be grouped as on-site emergency plan and Level-III as off-site emergency plan.

Few relevant regulations are reproduced for knowledge and implementation:

**Manufacturer, Import, Storage of Hazardous Chemical Rules 1989:**

Rule 13: Preparation of On-site emergency plan by the authority.

1. An occupier shall prepare and keep up-to-date an on-site emergency plan detailing how major accidents will be dealt with on the site on which the industrial activity is carried on and that plan shall include the name of the person who is responsible for safety on the site and the names of those who are authorized to take action in accordance with the plan in case of an emergency.

2. The occupier shall ensure that the emergency plan prepared in accordance with sub-rule (I) takes into account any modification made in the industrial activity and that every person on the site who is affected by the plan is informed of its relevant provisions.

3. The occupier shall prepare the emergency plan required under sub-rule
   (a) in the case of a new industrial activity before that activity is commenced;
   (b) in the case of an existing industrial activity within 90 days of coming into operation of these rules.
Rule 14: Preparation of off-site emergency plan by the authority.

1. It shall be the duty of the concerned authority as identified in Column 2 of Schedule 5 to prepare and keep up-to-date an adequate off-site emergency plan detailing how emergencies relating to a possible major accident on that site will be dealt with and in preparing that plan the concerned authority shall consult the occupier, and such other persons as it may deem necessary.

2. For the purpose of enabling the concerned authority to prepare the emergency plan required under sub-rule (1), the occupier shall provide the concerned authority with such information relating to the industrial activity under his control as the concerned authority may require, including the nature, extent and likely effects off-site of possible major accidents and the authority shall provide the occupier with any information from the off-site emergency plan which relates to his duties under rule 13.

3. The concerned authority shall prepare its emergency plan required under sub-rule (1),
   a. in the case of a new industrial activity, before that activity is commenced;
   b. in the case of an existing industrial activity, within six months of coming into operation of these rules.

Note: Preparation Emergency Preparedness/Response Plan is mandatory for all installations those come under other Statute like, MISHC Rules 1989, Factory Act & Rules etc. of respective State. The copy of same shall also be forwarded to Corporate HSE Department.

2. OIC/WIC shall responsible to provide adequate resources both internal and external as mentioned in Emergency Response Plans to respond to an emergency situation. The internal and external resources shall be reviewed in every meeting conducted during Emergency Preparedness Exercise.

3. Structured training shall be imparted to Employees and others, once in a year on Emergency Preparedness Plan conveying their roles and responsibilities to effective response to emergency situations.
4. Fire Defense System shall be maintained through well documented procedures to make it available in good condition to respond. The procedures laid down through Fire & Safety Policies issued in the month of March 2013, shall be complied.

5. OIC/WIC shall do agreement with neighboring industries under Mutual Aid (as required in line with PNGRB ERDMP Code) to get necessary assistance in case of emergency. Mutual Aid Meeting shall be conducted on quarterly basis to discuss on various aspects of emergency planning and response.


7. Neighboring communities, concerned civil authorities and public en-route of pipelines shall be informed of the potential hazard of the gas/chemicals and the way to respond during such emergency situations through safety briefing, safety pamphlets, trainings etc. on annual basis. Record of such training and awareness programs shall be documented.

8. Emergency Preparedness Exercise on various emergency scenarios, mentioned in Risk Analysis shall be conducted periodically.
   1. On Site Emergency Preparedness Exercise shall be conducted once in a quarter.
   2. Off Site Emergency Preparedness Exercise shall be conducted once in a year, as applicable.

Procedures of conducting Emergency Preparedness Exercise:
   a. Formation approval on Scenario shall be obtained from OIC.
   b. Observers shall be nominated by OIC and observers must be familiarized with emergency scenario and response plan.
   c. On-Site/Off-Site emergency Exercise to be initiated in witness of members.
   d. Observers shall prepare detailed report on Emergency Preparedness Exercise following the prescribed Perfoama.
e. Observations and recommendations in detailed shall be discussed in post Exercise Meeting along with key coordinators and other members.

f. Minutes of meeting shall be prepared by coordinator that includes scenario selection, emergency response actions by site teams and coordinators, recommendations etc.

g. Observations and recommendation recorded during meeting shall be reviewed by OIC once in a quarter for implementation.
Element No. 1.18 G

Compliance Audit

Guidelines

1. The internal HSE audits shall be conducted by a multidisciplinary team preferably from Operation, Mechanical/Pipeline, Instrumentation, Electrical and Fire & Safety department drawn from the unit itself. The multi-disciplinary audit team shall be approved by OIC. This Internal Safety Audit and Compliance Safety Audit will be conducted once in six months (Alternate basis) following OISD guidelines 145 and IS14489.

2. A multidisciplinary team drawn from different units formed by HSE, CO shall carry out HSE audit of all major units once in three years following OISD guidelines 145, HSE Management System and IS 14489.

3. External Safety Audit of Petrochemical Complex, Process Plants, Compressor Stations and Pumping Stations shall be conducted once in a year. External Safety Audit of NG Pipelines/Regional Pipelines and LPG Pipelines shall be conducted once in three years and two years respectively.

4. All the observations/recommendations of HSE Internal Audit, External Audit (including OISD) and IUSA shall be complied in time bound manner. OIC shall be responsible for review the implementation of audit recommendations on monthly basis with timelines. A compliance report of the same shall be forwarded to Corporate HSE Department on monthly basis for further top management review.

5. All members internal and corporate audit teams shall be imparted training on “How and What to Audit” for better understanding the audit philosophy of organization.
Health, Safety and Environment Management System

Part-I

[FORMATS]
### Annexure Details

<table>
<thead>
<tr>
<th>Annexure-1.1.1</th>
<th>Sample Format for Objectives and Targets</th>
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<tbody>
<tr>
<td>Annexure-1.1.2</td>
<td>Sample Format for Annual HSE Plan</td>
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<tr>
<td>Annexure-1.1.3</td>
<td>Sample Format for OIC Checklist</td>
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<tr>
<td>Annexure-1.2.1</td>
<td>Sample Safety Committee Meeting Format</td>
</tr>
<tr>
<td>Annexure-1.5.1</td>
<td>Sample Format for HIRA (Hazard Identification and Risk Assessment)</td>
</tr>
<tr>
<td>Annexure-1.5.2</td>
<td>Sample Format for JSA (Job Safety Analysis)</td>
</tr>
<tr>
<td>Annexure-1.6.1</td>
<td>Sample Format for evaluating Contractor’s Safety Performance</td>
</tr>
<tr>
<td>Annexure-1.7.1</td>
<td>Sample Format for PPE Matrix</td>
</tr>
<tr>
<td>Annexure-1.8.1</td>
<td>Sample Format for Bypass Authorization</td>
</tr>
<tr>
<td>Annexure-1.9.1</td>
<td>Safety Checklist to Work at Remote Location</td>
</tr>
<tr>
<td>Annexure-1.12.1</td>
<td>Sample Format for Plant Modification</td>
</tr>
<tr>
<td>Annexure-1.12.2</td>
<td>Sample Format for Drawing Modification</td>
</tr>
<tr>
<td>Annexure-1.13.1</td>
<td>Sample Format for Training Need Assessment</td>
</tr>
<tr>
<td>Annexure-1.13.2</td>
<td>Sample Format for Annual HSE Training</td>
</tr>
<tr>
<td>Annexure-1.13.3</td>
<td>Sample Format for Training Attendance</td>
</tr>
<tr>
<td>Annexure-1.13.4</td>
<td>Sample Format for Training Feedback</td>
</tr>
<tr>
<td>Annexure-1.14.1</td>
<td>Sample Format for Near Miss Reporting</td>
</tr>
<tr>
<td>Annexure-1.14.2</td>
<td>Sample Format for Near Miss Investigation</td>
</tr>
<tr>
<td>Checklist</td>
<td>Activities Periodicity Checklist</td>
</tr>
</tbody>
</table>

**Note:** Sample formats are provided in HSEMS covering the minimum aspects. However, sites specific formats to be adopted in line with ISO/IMS requirement, which fulfill the requirement of HSEMS also.
Annexure 1.1.1 – Objectives & Targets

Objectives & Targets

<table>
<thead>
<tr>
<th>SN</th>
<th>Objectives/Elements</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>To achieve Safety Index of more than 98.5% throughout the year</td>
<td>Target in %</td>
</tr>
<tr>
<td>2.</td>
<td>Organizing HSE Training (Detailed Annual Training Plan attached)</td>
<td>Target in Man-Hours</td>
</tr>
<tr>
<td></td>
<td>Contract Workers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GAIL Employees</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Compliance of Audit Observations (Yearly Compliance)</td>
<td>Target in %</td>
</tr>
<tr>
<td>4.</td>
<td>Lost Time Accident Frequency</td>
<td>Not more than 0.42</td>
</tr>
</tbody>
</table>

*Note: Objectives and Targets may be extended further and may vary from Installation to Installation*

Annexure 1.1.2 – Annual HSE Plan

Annual HSE Plan

<table>
<thead>
<tr>
<th>ANNUAL PLAN FOR YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month</td>
</tr>
<tr>
<td>Activities</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

*LEGEND:- P=PLANNING, E=EXECUTION*

Proposed By

Approved By

*Note: Annual Training Calendar to be made separately.*
Annexure 1.1.3 – Sample-Safety Committee Meeting

OIC’s Checklist

(A) SAFETY ORGANIZATION

1. Whether Head of F&S reports directly to OIC?
2. Responsibilities, Authority & objectives of HSE are clearly defined and documented?
3. Whether updated corporate HSE policy signed by CMD and local HSE Policy signed by Occupier and Factory Manager is defined and displayed prominently?
4. Annual Safety Plan (Financial Year) is prepared & approved by OIC?
5. Safety Committees are formed and have representation of staff members?
6. Safety Committee meetings are held regularly (at least quarterly) and records maintained?
7. Adequate manpower is positioned at each installation under the jurisdiction, for tackling any emergency?
8. Adequate training is imparted to all the employees in emergency management?

(B) MANAGEMENT CONTROL/SYSTEM

1. Whether monthly briefing is given by OIC on HSE and records to be maintained?
2. Whether quarterly internal safety audit is done regularly & record maintained, and compliance is monitored by OIC?
3. Whether once in a year External Safety Audit for process plant and once in three years External Safety Audit for pipeline installations is done regularly and compliance monitored by OIC in time bound manner?
4. Whether the work permit system is in place? Random weekly check is done by OIC?
5. Whether Interlock bypass authorization system exists and records maintained? Random check is done by OIC at least once a week?

6. Whether Regular Risk assessment is done by multi-disciplinary team and compliance checked by OIC at least once a month?

7. Whether SOPs are written and updated at least six-monthly and checked by OIC?

8. Whether PPEs are religiously used and compliance ensured? Random checks by OIC and record maintained?

9. Regular safety talks are given by Safety Officers and counter-checked by OIC & Record maintained?

10. Regular training on HSE for all employees, contract workers and security personnel (including CISF) is done and record maintained?

(C) FIRE PROTECTION

1. Required number of portable and trolley mounted fire fighting equipment identified, placed, maintained and displayed on a board?

2. Fire Water System is well maintained? System is kept on auto and pressure maintained?

3. Fire Alarm and Fire detection/hydrocarbon detection system is well maintained & operational? Record maintained?

4. Fire Escape routes and exits displayed prominently?

5. Emergency planning done and rehearsed monthly (in process plant) and quarterly (in pipeline installations)? Record maintained? Lacunas reviewed by OIC?

6. Adequate quantities of fire fighting chemicals are available at site?

7. Adequate number of fire tenders, pumps and other equipment are available and operational?

8. Proper access is provided to all fire hydrants/monitors/hoses/valves etc.

9. Adequate manning of Fire Tenders/Fire Control Rooms and Fire Station is done?

10. Whether the information on the availability of Fire Tenders/fire extinguishers/fire hydrants/monitors/hoses, etc required at the facility is displayed and systems being maintained accordingly.
(D) PHYSICAL SAFETY MEASURES AT WORKPLACE

1. No vehicle movement inside operational areas.
2. Wind socks placed?
3. Sufficient number of Safety Boards placed?
4. Earthing and bonding ensured?
5. Proper glancing of instrumentation & power cable in hazardous area?
6. Proper pathways and cross-overs provided?
7. Colour coding of plants and pipelines done?
8. Proper ventilation and lighting provided?
9. Stacking and storage is in order?
10. General housekeeping and waste management done?
11. Monthly environment monitoring done & record maintained?
12. Annual occupational health check done and health card generated for each employee?
13. Checking of the adequacy, Completeness & up keep of the fire detection & fire protection fighting systems at least once in THREE MONTHS and deficiencies got removed?
Annexure 1.2.1 – Sample-Safety Committee Meeting

**Agenda of Safety Committee Meeting**

- Review of Accident/Incident Status
- Status of Legal Compliance
- Major HSE activities undertaken
- HSE Training
- Pending observations of Safety Audits
- Review of last minutes of Safety Committee Meeting
- Safety suggestions received, if any
- Other points with approval of Chairman

**Minutes of Safety Committee Meeting**

Date & Time : 
Venue : 
Chaired by : 
Participants : 

<table>
<thead>
<tr>
<th>SN</th>
<th>Name of Employee</th>
<th>Designation</th>
<th>Department</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
## Annexure 1.5.1 – Sample HIRA Matrix

<table>
<thead>
<tr>
<th>Procedures (Sequence of Actions)</th>
<th>Deviations</th>
<th>Hazard</th>
<th>Severity</th>
<th>Frequency</th>
<th>Rank</th>
<th>Existing Control Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
<td>Resources</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPEs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

## Annexure 1.5.2 – Sample Job Safety Analysis Format

### Sample Format on Job Safety Analysis (JSA)

<table>
<thead>
<tr>
<th>Type of Job :</th>
<th>Location :</th>
<th>Date/Month/Year :</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sequence of basic job steps</th>
<th>Potential Hazards</th>
<th>Existing control measures &amp; SOPs</th>
<th>Recommended control measures &amp; SOPs</th>
<th>Gaps</th>
<th>Additional measures/recommendations</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>
Annexure 1.6.1 – Performance Assessment

Performance Assessment Third Party Services (Quarterly)

for the Quarter : Jan- March / Apr-June/ July-Sept/ Oct-Dec

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Parameters</th>
<th>Performance</th>
<th>Marks 0—8 0-Worst / 8- Excellent</th>
<th>Remarks, if any</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agency has its own HSE Mgmt. System aligned to GAIL requirements (Yes/No)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>No. of induction programs conducted/ HSE awareness programs done (Nos.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>No. of HSE meetings done (Nos.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>No. of Tool Box meetings done (Nos.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>JSA for critical activities: JSA done/ JSA identified (Nos.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>No. of fatal accidents (Nos.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>No. of non-reportable accidents (Nos)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Percentage Health Checkup of workmen carried out periodically as defined ( % )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 9 | Near-misses  
Nos. investigated/ Nos. reported (Nos.) | ------/------- |
| 10 | Legal compliances like TPI of Lifting Tool Tackles, Fitness of vehicles, other applicable rules/regulations etc. |   |
| 11 | - No. of occasions on which penalty imposed for safety violations  
- Total Amount (Rs) | --------------- |
| 12 | Housekeeping |   |
| 13 | Others (4 marks) |   |
|   | Total |   |

**Performance assessment grade**

Grade: A (More Than 90); B (More Than 80); C (More Than 65); D (More Than 50); E (Less Than 50);

**Overall Remarks about assessment on HSE performance:**

**Names of contract personnel recommended for safety appreciation:**

**Overall HSE performance assessment during the quarter (Grade A / B / C / D / E)**

GAIL

Signature/Name/Designation
## Annexure 1.7.1 – Sample PPE Matrix

<table>
<thead>
<tr>
<th>SN</th>
<th>Description</th>
<th>Personal Protective Equipments – स्वास्थ्य अनुकरण</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Helmet, Cotton Uniform, Safety Boot, Eye Plug, Ear Plug, Nitrile Glove, PVC Glove, Leather Glove, Electrical Gloves, Chemical Goggles, Grinding Goggles, Face Shield, Dust Mask, SFC.</td>
</tr>
<tr>
<td>1</td>
<td>Compressor Station</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>IP/RR/SV</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Venting</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Welding / Grinding</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Cleaning of Filters</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Removal of Pigs</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Acid Handling</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Electrical Job</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Working at Height</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Extinguisher Maintenance</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>General Maintenance</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Hot Surface Maintenance</td>
<td></td>
</tr>
</tbody>
</table>
Annexure 1.8.1 – Sample Interlock Bypass Authorization Format

<table>
<thead>
<tr>
<th>Trip Bypass ID</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td></td>
</tr>
<tr>
<td>Tag No Of The Trip to be Bypassed</td>
<td></td>
</tr>
<tr>
<td>Description of The Trip Alarm</td>
<td></td>
</tr>
<tr>
<td>Reason for Trip bypassing</td>
<td></td>
</tr>
<tr>
<td>Associated risks with the Trip Bypass</td>
<td></td>
</tr>
<tr>
<td>Alternative Safety measures for the trip bypass</td>
<td></td>
</tr>
<tr>
<td>Any Other precaution to be taken</td>
<td></td>
</tr>
<tr>
<td>Time and date of Bypass</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name &amp; Signature of Maintenance Engineer Bypassing the trip</th>
<th>Name &amp; Signature of Control Room Shift in charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature of I/C Electrical</td>
<td>Signature of I/C Mechanical</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time and date of Normalization</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name &amp; Signature of Maintenance Engineer taking Trip in Line</td>
<td>Name &amp; Signature of Control Room Shift in charge</td>
</tr>
</tbody>
</table>

**Note:** As per the maintenance policy & guideline Clause No. 5.1.7 if any interlock is not restored within 7 working days, then approval of OIC shall be taken.
## Annexure 1.9.1 – Safety Checklist for Remote Location

**SELF CERTIFYING SAFETY CHECK LIST FOR CARRYING OUT WORK AT REMOTE LOCATIONS / TERMINALS**

(Refer Maintenance Policy & Guidelines Clause 6.2)

Safety Check Sheet No.:  
Date  Time:  
Exact location of work area/unit:  
Equipment No:  
Name & No. of persons involved: Description of work:

THE FOLLOWING ITEMS SHALL BE CHECKED BEFORE COMMENCEMENT OF WORK  
(Tick mark in the appropriate box.)

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>ITEM</th>
<th>DONE/NOT REQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Safety briefing given to all concerned</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Wind direction checked</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Equipment / work area inspected.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Surrounding area checked, cleaned and covered</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Equipment blinded/disconnected/closed/isolated/wedge</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Equipment properly drained and depressurized</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Equipment electrically isolated and tagged</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Earthing /Continuity check done</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Equipment water flushed</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Equipment properly purged</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Proper ventilation and lighting provided/available</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Area cordoned off &amp; caution board/ tags provided</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Gas test: HC(%) LEL</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Toxic Gas (ppm)</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Running water hose/fire extinguisher/ fire water system provided/available</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>For work at height proper platform available /adequate safety precaution taken</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Shuttering provided for prevent collapse of sides</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>PPE are being used (tick mark): Helmet safety shoes / hand gloves / boiler suit / face shield / Apron/ Goggles / Dust respirator / Fresh air mask / Lifeline/ Safety belt / Airline / Earmuff etc.</td>
<td></td>
</tr>
</tbody>
</table>

Note: "Y" for done and "N" for not required

(Signature and Name of In-charge)
Status: (Work Completed / Job will be continued next day) and site restored

(Signature and Name of In-charge)

REMARKS:

1. The activity has the following expected residual hazards (tick the relevant items): Lack of oxygen/H₂S. Toxic gases / combustible gases/prophetic iron / corrosive chemical/steam condensate/others____________________________/ Not applicable.

2. Additional precautions if any:

GENERAL INSTRUCTIONS:

1) The checklist shall be filled up carefully and accurately in clear handwriting ensuring that the complete information is provided in all the sections/subsections. Sketches should be provided wherever possible to avoid miscommunication.

2) Appropriate safe guards and required personnel protective equipment (PPEs) shall be determined by a careful analysis of the potential hazards and the operations to be performed prior to starting the work.

3) Requirement of standby personnel from Contractor/others if any shall be mentioned in the additional requirement.

4) The above check list to be filled every day afresh.

5) On closure of the work for the day, the checklist format shall be signed again mentioning the status of work.

6) Check list will be used for remote locations where SAP facility is not available. The same shall be regularized in SAP wherever applicable.
## A. PLANT MODIFICATION DOCUMENT

### LOCATION:

<table>
<thead>
<tr>
<th>Identification No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description of modification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Intended Benefits</th>
</tr>
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<tbody>
<tr>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Back up Calculations</th>
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</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazop Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazop sheet should be endorsed separately</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Environmental impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

Prepared by: | Checked by: | Approved by:

## B. PLANT MODIFICATION DRAWING

1. Drawing of Existing System

2. Marking of Modification on drawing of Existing System

<table>
<thead>
<tr>
<th>Plant Modification Drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Prepared by:  
Checked by:  
Approved by:  
Identification No.
TRAINING NEED ANALYSIS FOR EMPLOYEES FOR YEAR 2013-2014

IDENTIFICATION OF TRAINING NEEDS

<table>
<thead>
<tr>
<th>SNo.</th>
<th>EMP No</th>
<th>NAME</th>
<th>DESIGNATION</th>
<th>TNA</th>
<th>EX</th>
<th>TNA</th>
<th>EX</th>
<th>TNA</th>
<th>EX</th>
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CONTRACT EMPLOYEES & SECURITY PERSONNEL

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<tr>
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<th>EX</th>
<th>TNA</th>
<th>EX</th>
<th>TNA</th>
<th>EX</th>
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<tbody>
<tr>
<td>OPERATION</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<td>MAINTENANCE</td>
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<td>✓</td>
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<td></td>
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</tr>
<tr>
<td>C&amp;P</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIVIL AND HORTICULTURE</td>
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<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NEIGHBOURING VILLAGES

<table>
<thead>
<tr>
<th>#</th>
<th>VILLAGES NEARBY PIPELINES</th>
<th>TNA</th>
<th>EX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TNA – TRAINING NEED ASSESSMENT, EX

XX – Topic or Coverage to be selected for employees in line with Fire and Safety policy
## Annexure 1.13.2 – Annual Training Plan

### Annual Training Plan 2013-14

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Topic</th>
<th>Level of Participation</th>
<th>Durations</th>
<th>No. of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Apr</td>
<td>May</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P</td>
<td>C</td>
</tr>
</tbody>
</table>


## Fire & Safety Training

### Attendance Sheet

<table>
<thead>
<tr>
<th>S No.</th>
<th>Name of Employee</th>
<th>Designation</th>
<th>Department/Location</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Training Evaluation Form

**I. अर्पण कृत्य का नाम/Name of the Programme:**

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>मानदंड / Parameters</th>
<th>दर / Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>पाठ्यक्रम के उद्देश्य का पूरा करणा / Meeting of the Course Objectives</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>विषय सूची की गुणवत्ता / Quality of Content</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>कितें गई प्रयोगों की पर्याप्तता / Adequacy of Exercises</td>
<td>15</td>
</tr>
<tr>
<td>4.</td>
<td>पाठ्यक्रम संचालन की लिधि / Method of Course Conduction</td>
<td>10</td>
</tr>
<tr>
<td>5.</td>
<td>समय की पर्याप्तता / Adequacy of Time</td>
<td>05</td>
</tr>
<tr>
<td></td>
<td><strong>योग Total:</strong></td>
<td><strong>70</strong></td>
</tr>
</tbody>
</table>

**II. प्रशिक्षण/संकाय का शक्ति दर/Rating of the Trainer/Faculty:**

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>मानदंड / Parameters</th>
<th>दर / Rating Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>अभिव्यक्ति / Expressions</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>प्रयोजनात्मक / Application of Aids</td>
<td>10</td>
</tr>
<tr>
<td>3.</td>
<td>कितें गई प्रश्नों व उत्तरों का दिवरण / Handling of Question &amp; Answers</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td><strong>योग Total:</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

**III. सामान्य टिप्पणियाँ / General Remarks:**

---

**नाम Name:-**

**CPF No.**
## Annexure 1.14.1 – Sample Near Miss Reporting

### Format for Reporting Near Miss Incident

1. **Date & Time of Reporting**: 
2. **Date & Time of Incident**: 
3. **Location of Incident**: 
4. **Affected Person Name, Age & Designation with CPF (if GAIL Employee)**: 
5. **If the affected person is not a GAIL Employee,**
   - Name, Age & Full Contact Information with Phone No (Name of Supervisor/EIC of the job) 
6. **Name of the Eye Witness (if available)**: 
7. **Description**: 

   Forwarded to F&S Department
Annexure 1.14.2 – Near miss Investigation

**Format for Near Miss Investigation**

*(To be filled by F&S SIC/F&S Officer Other than Investigating Officer)*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong></td>
<td>Date &amp; Time of the receipt of information :</td>
</tr>
<tr>
<td><strong>2.</strong></td>
<td>Date &amp; Time of Site Visit :</td>
</tr>
<tr>
<td><strong>3.</strong></td>
<td>What was the unsafe condition :</td>
</tr>
<tr>
<td><strong>4.</strong></td>
<td>What was the unsafe act :</td>
</tr>
<tr>
<td><strong>5.</strong></td>
<td>Preservation of Incident, if any :</td>
</tr>
<tr>
<td><strong>6.</strong></td>
<td>Signature of F&amp;S Shift In Charge, with Name, Designation: &amp; CPF with Date: :</td>
</tr>
</tbody>
</table>

**[To be filled up by Designated Committee/Fire & Safety Officer]**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Near Miss Incident Report No:</strong></td>
<td>: Location:</td>
</tr>
<tr>
<td><strong>1.</strong></td>
<td>Date &amp; Time of Reporting :</td>
</tr>
<tr>
<td><strong>2.</strong></td>
<td>Date &amp; Time of Incident :</td>
</tr>
<tr>
<td><strong>3.</strong></td>
<td>Location of Incident :</td>
</tr>
<tr>
<td><strong>4.</strong></td>
<td>Affected Person Name, Age &amp; Designation with CPF (if GAIL Employee) :</td>
</tr>
<tr>
<td><strong>5.</strong></td>
<td>If the affected person is not a GAIL Employee, Name, Age &amp; Full Contact Information with Phone No (Name of Supervisor/EIC of the job) :</td>
</tr>
<tr>
<td><strong>6.</strong></td>
<td>Name of the Eye Witness (if available) :</td>
</tr>
<tr>
<td><strong>7.</strong></td>
<td>Date &amp; Time of Evaluation :</td>
</tr>
<tr>
<td><strong>8.</strong></td>
<td>Reasons of Occurrence of Incident:</td>
</tr>
</tbody>
</table>
9. Investigation Result with Suggested Measures:

| 4. Monetary Reward Recommended | YES/No (Tick whichever is applicable) |
| 5. Signature of the Committee/F&S Officer | : |

Submitted for approval from Competent Authority.

[Action Taken Report – To be filled up by Fire & Safety Officer]

| 1. Action taken on recommendations/observations in details with necessary document evidence: |
| 2. Verification of Compliance : |
| 3. Dissemination of Information to employees | YES/No (Tick whichever is applicable) |
| 4. Signature of Reviewing Officer | : |

Submitted for approval from Competent Authority.
## Activities Periodicity Checklist

### Element No. 1.1 – HSE Leadership and Commitment

<table>
<thead>
<tr>
<th>Activities</th>
<th>Frequency</th>
<th>Involved Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of HSE Policy</td>
<td>In line with revision of Corporate HSE Policy or Change in Site Management Structure</td>
<td>Factory Manager &amp; FS In-Charge</td>
</tr>
<tr>
<td>Annual HSE Plan</td>
<td>Once in a year</td>
<td>Factory Manager/OIC/WIC/FS In-Charge</td>
</tr>
<tr>
<td>Review of HSE Plan</td>
<td>Once in six months</td>
<td>Factory Manager/OIC/WIC/FS In-Charge</td>
</tr>
<tr>
<td>Review of HSE Performance</td>
<td>Once in a month</td>
<td>Factory Manager/OIC/WIC/FS In-Charge</td>
</tr>
<tr>
<td>Random Safety Site Tour</td>
<td>Daily – Process Plants/Compressor Stations/Pumping Stations Once in a Quarter – Entire Pipelines installation</td>
<td>OIC/WIC and O&amp;M HODs OIC</td>
</tr>
</tbody>
</table>

### Element No. 1.2 – Employee Participation

<table>
<thead>
<tr>
<th>Activities</th>
<th>Frequency</th>
<th>Involved Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Safety Day</td>
<td>First Monday of the every month</td>
<td>FS In-Charge</td>
</tr>
<tr>
<td>Life Savers</td>
<td>Monthly</td>
<td>FS In-Charge/HODs-O&amp;M</td>
</tr>
<tr>
<td>Review of Safety Suggestions</td>
<td>Once in three months</td>
<td>OIC/WIC/Nominated Group</td>
</tr>
<tr>
<td>Unit level Safety Committee Meeting</td>
<td>Once in three months</td>
<td>OIC/WIC/FS In-Charge</td>
</tr>
<tr>
<td>Plant level Safety Committee Meeting</td>
<td>Once in six months</td>
<td>OIC/WIC/FS In-Charge</td>
</tr>
<tr>
<td>Constitution of Safety Committee</td>
<td>Once in two years or Change in nominated members</td>
<td>OIC/WIC/FS In-Charge</td>
</tr>
<tr>
<td>Understanding of SOPs</td>
<td>Once in six months</td>
<td>HODs-O&amp;M/FS In-Charge</td>
</tr>
<tr>
<td>Element No. 1.4 – Process Safety Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field verification of P&amp;IDs</td>
<td>Once in two years</td>
<td>Nominated Group</td>
</tr>
<tr>
<td>Job Safety Analysis/HIRA</td>
<td>Once in a year</td>
<td>Nominated Group</td>
</tr>
<tr>
<td>HAZOP</td>
<td>Once in five years or immediate after any modification</td>
<td>Nominated Group</td>
</tr>
<tr>
<td>Risk Analysis</td>
<td>Once in five years or immediate after any modification</td>
<td>Nominated Group</td>
</tr>
<tr>
<td>Review of HAZOP &amp; Risk Analysis</td>
<td>Once in three months</td>
<td>OIC/WIC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element No. 1.7 – Personnel Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Talk</td>
</tr>
<tr>
<td>Standardization of PPEs specifications</td>
</tr>
<tr>
<td>Revision of Safety/Pocket Safety Manual</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element No. 1.8 – Personnel Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of list of critical equipment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element No. 1.9 – Work Permit System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training on work permit system to issuer/receiver</td>
</tr>
<tr>
<td>Review of work permit system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element No. 1.10 – Operation &amp; Maintenance Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of SOPs</td>
</tr>
<tr>
<td>Training on SOPs to O&amp;M Personnel</td>
</tr>
<tr>
<td>Undertaking on understanding of SOPs</td>
</tr>
<tr>
<td>Review of O&amp;M Procedures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Element No. 1.11 – Inspection &amp; Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Updating list of equipment/machines/tools &amp; tackles etc.</td>
</tr>
<tr>
<td>Physical checking of equipment/machine/tools &amp; tackles etc.</td>
</tr>
<tr>
<td>Testing of Tools &amp; Tackles</td>
</tr>
</tbody>
</table>
### Element No. 1.13 – Training

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>TNA, Training Module &amp; Training Schedule</td>
<td>Once in a year</td>
<td>FS In-Charge/HR/WIC/OIC</td>
</tr>
</tbody>
</table>

### Element No. 1.14 – Incident Investigation and Analysis

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting of Nearmiss to Corporate HSE Department</td>
<td>Once in three months</td>
<td>OIC/WIC</td>
</tr>
<tr>
<td>Analysis of Nearmiss</td>
<td>Once in a year</td>
<td>FS In-Charge</td>
</tr>
<tr>
<td>Compliance of Incident/Accident Investigation recommendations</td>
<td>Once in a month</td>
<td>FS In-Charge/WIC/OIC</td>
</tr>
</tbody>
</table>

### Element No. 1.15 – Occupational Health

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational Health Committee Meeting</td>
<td>Once in three months</td>
<td>F&amp;S In-Charge/HR/WIC/OIC</td>
</tr>
<tr>
<td>Occupational Health Check up</td>
<td>Once in a year</td>
<td>HR</td>
</tr>
</tbody>
</table>

### Element No. 1.16 – Environment Management

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment Impact/Aspect Analysis</td>
<td>Once in six months</td>
<td>F&amp;S In-Charge/Nominated Group</td>
</tr>
<tr>
<td>Categorization and segregation of waste</td>
<td>Once in quarter</td>
<td>HODs – O&amp;M/C&amp;P</td>
</tr>
<tr>
<td>Greenhouse Gas Accounting</td>
<td>Once in a year</td>
<td>Nominated Group</td>
</tr>
</tbody>
</table>

### Element No. 1.17 – Emergency Preparedness & Response

<table>
<thead>
<tr>
<th>Activity</th>
<th>Frequency</th>
<th>Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onsite Emergency Exercise</td>
<td>Once in quarter</td>
<td>WIC/OIC</td>
</tr>
<tr>
<td>Offsite Emergency Exercise</td>
<td>Once in a year</td>
<td>WIC/OIC</td>
</tr>
<tr>
<td>Mutual Aid Meeting</td>
<td>Once in quarter</td>
<td>F&amp;S In-Charge/WIC/OIC</td>
</tr>
<tr>
<td>Compliance review of exercise observations &amp; recommendations</td>
<td>Once in quarter</td>
<td>F&amp;S In-Charge/WIC/OIC</td>
</tr>
<tr>
<td>Element No. 1.18 – Compliance Audit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal Safety Audit</td>
<td>Once in six months</td>
<td>Nominated Group</td>
</tr>
<tr>
<td>Compliance Safety Audit</td>
<td>Once in six months</td>
<td>Nominated Group</td>
</tr>
<tr>
<td>External Safety Audit of Process Plants/Compressor Stations/Pumping Station</td>
<td>Once in a year</td>
<td>Coordinated by Corporate HSE Department</td>
</tr>
<tr>
<td>External Safety Audit of LPG Pipeline</td>
<td>Once in two years</td>
<td></td>
</tr>
<tr>
<td>External Safety Audit of NG Pipeline</td>
<td>Once in three years</td>
<td></td>
</tr>
<tr>
<td>Compliance review of Audit observations &amp; recommendations</td>
<td>Once in a month</td>
<td>WIC/OIC</td>
</tr>
</tbody>
</table>
HEALTH, SAFETY AND ENVIRONMENT MANAGEMENT SYSTEM