



## **CG HSE**

# **Contractor Guidelines for Health and Safety Program Compliance**

## HEALTH, SAFETY AND ENVIRONMENT POLICY

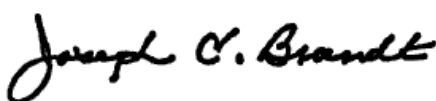
We are committed to provide and maintain a safe and healthy working environment for employees, contractors and visitors, and to care for the environment, society and protect natural resources in our communities.

Our Health, Safety and Environmental goals are integrated into our day-to-day business management by:

- Setting objectives that receive the same priority as operational and economic goals and to “target zero”—no harm to people and minimal environmental impact in all our activities;
- Following standards and procedures based on the International Finance Corporation guidance, the OHSAS 18001 and the ISO 14001 standards;
- Building relationships through transparent communication with our employees, customers, contractors, visitors and other stakeholders;
- Applying the continuous improvement principle in all our activities, including implementation of internal and third party Health, Safety and Environmental audits;
- Complying with the most exacting standards, rules and regulations or ContourGlobal’s internal HSE guidelines and standards, whichever is more stringent;
- Working with our customers, suppliers, and partners to progress towards our goal of zero harm, reduce impacts, and improve efficiencies along the value chain;
- Certifying that our internal HSE guidelines and standards are at least as stringent as those found in the World Bank guidelines<sup>1</sup>;
- Openly communicating Health, Safety and Environmental information to all of our stakeholders;
- Leading by understanding and applying best globally HSE practice;
- Improving the HSE Management System through periodic critical reviews by the Company’s Executive Committee.

Successfully achieving our health, safety and environmental goals requires that every employee acts as an ambassador for our Zero Harm program and consciously manages our social and environmental impacts. Moreover, it is the right and duty of every employee to highlight any acts, conditions or behaviors that are inconsistent with achieving our ambitions.

Signed:



Joseph Brandt,  
President & Chief Executive Officer ContourGlobal

Date: 30 of January, 2017

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<sup>1</sup> World Bank Group Environmental, Health, and Safety Guidelines "EHS Guidelines" (cf. [www.ifc.org/ehsguidelines](http://www.ifc.org/ehsguidelines))

## G03-S01 – HSE Training Program

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## 1. Purpose

The purpose of this standard is to define the HSE Training requirements for new and existing employees and contractors. It includes: HSE Training, HSE Induction, Basic Skills & Job Task trainings and competency evaluation.

## 2. Management Responsibilities

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.
- Communicate relevant information of this standard to people working on his/ her organization and other interested relevant parties.

### HR Organization

- Support decisions related to training programs implementation.
- Evaluate the effectiveness and efficiency of the training programs.
- Work with HSE to identify vendors to provide training services to ContourGlobal.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

## 3. Standard Content

### 3.1 Job Description, Competency Matrix and HSE Annual Training Plan

#### Job Description

- 3.1.1 The job description is the form that compiles the responsibilities and authorities of a particular function. In this form, they also described the activities related to each

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function that also involves HSE.

- 3.1.2 The job description compiles the responsibilities of a particular organizational role, position, and job function. It also describes the activities performed and highlights the critical HSE requirements to perform the activities safely, healthy and environmentally responsibly.
- 3.1.3 All job descriptions shall be approved and available in the ContourGlobal Management System as supporting documents. It is the basis to define the required HSE competencies to all organizational roles, positions and job functions.
- 3.1.4 In addition to the job descriptions, the responsibilities and some functions authorities are also outlined in the documents in the Management System (management procedures, operational, engineering and construction support documents and manuals).

**Competency/ Training Matrix:**

- 3.1.5 A competency/training matrix is a tool used to document and compare the required competencies for a position with the current skill level of the employees performing the roles. It shall be used to determine where the organization must have critical training needs and as a tool for managing people development.
- 3.1.6 All ContourGlobal businesses and operations shall develop a HSE Competence matrix, listing:
  - Key roles in the organization.
  - The competencies required for each role to perform their activities safely.
  - The training required to meet the desired competencies.

**Training needs & HSE Annual Training Plan:**

- 3.1.7 All ContourGlobal businesses and operations shall identify employees' training needs. This is achieved by the identification of the difference between the skills and knowledge of an individual or group and the skills and knowledge they require to carry out a particular task. This process shall be performed by line management, the HR and HSE organizations, and shall be carried out in consultation with the employees.
- 3.1.8 Once the employees training needs have been identified, a plan for the delivery of training shall be developed. The training plan shall contain:
  - Training required
  - Training objectives
  - Who is to be trained?
  - How is the training to be delivered?

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- Who is going to deliver the training?
  - Date of training
- 3.1.9 The Annual HSE Training Plan shall be approved by the site manager and line managers.
- 3.1.10 The site manager is responsible for the implementation of the HSE Training Plan. All ContourGlobal employees shall be provided with regular progress reports on the implementation of the training plan.

## 3.2 HSE Training

- 3.2.1 Sites shall develop, document, and implement training policies to help ensure the following:
- *Initial training* — each employee presently involved in a process is trained and qualified, and each employee must be trained and qualified before working in a newly assigned process or in a vital Risk Management role or function. Specifically, the training shall provide an overview of the process and shall emphasize the specific safety, health, and environmental hazards; emergency procedures; operating procedures; and safe practices applicable to the employee's job tasks.
  - *Refresher training* — each employee must receive refresher training in the subjects described above and be re-qualified at appropriate intervals according with the period determined by the site for each type of training.
- 3.2.2 The site's training policy and program shall include and address the following subject areas:
- *Parameters for personnel performance*
  - *Qualification of instructors*
  - *Basic skills*
  - *Job tasks relevant to process safety and safe operations*
  - *Emergency response and control*
  - *Initial, refresher, and supplemental training with competency evaluations such as job cycle checks or other means to demonstrate one's knowledge and abilities (e.g., site policies for incorrect answers on tests or other qualification issues that arise during competency evaluations).*

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- *Record keeping*

### 3.3 HSE Induction Training

- 3.3.1 The purpose is to communicate and train employees about the policy; principles, legal requirements, standards and procedures, as well as the culture of safety, health and the environment of ContourGlobal, aimed at raising awareness and adherence to these concepts.
- 3.3.2 The site manager shall establish and maintain induction and ongoing training procedures to ensure that visitors, directly employed contractors, and new employees are aware of:
- the importance of compliance with OHS Policy, Standards and procedures;
  - the significant OHS effects their work activities, actual or potential, as well as the benefits of improved performance;
  - their roles and responsibilities in achieving compliance with OHS Policy, Standards and Procedures; and
  - the potential consequences of departure from the specific operating procedures.
- 3.3.3 Specific guidance on Safety Induction Training is given in the ContourGlobal document - CG OHS Procedure CG04 - Visitor's Site Safety Induction v2 as showed in Appendix I.

### 3.4 Basic Skill Training

- 3.4.1 Each site shall develop an inventory of the basic skills that an employee must demonstrate to achieve satisfactory performance in a given job assignment.
- 3.4.2 For operators, this may include basic reading skills, math skills, and fundamentals of equipment operations (e.g., pumps, valves, filters, centrifuges, distillation columns, instruments, and computers). For mechanics, skills training should include the basic elements of a mechanic apprentice program.
- 3.4.3 Sites shall implement and provide basic skills training, as appropriate, to take all personnel beyond a minimum level of proficiency. Sites shall assess the content and completeness of basic skills training that has been evaluated or provided by external resources as part of a selection and hiring process for new personnel and maintain documentation of these results.

### 3.5 Job Tasking Training

- 3.5.1 Specific process operations (or job task) training shall address the detailed safety

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and health hazards, lines of defense, operating procedures, and safe work practices applicable to an employee's assignment. Such training shall also address and include all relevant Risk Management and HSE regulatory requirements.

- 3.5.2 Sites should include task training on field troubleshooting skills and methods, as appropriate, based on the hazards of the process, complexity of process tasks, the process, and the associated equipment.

### 3.6 Elements of Effective Training

- 3.6.1 Training should include, where appropriate, the following basic elements of effective training:

- *Classroom training* — explains how and why procedures are written the way they are. Classroom training may include formal instructor-led training, interactive video, programmed instruction, and other training methods.
- *Field training* — complements the classroom training and shows “how” and “where.”
- *Skill demonstration by the student* — gives the student an opportunity to perform a given task for the instructor, thereby demonstrating his or her degree of understanding of the training received.

### 3.7 Competency Evaluation

- 3.7.1 Training must include a competency evaluation, which is a combination of written qualification tests, skill demonstrations (where appropriate), and an assessment by the line organization that a person is competent to independently complete each assigned task or job in a safe, accurate, and consistent manner.
- 3.7.2 For tasks and procedures considered critical to the process, safety job cycle checks (e.g., skill demonstrations by individual employees or in a group) are recommended rather than only verbal competency evaluations by supervision.
- 3.7.3 As good practice must be established, a systematic check of assimilation of knowledge should be completed in at least 2 steps:
- **STEP 1** - Checking employee performance immediately after the end of training in proper form with issues directly related to the content of the training. This check is applied by the instructor himself, even in the training room, including space defined in the training agenda.
  - **STEP 2** - Checking employee performance after a suggested period of three months after training is completed, in standardized form itself, focused on the

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application of acquired knowledge in day-to-day work performed. This check is performed by the immediate superior of the employee or hired by the contract manager.

### 3.8 Record keeping

3.8.1 Training records shall be maintained and contain the following information:

- Employee ID
- Date of the training
- Training Content
- Qualification tests and records for specific job task training

### 3.9 Indicators

3.9.1 It is recommended that each ContourGlobal business and operation monitor the performance of the HSE Training Programs. The recommended indicators are:

- Number of HSE Training sessions conducted X Planned.
- Employees trained X Total number of employees
- Number of HSE Training Hours.

## 4. References

- ContourGlobal Manual  
*MHSE-001* - Health, Safety & Environment Management System Manual.
- ContourGlobal Guidelines  
*G-01* – Vision, Policy and Principles;  
*G-02* - People Involvement and Motivation;  
*G-03* – Training and Capability,  
OHS Procedure CG04- VISITOR’S SITE SAFETY INDUCTION

## 5. Appendices

- Appendix 1 – Visitor's Site Safety Induction
- Appendix 2 – Operation and Toolbox
- Appendix 3 – Job Start Meetings

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## Appendix 1 - Visitor's Site Safety Induction

General HSE induction training shall be provided to all new employees and visitors, and they shall be presented with a copy of the Site Visitor's Guide. The ContourGlobal site manager shall establish and maintain this site-specific procedure and ensure that an induction process and further ongoing procedures are set out to ensure that new employees, visitors, and directly employed contractor personnel are made aware of:

- the significant HSE effects of any work activities they may encounter.
- the requirements that may be placed on them with regard to the use of PPE, the location of safe traffic or pedestrian routes, the procedures to follow in case of an emergency evacuation, site emergency contact numbers and incident reporting requirements, and the locations of potable water and washrooms.
- their responsibilities for their own safety and the safety of others.
- the importance of their compliance with the ContourGlobal HSE Policy as well as any other specific site standards and procedures.
- the potential consequences of departure from the specific procedures as outlined during the induction process.

All visitors must be inducted onto the site by either the ContourGlobal site manager or a delegated suitably qualified person.

### SITE SAFETY VISITOR'S GUIDE

Visitors, regardless of who they are, must be provided with a current copy of the Site Safety Visitors Guide, copies of which are to be kept at the site in sufficient quantities that they are always available for distribution. The responsibility for maintaining this stock falls to the ContourGlobal site manager or a designated representative. The instructions in the Guide are clear and unambiguous.

They must be handed a copy of the Guide on each occasion, whether they are repeat visitors or not, and the hazards to be found on the site are to be explained to them.

With regard to visitors and directly employed contractor personnel, the Guide includes a tear-off page at the back of the document which should be completed and returned to the ContourGlobal site manager or a designated representative at the conclusion of the visit.

All records of induction shall be documented and retained permanently and will be examined as part of the ContourGlobal safety audit process. A visitor's log shall be kept as a permanent record of those who have visited the site.

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## Appendix 2 – Record of Toolbox Meeting

Date:

Meeting Commenced:                      am/pm

Location:

Meeting conducted by:

Position:

<b><u>Attendees:</u> (Print Names &amp; Sign)</b>		<b>(Print Names &amp; Sign)</b>	

### **STATUS OF TOPICS FROM PREVIOUS MEETING:** *(ie., Further clarification or investigation required)*

TOPIC	STATUS	ACTION BY

### **SAFETY ITEMS**

TOPIC	ACTION BY



Appendix 3 – Job Start Meetings Report

\_\_\_\_\_ **PROJECT/SITE**

**SUPERVISOR:** \_\_\_\_\_  
\_\_\_\_\_

**DATE:** \_\_\_\_\_

**AREA MEETING HELD:** \_\_\_\_\_  
\_\_\_\_\_

**NO. OF EMPLOYEES:** \_\_\_\_\_

**ACCIDENTS / INCIDENTS FROM PREVIOUS DAY**


Feedback	ACTION BY	DATE

**NEW ISSUES**


(Tick off if in place)

Permits in Place

☐

JSEA's in Place

☐

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## G05 – Legislation Compliance

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## 1. Purpose

This standard covers ContourGlobal guidance to ensure that all applicable HSE requirements are identified, evaluated and implemented throughout the life cycle of projects, facilities, equipment and operations.

## 2. Management Responsibility

### Line Managers

- Demonstrate a clear understanding of the need to comply with corporate and site-specific HSE standards and the consequences of non-compliance.
- Monitor operations/site activities for legal compliance and, if necessary, promptly adopt measures to correct non-compliance.
- Communicate relevant information on legal and other requirements to persons working under the management of the organization and other relevant interested parties.
- Evaluate compliance with applicable legal requirements on a regular basis.

### HSE Organization

- Control the issuance of official reports for Labor, Health and Environmental agencies in place (i.e. through signature memo process).
- Support the organization in the analysis and application of all HSE legal requirements.
- Identify and ensure the most appropriate means (i.e.: Internet, advice from regulatory agencies, tools, library access, etc.) for accessing the information of the current regulations and also to any revisions made to them.

## 3. Guideline Contents

### 3.1 Performance Requirements

- 3.1.1 Each ContourGlobal business and site shall ensure that applicable legal, regulatory and other HSE requirements are identified, implemented, documented, maintained, accessible, communicated, understood, and complied with.
- 3.1.2 Where local legal and regulatory requirements do not require an appropriate level of HSE performance, all activities at operations shall be conducted in a manner consistent with the ContourGlobal HSE management system and other internationally recognized HSE performance standards.
- 3.1.3 Where The ContourGlobal standards are distinct from the local legislation, the more restrictive standard will be followed even though compliance with the more stringent standard does not eliminate the need for complying with reporting and other requirements in the jurisdiction where the business is located.

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- 3.1.4 Each ContourGlobal business and operation will ensure that all applicable HSE requirements are implemented throughout the life cycle of facilities, equipment, and operations, monitoring compliance by contractors, suppliers, customers and partners.

## 3.2 Identification

- 3.2.1 Each operation shall have a formal system for accessing the most current legal, regulatory and other requirements relevant to HSE. It shall establish, implement and maintain a procedure(s) for identifying and accessing the legal and other HSE requirements that are applicable.
- 3.2.2 Each operation shall have, or have access to, competent people for the interpretation and application of all legal, regulatory and other requirements relevant to HSE.
- 3.2.3 Each business and site location will have a monitoring process to follow changes and updates in legal, regulatory and other requirements relevant to HSE.

## 3.3 Documenting & Maintaining

- 3.3.1 Each operation shall maintain a formal register, which shall be reviewed at least annually, of its key legal, regulatory, and other requirements relevant to HSE.
- 3.3.2 Each operation has a process to control the issuance of official reports, and a legislation compliance plan for labor, health, safety, and environmental agencies is in place.

## 3.4 Communicating & Understanding

- 3.4.1 Each operation shall have formal systems in place to ensure that all information relevant to HSE is effectively and proactively communicated to all applicable personnel.
- 3.4.2 Each operation shall have processes in place to ensure that the legal, regulatory and other requirements are understood.

## 3.5 Compliance With

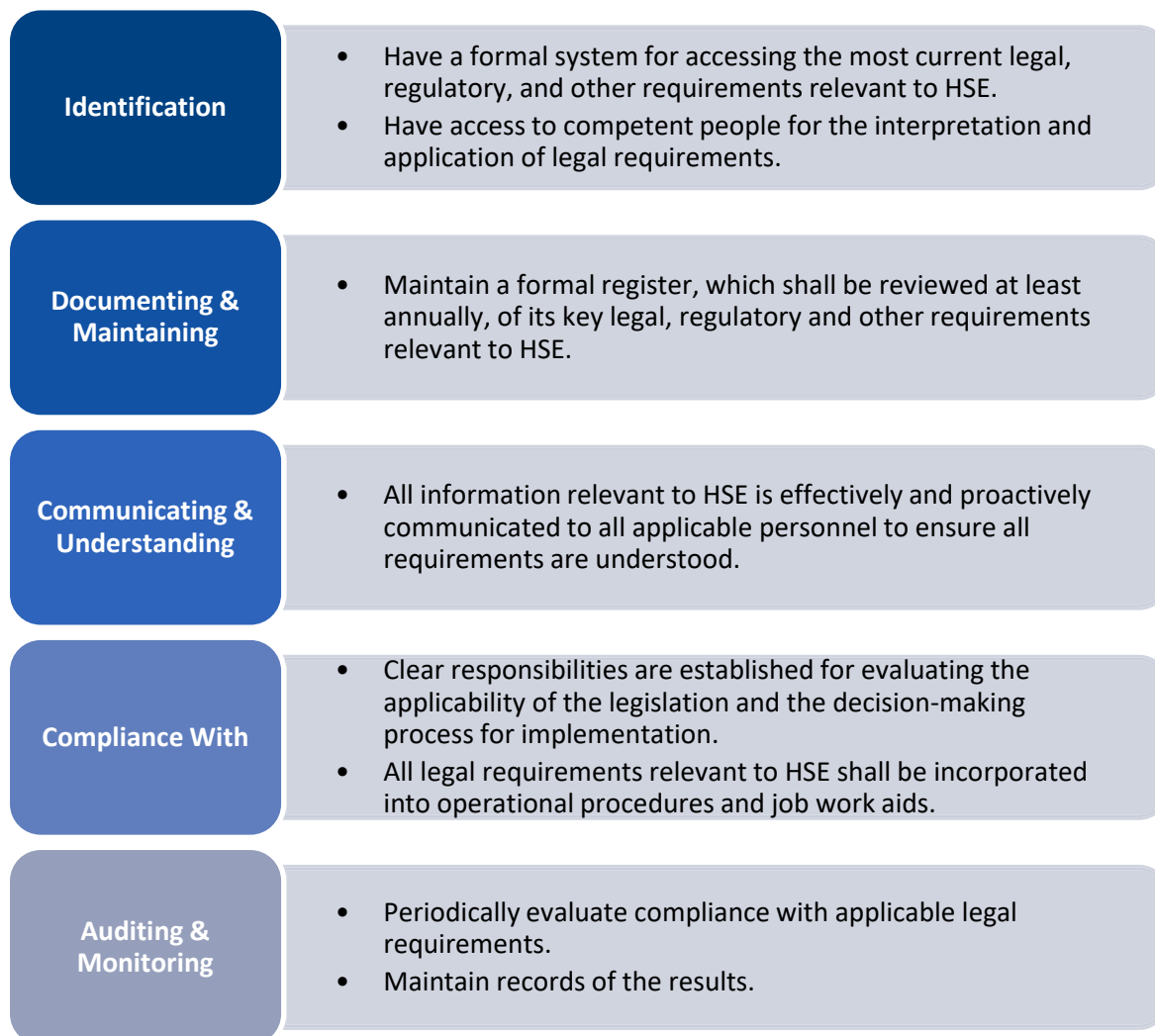
- 3.5.1 Clear responsibilities are established for evaluating the applicability of the legislation and the decision-making process for implementation.
- 3.5.2 All legal, regulatory, and other requirements relevant to HSE shall be incorporated into operational procedures and job work aids.
- 3.5.3 Each operation shall permanently monitor site activities, including all suppliers and contractors, for legal compliance and, if necessary, promptly adopt measures to fix and correct any non-compliance.
- 3.5.4 Evaluation of compliance with legal and other requirements applicable towards HSE is performed periodically, a minimum of once per year, or unplanned between periodical evaluations should events occur that may have significant impact. The evaluation is made by comparing the respective requirements with the situation in the organization.

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### 3.6 Auditing & Monitoring

3.6.1. Each operation shall establish, implement, and maintain a procedure for periodically evaluating compliance with applicable legal requirements. It also shall keep records of the results of the periodic evaluations.

The figure below summarizes the key steps in each phase:



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#### 4. References

- ContourGlobal Manual  
*MHSE-001* - Health, Safety & Environment Management System Manual
- OSHAS: 18001 standards and guidelines

#### 5. Appendices

Not applicable.

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G06-S01 - HSE Audits

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## 1. Purpose

This standard includes ContourGlobal requirements and guidance for managing and conducting HSE audits. It covers the steps on conducting an HSE audit as well as criteria for classifying findings of the audits.

## 2. Management Responsibility

### Line Management

- Periodic review of data to identify trends and opportunities for improvement.
- Ensure that the audit program is developed, implemented and reviewed to ensure continuous improvement.
- Actively engaged in appropriate audits to ensure that effective, visible felt leadership, mentoring and coaching are demonstrated.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

## 3. Guideline Contents

### 3.1 Performance Requirements

- 3.1.1. Each operation shall conduct periodic first-party, second-party, and third-party audits of the facility and its HSE management system. These audits shall include:
- Behaviors of employees and contractors
  - Facility and equipment conditions
  - Special emphasis items
  - Compliance with local regulations, corporate HSE standards, site safety procedures, and site safety rules
- 3.1.2. The audits should be designed to look beyond unsafe or inappropriate behaviors and conditions. The audit should identify system weaknesses (e.g., planning or communications) and conflicting or misunderstood priorities that could cause or allow an environmental deviation, unsafe behavior, or condition. All topics should be audited within a three-year cycle as a minimum.
- 3.1.3. By the end of each year, a preliminary schedule should be developed showing the sites to be audited during the coming year, the dates of the audits, and the number of days for each audit, the audit team leaders, and the audit team members. The audit program at each operation shall include details of the competencies, roles, and responsibilities required for conducting audits and reporting results.

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## 3.2. Conducting HSE Audits

### Pre-Audit

- 3.2.1. Each operation shall select an audit team leader. Audit team leaders shall be ContourGlobal employees, or employees of ContourGlobal subsidiaries, affiliated companies, or joint ventures required to comply with ContourGlobal HSE policies, standards and guidelines, and shall be qualified.
- 3.2.2. First-party audits' team leaders shall be a person from the site being audited. For HSE second-party audits, team leaders shall also be independent of the site being audited.
- 3.2.3. At least two weeks prior to each planned first-party audit and at least six weeks prior to each planned second-party audit, the audit team leader should contact the site leadership and the HSE coordinator to:
  - Establish the audit goals and objectives.
  - Confirm the exact dates of the planned audit.
  - Explain the audit process.
  - Request documents for review.
  - Determine the type of interviews and tours to be conducted
  - Select an audit team and designate member responsibilities.
- 3.2.4. During the initial communication with the site leadership team, the audit team leader should request that pre-audit information be sent to the team for review. The following are examples of typical pre-audit information: completed pre-audit questionnaire, organization charts, process flow diagrams and descriptions, local regulations, previous audit reports, etc.
- 3.2.5. The HSE audit team leader should hold a pre-audit meeting or conference call to plan an efficient audit at least one week before the first-party HSE audit and two weeks before the second-party audit.
- 3.2.6. At least one week before the HSE audit, the audit team leader should contact the site SHE manager again to finalize administrative details.

### On-site Audit Process

- 3.2.7. First-party HSE audits should be short in duration (e.g., less than one hour) unless a HSE management system audit is being conducted, which calls for more time to complete. Multiple teams should be used if large areas or large numbers of personnel are covered. The audit team should meet prior to going into the field to review the specific briefing sheet, checklist, and/or procedure of the topic being audited.
- 3.2.8. For second-party and third-party HSE audits, the audit team leader shall help ensure that audit members focus on management systems, include a sampling of compliance, and follow the appropriate audit protocols.
- 3.2.9. Team members should devote a considerable amount of time to test and verify findings during the audit. Audit verification guidance is included in the audit

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protocols. Following the verification guidance, team members should gather representative information sufficient to verify compliance, substantiate noncompliance, and demonstrate the functioning of management systems.

3.2.10. The team shall evaluate the audit results to identify action items as they relate to HSE practices. Findings should address departures from both regulatory or internal requirements and good HSE practices.

3.2.11. Observers may participate in first and second-party audits. The site manager, together with the audit team leader, approves any observer participation in the audit. Observers might include senior leadership, business personnel, technical experts, auditors in training, or others who have a special interest in the audit process.

### 3.3. Documenting and Reporting an HSE Audit

#### Classification of Audit Findings:

3.3.1. Audit findings shall be classified using the following categories:

- **Regulatory:** a finding that involves laws, ordinances, regulations, and directives that are external to the company, including government regulations and international treaties.
- **Policy:** a finding that involves company policies, requirements from ContourGlobal guidelines, standards and procedures.
- **Local attention item:** a finding that involves a minor and readily correctable situation that does not meet the criteria listed for the regulatory, policy, or guidance/ observation categories. These items might include minor performance anomalies and continuous improvement opportunities.
- **Commendation:** an exemplary system, action, or program worthy of adoption by other sites.

3.3.2. Audit Findings and recommendations shall be classified using one of three levels to help prioritize corrective actions:

- **Level 1** — highest priority action. Situations that may present substantial risk to the environment, the public, employees, stockholders, customers, the company or its reputation, or result in criminal or civil liability for knowing or willful violations.
- **Level 2** — priority action. Does not meet the criteria for Level 1, but is more than an isolated or occasional situation. These actions should not continue beyond the short term.
- **Level 3** — action. Findings may be administrative in nature or involve an isolated or occasional situation.

#### Post-Audit Process and Follow-up to Closure

3.3.3. Documentation of HSE audits, including draft and final audit reports, shall be created by audit team members using the corporate audit reporting software. Audit follow-

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up documentation, including action plans and status reports, shall be created using the corporate audit tracking software. Timely, consistent audit reports, site response to management, and feedback on the audit team's performance are essential to close out and improve the audit process.

- 3.3.4. To support and substantiate audit results, audit findings should produce a flow of logic from the auditor's discussions to the assertions to be tested.
- 3.3.5. Audit findings shall be free from any influence that would make one decision more attractive than another and, therefore, exclude evidence that would support the alternative decision.
- 3.3.6. Audit findings shall lead individuals examining the same evidence to reach the same conclusion.
- 3.3.7. If the situation identified in the audit appears to be potentially serious (e.g., a regulatory non-compliance finding), or findings are related to pending litigation, Legal shall be consulted.
- 3.3.8. The final report, action plans, and follow-up status reports shall be available in English. These versions shall be considered the official reports. If requested, these reports and plans should also be made available in the local language. The site shall develop and issue an action plan that defines corrective action steps for all findings, expected completion dates, and person(s) responsible.

## 4. References

- ContourGlobal Manual - *MHSE-001* - Health, Safety & Environment Management System Manual
- International Organization for Standardization (ISO) 14000 and 18000 standards and guidelines

## 5. Appendices

Not applicable.

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Excavations

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## Revision Control

Rev	Date	Comments
0	2016, May 2	DuPont drafted the guideline
1	2016, May 12	Guideline submitted to Technical Committee. Posted on Yammer on
1A	2016, May 19	Added comments from Tech Team and VCM - Improved item Barricades

**Notes:** ContourGlobal does not have any standard procedure for Excavations. DuPont consultant has used the DuPont standard and international best practices as the basis to develop this standard.

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## 1. Purpose, Scope and Field of Application

### 1.1 Purpose

This standard provides requirements and guidance to protect employees and contractors from risks when performing excavations.

### 1.2 Scope

This standard is applicable to all work involving breaking the earth's surface and concrete slabs/walls. Compliance with this procedure and all referenced procedures and standards is essential to the safe performance of excavation work.

Sites should be aware that local regulations may impose requirements not reflected in this standard. *The most stringent requirement shall apply.*

### 1.3 Field of Application

This guideline must be applied to all ContourGlobal sites where we operate.

It is recommended to all Joint Ventures (JV's) where ContourGlobal does not operate

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## 2. Acronyms and Definitions

### 2.1 Acronyms

HSE Health, Safety and Environment

### 2.2 Definitions

Encumbrance	any natural or man-made object encountered in or around an excavation, that might present a hazard to workers or might be damaged by workers during excavation work or while doing any work in or around the excavation.
Excavation	any man-made cavity, cut, trench, probing into or depression in an earth surface. Work below grade or enclosed line within a floor or wall that could possibly cause contact with piping, conduit, or other obstructions resulting in injury or equipment damage. This work requires an excavation permit.
Hazardous atmosphere	an atmosphere that is explosive, flammable, poisonous, oxidizing, irritating, oxygen deficient, toxic or is otherwise harmful to humans.
Protective System	a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide necessary protection
Trench	a narrow excavation (in relation to its width) made below the surface of the ground with the length and depth greater than the width. This excavation is not greater than 15 feet wide.
Shoring	a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.
Sloping	a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of the incline required to prevent a cave-in varies with differences in such factors as

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	the soil type, environmental conditions or exposure, and application of surcharge loads.
Shielding	a system that protects employees from excavation cave-ins by erecting a structure that can withstand the forces imposed on it during a cave-in. Shields can be either permanent structures or portable structures that are moved as the work progresses. Shields used in trenches are usually referred to as “trench boxes” or “trench shields.”

### 3. Management Responsibility

#### 3.1 Line Management

- Line management has the responsibility to implement this standard.
- Ensure that all excavation work only begins after an authorized Excavation Work Permit
- Facilitate excavation and Competent Person training programs
- Require and verify that existing utilities, structures and roadways are properly protected and supported

#### 3.2 HSE Organization

- Audit and verify compliance with this standard.
- Provide technical support for interpretation of excavation and trenching HSE guidelines.
- Provide training on HSE best practices when doing excavation work.
- Monitor and keep records of the Excavation work permits.

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#### 4. Standard Contents

All excavation work must be performed in a manner that prevents the occurrence of an injury, occupational illness or any other type of incident which can result during excavation work.

No excavation work shall begin prior to issue of a properly executed, approved and authorized Excavation Work Permit.

All personnel involved in initiating, approving and authorizing and performing excavation work must be capable of reading and interpreting maps and engineering drawings. A properly executed drawing and a plot plan of the proposed work showing the location of removals and installations will be provided with excavation permit applications.

When excavation work is to be done in a location where hazardous materials are present or may be encountered shall be complied with ContourGlobal standard on hazardous materials management (see CG-G08-S06) until the hazardous condition(s) is eliminated, mitigated or verified not to exist.

Measures can include, but not be limited to, air monitoring to insure proper oxygen and explosibility levels, confined space entry procedures, wearing proper PPE, etc.

Excavations that are 1.2 meters (4 feet) deep or deeper and/or meet other requirements of a confined space as designated in standard CG-G06-S03 shall be permitted as a Confined Space.

##### 4.1 On Plant and Off Plant Excavations

Before beginning any excavation work, the person requesting to have the excavation work done shall issue an Excavation Work Permit Form and have it approved as required by the permit issuer. A list of area authorized permit approvers shall be maintained with area procedures. Detailed information about work permits are listed on standard CG-G08-S11.

Areas surrounding the plant site that are the property of the plant are considered to be off plant and have various utility easements in which some underground interference might be located. A properly completed Excavation Work Permit Form must also be obtained for excavation work to be done in these locations. All excavations in these locations must be coordinated with the appropriate municipal official and/or utility companies.

Coordination with the appropriate municipal official and/or utility companies shall be made no later than four (4) weeks before the excavation work is to begin. Advise

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them of the work to be done and ask them to establish the location of the underground utilities before the work begins.

A competent person who fully understands the dangers and necessary precautions should inspect the excavation at the start of each shift. Excavations should also be inspected after any event that may have affected their strength or stability, or after a fall of rock or earth.

A record of the inspections will be required and any faults that are found should be corrected immediately.

## 4.2 Barricades

Barricades shall be erected, administered and maintained in all excavation work. As a minimum, all excavations must be barricaded with warning sign must be displayed in a conspicuous manner. Depending on location and other circumstances (e.g. proximity to roadways and/or walkways, pedestrian traffic, other work being performed in close proximity that involves vehicular traffic), a robust barrier should be used.

In areas subject to pedestrian and/or vehicular traffic, use of protective barricades shall be considered. Barricades shall be used where an excavation is within 0.6 meter (two feet) of a sidewalk or other pedestrian-way. Only the side(s) of the excavation that are adjacent to the pedestrian-way are required to have the protective barricade.

For excavations that are to be left open during the hours of darkness, barricades must be adequately illuminated.

Barricaded area shall be of a size in area that it will contain the entire excavation, removed soil, all tools, equipment, vehicles, workers, etc. related to it.

Every effort shall be made not to erect a barricade that will block entire roadways. If needed, must use signs so that traffic can detour before encountering barricades.

In all situations where barricades will require pedestrians to walk in a roadway, necessary actions shall be taken to protect pedestrians from vehicular traffic.

Barricades must be marked with battery-powered flashing warning lights if they are in or near walkways or roadways.

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### 4.3 Means of Egress

A stairway, ladder, ramp or other safe means of egress shall be located in excavations that are 1.2 meters (4 feet) or more in depth.

### 4.4 Protective Systems - Shoring and Sloping

Excavations of less than 1.5 meter (5 feet) in depth normally do not require protective devices such as shoring. However, the competent person shall determine on a case by case basis when and if shoring is required. When making this determination, the competent person shall consider the type of work to be performed in the excavation and the type of soil being excavated. If the excavation is made to bury something, the competent person can determine that shoring is probably not required. However, if someone has to lie down in the excavation, or if a person working in the excavation is of such a height that a cave-in might restrict that persons breathing (nose, mouth, chest, stomach, etc.), adequate protective measures shall be taken. Shoring design and procurement and sloping design are covered in the OSHA Standard.

Excavations 1.5 meter (5 feet) deep or deeper but less than 4.5 meters (15 feet) require shoring. Structural and design requirements shall be validated by the competent person and follow the OSHA or local HSE government agency standard.

Excavations 4.5 meter (15 feet) deep or deeper also require shoring. However, this excavation and its shoring shall be designed by a licensed professional engineer who is competent in excavation design, soils engineering and structural engineering. The ContourGlobal representative, before contracting a professional engineer, shall obtain from that engineer and verify the following:

- A resume' of experience and references for the type of work to be done.
- Any other documentation available that will verify the engineer's competence in this type of work.

For information on timber shoring, refer to OSHA 29 CFR 1926.650. When using hydraulic shoring, trench jacks, air shores, and shields, follow all of the manufacturer specifications, recommendations, and limitations.

All tabulated data must be maintained at the job site during the construction of protective systems. The design of support systems, shield systems, or protective systems (other than a manufacturer's design) must be approved by a registered professional engineer.

When shoring and shielding systems are not based on the soil classifications for Type A, B, or C soils, they must be designed by a registered professional engineer.

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The engineer is responsible for the correct design of the excavation. The engineer shall do the following:

- Provide a complete design of the excavation to include drawings of the excavation, shoring/sloping, points of entry/exit, etc.
- Perform all necessary duties as specified in this procedure and as specified in OSHA standards that pertain to excavations and work and safety conditions that occur in excavations.

#### 4.5 Vehicles, Equipment and Tools

Machinery or vehicles shall not be driven or parked within 3.0 meters (10 feet) of the edge of the excavation unless the banks are frequently inspected and confirmed to be stable.

When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system (such as barricades, hand or mechanical signals) will be utilized.

All personnel shall be instructed to remain clear of all active machinery including but not limited to excavators, backhoes, frontend loaders and side-booms. Operators will not be allowed to swing or lift in any way, objects over people's heads.

It is prohibited to store propane and/or compressed gas in the excavation. They shall be removed from the excavation after pre-heating is complete.

When any object may be projected into a roadway, it should be adequately marked and in accordance with the approved traffic control plan.

#### 4.6 Soil Disposal

Keep spoil dirt and any material or equipment that may fall into an excavation at least 1.0 meter (3 feet) from the edge.

Proper disposal of plant spoils is necessary to insure that only clean fill material(s) is stored on the plant site. Part of proper disposal is to insure spoils disposed of on the plant site are free of any and all contaminants. This requires 100% testing of all spoils before on plant disposal is permitted.

Disposal of contaminated spoils will be coordinated through the plant Environmental representative. These steps should be followed to ensure safe disposal of plant soils.

1. Prior Planning/Coordination

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Persons/Areas desiring to dispose of spoils should have them tested as early in the planning process as possible.

## 2. Testing

Prior process knowledge will not be accepted as assurance that spoils are contaminant free; testing is required.

Results of the tests will be reviewed with security team. If contaminants that will prevent onsite storage are found in the spoils, arrangements will be made for proper disposal off the plant site. If the spoils are contaminant free and approved for on site disposal, security team will be contacted to obtain a disposal permit and location.

## 3. Permit

After the soil has been approved for plant disposal, a written permit shall be submitted to Environmental team along with a copy of the testing results.

## 4. Disposal and Disposal Site(s)

The location will be designated by the Environmental team. To insure the disposal site is properly maintained, the following controls shall apply:

- Disposal sites will be a 100% fence enclosed location. Access to the site will be controlled by a locked gate. Keys to the gate will be in the possession of Security. Access to the facility will be granted only with the approval of security team
- Clean soil only shall be disposed of in the onsite facility. Documentation showing the spoils have been tested and determined to be contaminant free will be provided prior to being given approval to dispose of them. Besides being free of chemical contaminants, the spoils shall not contain concrete, miscellaneous trash, construction materials, etc.
- Spoils shall be stored only at the location within the fenced area.

### 4.7 Ensuring the Stability of Adjacent Structures

When the stability of adjoining buildings, walls, sidewalks and pavements, or other structures is endangered by excavation operations, use support systems or other protective measures such as shoring, bracing, or underpinning to ensure their stability and to protect employees.

Do not excavate below the level of the base or footing of any foundation or retaining wall unless the excavation is in stable rock, or unless one of the following precautions has been taken:

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- A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure.
- A registered professional engineer has determined that the structure is far enough away from the excavation so as not to be affected by the excavation activity.
- A registered professional engineer has determined that such excavation work will not pose a hazard to employees.

#### 4.8 Training

Each site (and/ or area) is responsible for having a trained competent person oversee all excavation work conducted in their area. A list of formally trained competent persons shall be maintained in site files.

All persons functioning as a competent person, shall have been formally trained in the requirements of and be familiar with the contents of OSHA Standard 29 CFR 1926.650-.652 and/ or any local HSE governmental agency requirements.

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## 5. References

- ContourGlobal Manual  
*MHSE-001* - Health, Safety & Environment Management System Manual.  
  
CG-G08-S10 – Lone Work
- Others
  1. OSHA 29 CFR 1926.650-.652. Occupational Safety Health Standards- Excavations, dated October 31, 1989.
  2. OHSAS 18001: 2007 – Occupational Health and Safety Assessment Series

## 6. List of Appendices

Not applicable.

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# G08-S10 – Job Safety & Environmental Analysis

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## 1. Purpose

This standard covers ContourGlobal guidance to prevent injuries, loss of life, property loss, damage to the environment and/or the community, as a result from events occurring when performing a job or a routine/non-routine task.

## 2. Management Responsibility

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.
- Communicate relevant information of this standard to people working on his/ her organization and other interested relevant parties.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

## 3. Guideline Contents

### Premises

Job Safety and Environmental Analysis (JSEA) is a formal process that provides a systematic and effective method to review job methods and uncover hazards. JSEAs are very useful in initial and periodic employee training, upgrading procedures, strengthening workplace safety inspections, reducing and eliminating injuries/illnesses/environmental incidents.

Key elements in preparing a JSEA are:

- Select a job suitable for analysis.
- Describe the sequence of steps to perform the job.
- Determine the hazards and potential accidents for each job step.
- Identify ways to eliminate and control each hazard.

### 3.1 General Requirements

- 3.1.1 All routine operations shall progressively be represented by procedures and safe practices, developed with hazard analysis, using JSEA or other methods. Once there is a risk-based developed procedure, that procedure is to be followed.
- 3.1.2 JSEA shall be applied for the following situations, but not limited to:
  - New tasks/jobs/operations.

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- One-of-a-kind operations, first time tasks.
- Existing tasks (with procedures) developed in new contexts, i.e., when there is any change to the context in which the safe procedure was firstly developed.
- Complex tasks when it is advisable to perform a hazard review.
- Integrated with other regulated requirements like hot work, confined spaces, lockouts, especially in the event of the above abnormal conditions.
- Tasks that will require special planning, like rigging operations, dangerous transportation, special site situations, may also be integrated with JSEA.

3.1.3 JSEA's shall be the responsibility of all persons but in particular to: Project Managers, Engineers/Planners and Supervisors/Team Leaders/HSE Managers and Representatives.

## 3.2 Completion of a JSEA

### (A) PREPARATION

- 3.2.1 The JSEA must be completed prior to the job being performed so that the identified hazards can be removed and remaining risks minimized, as far as it is practicable.
- 3.2.2 JSEA's completion shall be the responsibility of a team analyzing the task, as described ahead. JSEA results and provisions are of the responsibility of the area supervisor or manager that will approve the JSEA. JSEA adequate use as an effective risk control site tool belongs to the site manager responsibility.

### (B) DEVELOPING ACTIVITIES

- 3.2.3 Prior to starting the work, a JSEA shall be completed and documented to identify hazards and put into place any corrective actions deemed necessary to prevent an injury and/or other damages.

The activities in developing a JSEA include:

- Assembling a team of people familiar with the hazards of the process, area, and scope of work.
- Reviewing the local work area and any hazards associated with the work, considering the task steps. Clearly describe and consider the scope of work, step by step, including preparation for the work, development and termination.
- Reviewing how the work may create a hazard that could have an impact on the surrounding area and the environment.
- Reviewing how the surrounding areas could have an impact on the work area.
- Defining methods for mitigating identified hazards and related risks
- Conducting a final field tour to verify all hazards have been identified.
- Documenting the JSEA in the JSEA form and obtaining necessary approvals.
- Having all personnel performing the work sign the JSEA to indicate that they have read and understood it.

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### (C) COMPLETING A JSEA FORM

- 3.2.4 The Job Safety Environment Analysis is to be conducted during the planning stage of the job. The JSEA document is broken up into 4 steps: (a) Details of the job to be performed, (b) Steps of the Job to be performed, (c) Completion of a Safe Work Method Statement and (d) Awareness and Approval.

#### Step 1: Details of the Job to be performed:

- 3.2.5 The following details need to be included in Step 1 of the JSEA:
- Workplace / area where work is to be conducted
  - Task description (general objective and complete task steps)
  - Work order number (or equivalent)
  - Date work is to be performed
  - Type of integrated permits required
  - Type of isolations required
  - PPE required
  - Equipment required
  - Potential environmental hazards associated with the job
  - Hazardous materials/substances to be used during the job
  - Possible manual handling hazards associated with the job
- 3.2.6 Any hazards identified need to be accordingly addressed in the hazards column relating to the task steps in Step 2.

#### Step 2: Steps of the Job to be performed

- 3.2.7 The Job Step column of the JSEA requires a list of the sequence of basic steps of the task which is to be performed.
- 3.2.8 The Hazards column will address all potential safety and environmental/occupational hygiene hazards that may be encountered whilst completing the task. The following list gives an illustrative (partial) guide to the possible hazards that may be present.

Asbestos	Confined Spaces	Corrosive liquid
Dust, vapor, gases	Electricity	Fire & Explosive
Flooding	Fumes, smoke	Hot Metal
Hydraulic Pressure	In Wall Services	Lone Worker
Manual Handling	Moving Machinery	Noise, Vibration
Overhead Hazards	Pressure/Vacuum	Restricted Access
Slips/Falls	Steam, Heated surfaces	Toxic Material
Trace Heating	Trapped Heating	Traffic/Vehicles
Underground Services	Working over/near water	Working at Heights



Hazardous/Prescribed Waste

Chemicals

Other

3.2.9 To each recognized hazard, complete the risk assessment, using the risk matrix as shown on page 2 of the JSEA form. The risk assessment will take into account the probability and consequence of the hazardous event considered. The following points shall be considered:

- a) the worst case scenario that the hazard may cause (worst credible consequences)
- b) the probability that this particular consequence scenario can occur during the task

Frequencies categories

- A - "It will happen" or is a common or repeating occurrence
- B - "It has happened" or is known to occur
- C - "I've heard of it happening" or could occur
- D - "Never heard of it happening" or not likely to occur
- E - Practically impossible

Consequence categories

*For people's safety or a loss to the business*

- 1 – Fatal injury or permanent disability
- 2 – Serious injury or Major Loss Incident
- 3 – Lost-time Injury
- 4 – First Aid or Medical Treatment injury
- 5 – Minor consequences, no injury

*For the environment*

- 1 – Toxic release off site with detrimental effect
- 2 – Off site release with no detrimental effect (nuisance or noticeability)
- 3 – On site release with some detrimental effect
- 4 – On site release with no detrimental effect
- 5 – Minimal environmental effect or impact

	A	B	C	D	E
1	H	H	H	M	M
2	H	H	M	M	M
3	H	M	M	M	L
4	M	M	M	L	L
5	M	M	L	L	L

**H = High risk activities that cannot be commenced without a full risk assessment and method statement**

**M = Medium risk activities**

**L = Low risk activities**

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- 3.2.10 The required hazard control column must show the control measures taken to eliminate the hazard or minimize the risk of injury to any party involved in the execution of the task.
- 3.2.11 When planning how hazards are to be controlled and risks reduced, the following 'hierarchy of controls' should be considered. In most circumstances, control solutions will incorporate a combination of controls:
- *Elimination*: Can the type of process or substance creating the hazard be eliminated?
  - *Substitution*: Can the work process or substance be substituted for something safer (inherently safer processes)?
  - *Engineering Controls*: Engineering Controls means modification of process equipment, tools or the workplace conditions to minimize the hazard exposure.
  - *Administration Controls*: Developing measures to ensure that the work is performed safely through procedures, signs, permit to work system, training and capability.
  - *Personal Protective Equipment and Clothing*: Personal protective equipment and clothing shall be the last resort in responding to workplace hazards and shall be used, in most instances, only as an interim or supplementary measure.
- 3.2.12 Any hazard condition must be made safe before commencing work, and control measures documented on the JSEA. If the control is beyond ContourGlobal's responsibility, the completed JSEA must be taken to the Main Contractor or Client for further consideration. DO NOT COMMENCE WORK.
- 3.2.13 The person or people responsible for implementing each hazard control measures must be listed in the Responsibility column.

### Step 3: Completion of a Safe Work Method Statement

- 3.2.14 Some tasks require the completion of a Safe Work Method Statement (SWMS). A SWMS identifies work activities assessed as having a particular safety risk and describes the needed control measures that shall be applied.
- 3.2.15 The SWMS includes a description of the equipment used in the work, the standards or codes to be complied with, the qualifications of the personnel and training required to do the work. These details need to be included in Step 3 of the JSEA form.
- 3.2.16 The SWMS will be used if any particular safety issues are not covered by specific permits to be added to the JSEA, e. g., Confined Spaces, Work at Heights, Hot Work.

### Step 4: Awareness and Approval

- 3.2.17 Every member of the work team must sign on to the JSEA to acknowledge awareness of the hazards associated with the task and the control measures that have been implemented.
- 3.2.18 The completed JSEA must be reviewed by a ContourGlobal Area Supervisor or Team Leader and signed off to acknowledge acceptance of the proposed job sequence and hazard control strategies. If required by site rules or contractual agreements, the client can also review and sign off the JSEA to accept the proposed job sequence and hazard control strategies.

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3.2.19 Attach the JSEA to the Work Order and/or other Permits and commence work. If the Work Order is extended over more than one day, or different persons are involved, the JSEA must be dated and signed by all involved on a daily basis until work is complete. If there is insufficient space, then the back of the form can be used.

3.2.20 Work shall be discontinued and the JSEA shall be reviewed/re-issued if there are any changes to methods, resources characteristics, materials used, surroundings and severe climatic or atmospheric changes.

**(D) REVIEW**

3.2.21 Upon completion of the task, the JSEA shall be reviewed by a member, or members of the work team to detect any inadequacy as compared to the planned activities and to a “lessons learned” purpose. The completed JSEA must be reviewed by a ContourGlobal Area Supervisor or Team Leader. The completed JSEA worksheet can form the basis for future safe work procedures including the task or job.

**(E) RECORDS**

3.2.22 The completed and signed copy of the JSEA shall be retained in a manner that is readily retrievable for future purposes. The retention and disposal period for completed JSEA’s is 7 years, unless otherwise stated.

## 4 References

- ContourGlobal Manual  
MHSE-001 - Health, Safety & Environment Management System Manual
- OSHAS: 18001 standards and guidelines

## 5 Appendices

- Appendix 1 – JSEA Form
- Appendix 2 – JSEA Register Form

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# Appendix I – JSEA Form:

JOB SAFETY AND ENVIRONMENTAL ANALYSIS / WORK METHOD STATEMENT WORKSHEET												Part 1	
a) Workplace / Area:				b) THIS JSEA COVERS:								c) JSEA No:	
JSEA Team (Attach separate sheet if required)									REVIEWED BY: (Client if applicable)			DATE:	
									REVIEWED BY: (Team Leader/Supervisor)			DATE:	
Type of Permit Required: (please indicate by ticking)		Type of Isolation Required: (please indicate by ticking)				PPE Required: (please indicate by ticking)				Equipment Required: (please indicate by ticking)			
Hot Work		Electrical		Chemicals		Safety Glasses		Gloves		Barricading/Signs			
Confined Space		Mechanical		High Voltage		Chemical Goggles		Safety Harness		Electrical Earth Leakage Unit			
Excavation / Penetration		Manual Valves		Hydraulic		Face shield		Respirator		Fire Extinguisher			
Working from Heights		Pneumatics		Liquids		Dust Masks		Disposable Overalls		Lifting Equipment			
Asbestos Removal													
High Voltage													
Other _____													
Potential Environmental Hazards This item requires continual review to include the specific area or activities requirements. Please Tick Box			Hazardous Materials / Substances (List any hazardous materials to be used or present in the work Area. Attach an MSDS for each)				Manual Handling Will Hazardous Manual Handling be possible during the job? E.G. lifting, pushing, pulling, twisting or bending? If so tick the box that most likely describes the manual handling risk and include the code on each JSEA Job step.						
Air Pollution (dust, fumes)							NONE		There will be no Hazardous Manual Handling in this job.				
Hazard to Flora or Fauna							MH1		The task may involve high forces.				
Noise (plant & equipment)							MH2		The task will require repetitive forceful movements?				
Spills to drains / waterways							MH3		The task is likely to cause fatigue or soreness due to its long duration				



Spills to ground			<b>MH4</b>	Environmental factors are likely to increase the chance of injury.	
Soil Erosion			<b>MH5</b>	Awkward posture or movements.	

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## Appendix 2 – JSEA Form:



## JSEA Register

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G08-S11  
Work Permit System

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## 1. Purpose

This standard provides requirements and guidance for the Permit to Work system to ensure that proper planning and considerations is given to the risks of a particular job. It provides requirements and guidance for issuing, approval and closing of work permits.

Sites shall be aware that local regulations may impose requirements not reflected in this standard. The most stringent requirement shall apply.

## 2. Management Responsibility

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.
- Communicate relevant information of this standard to people working on his/ her organization and other interested relevant parties.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

## 3. Guideline Contents

### 3.1 General Requirements

3.1.1 Each ContourGlobal business and operation must have a site-specific Work Permit System procedure. The following elements must be included in each of the required work permit procedures:

- Appropriate safety requirements and work permit authorization levels are established.
- Define responsibilities of individuals authorizing work permits.
- Define that the person doing the work must understand the job and safety requirements before each initials the permit. Individuals must satisfy permit requirements before starting work.
- Permits are terminated when: work is completed, the specified time period for the permit is reached, or the job set-up is adversely affected due to changing conditions.

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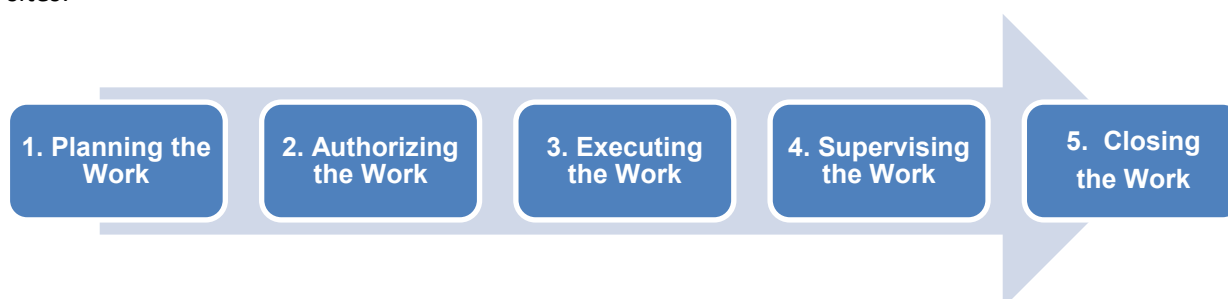
## 3.2 Activities Requiring a Work Permit

ContourGlobal and contractors shall establish, implement and maintain a Work Permit System for all HSE Critical Operations, but not limited to:

- 3.2.1 Cold Work Permit for carrying out any activity of maintenance/cleaning/testing in the site that does not produce sufficient heat to ignite a flammable air-hydrocarbon mixture or a flammable substance.
- 3.2.2 Hot Work Permit for carrying out any activity, which produces sufficient heat to cause fire in an inflammable air-vapor mixture.
- 3.2.3 Confined Space Entry Work Permit for going into any confined space.
- 3.2.4 Excavation Work Permit for carrying out any excavation in the site.
- 3.2.5 Electrical Work Permit System:
  - To work on High Voltage (HV) line and/or equipment or for all electrical isolation and energization of electrical equipment (HV)
  - To work on Low Voltage (LV) line and/or equipment or for all electrical isolation and energization of electrical equipment (LV)
  - For Trip reset of HV and/or LV equipment
- 3.2.6 Live Line Work Permit when:
  - Working “live” around exposed energized parts
  - De-energized work is not possible
  - Working “live” around exposed energized parts
- 3.2.7 Work at Height Permit for all working at heights of 1.8 meters or above on a temporary structure or on a fixed structure, not meant for carrying out a particular job safely
- 3.2.8 Radiation Permit for all jobs, which generate ionizing radiation
- 3.2.9 Any non-routine job performed in high hazard areas
- 3.2.10 Any non-routine contractor job

## 3.3 General Process to Issue a Work Permit

The five-steps are mandatory when issuing a work permit at all ContourGlobal business and operation sites:



- 3.3.1 **Planning the Work** – It is important to ensure that work activities which require a WP are planned and coordinated in order to avoid risks caused by simultaneous activities.

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During this stage, a risk assessment (e.g. using a JSEA) must be performed and all control measures identified. A visit to the location/place where the work is going to be conducted must be done to check and validate the permit scope and boundaries. Other activities (routine/non-routine) being carried out nearby, which can create conditions unsafe for performance of the permit work, should be taken into consideration, and the concerned persons should be alerted accordingly.

- 3.3.2 **Authorizing the Work** – Before any work subject to a permit is allowed to commence, the appropriate authorizations must be obtained. The Permit Issuer and Permit Receiver must sign the work permit as well as getting signatures of all people involved to execute the work. Exceptions must be approved by the site manager.
- 3.3.3 **Executing the Work** – process of executing each of the work activities according the risk assessment (JSEA), work plan, and work permit. Work permits shall be displayed so that any people who need to be aware of it, or to refer to it, are able to do so.
- 3.3.4 **Supervising the Work** – Monitoring of the activities shall happen where the work is taking place. The supervision must be done before, during, and after the execution of the work, and all controls listed on the work permit must be checked.
- 3.3.5 **Closing the Work** – all work permits must be closed when all activities have been performed or there was the suspension of the work. The area must be left on safe conditions and the permit issuer shall be informed.

The Work Permit form (document) shall include:

- The period of validity, in terms of the date, start time and completion time.
- The location (place of the work shall be specified clearly in terms of the plant, plant area, building, vessel or equipment. Identification number of the equipment shall be mentioned. Wherever it is necessary location sketch should be attached with the permit for clarity).
- A precise description of the work to be performed.
- Equipment and tools to be used for the task.
- PPE required.
- Emergency response requirements.
- Other people to be notified.
- Time of issue and period of validity.
- Signatures (approver, issuer, receiver, team members).

Appendix 1 shows a form for a General Permit to Work. Appendix 2 shows an example of a Hot Work Permit to Work.

- 3.3.6 In case of any accident or fire at the work site, the permit shall get automatically cancelled. A new work permit shall be obtained for restarting the job.
- 3.3.7 All work permits are going to be cancelled at the end of each shift and if needed, there shall be issued a new work permit if work is continuing beyond the shift.
- 3.3.8 Depending on the task and its characteristics - if work activities are the same, and its risks and required controls, the team work or contractor involved also are the same in the

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work permit - the overall life of a work permit shall be up to seven days. It will be necessary to revalidate the permit every day during this period. All signatures and approvals must be collected in the revalidation process.

3.3.9 All permits issued shall be maintained for recordkeeping purposes.

### 3.4 Roles & Responsibilities in the WPS

3.4.1 The site manager or project manager (for construction) shall appoint and maintain a list of people assigned in the Work Process System as:

- Area Authorities
- Issuing Authorities (WP Issuers)
- Performing Authorities (WP Receivers)

3.4.2 The Area Authority:

- Authorizes all work activities within their designated area of responsibility.
- Obtains higher levels of approval as needed. Any exception must have the approval of the site manager or project manager.
- Ensures appropriate permits are issued, closed, and filed per local operating requirements.
- Confirms work is appropriately planned and scheduled.
- Confirms with the Issuing Authority that all appropriate control measures have been put in place prior to commencement of activity.
- Ensures that all people involved in the work understand the scope of the activity and the hazards involved.

3.4.3 The Issuing Authority (or the Work Permit Issuer) is the person appointed by the Area Authority for issuing work permits. The Work Permit Issuer:

- Is responsible for the issuance and closure of permits.
- Maintains full knowledge of all work in progress in the area concerned.
- Confirms that all personnel involved in a work activity are competent and correctly outfitted for the work they will perform.
- Confirms that employees and contractors have clear understanding of the scope of work, hazards, controls and mitigations.
- Confirms that the correct tools and equipment are available and appropriate certifications and/or inspections are reviewed or made as appropriate.
- Confirms that required permits are in place and that work undertaken on site is consistent with, and confined to, the original scope of work.
- Routinely monitors the work area.

3.4.4 The Performing Authority (or the Work Permit Receiver) is the person responsible for activities carried out at the site and for the safe delivery of all work activities. The WP Receiver:

- Accepts and signs authorized permits for work activity being performed.
- Confirms that all members of the work sign the work permit.

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- Confirms that all persons involved in the task fully understand the scope of the work and the hazards and controls for the job.
- Verifies only work covered by the permit takes place.
- Confirms that non-essential personnel are kept a safe distance from the work activity.
- Ensures worksite is left in a safe condition upon work completion.

#### 3.4.5 The Work Team Members:

- Participates in the review of the work permit.
- Verify understanding and agreement via signing the work permit.
- Perform work within the bounds of the work permit.

### 3.5 Training

3.4.1 Any person who is authorized to issue or receive the work permit shall be imparted training for a period of not less than one day covering various aspects of the work permits system. Refresher training shall be conducted every two years on the work permit system. Sites shall be aware that local regulations may impose additional training requirements - the most stringent requirement shall apply.

3.4.2 Training of contract employees is primarily the responsibility of the contractor. ContourGlobal specific Work Permit System training materials may be provided by ContourGlobal to the contractor.

### 3.6 Work Permit Audits

3.5.1 Audits on Work Permits results shall be recorded, analyzed and used to improve the management and quality of the CoW process.

3.5.2 Line Management shall carry out work permit audits twice a year in their areas which include personal participation when necessary. The audits shall be scheduled and carried out by assigned competent people.

3.5.3 The audit findings shall be retained for a minimum of 12 months.

## 4. References

- ContourGlobal Manual  
*MHSE-001 - Health, Safety & Environment Management System Manual*
- OSHAS: 18001 standards and guidelines

## 5. Appendices

- Appendix 1 - General Permit to Work

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- Appendix 2 - Example of Hot Work Permit

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## Appendix 1 – General Permit to Work

Should be filled out at place of work. ALL BOXES MUST BE COMPLETED (YES IF APPLICABLE NO IF NOT)

<b>1. Location</b>	Permit valid from _____ : _____ hrs on _____ till _____ : _____ hrs on _____ Job Location: _____ Plant/Equipment Detail: _____ Asset No: _____ Contour Global Point of Contact – Name and Contact No: _____																																																																											
<b>2. Nature of Work</b>	Job Description: _____ CG 06.2 <input type="checkbox"/> Method Statement Ref: _____ Method Statement Agreed <input type="checkbox"/> Other Permit(s) Required: Confined Space <input type="checkbox"/> # _____ Hot Work <input type="checkbox"/> # _____ General Permit <input type="checkbox"/> # _____ Electrical <input type="checkbox"/> # _____																																																																											
<b>3. Hazards</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 25%; vertical-align: top;"> <b>SUBSTANCES</b>            Flammable <input type="checkbox"/>            Chemicals <input type="checkbox"/>            Smoke / Dust <input type="checkbox"/>            Liquid <input type="checkbox"/>            Biological <input type="checkbox"/>            Asbestos <input type="checkbox"/> </td> <td style="width: 25%; vertical-align: top;"> <b>SERVICES</b>            Buried Services <input type="checkbox"/>            Overhead Services <input type="checkbox"/>            Steam <input type="checkbox"/>            Gas <input type="checkbox"/>            Electricity <input type="checkbox"/>            Pressure System <input type="checkbox"/> </td> <td style="width: 25%; vertical-align: top;"> <b>PHYSICAL</b>            Slips / Trips / Falls <input type="checkbox"/>            Arcs / Egners <input type="checkbox"/>            Fragile Roof <input type="checkbox"/>            Moving Machinery <input type="checkbox"/>            Traffic Movements <input type="checkbox"/>            Manual Handling <input type="checkbox"/>            Falling Objects <input type="checkbox"/>            Ladders <input type="checkbox"/>            Ionising Radiation <input type="checkbox"/>            Ground Condition <input type="checkbox"/>            Working At Height <input type="checkbox"/> </td> <td style="width: 25%; vertical-align: top;"> <b>ENVIRONMENTAL CONDITIONS</b>            Water/Effluent <input type="checkbox"/>            Fumes / Odours <input type="checkbox"/>            High/Low Temp. <input type="checkbox"/>            Drainage <input type="checkbox"/>            Noise <input type="checkbox"/>            High/Low Pressure <input type="checkbox"/>            Adverse Weather <input type="checkbox"/> </td> </tr> </table> Comments on Above / Details of Other Hazards: _____ _____ Other Activities in area: _____ _____ _____ <b>* IF ANY HAZARD EXISTS, NEXT CONSIDER ISOLATION AND/OR PRECAUTIONS REQUIRED TO CONTROL</b>				<b>SUBSTANCES</b> Flammable <input type="checkbox"/> Chemicals <input type="checkbox"/> Smoke / Dust <input type="checkbox"/> Liquid <input type="checkbox"/> Biological <input type="checkbox"/> Asbestos <input type="checkbox"/>	<b>SERVICES</b> Buried Services <input type="checkbox"/> Overhead Services <input type="checkbox"/> Steam <input type="checkbox"/> Gas <input type="checkbox"/> Electricity <input type="checkbox"/> Pressure System <input type="checkbox"/>	<b>PHYSICAL</b> Slips / Trips / Falls <input type="checkbox"/> Arcs / Egners <input type="checkbox"/> Fragile Roof <input type="checkbox"/> Moving Machinery <input type="checkbox"/> Traffic Movements <input type="checkbox"/> Manual Handling <input type="checkbox"/> Falling Objects <input type="checkbox"/> Ladders <input type="checkbox"/> Ionising Radiation <input type="checkbox"/> Ground Condition <input type="checkbox"/> Working At Height <input type="checkbox"/>	<b>ENVIRONMENTAL CONDITIONS</b> Water/Effluent <input type="checkbox"/> Fumes / Odours <input type="checkbox"/> High/Low Temp. <input type="checkbox"/> Drainage <input type="checkbox"/> Noise <input type="checkbox"/> High/Low Pressure <input type="checkbox"/> Adverse Weather <input type="checkbox"/>																																																																				
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<b>4. Precautions / Preparations</b>	<table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">Fire Detection / Protection Isolation</td> <td style="width: 10%;"><input type="checkbox"/></td> <td style="width: 40%;">If yes, alternative arrangements in place</td> <td style="width: 10%;"><input type="checkbox"/></td> <td style="width: 10%;">Initial</td> <td style="width: 10%;">_____</td> </tr> <tr> <td>For hazardous tasks, have appropriate checklists been completed</td> <td><input type="checkbox"/></td> <td>If yes, specify checklists completed</td> <td>_____</td> <td></td> <td></td> </tr> <tr> <td>Is work equipment in good repair and tested appropriately</td> <td><input type="checkbox"/></td> <td>Certificates viewed and in date</td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> <tr> <td>Attended person notified of the work</td> <td><input type="checkbox"/></td> <td></td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> <tr> <td>Adequate barriers / signage erected</td> <td><input type="checkbox"/></td> <td></td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> <tr> <td>Fire precautions communicated</td> <td><input type="checkbox"/></td> <td></td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> <tr> <td>Gas testing, gas permitting, break gas units and phoning</td> <td><input type="checkbox"/></td> <td></td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> <tr> <td>Temporary Services required</td> <td><input type="checkbox"/></td> <td>If yes, specify: _____</td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> <tr> <td>All personnel completed site induction</td> <td><input type="checkbox"/></td> <td></td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> <tr> <td>Are persons carrying out work named in method statement</td> <td><input type="checkbox"/></td> <td>If not, confirm competence of substitutes</td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> <tr> <td>First Aiders and stations communicated</td> <td><input type="checkbox"/></td> <td></td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> <tr> <td>Equipment / Area cleared</td> <td><input type="checkbox"/></td> <td></td> <td><input type="checkbox"/></td> <td>Initial</td> <td>_____</td> </tr> </table> Preparation for break: No Break <input type="checkbox"/> Clean <input type="checkbox"/> Depressures <input type="checkbox"/> Drain/Vent <input type="checkbox"/> Cool/Warm <input type="checkbox"/> Purge <input type="checkbox"/> Free from hazardous substances <input type="checkbox"/> Other specify: _____ Other Requirements: _____ _____				Fire Detection / Protection Isolation	<input type="checkbox"/>	If yes, alternative arrangements in place	<input type="checkbox"/>	Initial	_____	For hazardous tasks, have appropriate checklists been completed	<input type="checkbox"/>	If yes, specify checklists completed	_____			Is work equipment in good repair and tested appropriately	<input type="checkbox"/>	Certificates viewed and in date	<input type="checkbox"/>	Initial	_____	Attended person notified of the work	<input type="checkbox"/>		<input type="checkbox"/>	Initial	_____	Adequate barriers / signage erected	<input type="checkbox"/>		<input type="checkbox"/>	Initial	_____	Fire precautions communicated	<input type="checkbox"/>		<input type="checkbox"/>	Initial	_____	Gas testing, gas permitting, break gas units and phoning	<input type="checkbox"/>		<input type="checkbox"/>	Initial	_____	Temporary Services required	<input type="checkbox"/>	If yes, specify: _____	<input type="checkbox"/>	Initial	_____	All personnel completed site induction	<input type="checkbox"/>		<input type="checkbox"/>	Initial	_____	Are persons carrying out work named in method statement	<input type="checkbox"/>	If not, confirm competence of substitutes	<input type="checkbox"/>	Initial	_____	First Aiders and stations communicated	<input type="checkbox"/>		<input type="checkbox"/>	Initial	_____	Equipment / Area cleared	<input type="checkbox"/>		<input type="checkbox"/>	Initial	_____
Fire Detection / Protection Isolation	<input type="checkbox"/>	If yes, alternative arrangements in place	<input type="checkbox"/>	Initial	_____																																																																							
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Are persons carrying out work named in method statement	<input type="checkbox"/>	If not, confirm competence of substitutes	<input type="checkbox"/>	Initial	_____																																																																							
First Aiders and stations communicated	<input type="checkbox"/>		<input type="checkbox"/>	Initial	_____																																																																							
Equipment / Area cleared	<input type="checkbox"/>		<input type="checkbox"/>	Initial	_____																																																																							

Blue Copy: Remain in Book

White Copy: Retained at Area of Work

Yellow Copy: Department / Area Copy

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## Appendix 1 – General Permit to Work (cont'd)

<b>5. Personal Protective Equipment</b>	PPE & Equipment Required: Apron <input type="checkbox"/> Overalls <input type="checkbox"/> Hard / Bump Hat <input type="checkbox"/> Safety Shoes <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Glasses/Goggles <input type="checkbox"/> Dust Mask <input type="checkbox"/> High Visibility Vest <input type="checkbox"/> Safety Gloves <input type="checkbox"/> Fall Arrest Equip. <input type="checkbox"/> Rlt. Face Mask <input type="checkbox"/> Harness <input type="checkbox"/> Head Torch <input type="checkbox"/> Face Veil <input type="checkbox"/> Chemical Suit <input type="checkbox"/> Other (specify): _____ _____																																									
<b>6. Isolation</b>	With reference to Sections 3 & 4, are there any isolations required? Yes <input type="checkbox"/> No <input type="checkbox"/> If No, go to Section 7 Isolation Schedule No. _____ If no isolation schedule exists, then specify isolations required: _____ All isolations secure and proved effective <input type="checkbox"/> Signed _____ All deisolations complete <input type="checkbox"/> Signed _____ Isolations left in place as job not complete <input type="checkbox"/> Signed _____																																									
<b>7. Permit Issue</b>	I have read this permit and confirm that the location where the work outlined above is being carried out has been personally examined and the precautions have been checked as indicated. Permit & Emergency requirements shall be communicated to all persons involved in the work and I will immediately notify the issuer of any changes to the conditions governing this permit. Permit Receiver: _____ Time: _____ Date: _____ Signature: _____ Staff name: _____ Area/System Owner: _____ Time: _____ Date: _____ Applying: Signature: _____ Staff name: _____ Permit Issuer: _____ Time: _____ Date: _____ Signature: _____ Staff name: _____ *In event of permit hand over see below table I have read this permit, risk assessments and method statement, and accept that this work requires the precautions stated. I will immediately notify the issuer of any changes to the conditions governing this permit. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Signature</th> <th>Print Name</th> <th>Date</th> <th>Time</th> <th>Sign-off Permit</th> </tr> </thead> <tbody> <tr><td>1.</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>2.</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>3.</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>4.</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>5.</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> *For Additional persons use box overleaf						No.	Signature	Print Name	Date	Time	Sign-off Permit	1.						2.						3.						4.						5.					
No.	Signature	Print Name	Date	Time	Sign-off Permit																																					
1.																																										
2.																																										
3.																																										
4.																																										
5.																																										
<b>8. Permit Return</b>	I accept that this work has been completed satisfactorily; all people, tools & equipment have been removed; the area cleaned, tidied & all waste removed and the plant/equipment is now ready for safe use <input type="checkbox"/> . All isolations have been removed. Or this work is not completed and will require a new permit but has been left in a safe and environmentally acceptable state <input type="checkbox"/> . Permit Receiver: _____ Time: _____ Date: _____ Signature: _____ Staff name: _____ Area/System Owner: _____ Time: _____ Date: _____ Applying: Signature: _____ Staff name: _____ Permit Issuer: _____ Time: _____ Date: _____ Signature: _____ Staff name: _____																																									

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## Appendix 2 – Example of Hot Work Permit

<b>Site Location:</b>	<b>Date:</b>	<b>Permit No:</b>
<b>Description of Hot Work:</b>		
<b>The location of the hot work:</b>		
<b>The equipment to be used:</b>		
<b>The fire-fighting equipment to be laid out at the work-site:</b>		

<b>HAZARD CHECKLIST</b> (Note: All questions are to be answered by the issuing responsible person. 'NA' means 'not applicable')					
Have drains, pits and depressions been checked, isolated and sealed?	<b>Yes</b>	<b>N/A</b>	Has contaminated ground been covered?	<b>Yes</b>	<b>N/A</b>
Have combustible materials been removed from the work area or made safe?	<b>Yes</b>	<b>N/A</b>	Is the fire equipment checked and laid out ready for use?	<b>Yes</b>	<b>N/A</b>
Have tanks, valves, vents and pipelines been blanked off or effectively isolated?	<b>Yes</b>	<b>N/A</b>	Is the fire pump or fire brigade on stand-by?	<b>Yes</b>	<b>N/A</b>
Is ventilation adequate?	<b>Yes</b>	<b>N/A</b>	If required, has a fire watch been organised?	<b>Yes</b>	<b>N/A</b>
Are spark and flash screens in place?	<b>Yes</b>	<b>N/A</b>	Is the wind direction satisfactory for hot work to be done?	<b>Yes</b>	<b>N/A</b>
Have leaks from valve and pump glands, flanges and the like been controlled?	<b>Yes</b>	<b>N/A</b>	Has product movement been stopped in the area of hot work?	<b>Yes</b>	<b>N/A</b>
Have pressure relief valves been vented to safe areas?	<b>Yes</b>	<b>N/A</b>	Has the site of the hot work been isolated and barriered off?	<b>Yes</b>	<b>N/A</b>

<b>GAS TESTING</b>		Equipment make and model: _____	
(as appropriate)		Serial No.: _____	
		Date of last equipment check: _____	
Date of test: _____		Results of tests:	Percentage LEL:
Time of test: _____			
Is hot work safe to proceed: <input type="checkbox"/> Yes <input type="checkbox"/> No			

Name & Signature of tester:

Name:

Signature:

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**The following conditions and precautions were observed:**

This permit is valid from \_\_\_\_\_ am/pm on to \_\_\_\_\_ am/pm on \_\_\_\_ / \_\_\_\_ / \_\_\_\_  
Please note permits are valid for single day only

Name of contractor performing the work:

Work Order No.:

Name and signature of fire-watch (where required):

**PERMIT APPROVALS**

The location where the work is required has been examined by me and necessary precautions have taken place.

\_\_\_\_\_  
(print name)  
Person in charge of location:

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(print name)  
Supervisor:

\_\_\_\_\_  
(signature)

\_\_\_\_\_  
(print name)  
Trade Person

\_\_\_\_\_  
(signature)

**Return Permit:**

This permit was returned/cancelled by:

\_\_\_\_\_  
(print name)

\_\_\_\_\_  
(signature)

To:

\_\_\_\_\_  
(print name)  
At am/pm \_\_\_\_ / \_\_\_\_ / \_\_\_\_

\_\_\_\_\_  
(signature)

The worksite has been inspected by me at the expiry/cancellation of this hot work permit and declared safe for normal operations to resume.

\_\_\_\_\_  
(print name)

\_\_\_\_\_  
(signature)

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*This hot-work permit should be prominently displayed on the worksite.*

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## G08-S09 – Lifting & Rigging

**CONTOURGLOBAL®**



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## 1. Purpose

This standard provides requirements and guidance for establishing, sustaining, and improving the procedures and practices used to prevent incidents and injuries from lifting and rigging operations. It covers safe rigging and lifting practices, working around high voltage electricity, inspections, lift plans, and worker requirements.

This standard applies wherever lifting operations are undertaken. It includes lifts involving ContourGlobal owned, hired or contracted cranes and lifting machines such as mobile, crawler, tower, derrick, portal and pedestal-type equipment (e.g. cherry pickers), vehicle loading cranes, electric overhead travelling cranes, hoisting blocks/tackle and monorail cranes. The standard also applies to lifting equipment including slings, chains, wire ropes, shackles, pad-eyes, containers, baskets, tuggers, winches, man-riding winches, jacks, work-belts, harnesses and transfer baskets for equipment and personnel.

In addition to the manufacturer's standard HSE features, local statutory requirements or, in the absence of these, ISO Standards, the minimum HSE features indicated in this standard shall be included.

Sites shall be aware that local regulations may impose requirements not reflected in this standard. ***The most stringent requirement shall apply.***

## 2. Management Responsibility

### Line Management

- Line management has the responsibility to implement this standard.
- Communicate the requirements of this standard to personnel involved with mobile crane equipment, and ensure and monitor their compliance with it.
- Ensure this standard is properly implemented and is compliant with all relevant requirements.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

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### 3. Guideline Contents

#### 3.1 Inspecting and Maintaining Lifting Equipment

- 3.1.1 Each ContourGlobal business and operation that makes use of lifting and rigging equipment shall implement a Lifting and Rigging Program that shall, at a minimum, incorporate the following technical guidelines:
- A Lifting and Rigging Designated responsible person shall be assigned for each site activity, and his/her responsibility shall be clearly defined.
  - All lifting and rigging machinery shall be operated by a competent, certified, or deemed proficient qualified person, specific to the device being operated (Designated Operator).
  - Copies of the employee license shall be held in the employee's file.
  - Contractor drivers shall have their license inspected before work commences on site.
- 3.1.2 All cranes and lifting equipment shall be inspected and tested to ensure all safety devices are working (including non-destructive testing as required by the relevant standard) prior to being operated or put into service. After any repair and/or modification, cranes and lifting equipment shall be inspected (and non-destructively tested as required by the relevant standard) prior to being returned to service.
- 3.1.3 At the beginning of each shift or prior to use if the equipment is not used daily, an equipment operator shall conduct a visual and functional inspection prior to using the equipment. These inspections should be documented and maintained onsite for one year.
- 3.1.4 The designated equipment operator shall also perform a detailed inspection at monthly intervals. These inspections shall be documented and maintained onsite for two years.
- 3.1.5 A system of periodic inspection shall be in place for all cranes and lifting equipment. Lifting equipment shall be inspected visually and confirmed fit for purpose prior to being put into service. Visual inspection of lifting equipment by an approved competent person shall be performed on a regular basis (e.g. six monthly) unless regulations in the local area require examination more frequently.
- 3.1.6 A register of all lifting equipment (including slings) should be maintained. This should include:
- equipment's unique identification number
  - documentary evidence of all inspections
  - certifications
  - maintenance
  - modifications and tests

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- 3.1.7 Ropes shall be inspected prior to and after each use. Ropes exhibiting any deterioration or excessive wear shall be immediately removed from service.
- 3.1.8 All ropes which have been idle for a period of a month or more due to shut down or storage of a Crane on which it is installed shall be given a thorough inspection before it is used. This inspection shall be for all types of deterioration and shall be performed by an appointed person whose approval shall be required for further use of the rope.
- 3.1.9 The person inspecting lifting and rigging equipment shall meet requirements and have proper Designated Competent Person paperwork filled out and placed in the individuals file.
- 3.1.10 All cranes, hoists, aerial platforms, scissor lifts and other lifting and rigging equipment shall have the appropriate testing certificates to ensure they are fit for the purpose of the job and shall only be used for the specific operations for which that piece of equipment was designed.
- 3.1.11 A certification record shall be available for inspection which includes the date of inspection, the signature of the person who performed the inspection and identification of the inspected rope.
- 3.1.12 All maintenance and repairs shall be performed in accordance with the manufacturer's recommendations. Modifications affecting capacity or safe operation shall have the manufacturer's written approval prior to the modifications being performed – MOC process to be followed in this situation. Records of maintenance, repairs, and modifications shall be maintained.
- 3.1.13 Any modification to cranes and lifting equipment shall be subjected to the original equipment manufacturer's approval and to a rigorous change management process.
- 3.1.14 Preventive Maintenance shall be conducted according to manufacturer recommendations to ensure that all cranes and lifting equipment are maintained and in a serviceable condition, with appropriate records being kept. Load tests shall be conducted on a periodicity no less than recommended by the manufacturer, and before any Critical Lift. Records shall be maintained for all load tests at least for one year.

## 3.2 Lifting and Rigging Operations

- 3.2.1 All operations shall be in accordance with crane manufacturer's operations manual. Modifications to lifting equipment shall not be made. If modifications are required, no operations shall be conducted with the modified equipment until appropriate

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- engineering certifications (by a qualified engineer or the equipment manufacturer) have been made on the equipment with respect to load capacity.
- 3.2.2 A recommended checklist to be performed prior to any lifting and rigging operation is showed at Appendix 1.
  - 3.2.3 Prior to making a lift, communications should be established to discuss the job with all parties involved.
  - 3.2.4 The parties involved in the lift shall walk down the area where the lift will be made to determine the best location for rig placement and the best path for the load to travel. Special consideration should be given to lifts made over process piping and equipment, instrumentation, utilities, roadways and areas where personnel travel
  - 3.2.5 Lifting and rigging devices shall not be loaded beyond its Rated Load except for load testing. The rated load shall be displayed on the equipment and clearly visible to the operator.
  - 3.2.6 Loads shall be well secured and properly balanced before it is lifted more than a few inches.
  - 3.2.7 Ropes shall not be knotted, kinked, or twisted around each other and only wire ropes shall be used.
  - 3.2.8 Prior to operating a mobile crane, the operator must make a complete walk around the equipment to ensure that people are clear of the equipment, all equipment is in a safe condition, and to identify any overhead electrical hazards.
  - 3.2.9 All controls must be tested by the operator prior to operating the equipment. Any malfunctions must be corrected or repaired before operating the crane.
  - 3.2.10 All loads must be rigged only by a Qualified Rigger.
  - 3.2.11 The operator shall respond to signals only from the appointed signal person. The signal person shall be trained. The operator shall obey an emergency stop signal when given at any time, regardless of who gives the signal.
  - 3.2.12 The operator is responsible to secure any unattended hoisting equipment. Suspended loads shall not be left unattended without proper safeguards.
  - 3.2.13 At no time shall persons work under a suspended load.
  - 3.2.14 A formal selection and acceptance process based on risk assessment shall be in place for all new (to site) and modified lifting equipment, taking into account the crane's various safety features and cabin ergonomics, prior to commencement of work.
  - 3.2.15 Manufacturer's crane and lifting equipment operating instructions and load charts shall be available to the crane and lifting equipment operator. These should be in the language of the country in which the lifting equipment is being used.
  - 3.2.16 Where crane and lifting equipment operators are not conversant with the language of the country, provisions shall be made to ensure that the operators can understand the operating manuals and load charts.
  - 3.2.17 A procedure shall be in place to address:
    - that the load and reach do not exceed the capacity of the lifting equipment;

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- lifting operations when the arcs of operation of two or more cranes can overlap\*;
- stationary multiple crane lifting operations\*;
- that “pickup and carry” operations using multiple mobile cranes is prevented;
- the danger to lifting operations when adverse weather conditions are present or imminent (e.g. electrical storm, high winds and sea state);
- the safety of personnel when cranes and lifting equipment are operating in the proximity of live electrical conductors\*;
- lifting operations when lifting near or over unprotected plant, equipment or services, including live process or hydrocarbon processes\*;
- the effective hand-over, from one operator to another, of cranes with complex boom, jib or tower configurations; and
- availability and use of check-lists for pre- and post-operational inspections.

\* Detailed lifting plans are required for these procedures and shall be approved by a competent supervisor. Coordination meetings shall be held prior to such lifts to ensure all personnel understand how they are to be executed.

- 3.2.18 Risks associated with all lifting, crane maintenance, assembly activities and environmental conditions shall be assessed as part of the planning process. Barricading, warning signs or other means of ensuring personnel protection shall be in place during lifting operations and for those cranes left unattended in wind vane mode.
- 3.2.19 Side loading of crane booms should be prevented according to the manufacturer’s specifications.
- 3.2.20 With the exception of pick and carry operations, no lifting shall be carried out without outriggers being deployed and locked.
- 3.2.21 Controls shall be in place to prevent the falling of objects from lifting equipment and suspended loads.
- 3.2.22 The lifting of personnel with cranes shall be carried out only with the use of approved workbaskets or cages. Cranes used for this purpose shall be approved as suitable for man-lifting operations. A recovery plan should be in place before personnel are lifted.
- 3.2.23 The elimination of the need to work under or in the drop zone of suspended loads shall be pursued. Where working under suspended loads is unavoidable, controls shall be in place to eliminate or minimize the risks to personnel.

### 3.3 Operator Qualifications

- 3.3.1 Mobile crane operators and other lifting equipment operators shall successfully complete training and testing programs that meet country and/or site requirements. The testing program should consist of both a written test and an operating test demonstrating proficiency in handling the specific type of crane. Normal and emergency operations, load chart use, and crane signals shall be covered by the testing.

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- 3.3.2 Lifting and rigging operators shall undergo an annual medical exam to ensure they are fit to perform their role.
- 3.3.3 When a rental crane and outside contract operator are used, upon arrival at the site, documentation must be provided supporting that the operator's competency meets local laws and regulations for the specific make and/or model of crane intended for use. The operator's competency must be confirmed in writing by either the crane owner or the contract operator's employer.

### 3.4 Critical Lifts

- 3.4.1 A critical lift is any lift with a mobile crane that meets the following criteria:
- Horizontal lifts weighing more than 50 tons and vertical lifts weighing more than 40 tons.
  - Erection of process columns, towers or vessels and turbine/generator systems.
  - Lifts or movements of unusual difficulty or geometry.
  - The lift is personnel hoisted in a personnel basket.
  - The lift exceeds 75% of the rated capacity of the equipment as determined by the load chart.
  - All multi-crane lifts
  - Lifts requiring modifications or special configurations of lifting equipment.
  - Wind speed limits
  - Any other lift deemed critical by any single or combination of factors and by the vendor of the equipment, whenever applicable
- 3.4.2 A pre-lift meeting shall be held for all critical lifts. At a minimum, meeting attendance shall include the supervisor, foreman, equipment operators, and all other employees directly associated with the lift.
- 3.4.3 A lift plan must be completed for ALL critical lifts and must be available for presentation to any requesting party. It shall include:
- Drawings to scale
  - Equipment list and certifications
  - Proof load tests
  - Lift weights
  - Hoisting capacities
  - Calculations of sling and wire rope safety factor determinations, blocks and rigging tackle analysis, ground loadings, load distribution variations, structural details, stability analysis (barge off-loadings, soil loadings, etc.), load weight determinations.
- 3.4.4 Once the lift plan has been developed, if any of the variables in the equipment, load, or lift change, then the plan must be updated or a new lift plan must be developed.

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- 3.4.5 For special applications, ContourGlobal or the contractor responsible for the activity shall obtain approval from manufacturers of tower cranes, mobile cranes, overhead cranes, derricks, gin poles, and others prior to the lifting operation happens.

### 3.5 Working Around High-Voltage Electricity

- 3.5.1 At no time shall any part of the load or the crane be closer than 3.0 meters (10 feet) for lines rated less than 50kV. For lines rated over 50kV, an additional 0.4 in. should be added for each 1kV.
- 3.5.2 During transits with no load and boom lowered, the equipment clearance shall be a minimum of 4 ft. for voltages less than 50kV, 10 ft. for voltages between 50kV and 345kV, and 16 ft. for voltages up to and including 750kV.
- 3.5.3 A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.
- 3.5.4 Required Clearances from Live Electrical Lines:

Minimum Nominal Voltage (kV)	Minimum Required Clearance (meters)
0 to 50	3.0
51 to 75	3.3
76 to 100	3.6
101 to 125	3.9
126 to 200	4.6
201 to 300	5.8
301 to 400	6.6
401 to 500	7.6
501 to 1000	9.8

### 3.6 Adverse Weather Conditions

- 3.6.1 Lifts made with wind speeds at 32 Km/h or greater shall be de-rated according to the crane operator's manual. It is recommended that an engineer is involved prior to making the lift.
- 3.6.2 Crane operation shall not be performed in sustained winds of 48 Km/h or greater. Crane's shall not be operated when the load cannot be controlled due to wind or weather.

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- 3.6.3 In high winds, consideration should be taken as to the area you are working in to warrant shutting the crane down.
- 3.6.4 Crane operation shall stop in lightning storms and boomed down and moved out of operating units if possible. If not possible, the crane shall have a ground cable attached to the nearest ground grid.

### 3.7 Crane-suspended Work Platforms

- 3.7.1 Lifting personnel with a crane basket or similar device shall only be done as a last resort or when this option presents the least risk to personnel involved with the task.
- 3.7.2 In this situation, the following actions must be performed:
  - A critical lift plan shall be completed and approved.
  - The crane shall be uniformly levelled and located on firm footing. Cranes equipped with outriggers shall have them all fully deployed following the manufacturer's specifications, insofar as applicable, when hoisting personnel.
  - Outrigger floats shall be placed on matting or oversized pads to further distribute the ground bearing pressure of the crane.

### 3.8 Plant and equipment requirements

- 3.8.1 All electrical cranes shall have power supply isolation points capable of being positively locked out and isolated.
- 3.8.2 Cranes shall have their operability assessed against site conditions and workforce (e.g. language for the controls) and have fall protection systems provided for people in charge of their operation, maintenance, and inspection.
- 3.8.3 Cranes shall not be used without a physical locking system that disables and isolates their free-fall capability.
- 3.8.4 Electric overhead traveling and portal cranes should have overload protection.
- 3.8.5 Crane cabins should be air-conditioned or heated in accordance with environmental conditions.
- 3.8.6 All crane cabins shall have signs to warn against interruption of the operator.
- 3.8.7 Vehicle loading cranes shall have sufficient engineering controls to prevent the operator from being crushed during lifting operations.

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- 3.8.8 All crane hooks shall be fitted with a positive locking safety catch.
- 3.8.9 The safe working load (SWL) shall be clearly identified and marked on all cranes and relevant lifting equipment and shall not be exceeded.
- 3.8.10 For cranes, the following should be made available:
  - load cells
  - load moment indicators
  - external rated capacity lighting
  - stability monitoring devices (to prevent overturning).
- 3.8.11 All cranes and lifting equipment shall comply with the requirements of the relevant approved design standard. The minimum acceptable design standard shall be the relevant ISO Standard. In countries where the requirements of the relevant national standard exceed the requirements of the ISO Standard, the national standard shall apply.
- 3.8.12 All cranes and lifting equipment shall be identifiable with a unique identity code, and its rated capacity should be visibly displayed.
- 3.8.13 A competent person shall determine the maximum environmental conditions under which cranes and lifting equipment can be used safely. Except in the event of an emergency, cranes and lifting equipment shall not be put into service if the maximum environmental conditions are exceeded. Risks shall be assessed in emergency situations.
- 3.8.14 Items of lifting equipment that are subject to wear and frequent replacement (e.g. slings, shackles, pad-eyes, shipping and handling baskets) or are used to transport equipment to and from sites, shall be color-coded to confirm compliance with inspection requirements.
- 3.8.15 Lifting by the use of a block and tackle, for example, shall only be done from designated lifting points or be authorized by a competent person.
- 3.8.16 All lifting equipment shall be maintained in good condition with inspection maintenance log books. Proof-loading shall be undertaken as appropriate.

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#### 4. References

- ContourGlobal Manual  
*MHSE-001* - Health, Safety & Environment Management System Manual
- OSHAS: 18001 standards and guidelines

#### 5. Appendices

- Appendix 1 - Checklist prior to any lifting and rigging operation

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## Appendix 1 - Checklist prior to any lifting and rigging operation

Prior to any lifting and rigging operation, these activities shall be performed:

- Inspect all equipment.
- Establish a safety area that prevents other people from being endangered by operations.
- Ensure that JSEA and Critical Lift Plans have been approved.
- Ensure rigging personnel have the necessary capabilities for the job, are available and wearing appropriate Personal Protective Equipment.
- The lift area shall be clear of all unnecessary personnel.
- Check material and all equipment controls to insure proper operation before use.
- Briefing with all associated people.
- Barricade accessible areas within the crane's swing radius.
- Inspect wire rope, chains, and hook for any damage.
- Check all rigging prior to use; do not wrap hoist ropes or chains around the load.
- Know the weight of the load that the crane is to lift.
- Ensure that the load does not exceed the equipment's rated capacity for the boom angle planned.
- Watch for overhead electrical lines and maintain a safe working clearance of at least 10 feet (3 meters) from energized electrical lines.
- Horn blast (warning) should be made to alert workers in the vicinity.
- Raise the load a few inches to verify balance and the effectiveness of the brake system.
- Fully extend outriggers. Ensure outriggers are supported on appropriate load spreading devices to preclude damage to underground utilities and/or ground failure during "loaded" operating condition.
- Do not move a load over workers.

### Safety Practices

- Crane operators shall not engage in any practice that will divert their attention while operating the equipment.
- Operators, riggers, and signal persons must wear personal protective equipment, including hard hats and safety shoes when conducting hoisting activities and working within the lifting radius.
- Confirm safe site conditions - checking for hazardous weather, excessive wind, and icing.
- Verify that ground conditions at work locations are firm, stable, drained, graded and provide adequate support. Ensure blocking is stable, adequately supported, and of sufficient strength.
- Barricades, warning signs or other methods must be used to prevent entry into a lift area or turn radius of the crane. Traffic patterns and pedestrian safety must be considered. Lone work not permitted.

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G08 – S08  
Machine Safety

**CONTOURGLOBAL®**



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## 1. Purpose

This standard provides requirements and guidance about the safety of the interface between industrial machinery and people. Its purpose is to promote injury prevention by helping to ensure that machinery is designed, procured, and constructed so that it can be used and maintained to achieve acceptable levels of risk throughout all phases of its life.

This standard does not address catastrophic failure of machinery. This standard does not cover Lifting and Rigging Equipment. They are described in standard procedure G08-S09 – Lifting and Rigging.

## 2. Management Responsibility

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.
- Communicate relevant information of this standard to people working on his/ her organization and other interested relevant parties.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

### Engineering Department

- Provide guidance for incorporating machine safety concepts in the specification, procurement, and installation of new or modified equipment.
- Participate in the preparation of the machine system design package, with primary emphasis on the machine safeguard design basis.
- Provide training and consultation on key Machine Safety Management technical areas (e.g., inherently safer technologies, machine interlock design, external standards, human factors, and quantitative risk analysis).

**Note:** for sites that do not have an Engineering Department, these responsibilities are transferred to the line management – they shall identify an external provider to do so.

## 3. Guideline Contents

### Premises

When the operation or inadvertent contact with a machine could cause injury to the operator or others in the immediate area, the hazards shall be eliminated or the risks controlled to an acceptable level. The primary machine hazard concerns are associated with those tasks and conditions that have the potential to result in entrapment, pinching, crushing, eye damage, and/or cut-related injuries.

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Unless the task activity is eliminated or automated, the risk control provisions often count on multiple controls from engineering and administrative control options - the combination of controls is usually the most effective way to achieve acceptable risk.

The most common hazards in machines are: to be struck by or caught between a moving and a stationary part during the back-and-forth or up-and-down motion, or to be struck or caught in a pinch or shear point by the moving material. Additionally, non-mechanical hazards (noise, electricity, harmful emissions, etc.) may be associated with machines and have a potential to cause serious injuries if not adequately controlled.

Although fixed machine guards are intended to protect affected persons, they may create other hazards if poorly designed or maintained (e.g., sharp, nip, or pinch point). Additionally, the guards, when removed for machine repair, create temporary pinch or crush hazards if not properly secured.

### 3.1 General Machine Requirements

- 3.1.1 All ContourGlobal employees and contractors shall wear proper apparel for the task, avoiding loose clothing, ties, or jewelry which can become caught in moving parts.
- 3.1.2 Safety signs should be used to communicate and alert to main hazards while using/working with each machine.
- 3.1.3 All used machines shall be:
  - properly installed and used;
  - maintained in good working condition;
  - used only as intended; and
  - served by appropriately trained workers.
- 3.1.4 Machines and used equipment shall be provided with instructions that contain information about: (i) conditions for use; (ii) foreseeable abnormal situations; (iii) safety requirements (conclusions drawn from experience in using the working equipment). These instructions shall be written in a language comprehensible by the personnel (preferably in the local language).
- 3.1.5 Responsible maintenance/operation managers shall provide maintenance records for equipment including:
  - accompanying documentation with all necessary details and requirements related to safe operation, maintenance and repair; and
  - all documents reflecting the periodical inspections and checks during operation, including maintenance and assessment of working environment, including monitoring results, when provided.
- 3.1.6 The operation and maintenance (regular and emergency) of the machines shall be carried out under the instructions of the manufacturer and in compliance with the local regulations.
- 3.1.7 The technical servicing and scheduled maintenance and repair of machines are made in such manner in order to be ensured its good working condition.

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- 3.1.8 The forms of process implementations are:
- daily maintenance,
  - scheduled maintenance,
  - ongoing repair works,
  - overhaul, and
  - emergency repairs.
- 3.1.9 The activities are carried out according to the methods and procedures described in the accompanying instructions, passports and records of the equipment.
- 3.1.10 The direct manager shall be informed when a daily or a periodic check of the machines registers deviations from normal operation, then undertakes necessary actions for putting machines out of operation and repairs.

## 3.2 Machine Hazards

- 3.2.1 Line management shall help ensure that all affected persons are trained to recognize machine motions and actions and conditional hazards. This requirement shall apply for each employee and contractor in order to effectively evaluate and manage tasks to acceptable levels of risk.
- 3.2.2 Each ContourGlobal business and operation shall conduct an inventory of installed equipment, evaluating potential risks to ContourGlobal people and contractors associated with equipment operation, maintenance, and repair.
- 3.2.3 Each ContourGlobal business and operation shall have an inventory list of human-machine interactive tasks. The inventory list should include all routine, normal operation, maintenance tasks, non-routine, and abnormal human-machine interactive tasks where people are exposed to hazards from machinery that is energized or stopped and not locked out.
- 3.2.4 The inventory of equipment and inventory of human-machine tasks are the foundation to define an annual improvement plan. Appendix 1 shows an example of an annual plan.
- 3.2.5 Risks associated with interactions between people and machinery can be increased significantly at times of equipment malfunctions or troubleshooting where no standard procedure applies. All sites must establish a Work Permit process to control the risk levels in these circumstances.

## 3.3 Machine Guarding

- 3.3.1 Line management shall ensure that systems are in place to identify and safeguard the machine hazards created by new, existing, or modified equipment. Further, they must ensure that design safeguards are installed, used, and maintained as specified, and that provisions are in place to help ensure that the guard itself does not create a hazard when in operation or when removed for troubleshooting or repair. Examples of

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guarding methods to be considered in this evaluation are barrier guards, electronic safety devices, etc.

3.3.2 Machine safeguards shall:

- Be attached to the machine where possible and secured elsewhere, if for any reason attachment to the machine is not possible.
- Protect the point of operation (the point where work is performed on the material, such as cutting, shaping, boring, or forming of stock) where a ContourGlobal employee or contractor may be exposed to injury.
- Be in compliance with local legislations. In the absence of applicable specific standards, safeguards shall be so designed and constructed as to prevent the operator from having any part of his or her body in the danger zone during the operating cycle.
- Where necessary, guards with interlocking devices shall be installed to prevent a bypass of the guards.

3.3.3 If safeguards shall be removed, safe procedures will be developed to insure that the machine has been shut down (i.e. lock out and tag out). Performing a JSEA is highly recommended for this type of activity.

3.3.4 While these aids do not give complete protection from machine hazards, they may provide the operator with an extra margin of safety. Sound judgment is needed in their application and usage. Examples of other design safeguards include: awareness barriers and signs, miscellaneous protective shields, hand-feeding tools and holding fixtures.

### 3.4 Electrical and Instrumented Design Controls

3.4.1 Electrical and instrumented control safety devices may be used whenever possible.

- Use of presence sensing to stop the machine if a hand or any part of the body is inadvertently placed in the danger area.
- Use of two-hand control to call for the operator to use both hands on machine controls.
- Use of interlocked guards to provide a barrier that is synchronized with the operating cycle of the machine in order to prevent entry to the danger area during the hazardous part of the cycle.
- Emergency buttons to provide a means to stop the machine in the event of an emergency.
- Mechanical or electrical power control to make it possible for the operator to turn the machine down without leaving his/her position at the point of operation.

### 3.5 Use of Portable Power Tools

3.5.1 A power tool is a tool that is actuated by an additional power source and mechanism. The most common types of power tools use electric motors, internal combustion

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engines, and compressed air. Each ContourGlobal business and operation shall develop, implement, and maintain a Portable Power Tools Safety Program for workers that use Portable Power Tools, including proper handling, PPE usage and other means to mitigate risks.

- 3.5.2 Each site shall conduct an inventory of all portable power tools used by ContourGlobal employees and contractors.
- 3.5.3 The class of portable power tools and their voltage shall conform to the environment where they are operated. It is not permitted to work with portable power tools that are not suitable for the workplace environment if the environment poses a high risk for damage by electric shock, fire, and explosion hazards.
- 3.5.4 It is forbidden to work with non-standard or faulty portable power tools and such equipment that has not passed a regular inspection;
- 3.5.5 It is forbidden to use faulty or non-standard plug connections or extension cords.
- 3.5.6 The manufacturer's instructions with respect to care and maintenance shall be followed, and any tool developing a defect shall be removed from service immediately until it is properly serviced and repaired.
- 3.5.7 All manufacturers' guarding devices and safety switches shall be operated in accordance with the manufacturer's design, with no tampering or alterations to facilitate or speed use.
- 3.5.8 Before using a tool, the operator shall inspect it to determine that it is clean, that all moving parts operate freely, that the tool is in good condition, power cords (if applicable) are not frayed or hazardous, and that all working areas are free from obstruction.
- 3.5.9 Records of periodical inspections of the portable tools according to the local legislation must be maintained.
- 3.5.10 No tools shall be left unattended in a place where they could be available to unauthorized users.
- 3.5.11 All portable power tools designed for cutting, grinding, or tearing shall have a constant pressure switch or a comparable handle safety device that requires a positive act of the user to energize the equipment.
- 3.5.12 People that use Portable Power Tools shall be trained on proper use, maintenance, and storage of those tools in the conduct of their work.
- 3.5.13 Workers who use Electric Powered Tools shall be protected by ground-fault circuit interrupters or an assured equipment-grounding conductor program and be aware of the electrocution hazard as well as additional dangers, like electrical burns and shocks
- 3.5.14 Pneumatic Powered Tools shall be checked to see the tools are fastened securely to the air hose to prevent them from becoming disconnected and comply with manufacturers recommendations.
- 3.5.15 Fuel-powered Tools are usually operated with gasoline which can bring serious hazards associated with fuel vapors that can burn or explode and also give off dangerous exhaust fumes.

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### 3.6 Do Not Touch Program

- 3.6.1 All ContourGlobal businesses and operations shall apply the “Do Not Touch” approach where possible to avoid touching moving equipment or materials. Touching of moving equipment or materials shall be prohibited unless it is necessary and authorized.
- 3.6.2 Entrapment, pinch, and cut hazards associated with touching must be identified, risks assessed, and precautions taken to reduce risks to acceptable levels. These hazards and precautions shall be included in the “Do Not Touch” program.
- 3.6.3 All affected personnel performing an authorized task shall be trained and qualified, and they must consistently operate in complete compliance with the “Do Not Touch” program.
- 3.6.4 Predictable circumstances where touching may be required must be identified in advance. These circumstances should include situations where an abnormal running condition might likely lead to touching (e.g., clearing a jam, adjusting, or aligning). Any steps in a task that require touching must be identified with a clearly defined safe method in a standard procedure or “Do Not Touch Exception.”
- 3.6.5 If touching is necessary:
  - Define “Do Not Touch Exceptions” where touching is allowed and include specific safety measures to comply with.
  - A Work Permit is approved with actions to mitigate the risk levels in these circumstances.
  - Assess residual risks after applying precautions in order of physical barrier, interlocks, use of tools, and training/experience.
  - Run equipment at low or jog speeds when touching is required.

## 4. References

- ContourGlobal Manual - *MHSE-001* - Health, Safety & Environment Management System Manual
- American National Standards Institute (ANSI) B11.19, Performance Criteria for Safeguarding
- British Standards/European Norm (BS EN) 60204-1, Safety of Electrical Equipment of Machinery
- International Organization for Standardization (ISO) 9000 standards and guidelines. ISO 14121:2007, Safety of machinery—Principles of risk assessment
- ISO 14121:1999 Safety of machinery—Principles of Risk Assessment

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## 5. Appendices

- Appendix 1 – Example of Annual Improvement Plan for Machine Safety

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## Appendix 1 – Example of Annual Improvement Plan for Machine Safety

Item	Activity	Resp	Start Date	End Date
<b>Plan</b>				
1	Identify/confirm Machine Safety (MS) Champion.			
2	Establish or confirm access to subject matter experts for task assessment.			
3	Evaluate MS event related (ER) injuries for last 1 to 5 years.			
4	Conduct a MS Program Self-Assessment.			
5	Review and update MS task assessments Inventory List and establish Metrics for the year.			
6	Based on items 1 to 6, establish or update annual improvement plan.			
<b>Implement (Do)</b>				
7	Communicate plan and objectives.			
8	Conduct targeted task-based risk assessments.			
9	Conduct MS training with focus on the interrelatedness of safeguards (e.g., lock out, Do Not Touch (DNT), Instrumented Controls, troubleshooting).			
10	Conduct first-party MS audit with focus on administrative controls (see audit checklist).			
11	Inspect and verify MS design safeguards.			
12	Progress and complete tool, design and administrative control upgrades.			
<b>Track Progress (Check and Correct)</b>				
13	Track progress and corrective action on items 7 to 12.			
14	Review and identify all MS ER's Year to Date (YTD).			
15	Solicit new tasks needing review.			
16	Report progress to Site Management team			
<b>Adjust plans if needed and Recognize Success (Act)</b>				
17	Review and adjust plans.			
18	Communicate progress, and next steps include feedback on new issues identified.			
19	Establish draft Critical Operating Tasks (COTs) for next year			

G08 – S07  
Personal Protective Equipment  
Management

**CONTOURGLOBAL®**



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## 1. Purpose

This standard covers ContourGlobal requirements and guidance associated with the selection, introduction, maintenance, training, and use of Personal Protective Equipment (PPE). It covers: eyes and face, head, hands, foot and leg, respiratory, hearing and body protection.

Fall protection systems – the requirements for fall protection system are listed in the standard CG-G08-S04 - “Fall Protection”.

Sites should be aware that national and local regulations might impose requirements not reflected in this standard. ***The most stringent requirement shall apply.***

## 2. Management Responsibility

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.
- Communicate relevant information of this standard to people working on his/ her organization and other interested relevant parties.

### HSE Organization

- Support line management to conduct workplace hazard assessments to determine needs for using PPE.
- Select the most appropriate PPE.
- Monitor the shelf life of specific PPE.
- Provide training, guidance, and assistance to supervisors and employees on the proper use, care, and cleaning of approved PPE.

### Employees

- Properly wear PPE as required.
- Ensure that PPE is used for the purpose intended.
- Participate in the PPE training sessions and demonstrate an understanding of PPE capabilities and limitations.
- Clean, maintain, and inspect PPE as required.
- Report immediately to his/her supervisor of worn or damaged PPE that's required to be replaced.

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### 3. Guideline Contents

#### 3.1 Minimum PPE Requirements for Operational and Constructions Areas

- 3.1.1 Each ContourGlobal business and operation shall assess the workplace to determine which hazards are present, or are likely to be present and, which necessitate the use of personal protective equipment (PPE).
- 3.1.2 Each business and operation shall select and have each affected employee use the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment. The PPE selection decisions shall be communicated to each affected employee.
- 3.1.3 All personnel working or moving about ContourGlobal locations, construction projects, and operational sites shall wear the following PPE as a minimum requirement and observe all safety and environmental rules:
  - Safety shoes with reinforced toe-caps and steel mid-sole
  - Safety glasses (eye protection)
  - Safety helmet
  - Suitable overalls or long trousers and long sleeved shirts, unless a site-specific risk assessment has been carried out with an outcome that allows otherwise.
- 3.1.4 Other personal protection items may be required such as: hearing protection, hand protection, respiratory protection, high-visibility garments, etc. These requirements may be specified by: client standards; site operating procedures; product manufacturers or suppliers; MSDS (Materials Safety Data Sheet) information; legislation or statutory bodies; or may be identified in JSEA's/work permits depending on the risks associated with the work that is underway.
- 3.1.5 High-visibility garments are to be worn by ContourGlobal personnel where they may be exposed to a hazard from directing traffic or from moving vegetation or equipment.
- 3.1.6 Visitors, contractors, and labor hire personnel shall comply with the same Personal Protective Equipment requirements as are applied to ContourGlobal personnel.
- 3.1.7 Each area where it is mandatory to use PPE should have visual safety signs posted identifying what PPE is required.

#### 3.2 Levels of Control

- 3.2.1 Risks should be reduced to the lowest reasonably practicable level by taking preventative measures, in order of priority.
- 3.2.2 Each CountourGlobal business shall consider Personal Protective Equipment as the 'last resort' within the hierarchy of risk control. PPE shall only be used if the hazards cannot be eliminated or reduced to an acceptable level, or if personnel cannot be kept

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away from the source of the hazard. It is recognized, however, that there are many tasks where some basic PPE is always required.

- 3.2.3 The following control measures shall guide all ContourGlobal personnel when planning to reduce risk from construction and operations activities. All employees shall consider the headings in the order shown below and not to simply jump to the easiest control measure to implement:
- 1) *Elimination*: redesign the job or substitute a substance so that the hazard is removed or eliminated.
  - 2) *Substitution*: replace the material or process with a less hazardous one.
  - 3) *Engineering controls*: physical modification to a process, or process equipment, or the installation of further equipment.
  - 4) *Administrative controls*: identifying and implementing the critical operational procedures.
  - 5) *PPE*: if all the previous measures are not enough to control risks to a reasonably practicable level, PPE shall be used.

### 3.3 Selection of PPE

- 3.3.1 The selection of PPE must take into account the identified hazards in the workplace. Hazards may be identified using process hazard analysis, risk assessment, preliminary risk analysis or job safety and environmental analysis.
- 3.3.2 Where non-routine tasks are undertaken, special PPE requirements shall be defined in the JSEA/work method statement or work permit.
- 3.3.3 All PPE clothing and equipment shall be of safe design and production, and should be maintained in a clean and reliable fashion.
- 3.3.4 All PPE shall conform to local legislative requirements, although EU or US standards are the norm for ContourGlobal businesses and operations. *The most stringent requirement shall apply.*
- 3.3.5 All ContourGlobal businesses and operations shall take the fit and comfort of PPE into consideration when selecting appropriate items for their workplace. If several different types of PPE are worn together, make sure they are compatible.
- 3.3.6 Any changes or modifications to process, exposure limits, working conditions, materials used, or available technology shall be risk assessed and if necessary, corresponding changes shall be made to PPE used by personnel who may be affected.

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### 3.4 Training & Use of PPE

- 3.4.1 Employees must be trained before their initial use of any PPE. They must receive training annually thereafter, or when PPE is changed by a different type, or once a gap regarding to understanding and use is identified. This training should include information about:
- The responsibilities, rights, and duties of each employee regarding the use of PPE.
  - Why PPE is used, the capabilities, and limitations.
  - How to inspect, put on, remove, and use PPE.
  - How to make simple adjustments to PPE or replace user-replaceable components.
  - How to clean, sanitize, maintain, and store PPE.
  - How improper fit, use, or maintenance can compromise PPE's protective effect.
  - How to use PPE effectively in emergency situations, including situations in which PPE malfunctions.
- 3.4.2 All ContourGlobal employees shall demonstrate an understanding of the training specified – this may be done through both a written and practice test.
- 3.4.3 If the line manager believes that a previously trained employee is not demonstrating the proper understanding and skill level in the use of PPE, that employee should receive retraining and tested again.
- 3.4.4 Circumstances where retraining is required include, but are not limited to, situations where:
- changes in the workplace render previous training obsolete; or
  - changes in the types of PPE to be used render previous training obsolete; or
  - inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.
- 3.4.5 All ContourGlobal businesses and operations shall document the training of each employee required to wear or use PPE. This may be done, for instance, by preparing a certification containing the name of each employee trained, the date of training, and a clear identification of the subject of the certification.

### 3.5 Supply of PPE

- 3.5.1 All ContourGlobal businesses and operations shall provide appropriate PPE and training in its usage to their employees wherever there is a risk to health and safety that cannot be adequately controlled by other means.
- 3.5.2 All ContourGlobal employees shall have PPE readily available, or at the very least have clear instructions on where they can obtain it. Spare equipment is to be available for visitors.
- 3.5.3 Worn or damaged equipment shall be replaced once it no longer provides the intended protection.

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### 3.6 Inspecting and Testing PPE

- 3.6.1 PPE shall be regularly inspected and tested, and if required, repaired or replaced. Records of all inspections and maintenance shall be and readily available for consultation.

### 3.7 Types of Protection

#### Eye and Face Protection:

- 3.7.1 All ContourGlobal businesses and operations shall ensure that all employees have appropriate eye or face protection if they are exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, potentially infected material or potentially harmful light radiation.
- 3.7.2 Employees with corrective lenses shall either wear eye protection that incorporates the prescription into the design or wear additional eye protection over their prescription lenses. The employee needs to report immediately to his/her supervisor if it was reported any change on his/her eye visibility during eye clinical analysis.
- 3.7.3 Employees performing tasks such as: welding, grinding, cutting, chemical handling, etc., shall be required to wear additional eye protection (i.e., goggles, face shields) over their safety glasses. These requirements shall be validated through a JSEA.
- 3.7.4 The most common types of eye and face protection at ContourGlobal sites include: safety glasses, goggles, welding shields and face shields.

#### Head Protection

- 3.7.5 All ContourGlobal businesses and operations shall ensure that employees wear head protection if any of the following apply:
- Objects might fall from above and strike them on the head;
  - They might bump their heads against fixed objects; or
  - There is a possibility of accidental head contact with electrical hazards.
- 3.7.6 Wearing a safety helmet is the easiest way to have head protection. Safety helmets are not to be worn in the reverse position (i.e. the peak facing backwards). Where visibility may be impaired, an alternative helmet shall be provided that has no peak. In order to prevent its falling off, a safety helmet should be furnished with a chin strap.
- 3.7.7 In case of religious requirements for head apparel (e.g. Sikhs wearing turbans), such individuals shall work where the risk of injury is removed or reduced, to the extent that they can continue to wear religious head apparel in a safe way.
- 3.7.8 A safety helmet shall not be altered by drilling holes in it or bending it. Any defective or cracked helmets shall be immediately discarded. Each safety helmet has a life span and must be replaced as recommended by the manufacturer (usually every three years) or if it receives a severe strike.

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### Respiratory Protection

- 3.7.9 All ContourGlobal businesses and operations shall protect workers and the public from exposures to dust, fumes, vapors, mists or gases in excess of Permissible Exposure Limits (PEL) or Short Term Exposure Limits (STEL), as referenced by the Occupational Safety and Health Administration (OSHA), American Conference of Governmental and Industrial Hygienist (ACGIH) or other local regulation applicable.
- 3.7.10 All ContourGlobal businesses and operations shall ensure that all employees shall have respiratory protection in environments with insufficient oxygen or where harmful dusts, fogs, smokes, mists, fumes, gases, vapors, or sprays are present.
- 3.7.11 Each ContourGlobal business and construction project shall implement a Respiratory Protection Program, which includes proper maintenance and care of the respirators and any related equipment.
- 3.7.12 Selection of the protection shall be determined using a JSEA and taking into consideration the contaminants in the area and the work to be performed.
- 3.7.13 When selecting respirators, it must consider the chemical and physical properties of the contaminant, as well as the toxicity and concentration of the hazardous material and the amount of oxygen present. Other selection factors are: nature and extent of the hazard, work rate, area to be covered, mobility, work requirements and conditions, as well as the limitations and characteristics of the available respirators.
- 3.7.14 Respirators must not impair the worker's ability to see, hear, communicate, and move as necessary to perform the job safely.
- 3.7.15 All employees required to use respiratory protective equipment must receive instruction in the proper use of the equipment and its limitations. The training programs shall be based on the employee's education level and language background.
- 3.7.16 Respirators shall not be used where gases or vapors may be present in high concentrations or in confined spaces where an oxygen deficiency may occur.
- 3.7.17 Breathing Apparatus: shall be used when the above equipment cannot offer any respiratory protection such as from an oxygen deficiency, high concentration of toxic gases or vapor, etc.

### Hearing Protection

- 3.7.18 All personnel shall wear approved hearing protection when (i) working in designated noise areas where the noise level is above 85 dB(A), or (ii) performing tasks generating high noise levels, above 85 dB(A).
- 3.7.19 Where noise levels exceed 90 dB(A), then a complete frequency analysis shall be carried out and the appropriate protection shall be provided.
- 3.7.20 Visitors entering designated noise areas shall be required to wear approved hearing protection regardless of the time spent in the area.
- 3.7.21 The most common types of hearing protection at ContourGlobal sites include: single-use earplugs, molded earplugs, and earmuffs.

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#### Foot and Leg Protection

- 3.7.22 Employees who may have foot or leg injuries from falling/rolling objects or from crushing/penetrating materials should wear protective footwear. Safety shoes with reinforced toecaps and steel mid-sole are mandatory at all ContourGlobal operational and construction sites.
- 3.7.23 Also, employees whose work involves exposure to hot substances, corrosive or poisonous materials, and/or exposure to venomous animals' presence must have protective gear to cover exposed body parts, including legs and feet. Rubber boots with safety toe-caps shall be used to protect against chemical splashes and in areas where there is water, deep mud, or bottom sediment.
- 3.7.24 Where there is a risk of slag or spatter penetrating boots from welding or cutting, then spats or similar protection shall be worn.
- 3.7.25 If an employee's feet may be exposed to electrical hazards, non-conductive footwear should be worn. Insulated rubber boots shall be used for electrical work when an electrical shock is anticipated.
- 3.7.26 For workplaces where there is static electricity, there is a need to use conductive footwear.

#### Hand and Arm Protection

- 3.7.27 All ContourGlobal businesses and operations shall ensure that employees wear appropriate protection for hands and arms. Potential hazards include skin absorption of harmful substances, chemical or thermal burns, electrical dangers, bruises, abrasions, cuts, punctures, fractures, and amputations.
- 3.7.28 Protective equipment includes gloves, finger guards, and arm coverings or elbow-length gloves. Barrier creams shall not be considered a substitute for gloves.
- 3.7.29 All ContourGlobal employees who use box cutters, Stanley knives, or similar devices are required to wear an appropriate cut resistant (Kevlar) glove on the non-cutting holding hand.
- 3.7.30 Cotton or leather gloves are to be worn for work involving the handling of rough or sharp materials, which can result in minor cuts, scratches, or abrasions.
- 3.7.31 For heat protection, heat resistant gloves shall be worn when handling hot materials or when exposed to excessive heat. Use of asbestos gloves is not allowed because of the health hazards.
- 3.7.32 For protection against harmful chemicals, solvents, etc. gloves made of special materials such as Neoprene, PVC and rubber shall be worn.
- 3.7.33 Insulated gloves and sleeves shall be used when exposed to electrical hazards and approved rubber gloves shall be used for electrical work. Heavy-duty rubber gloves shall be used for concrete work.

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### Body Protection

- 3.7.34 Employees who face possible bodily injury of any kind that cannot be eliminated through engineering, work practice, or administrative controls, must wear appropriate body protection while performing their jobs.
- 3.7.35 Contact with extreme temperatures, cuts, radiation, hot splashes from molten metals and other hot liquids, hazardous chemicals, impacts from tools, machinery and materials are the most common factors, causing body injuries.
- 3.7.36 All ContourGlobal businesses and operations shall ensure that employees wear protective clothing for the parts of the body exposed to possible injury. Examples of body protection include: coveralls, vests, jackets, full body suits, etc.

## 4. References

- MHSE-001 - Health, Safety & Environment Management System Manual
- ISO – (International Organization for Standardization) 9000 standards and guidelines
- OSHA, 29 CFR 1910.132, Personal Protective Equipment, General Requirements
- Health and Safety Executive, United Kingdom - Personal Protective Equipment Regulations 2002 / Personal Protective Equipment at Work Regulations 1992

## 5. Appendices

- Appendix 1 - Hazard and Risk Categories

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## Appendix 1 – Hazard and Risk Categories

Gravity Hazards		
Area of Exposure	Risks	Protection
Head	Falling objects	Safety helmets
Eyes	Falling fragments	Safety goggles Face shields
Hands	Falling objects	Safety gloves
Feet	Heavy falling & rolling objects	Safety footwear
Whole body	Falls from elevated surface	Safety harness Safety lines

Kinetic Energy Hazards		
Area of Exposure	Risks	Protection
Head	Cutting, flying, protruding, sharp objects	Safety helmets
Eyes	Protruding, flying objects	Eye protectors, face shields
Hands	Cutting, flying, protruding objects, sharp objects	Safety gloves
Feet	Cutting, flying, protruding objects, sharp objects	Safety shoes
Whole body	Cutting, flying, protruding objects, sharp objects	Protective clothing

Mechanical Energy Hazards		
Area of Exposure	Risks	Protection
Head	Moving, swinging parts of machinery	Safety Helmets
Eyes	Projected debris, off-cuts	Eye protectors, face shields, goggles
Hands	Crushing	Machine guards
Feet	Moving, swinging parts of machinery, crushing	Safety shoes
Whole body	Collisions	Seat belts, ROPS Reflective outerwear

Hazardous Substances		
Area of Exposure	Risks	Protection
Head	Splashes, burns to the face	Face shields
Eyes	Burns, splashes, irritation	Face shields, goggles
Hands	Burns Dermatitis	
Feet	Burns	Safety footwear
Whole body	Respiratory vapors, inhalation, ingestion	Respirators, breathing apparatus
	Burns	Hazardous chemical suit

Thermal Energy Hazards		
Area of Exposure	Risks	Protection
Head	Burns, scalding, splashes, contact with heat	Face mask Fire protective clothing Protective headwear
Eyes	Splashes, sparks	Eye protectors Protective eyewear
Hands	Burns, scalding, splashes, contact with heat, spills	Protective gloves
Feet	Burns, scalding, splashes, contact with heat, spills	Protective footwear
Whole body	Burns, scalding, splashes, contact with heat, spills	Respiratory equipment as appropriate to the exposure Fire protective clothing



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Extreme Temperature Hazards		
Area of Exposure	Risks	Protection
Whole body	Heat exhaustion, heat stress, burns, scalding, contact with hot surfaces	Respiratory equipment Fire protective clothing
	Contact with cold surfaces, frostbite, hypothermia	Thermal clothing, footwear and headwear

Non-Ionizing Radiation Hazards		
Area of Exposure	Risks	Protection
Head	Cancer, skin burns	Face shields Protective headwear
Eyes	Optical radiation, glare, corneal damage, cataracts	Eye filters Protective eyewear
Hands	Cancer, skin burns	Protective gloves
Feet	Cancer, skin burns	Protective footwear
Whole body	Cancer, skin burns, reproductive toxicity, damage to nervous or cardiovascular system	Shields, aprons, protective clothing

Sound Hazards		
Area of Exposure	Risks	Protection
Ears	Overexposure to noise (hearing damage, loss)	Hearing protection  Noise control

Biological Hazards		
Area of Exposure	Risks	Protection
Head	Inhalation, ingestion, irritation, needlestick, absorption through cuts, open sores, skin pores	Masks, shields, protective head covering
Eyes	Splashes, squirts, irritation	Protective eyewear
Hands	Inhalation, ingestion, irritation, needlestick, absorption through cuts, open sores, skin pores	Protective gloves
Feet	Irritation, needlestick, absorption through cuts, open sores, skin pores	Protective footwear
Whole body	Inhalation, ingestion, irritation, needlestick, absorption through cuts, open sores, skin pores	Protective clothing  Aprons

Electrical Hazards		
Area of Exposure	Risks	Protection
Head	Burns, electric shock	Protective headwear
Eyes	Sparks, glare	Eye protectors
Hands	Burns, electric shock	Safety gloves
Feet	Burns, electric shock	Protective footwear
Whole body	Burns, electric shock	Protective clothing

Vibration Hazards		
Area of Exposure	Risks	Protection
Hands	Reynaud's Syndrome	Protective gloves
Whole body	Spine disorders Gastro intestinal disturbance Circulation, muscle and joint disorders	Redesign of work process, equipment, work practices

# G08-S06 – Hazardous Material Management

**CONTOURGLOBAL®**



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## 1. Purpose

This standard provides requirements and guidance to ensure that the hazards of all chemicals handled, used, or stored in the workplace are evaluated and that this hazard information is transmitted to all affected employees and contractors.

Sites shall be aware that local regulations may impose requirements not reflected in this standard. ***The most stringent requirement shall apply.***

## 2. Management Responsibility

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.
- Communicate relevant information of this standard to people working on his/ her organization and other interested relevant parties.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

## 3. Guideline Contents

Chemical substances are handled, used, or stored in ContourGlobal operations with several purposes. Some examples are:

- Acetylene, CO<sub>2</sub>, O<sub>2</sub> for cutting and welding;
- MEA (Mono Ethylene Amine);
- Lubricants (oil & greases) for engines;
- Water treatment agents (e.g. hydrochloric acid);
- Fuels: diesel, gasoline;
- Cleaning agents;

### 3.1 General Requirements

- 3.1.1 In order to ensure chemical safety in the workplace, information about the identities and hazards of the chemicals must be available and understandable to workers.
- 3.1.2 A chemical product may be used after the MSDS (Material Safety Data Sheet) supplied by the vendor is documented, reviewed, and all relevant information is communicated to all

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employees and contractors who may have contact with the chemical product. A copy of the MSDS and all hazard data shall be available in the site.

- 3.1.3 The MSDS must be always in the local language, where the hazardous chemical product is commercialized/used and also, if possible, in English.
- 3.1.4 The site manager shall communicate to the vendor that it must mandatorily communicate and share updated versions of any MSDS regarding chemical products distributed/commercialized to CG. This should happen yearly or if that periodicity does not apply, every time the MSDS requires an update.
- 3.1.5 The site has to have a written SOP (Standard Operation Procedure) to approve chemicals (including those requested through New Material Introduction/New Process Introduction) for manufacturing, import, receipt, storage and use at the operation. The SOP shall establish minimum pre-approval requirements (e.g.: need for MSDS, estimated quantities required, planned use descriptions, location of importation, etc.).
- 3.1.6 A regular and documented communication with emergency services shall be in place. Emergency services shall be invited to participate in periodic orientation tours to ensure they are familiar with the site layout and potential hazards that may be present.

## 3.2 Hazardous Materials Inventory

- 3.2.1 Each ContourGlobal business and operation shall identify the hazardous chemical substances, which occur or can be expected to occur in its activities.
- 3.2.2 An inventory (record) of all chemicals and substances used on site shall be in place, containing the substance names and CAS numbers.
- 3.2.3 General information on all hazardous materials shall be identified, which have to include the chemical abstract service (CAS) number, chemical name, formula, functional group classification, and synonyms (e.g., code or trade names).
- 3.2.4 Sites may include electronic links to MSDS's available. Sites should also recognize that vendor MSDS's may have incomplete or inaccurate data and may not provide all pertinent physical and hazard data. In that case, the MSDS should be used as only one source of information that should be verified and the HSE organization shall support to get all the pertinent hazard data.
- 3.2.5 Highly Toxic Materials accidental release or exposure to a HM can cause serious injury or death. If the site cannot avoid using highly toxic materials, then proper personal protective equipment (gloves, safety goggles, respirators etc.) and engineering controls such as fume hoods are an absolute necessity.

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- 3.2.6 It is critical that the site develop and enforce a written standard operating procedure (SOP) for working with each highly-toxic material. HTMs are listed in Appendix A.
- 3.2.7 The inventory shall be kept readily available to employees working with or otherwise liable to come into contact with any of the chemical products. The list shall be kept up-to-date and reviewed every year.
- 3.2.8 Chemicals that are listed in the inventory and no longer used shall be periodically purged from the site to minimize risks associated with such storage and in-plant inventory management.

### 3.3 Hazardous Materials Assessment

- 3.3.1 The corresponding HSE risks and impacts shall be assessed for all hazardous materials. The risk assessment shall take into account:
  - The hazardous properties of the chemical substances identified, both separately and taken together.
  - The information on hazardous properties and necessary measures for the protection of HSE that shall be provided by the supplier.
  - The mode of handling, work equipment, quantity, pressure and temperature, the preventive measures taken in connection with handling and other preconditions in the activity where the hazardous chemical substances occur.
  - Level of exposure to the hazardous chemical substances; its nature, level and duration.
  - Reports from the activity concerning discomfort, ill-health, or accident thought to be connected with chemical substances occurring.
  - Conclusions, which can be drawn from any health surveillance already undertaken.
- 3.3.2 The risk assessment shall be updated every year or when there is a relevant change in the site operations, which happens first.

### 3.4 Storage of Hazardous Materials

- 3.4.1 All chemical substances shall be stored in well ventilated areas with appropriate temperature and humidity. Bulk quantities of chemicals shall be stored in separate areas from the work area.
- 3.4.2 Chemicals shall never be stored with, or adjacent to, food-stuffs, including in or near refrigerators used for food-stuffs.
- 3.4.3 Materials should always be segregated and stored according to their chemical family or hazard classification. Each ContourGlobal site shall evaluate where chemical products are going to be stored so that materials are only stored with compatible materials.

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- Corrosive, oxidizing and reactive chemicals shall be segregated from flammable materials and from other chemicals of incompatible classes. (e.g., acids versus bases, oxidizers versus reducers, water sensitive versus water based, etc.).
- Water reactive products shall be isolated to lessen the probability of their involvement in a fire situation where water is used as a fire suppressant/system.
- Highly toxic and regulated materials (carcinogens) shall be segregated to provide some degree of control over their distribution and to lessen the possibility of accidental spills.
- Corrosive, oxidizing and reactive chemicals shall be stored with appropriate secondary containment to minimize intermixing during spills.

3.4.4 All storage areas shall be inspected at least annually. The inspection shall cover: spills, bulging drums, labeling deficiencies, incompatible material storage, container deterioration, strong odors, etc.

3.4.5 All hazardous chemical product storage areas must be located away from ignition sources and separated physically from combustible materials, in order to prevent, in case of fire, the fire scenario from spreading easily.

3.4.6 The chemical storage areas shall be confined so that leaks or spills are controlled. When confinement is not possible, the site shall develop a contingency plan in case there is a spill or leak.

3.4.7 Every site shall prevent chemicals from running down sink, floor, or storm water drains. Any spills and drips shall be cleaned up immediately. Appropriate spill kits shall be available.

3.4.8 All liquid chemical products must be stored through the usage of retention basin of equal volume as the chemical volume stored in that area.

3.4.9 Only authorized people may have access to storage areas with highly toxic materials.

## 3.5 Packaging and Labeling of Hazardous Materials

3.5.1 All ContourGlobal businesses and operations shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged, or marked with the following information: identity of the hazardous chemical(s) contained therein, appropriate hazard warnings, and the name and address of the chemical manufacturer, importer or other responsible party.

3.5.2 The labeling and marking system shall be aligned with international best practices such as the NFPA Labeling Guide.

3.5.3 The hazard pictogram or signal word shall be presented in the label, including either “Warning” or “Danger” depending on the material classification.

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- 3.5.4 The hazardous materials shall be stored in the containers provided by the vendor. In the case there is a need to repack the material, the packages and containers shall not be susceptible to damage by its contents and should be strong enough throughout to meet the normal stresses and strains of handling. Labeling in the repacked container shall follow the requirements above.
- 3.5.5 It is strictly forbidden to use food packaging to store or transfer chemical products, hazardous and non-hazardous.

## 3.6 Handling of Hazardous Materials

- 3.6.1 Each ContourGlobal business and operation shall have local instruction for consistent material handling requirements.
- 3.6.2 The hazardous materials handling instructions shall include, but not limited to:
- Preparation for the work: where the work is to be done, arrangement of warning signs and barriers, checking of equipment and apparatus, and arrangement of protective equipment and of decontamination agents for dealing with spillage.
  - Activity description, showing quantities of chemicals to be used, PPE, waste disposal, decontamination and equipment cleaning.
  - Emergency response plan (for scenarios such as: violent reaction, fire, spillage or air escape).
- 3.6.3 Workers who handle corrosive, oxidizing and reactive chemicals shall have specialized training on managing the inherent risks and shall be issued with appropriate PPE (e.g. gloves, aprons, splash-suits, face shield or goggles, etc.).
- 3.6.4 A qualified first-aid respondent appropriately equipped first aid stations shall be available where corrosive, oxidizing or reactive chemicals are handled.
- 3.6.5 Work practices shall be developed and implemented to minimize the release of contaminants into the work environment.
- 3.6.6 Contaminant dusts, vapors and gases shall be maintained below the Threshold Limit Value (TLV) concentration recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) or according to local legislation.
- 3.6.7 Information shall be supplied concerning occupational exposure limit values for the substances occurring and other provisions applying to the work, as well as the existing routines for internal chemicals control.
- 3.6.8 Where the work shifts extend beyond eight hours then the pro-rated exposure shall be calculated using criteria recommended by the ACGIH or according to local legislation.

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### 3.7 Communicating the Hazard Material Data to the Workforce

- 3.7.1 All relevant data about the hazards of all hazardous materials used (or produced) shall be communicated to all employees and contractors.
- 3.7.2 Each ContourGlobal business and operation shall post copies of any hazard coding system used on site, outside of the facility at emergency entrances where they are likely come to the attention of emergency services personnel.
- 3.7.3 Material Safety Data Sheets (MSDS) shall be available for all chemicals used on site at the point of use of the chemical and be held in a central file which can be soft or hard copied.
- 3.7.4 The chemical documentation (MSDS or equivalent) has to be written in the local language and kept on file for at least five (5) years following initial issuance or revision.
- 3.7.5 The MSDS shall be readily accessible during each work shift to all employees (including contractor's employees) of the operation.

### 3.8 Asbestos Management

- 3.8.1 The use of asbestos containing materials (ACM) shall be forbidden in construction or remodeling activities.
- 3.8.2 An asbestos inventory shall be included in any due diligence process for the procurement of any facilities.
- 3.8.3 Existing facilities suspected of containing ACM shall have an asbestos survey carried out by a qualified contractor.
- 3.8.4 Copy of the Asbestos Materials Register shall be maintained at each location. A responsible person shall be nominated by the site manager at each location to ensure the register is available for viewing and is maintained in good order.
- 3.8.5 The type of asbestos and its condition (e.g. whether it is in friable form with the potential to release fibers) shall be detailed.
- 3.8.6 Warning signs and labels are to be strategically located within the building. The signs shall be installed to advise occupants, visitors, construction and maintenance personnel that asbestos containing material is present.
- 3.8.7 The facility shall detail the procedures for monitoring on-going conditions of the ACM. e.g.: Minimize Disturbance, Restrict Airborne Materials, and Prevent Inhalation of Fibers, Restricted Areas.

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- 3.8.8 The procedures shall be available to all workers who are involved in operations and maintenance in the areas that contain ACM, and workers shall also be made aware of the risks and trained to prevent damage and exposure.
- 3.8.9 The facility shall have a procedure for inspection where the tasks are taking place, and an approved class P2 respirator shall be worn at all times and people oriented to not having direct skin contact with any identified asbestos.
- 3.8.10 All work involving the removal of thermal or acoustic asbestos insulation, areas of asbestos cement sheeting, or work on materials that have the potential to generate asbestos dust shall be conducted by a licensed asbestos removal contractor.
- 3.8.11 All asbestos waste shall be disposed of in accordance with the local legislative requirements. Where these do not exist then the ContourGlobal Environmental Responsible team shall be notified for advice prior to disposal.

## 4 References

- ContourGlobal Manual - *MHSE-001* - Health, Safety & Environment Management System Manual
- OSHAS: 18001 standards and guidelines
- ISO14001:2015

## 5 Appendices

- Appendix 1 – Highly Toxic Materials

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## Appendix 1 – Highly Toxic Materials

Material	CAS Number	Substance Hazard Index (SHI)
Ammonia (anhydrous)	7664-41-7	13,154
Bromine	7726-95-6	56053
Butyl isocyanate	111-36-4	22,370
Carbon monoxide (anhydrous liquid)	630-08-0	68,966
Chlorine	7782-50-5	385,197
Chlorosulfonic acid <sub>b</sub>	7790-94-5	668
Dimethylamine	124-40-3	5,737
Ethyl chloroformate	541-41-3	6,031
Formaldehyde (anhydrous)	50-00-0	204,684
Fluorine	7782-41-4	2,549,868
Fluorosulfonic acid <sub>b</sub>	7789-21-1	433
Hexafluoropropylene	116-15-4	12,818
Hydrochloric acid (anhydrous)	7647-01-0	310,693
Hydrogen cyanide	74-90-8	39,000
Hydrogen fluoride (anhydrous)	7664-39-3	24,132
Hydrogen sulfide (anhydrous liquid)	7783-06-04	199,053
Methyl chloroformate	79-22-1	28,684
Methyl isocyanate	624-83-9	386,842
Methyl mercaptan	74-93-1	19,855
Monomethylamine	74-89-5	6,974
Nitrogen dioxide (anhydrous liquid)	10102-44-0	39,825
Nitrogen tetroxide	10544-72-6	117,770
Ozone	10028-15-6	27,464,474
Perfluoroisobutylene	382-21-8	6,579,000
Phosgene	75-44-5	1,865,789
Phosphorus oxychloride	10025-87-3	49,536
Phosphorus trichloride	7719-2-12	10,526
Silicon tetrachloride	10026-04-07	7,368
Sulfur dioxide (anhydrous liquid)	7446-09-5	263,246
Sulfur trioxide/oleum (anhydrous liquid)	7446-11-9	37,614
Sulfuryl chloride	7791-25-5	16,746
Thionyl chloride	7719-09-7	15,789
Titanium tetrachloride <sub>b</sub>	7550-45-0	1,224
Trimethylamine	75-50-3	4,263

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**CONTOURGLOBAL®**



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## 1. Purpose

This standard provides requirements and guidance for establishing, sustaining, and improving the procedures and practices used to manage interactions with electrical equipment and systems to prevent incidents and injuries from electrical energy.

Sites shall be aware that local regulations may impose requirements not reflected in this standard.

***The most stringent requirement shall apply.***

## 2. Management Responsibility

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.
- Communicate relevant information of this standard to people working on his/ her organization and other interested relevant parties.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

### Engineering Department:

- Develop engineering solutions to eliminate, reduce, and guard against personnel exposure to electrical hazards.

## 3. Standard Contents

When the operation or inadvertent contact with electrical energy could cause injury to the operator or others in the immediate area, the hazards shall be eliminated or the risks controlled to an acceptable level. The primary electrical hazards of concern are associated with those tasks and conditions that have the potential to result in electrocution, arc flash, receiving an electrical shock, etc.

### 3.1 General Electrical Safety Requirements

- 3.1.1 Each ContourGlobal business, subsidiary and contractor shall develop, implement, and maintain work procedures for operations where employees are exposed to electrical hazards. These procedures shall be developed using a risk assessment process and

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- shall contain the safe practices necessary to identify and manage the electrical hazard exposure.
- 3.1.2 The procedures shall include all work on or near permanent or temporary electrical parts and wiring, fixtures or equipment, all work involved with constructing, installing, testing, commissioning, removing, renovating, or modifying electrical parts and wiring, fixtures or equipment under ContourGlobal responsibility.
  - 3.1.3 Sites shall also have procedures and practices in place to assess, manage, and reduce potential exposure to electric arc flash hazards.
  - 3.1.4 Electrical safety procedures shall be reviewed and reauthorized at intervals not to exceed three years and shall be consistent with local regulations and the requirements of this standard.
  - 3.1.5 All workers shall be aware of the potential electrical hazards present in their work environment to avoid situations which could make them vulnerable to the danger of electrocution or other injuries.
  - 3.1.6 Awareness shall include requirements for the identification and control of electrical hazards, minimum training requirements, the use of PPE, and other controls.
  - 3.1.7 Workers working on or near exposed energized electrical parts or equipment shall use appropriate personal protective equipment (PPE) and tools to protect them from the potential electric shock, arc-flash, and fire hazards of the equipment being worked on or near.
  - 3.1.8 Workers working on or near electrical parts shall wear clothing, including undergarments, that will not increase the hazards of exposure to flame or electric arc, such as materials made of non-synthetic natural fibers, or fabric specifically designed for use around electrical parts. Workers shall remove conductive articles, such as rings, watches, chains, etc., prior to working on or near electrical parts.
  - 3.1.9 All energized electrical parts shall be covered, enclosed or otherwise protected from contact with any workers.
  - 3.1.10 At least two (2) workers shall be present while the following types of work are being performed:
    - Installation, removal or repair of lines that are energized at more than 600 volts, line to ground, or according to local legislation. Installation, removal or repair of de-energized lines if a worker is exposed to contact with other parts energized at more than 600 volts, line to ground, or according to local legislation.
    - Installation, removal or repair of equipment, such as transformers, capacitors, and regulators, if a worker is exposed to contact with parts energized at more than 600 volts, line to ground, or according to local legislation.
    - Work involving the use of mechanical equipment other than insulated aerial lifts, near parts energized at more than 600 volts, line to ground, or according to local legislation.
  - 3.1.11 Sites shall demonstrate commitment to minimizing exposure of working on or near un-insulated or unguarded electrical circuits and conductors energized >50 V,

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including the contact of tools or any part of the body, regardless of personal protective equipment used.

- 3.1.12 New equipment must be subject to a risk assessment prior to purchase or hiring/contracting. The purchasing or hiring/contracting of electrical equipment must be done according to the ContourGlobal requirements and local or country requirements.

## 3.2 Work Permit for Electrical Work

- 3.2.1 ContourGlobal and contractors shall establish, implement, and maintain a Work Permit for the following activities, under Electrical Safety:

- Electrical Work Permit System:
  - To work on a High Voltage line and/or equipment or for all electrical isolation and energization of electrical equipment (HV).
  - To work on a Low Voltage (LV) line and/or equipment or for all electrical isolation and energization of electrical equipment (LV).
  - For trip reset of HV and/or LV equipment.
- Live Line Work Permit when:
  - Working “live” around exposed energized parts
  - De-energized work is not possible
  - Working “live” around exposed energized parts

Appendix 1 shows an example of an Electrical Safety Work Permit.

## 3.3 Shock Hazard Minimization

- 3.3.1 Sites should have a shock protection program in place. It may include the following:
- Battery-powered tools
  - Reduced-voltage equipment
  - Double-insulated equipment
  - Insulated or voltage-rated tools
  - Voltage-rated personal protective equipment (PPE) (e.g., gloves or hats)
  - Insulated, flexible barriers for exposed energized equipment parts
  - Installing equipment control devices to be accessible from outside the equipment enclosure to eliminate the need to enter an enclosure to access the devices
  - Restricting internal access to electrical equipment with the use of keys or special tools
  - Reducing the amount of socket-fed equipment
  - Expanding the use of ground-fault circuit interrupters (GFCIs) or residual-current devices (RCDs) during retrofits and design of new facilities
  - Nonconductive ladders

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### 3.4 Test Before Touch

- 3.4.1 Sites shall have practices in place requiring that testing be conducted for the absence of voltage before touching bare conductors or parts (i.e., Test Before Touch program). The practices shall include verifying test instruments on a known energized source before and after the test to check for absence of voltage and complying with the PPE requirements.
- 3.4.2 Personnel should test every circuit and every conductor, every time, to verify the absence of voltage before touching. While in some cases this may seem to be redundant or repetitive testing, the practice of Test Before Touch is a critical step that minimizes the risk of contacting an energized conductor due to unexpected and unplanned situations.

### 3.5 De-Energized Work

- 3.5.1 Whenever possible, de-energize all electrical circuits prior to beginning work. Lock out & Tag out de-energized systems and controls and implement barricades on the jobsite that will restrict entry into and/or warn workers of areas that contains electrical hazards.
- Tags shall be placed and maintained legibly to identify equipment or circuits being worked on.
  - The best protection for work around high voltage lines or equipment is to maintain a safe distance from the lines or equipment. Distances shall be defined based on international requirements (i.e. OSHA/ NFPA) or according to local legislation.
  - If proper clearances cannot be maintained, the line or equipment shall be grounded.
- 3.5.2 All lines or equipment shall be properly tested and grounded before any contact with them by personnel, based on following definitions and requirements:
- Isolation: the high voltage line or equipment shall be removed from a source of electricity following appropriate lock out & tag out practices. Proper communication with dispatch shall be followed if applicable.
  - Testing: the line or equipment shall be tested using an appropriate potential tester which will indicate if high voltage is present.
  - Grounding: proper application of grounds using approved live line tools is required. The sequence is to be as follows:
    - Select correct size of grounds for the fault current and system to be worked on.
    - Inspect the grounds for condition and proper operation.
    - Use appropriate PPE when installing the grounds e.g., hard hat, eye protection, gloves and appropriate clothing.
    - Use appropriate length of live line tool for the application of the ground.
    - Install the ground to the earth potential connection first.

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- Install the other end of the ground to the line or equipment to be worked on.
  - Visible Grounds: if grounds are not visible from work location then point of work grounds shall be applied using approved practices.
- 3.5.3 Special attention shall be given to generators, induced voltage, or other circuits which can represent a back feed.

### 3.6 Live Line Work

- 3.6.1 When de-energized work is not possible, each ContourGlobal business and operation shall guarantee by local procedures that:
- Workers possess an Energized Electrical Work Permit before work begins.
  - Workers have a written plan for performing the live work safely. JSEA procedures shall be conducted and followed for all energized works.
  - Workers use appropriate Personal Protective Equipment (PPE).
  - Barricades shall be implemented on the jobsite to restrict entry into and/or warn workers of areas that contains electrical hazards.
- 3.6.2 Only qualified and approved personnel may perform live line work. Appropriate safe distances to a second point of contact shall be maintained during live line work based on international practices (e.g. OSHA/ NFPA) and local legislation.
- 3.6.3 When working “live” around exposed energized parts, the following requirements shall be observed:
- Workers shall sign an Energized Electrical Work Permit describing the work to be performed, outlining precautions, equipment/tools, personal protective equipment, and procedures to use during the job and why it shall be performed live.
  - The Work Permit shall identify the Qualified Person(s) by name and include emergency phone numbers. Live work shall be authorized by the site person responsible.

### 3.7 Facilities and Equipment Electrical Safety

- 3.7.1 Each ContourGlobal business and operation shall assure that each disconnect switch or over current device required for a service, feeder, or branch circuit will be clearly labeled to indicate the circuit's function, and the label or marking shall be located at the point where the circuit originates.
- Each disconnection for motors and appliances shall be legibly marked to indicate its purpose.
  - These markings shall be of sufficient durability to withstand the environment involved: weather, chemicals, heat, corrosion, or any other environment to which they may be exposed.
- 3.7.2 Extension cords shall never be used in place of permanent wiring.

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- Extension cords may only be used as a temporary solution and shall be rated to handle anticipated load.
  - Extension cords shall be used singly (not extension to extension to form a chain).
  - Extension cords shall not be routed through walls, doors, windows, ceilings or partition walls.
- 3.7.3 All electrical cords, cables, and hand power tools shall be regularly and visually inspected for frayed cords or exposed wires. Any defective equipment or cables shall be removed from service and replaced.
- 3.7.4 All electrical equipment that may be used in a wet environment shall be double insulated, be grounded, and have ground fault interrupter (GFCI) protected circuits.
- 3.7.5 Electrical cables shall be protected from wear and tear.
- No electrical cables shall be run through doorways or run under carpets.
  - Any electrical cables that run over carpets shall be protected by a cable strip.
  - Any power cords or cable that may be exposed to vehicular traffic shall be either appropriately shielded or suspended above the traffic areas and appropriately signed.
- 3.7.6 A Portable Appliance Testing (PAT) procedure shall be in place and carried out by a competent professional.
- 3.7.7 All electrical panels shall be kept locked at all times.
- 3.7.8 Electrical panels and circuits shall be locked and tagged out during servicing and maintenance.
- Electrical power lines shall be insulated or located away from water lines, telephone lines, air lines or other conductive materials so that a damaged circuit will not energize the other systems.
  - All electrical parts and wiring, permanent or temporary, shall be enclosed or protected and conform to applicable electrical and building code requirements.
  - Oil-filled transformers shall not be used underground unless they are located in a fire-resistant enclosure suitably vented to the outside and surrounded by a dike to retain the contents of the transformers in the event of rupture.

### 3.8 Grounding and Bonding

- 3.8.1 Each ContourGlobal business and operation shall develop, implement, and maintain standards for mitigating the unique hazards associated with grounding and bonding operations.
- 3.8.2 Standards shall mitigate the hazards associated the unexpected re-energization of conductors and equipment from all sources as well to establish the minimum level of PPE for these applications.
- 3.8.3 The site-specific standard shall cover the topic of “proving de energized” and the techniques needed to select the appropriate size grounding materials for various system applications and to include guidance on both bracket and equipotential grounding.

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- 3.8.4 The path to ground from circuits, equipment, and enclosures shall be permanent and continuous and cover the following areas:
- All electrical systems shall be grounded.
  - All supports and enclosures for conductors shall be grounded.
  - All metal enclosures for service equipment shall be grounded.
  - All exposed, non-current-carrying metal parts of fixed equipment shall be grounded.
  - All ground exposed, non-current-carrying metal parts of tools and equipment connected by cord and plug shall be grounded.
- 3.8.5 Grounding shall be installed for the metal parts of the following non-electrical equipment:
- Frames and tracks of electrically operated cranes.
  - Frames of non-electrically driven elevator cars to which electric conductors are attached.
  - Hand-operated metal shifting ropes or cables of electric elevators.
  - Metal partitions, grill work, and similar metal enclosures around equipment of over 600 V line to ground.
  - Mobile cranes, derricks, and vehicles when being moved or operated in close proximity to energized lines or equipment.

### 3.9 Personal Protective Equipment

- 3.9.1 Sites shall have procedures and practices in place to manage selection, approval, application, provision, inspection, testing, storage, use, and maintenance of all PPE used for personal protection from electrical hazards.
- 3.9.2 The use of metal frame glasses and the wearing of metal jewelry and watches is prohibited if the items could fall into energized electrical equipment and create an arc flash.
- 3.9.3 The wearing of metal jewelry on body parts is prohibited within the restricted approach boundary of equipment.
- 3.9.4 Sites shall have practices and procedures in place that require the use of voltage-rated gloves on circuits greater than 50 V when working within the restricted approach boundary, including using voltage testing or diagnostic instruments.

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- 3.9.6 Voltage-rated gloves shall be maintained in a safe, reliable condition by performing the following:
- Properly storing gloves to protect them from damage.
  - Visually inspecting gloves before use each day to identify any defects.
  - Performing an air test on the insulating portion of the glove before use each day to check for holes in the glove.
  - Documenting periodic electrical testing on the insulating portion of the glove per national regulations to check the electrical integrity of the glove.
- 3.9.7 Voltage-rated gloves must be rated higher than the system voltage associated with the task being performed.
- 3.9.8 Personnel shall wear electric arc flash PPE when arc flash PPE is required for a task as determined by the arc flash risk assessment. Arc flash PPE must be rated higher than the incident energy of the work being performed. Arc flash PPE must protect the entire body.

### 3.10 Electrical Safety Training

- 3.10.1 Only authorized personnel shall perform work involving electrical hazards. Personnel shall receive training and be qualified to recognize and manage the electrical hazards that they may be exposed to in their jobs. This training shall include the use of electrical PPE, electrical safety procedures and practices, safeguards for using electricity, electrical equipment and devices, and local legislation.
- 3.10.2 In addition, all qualified people required to do electrical work, work on or near exposed electrical parts, or construct, remove or demolish electrical parts or equipment shall be trained on:
- Techniques to distinguish exposed energized electrical parts from other parts.
  - Techniques to determine the nominal voltage of exposed energized electrical parts.
  - The safety procedures, safe clearance distances, and minimum approach distances required for working near energized exposed electrical parts.
  - PPE usage to protect from electric shock or arc flash.
- 3.10.3 All employees that install, remove, and inspect grounds shall be trained on:
- The purpose for personal protective grounding
  - The grounding and bonding principles
  - The importance of providing a low-resistant path around the worker
  - How equipotential grounding protects in the case of accidental re-energization
  - How the written procedures for installing grounds on the facilities are applicable to each affected employee
  - The effects of electric field (capacitive) induction and magnetic field (inductive) induction
  - How induction will cause current to flow in the conductor and grounds when more than one set of grounds are installed on a circuit and how protective grounding/bonding is needed to control voltage and current to a level that is safe for the worker.

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- The limitations of bracket grounding and the need for a protective grounding plan
  - The proper components and assembly of ground sets
  - The proper maintenance, care, and inspection of ground sets or assemblies
- 3.10.4 All qualified workers to perform electrical jobs are required to be trained in first aid, CPR, and emergency procedures necessary for their assigned tasks.
- 3.10.5 Training, validation, and refresher training shall be completed and documented at least every three years or when one or more of the following occur:
- Change in work function
  - Return to the function after more than three months out of function
  - Change in electrical installation, procedures, or organization
  - When site assessments and incident investigations indicate the need for refresher training
- 3.10.6 Training documentation should take the form of a written test, record of verbal affirmation, documented job-cycle tests, or a combination of these.
- 3.10.7 All training conducted for compliance with this program shall be recorded and tracked as required.

### 3.11 Pre-Startup Safety Reviews

- 3.11.1 Sites shall perform pre-startup safety reviews of all new and modified electrical systems and equipment before any partial, temporary, or long-term energization of electrical systems or equipment. At a minimum, the pre-startup safety review shall include verification of the following:
- Equipment is ready to be safely energized.
  - Permanent circuit identification and isolation information is installed and verified as correct.
  - Accurate documentation needed to plan energy isolation and lock out & tag out is available.
  - Equipment construction and installation are in accordance with design specifications, local regulations, and site requirements.
  - An arc flash hazard assessment, if applicable, is complete and equipment arc flash hazard labeling is installed.
  - The electrical hazard assessment, if applicable, is complete.
  - Equipment grounding and bonding systems are in place.

### 3.12 Emergency Planning and Response

- 3.12.1 Sites shall demonstrate preparedness for electrical safety emergencies (e.g., rescue and treatment for electric shock, arc-flash burns, blast injuries, or fire involving electrical equipment) as part of the site emergency response planning.
- 3.12.2 Sites shall have procedures established to help ensure prompt and immediate medical evaluation for anyone exposed to an electrical shock greater than 50 V, regardless of observable symptoms, wounds, or discomfort.

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3.12.3 Site preparations for response to electrical emergencies shall include, but not be limited to:

- Helping ensure that first responders are trained in the administration of appropriate first aid (e.g., cardiopulmonary resuscitation [CPR] where there is a recognized risk of electric shock and treatment of burns where there is a recognized risk of electric burns).
- Identifying energy isolation points and providing training on energy isolation requirements for emergency responders.
- Having emergency equipment, including communications equipment, available and accessible.
- Establishing procedures for securing the scene of an electrical incident.
- Helping ensure that first responders are trained on the appropriate use of electrical PPE.

## 4. References

- ContourGlobal Manual  
*MHSE-001* - Health, Safety & Environment Management System Manual
- Others  
International Organization for Standardization (ISO) 9000 standards and guidelines. ISO 14121:2007, Safety of machinery—Principles of risk assessment  
  
National Fire Protection Association (NFPA) 70E, Standard for Electrical Safety in the Workplace, 2012 Edition  
  
OSHA 29 CFR 1910 and 29 CFR 1926

## 5. Appendices

- Appendix 1 – Example of Electrical Work Permit

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## Appendix 1 – Example of Electrical Work Permit

PERMIT NO XXXXXX

REVISION NO 1 CONTRACTOR COMPANY NAME \_\_\_\_\_

### ELECTRICAL WORK PERMIT



Use block capitals throughout (maximum duration one "working day"). Should be filled out at place of work. ALL BOXES MUST BE COMPLETED (YES IF APPLICABLE NO IF NOT)

1. Location	Job details: Precise location of the Electrical Work _____	
	Plant Reference No. _____	
	Description of Electrical Work _____	
	Method Statement Reference _____	
2. Preparation and Precautions	ALL BOXES MUST BE COMPLETED (YES IF APPLICABLE NO IF NOT)	
	Has a suitable and sufficient risk assessment been provided _____ <input type="checkbox"/> Has an appropriate method statement been provided, does it include emergency procedures _____ <input type="checkbox"/> Have all team members been briefed on method and emergency procedures _____ <input type="checkbox"/> Has a re-energising procedure been provided _____ <input type="checkbox"/> Does the work involve low voltage – less than 1000 V a.c. or 1500 V d.c. _____ <input type="checkbox"/> Does the work involve high voltage – exceeding 1000 V a.c. or 1500 V d.c. _____ <input type="checkbox"/> Are the operators involved competent/adequately qualified – confirmed in writing training and experience _____ <input type="checkbox"/> Have all sources of electrical supply been identified – is there more than one circuit _____ <input type="checkbox"/> Has appropriate isolation of the electrical system been applied – e.g. padlocks, fuse or key removal, etc _____ <input type="checkbox"/> Has the electrical system been proved to be dead – e.g. test on / off, test lamp, test probes _____ <input type="checkbox"/> Have all other energy sources been isolated and proved to be dead – e.g. pneumatic, hydraulic, etc _____ <input type="checkbox"/> Has appropriate earthing been put in place – e.g. clamps, rods, etc _____ <input type="checkbox"/> Have appropriate signage and barriers been positioned _____ <input type="checkbox"/> Has appropriate safety equipment been provided – e.g. insulating sticks, rubber mats, rescue hooks, etc _____ <input type="checkbox"/> Has appropriate PPE been provided – e.g. rubber gloves, gauntlets, eye protection, etc _____ <input type="checkbox"/> Has emergency communications been established – e.g. radios, mobile phones _____ <input type="checkbox"/> Has safe access and egress been established _____ <input type="checkbox"/> Have insulated ladders/step ladders been provided _____ <input type="checkbox"/> Has a Standby Person been appointed _____ <input type="checkbox"/> Has the Standby Person been trained in First Aid & Fire Extinguishers _____ <input type="checkbox"/> Has an appropriate Fire Extinguisher been provided _____ <input type="checkbox"/> Have all tools and equipment been inspected/calibrated – visual check, test certificates _____ <input type="checkbox"/> Earth loop impedance and resistance to earth documentation in line with BS 7671 17th Edition for new installations or modifications/minor works on the LV distribution system _____ <input type="checkbox"/> Additional precautions: _____ _____ _____ _____	
3. PPE Equipment	PPE & Equipment Required: Apron <input type="checkbox"/> Overalls <input type="checkbox"/> Hard / Bump Hat <input type="checkbox"/> Safety Shoes <input type="checkbox"/> Hearing Protection <input type="checkbox"/> Glasses/Goggles <input type="checkbox"/> Dust Mask <input type="checkbox"/> High Visibility Vest <input type="checkbox"/> Safety Gloves <input type="checkbox"/> Fall Arrest Equip. <input type="checkbox"/> Filt. Face Masks <input type="checkbox"/> Harness <input type="checkbox"/> Head Torch <input type="checkbox"/> Face Visor <input type="checkbox"/> Chemical Suit <input type="checkbox"/> Gauntlets <input type="checkbox"/> Other (specify): _____	

Pink Copy: Remains in Book

White Copy: Posted at Area of Work

Yellow Copy: Department / Area Copy

4. Confirmation of Isolation	<table border="1"> <tr> <th>Name of person confirming isolation</th> <th>Signature</th> <th>Date</th> <th>Time</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>				Name of person confirming isolation	Signature	Date	Time																																																																																											
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5. Permit Issue	This permit is valid from _____ hrs. on _____ to _____ hrs. on _____ (max 24 hours) I certify the above particulars are correct and that the work may now proceed.																																																																																																		
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7. Cancellation	Completion by Electrical operator. The Electrical work detailed on this permit has been completed. YES/NO <input type="checkbox"/> The electrical system and location have been inspected and is electrically safe YES/NO <input type="checkbox"/>																																																																																																		
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In the event of an Emergency, please ring \_\_\_\_\_ immediately

# G08-S04 – Work at Heights & Fall Protection

**CONTOURGLOBAL®**



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## 1. Purpose

This standard provides requirements and guidance for establishing, sustaining, and improving the procedures and practices used to protect employees and contractors from falls from heights.

Sites shall be aware that local regulations may impose requirements not reflected in this standard. The most stringent requirement shall apply.

## 2. Management Responsibility

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.
- Communicate relevant information of this standard to people working on his/ her organization and other interested relevant parties.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

## 3. Guideline Contents

### 3.1 General Requirements

- 3.1.1 Activities that need to be made at heights of 1.8 meters (6 feet) or more or if risk of falling can cause harm to any person, these activities should be performed with enough attention and care to prevent falls from heights.
- 3.1.2 Work at heights shall be undertaken only by workers who are physically and psychologically fit and have the necessary knowledge and experience for such work. Each ContourGlobal business and operation shall develop, implement, and maintain a Fall Protection Program for all activities for its employees and contractors working at a height of 1.8 meters (6 feet) or more, taking into consideration the local legislation. The Fall Protection Program shall contain: hazard identification, selection of fall hazard control, equipment inspection, rescue plan, and workforce training.
- 3.1.3 Fall prevention and protection shall be addressed during planning for tasks involving exposure to falls. Routine tasks that involve fall protection shall be addressed by written site procedures. Non-routine tasks shall be covered by a JSEA.
- 3.1.4 A Fall Hazard assessment shall be conducted to identify all elevated work locations; in all operations, processes, and tasks including buildings, towers, nacelles and machinery to

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identify elevated work opportunities. Assessment shall address both routine ongoing tasks as well as temporary ones which may take place during maintenance and construction.

- 3.1.5 For operating sites, an annual assessment shall be conducted to verify that all elevated work locations are identified in order to ensure that changes in fall hazards are addressed and that controls provide adequate protection. The assessment shall be also conducted after an incident or when there have been changes to the original plant design.
- 3.1.6 For construction sites, the site manager shall determine the appropriate assessment frequency for field tasks elevated work, depending on the construction phase, since conditions can change rapidly, even more than once a day in specific activities.
- 3.1.7 Prior to work at heights commencing, all the relevant instructions shall be issued to all personnel involved with the task, and the items below shall be evaluated and considered:
  - Wind and weather actual conditions and forecast
  - Fall protection equipment and its suitability for the specific task at hand
  - Condition of scaffolding, ladders and platforms
  - Safe means of access and escape
  - Cordoning of areas subject to heavy vehicular or pedestrian traffic including warning signs
  - Loads likely to be encountered
  - Communications between those on ground and those above
  - Suitability of personnel selected to perform the tasks
  - Rescue techniques in emergencies
  - Access to the workplace for elevated platform vehicles and/or cranes
  - Barricading/signage of the area above which the task is performed
  - Periodical inspections of the used equipment and PPEs and associated responsibilities
- 3.1.8 When in an area where the risk of falling objects exists, hard safety hats shall be worn by all people in the area, and every effort shall be made to prevent objects from falling from workplaces on people below the work area.
- 3.1.9 The employees who work in elevated locations shall be trained in the requirements of the Fall Protection Program including use and inspection of fall protection equipment. Training and inspection records shall be maintained.
- 3.1.10 Each ContourGlobal business and site shall apply a fall-arrest management system which is composed of a three-step systematic approach to help protect people from falls from heights and also explains how to:
  - eliminate fall hazards;
  - prevent falls; and
  - prevent or minimize an injury if a fall occurs.

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## 3.2 Reducing the Risk of Falling from Heights

- 3.2.1 Where the potential for a fall from heights hazards exists, the hazards shall be eliminated or the risks controlled to an acceptable risk level.
- 3.2.2 All ContourGlobal business and operations shall implement and maintain a risk management and reduction process for fall from heights hazards. This process should consider the following hierarchy of controls: (i) Eliminating the fall hazard; (ii) Minimizing the fall exposure and (iii) Using fall-arrest equipment

### A. Eliminating the fall hazard

- 3.2.3 Eliminating the hazard in the early phases is the more effective action and allows safety to be designed into the work process. Examples of fall-hazard elimination include:
- Eliminating elevated work by employing methods to do the work from the ground or floor level.
  - Prevent falls during Facilities Design (shall be addressed during facility design and major equipment or facility modifications for the safety of construction, maintenance, and operations employees who must work at heights. A qualified person shall be involved in the design phase of the work)

### B. Minimizing the fall exposure

- 3.2.4 The second step in fall prevention is to minimize fall exposure when fall hazards cannot be completely eliminated. Where the potential for a fall from height exists, a risk assessment shall be conducted to determine the nature and extent of the fall exposure. The risk assessment should consider the following:
- Potential fall distance
  - Access and egress
  - Number of employees involved
  - Duration of task
  - Frequency of the task
  - Vertical and horizontal movement
  - Walking and/or working surfaces (e.g., stability, slope and levelness, structural integrity, and adequacy of size)
  - Available anchorages
  - Environmental factors (e.g., rain, ice, wind, and visibility)
  - Ability for self-rescue and possibility of emergency rescue

Considerations for minimizing fall exposure include:

- Using equipment designed for working at heights (e.g., aerial work platforms).
- Reducing the number of employees involved
- Reducing the time of exposure
- Reducing the distance of the potential fall

**Note:** Because of residual exposure to fall hazards, this second step is often used in conjunction with the third step, using fall-arrest equipment.

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### C. Using fall-arrest equipment

- 3.2.5 Fall-arrest equipment is the last line of defense. Fall-arrest equipment shall be used at heights of 1.8 meters (6 feet) or more, or according to local legislation, as measured from the employees' feet to the next lower level when physical protection (e.g., a guardrail system) is not available. At a minimum, fall-arrest systems shall be used when:
- A risk assessment was developed and indicates it is needed.
  - Working within 1.8 m (6 feet) of an unprotected edge (e.g., a floor or wall opening, nacelle, tower, etc).
  - Working from high-pitched roofs (i.e., greater than a 4/12 slope).
  - Working from suspended scaffolds, crane baskets, or telescoping, rotating, and/or articulating boom man lifts.
- 3.2.6 If the height between the anchorage point and the floor is above 5.6 meters (18.5 ft.), it is obligatory to use a lanyard with shock absorber.
- 3.2.7 When sites elect to use components and subsystems made by different manufacturers within the same system, the sites shall take precautions to determine that the components and subsystems are compatible by consulting the respective manufacturers.
- 3.2.8 Persons using fall-arrest systems must not work alone and must use 100 percent tie off.
- 3.2.9 Waist belts (body belts) and chest harnesses (with no leg straps) shall not be permitted as components of a personal fall-arrest system. Waist belts and chest harnesses may be used for "tethering" fall prevention (e.g., a waist belt and lanyard used as a tether to keep an employee sufficiently away from the leading edge of a roof or open hole so that a fall is impossible.) Minimum anchorage capacity for use in fall prevention applications shall be 5,000 pounds (22.2 kN) per employee attached.

## 3.3 Fall Protection System

- 3.3.1 Users of fall-protection equipment shall inspect the equipment before each use. Additionally, a qualified person must inspect the equipment and document the inspection at least twice a year. The inspection criteria shall meet, as a minimum, the manufacturer's recommendations for inspection and must include in Fall Protection Program. When inspections reveal defects, the equipment shall be tagged and removed from service until the repairs are completed and the equipment has been inspected by a qualified person.
- 3.3.2 Maintenance and storage of fall-protection equipment shall be done in accordance with the manufacturer's recommendations and instructions. The equipment shall be stored and used in such a manner as to prevent damage from environmental factors (e.g., heat, light, excessive moisture, oil, chemicals, and other degrading elements). Heavily soiled, wet, or other contaminated equipment should receive proper cleaning prior to storage. Damaged equipment or equipment scheduled for maintenance should not be stored with usable equipment.

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### Anchorage and Connectors

- 3.3.3 Anchorage should be available in the site and in good shape to use for height services. They should be marked as approved anchorage points. They shall be inspected for obvious defects or deformities prior to use. All ContourGlobal employees and contractors, who are responsible for the service, must be aware and shall have received proper training.
- 3.3.4 Anchorage used for the attachment of personal fall-arrest equipment shall be independent of any anchorage being used to support or suspend work platforms. Anchorage connectors shall be used as recommended by the equipment manufacturer or qualified person to provide safe coupling of the harness to its anchorage. A separate anchorage connector shall be used for each person attached to an anchorage.
- 3.3.5 Anchorage connectors shall be subject to the same capacity criteria as the anchorage.

### Lifelines and Self-Retracting Lifelines

- 3.3.6 Horizontal and vertical lifelines shall be designed by a qualified person. They shall be installed and used according to the design. A lifeline shall have a minimum breaking strength per person equivalent to the anchorage capacity, unless it is part of a complete personal fall-arrest system, in which case it must maintain a safety factor of at least two.
- 3.3.7 Self-retracting lifelines should be considered when working on roofs and scaffolds or in tanks, towers, vessels, and manholes. Self-retracting lifelines should also be considered when climbing on equipment (e.g., vertical fixed ladders and telescoping derricks). For tasks involving confined space hazards, combination self-retracting lifelines with built-in retrieval systems may be used.

### Safety Net System

- 3.3.8 A safety net system is the least desirable fall-arrest system. If a safety net is used, it must be installed as close as practical under the walking and/or working surface. A safety net system must never be more than 7.6 meters (25 ft.) below the working surface and must only be used in conjunction with an approved safety harness.

## **3.4 Equipment for Work at Heights**

### Ladders

- 3.4.1 A ladder's safety should provide continuous protection while a person ascends or descends the ladder. For new ladders, there shall have an automatic locking and arresting-fall device. For existing ladders, a risk assessment shall be done and shall identify the proper control measure.
- 3.4.2 All ladders that are used must be approved by the site representative to an appropriate standard for the type of ladder and its intended use.
- 3.4.3 The foot of the ladder should always be placed on a flat, hard, and solid surface, and for extended operations with a vertical ladder, the top should be secured to the structure

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against which it is being leaned. The ladder should be tied. If there is no point available to tie it, the ladder must be held by a second person in order to allow stability.

- 3.4.4 A risk assessment for fall protection shall be made before any work is performed from a portable ladder. As part of the risk assessment, consideration should be given to using alternative means of access such as a personnel lift or scaffold.
- 3.4.5 The ladders should be examined before use and not used if defective. A written record of inspections, defects, and repairs should be maintained. Ladders should never be painted to ensure not hiding defects and should never be 'home-made'.
- 3.4.6 Fall protection must be provided for employees climbing or working on fixed ladders above 7.3 meters (24 feet) as per OSHA requirement. If local legislation requirement is more stringent, the local requirement shall be used.
- 3.4.7 All stepladders shall have structural cross bars prohibiting the ladder from expanding beyond its usable range.
- 3.4.8 All ladders shall meet the applicable weight load standards (at minimum the ladder should be able to bear four times the total weight of equipment and people to be using the ladder).
- 3.4.9 Portable ladders can be used only if all items below are followed:
  - it is impossible or inappropriate to use scaffolding, platform, or another more convenient and safer piece of equipment;
  - the work does not involve bulky or heavy loads, and it is not required to hold the load with both hands; and
  - they are not placed close to holes in floors or walls, next to sharp protrusions, or open containers for hazardous liquids and chemicals.
- 3.4.10 Use of temporary wooden ladders should be avoided. If used, wooden ladders shall be less than 6.1 meters (20 feet) in length, shall not be made of low-density (soft) woods, and shall be visually inspected prior to use for splinters, excessive wear, cracks, and decay.
- 3.4.11 Ladders shall only be used as per the manufacturer's instructions (for instance, ladders shall not be banded together to extend the length of the ladder).

#### Scaffold & Scaffolding System

- 3.4.12 System scaffolding shall be designed and erected in accordance with the manufacturers or suppliers' handbook. All the scaffold system components: toe boards, sole boards, basejack, guardrail, transom, wedge, standards, adjustable jack, etc., must be installed in accordance with the manufacturers and suppliers' handbook.
- 3.4.13 Any proposed modifications or alterations shall be designed by a competent professional and included a risk analysis for the change.
- 3.4.14 All workers shall be competent for the type of scaffolding work they are undertaking and shall have received appropriate training relevant to the system they are working on.
- 3.4.15 ContourGlobal shall designate a competent person for: (i) the supervision and direction of the erection, movement, dismantlement or alteration of scaffolds; and (ii) inspection of scaffold components for visible defects prior to each shift, after the initial setup, after

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reconfiguration, after relocation and after each occurrence which could affect a scaffold's structural integrity and weekly.

- 3.4.16 There is a variety of different types of scaffold; e.g., independent, tied, putlog, trestle or birdcage. The most appropriate scaffold must be selected considering the activity to be undertaken.
- 3.4.17 All scaffold systems shall visibly and clearly include: dated and signed tags on scaffolds which indicate whether or not the scaffold system is safe for use as well as the maximum loading capacity of the platform. All should be erected, modified, or if dismantled shall not be tagged as suitable for use. The scaffolds can only be accessed by those involved with the process.
- 3.4.18 All scaffolds shall be inspected weekly by a competent appointed person and also after any changes have been made or after an incident occurs that may have affected the scaffold structure, e.g., exposure to strong winds or collision by a vehicle. The inspection should be recorded in writing with any comments and inspectors signature and date.
- 3.4.19 Scaffold Planks shall be inspected and tested regarding:
- Wooden planks used for scaffold platforms shall be scaffold grade lumber.
  - Scaffold planks shall be inspected and tested upon receipt and prior to use.
  - Inspections shall identify any defects, which may affect the structural integrity of the plank (i.e. decay, splits, cuts, etc.).
  - Scaffold planks when loaded shall not deflect more than 1/60th the length between bearers.
  - Fire-retardant treated lumber shall have a weight capacity rating of 80 to 85 percent of untreated lumber.
- 3.4.20 It is forbidden to use scaffolds that only allow climbing/access from external part of the equipment. Trap doors with safety accesses must always be used.

#### Mobile Tower Scaffolding

- 3.4.21 A mobile scaffold is a tower scaffold mounted on wheels. They are used for mechanical and electrical installations, inspections, or short duration work in many ContourGlobal locations. They need a level, firm foundation, and the ultimate working height is restricted by the base dimensions.
- 3.4.22 Any person erecting or moving a mobile scaffold must be adequately trained and records maintained of the training and understanding. A review of the training must be carried out after an incident, personnel change, three-years maximum, or a change in local regulations.
- 3.4.23 Towers must not be used unless the wheels are locked. Ensure the platform is fully boarded out and guardrails and toe boards are fitted as appropriate.
- 3.4.24 Never exceed the manufacturer's Safe Working Load (SWL) for the mobile tower scaffold.
- 3.4.25 It is prohibited to use ladders or steps on a mobile tower scaffold platform as this may cause the tower to turn over.

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### Mobile Elevating Work Platforms

- 3.4.26 Mobile Elevating Work Platforms (MEWP) provide a temporary working platform where ladders would be unsafe and scaffold is not practicable. They are used for mechanical and electrical installation, steelwork connections, finishings, maintenance, and inspections.
- 3.4.27 Any person using a MEWP should receive specific regular training and a record held of their competence. No Person should be permitted to use a MEWP unless trained on the specific type of equipment.
- 3.4.28 The limits of elevation and outreach – the operating envelope – are described in manufacturers' handbooks – all activities shall be in line with the manufacturer guidelines.
- 3.4.29 Ground conditions are critical to safe operation. Many platforms are fitted with outriggers or stabilizers and they must always be used in accordance with the manufacturer's instructions. Check that the machine is level and that the ground is firm and will support the expected loading. There should be no cellars, basements, sewers, drains, manholes, old trenches, un-compacted backfill or anything else that might collapse under the machines weight.
- 3.4.30 Check that the wind speed does not exceed manufacturer's guidance for safe operation. Wind speeds can make the platform unstable and create unsafe working conditions. Additional precautions should be taken where sheet materials and cladding materials are being handled; this additional wind loading will affect the machines stability.

## **3.5 Roof Access and Work**

- 3.5.1 Any ContourGlobal employee or contractor going onto roofs for any purpose shall be formally cleared to do so by issue of a Work Permit. The Permit authorizer shall nominate any additional precautions to be taken to avoid falls and shall also advise of hazards from process situations that could be encountered in the work area.
- 3.5.2 Roof work shall only be undertaken by workers who are physically and psychologically fit and have the necessary knowledge and experience for such work. Work on roofs shall not be carried on in weather conditions that threaten the safety of workers.
- 3.5.3 Each site shall perform a risk assessment of the activity(s) and document the specific requirements in their site procedures. Personnel involved in the roof work shall be properly trained on the hazards and requirements of this activity and limit their activities accordingly.
- 3.5.4 Crawling boards, walkways and roof ladders shall be securely fastened to a firm structure. All covers for openings in roofs shall be of expand substantial construction and be secured in position.
- 3.5.5 During extensive work on the roof, strong barriers or guardrails and toe-boards shall be provided to stop a person from falling off the roof.
- 3.5.6 Where workers are required to work on or near roofs or other places covered with fragile material, through which they are liable to fall, they shall be provided with suitable roof ladders or crawling boards strong enough (4X time the expected loading) and when spanning across the supports for the roof covering to support those workers

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- 3.5.7 In case roof ladders, barriers, guardrails or any other protective device cannot be provided, PPE for working at heights with proper anchorage or lifeline shall be used.

### 3.6 Emergency Response

- 3.6.1 Fall rescue equipment (e.g. rescue ladder, suspension trauma safety straps, or rescue winch & rescuer safety harness) shall be prepared prior to starting work.
- 3.6.2 All ContourGlobal businesses and operations must incorporate into its overall emergency plan, one section regarding emergency work at heights, which must include at least the following:
- Response and Rescue Plan
  - Clearly defined roles and responsibilities of the emergency brigade and the area personnel responsible for coordinating external services (e.g.: ambulance, firefighters, medical personnel, etc.)
  - Validation of the Rescue Plan

## 4. References

- ContourGlobal Manual - *MHSE-001* - Health, Safety & Environment Management System Manual
- OSHAS: 18001 standards and guidelines

## 5. Appendices

- Not applicable.

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## G08-S03 – Confined Space

**CONTOURGLOBAL®**



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## 1. Purpose

This standard provides requirements and guidance to protect employees and contractors from hazards of confined space entry. It outlines a systematic approach to identifying, eliminating, and controlling confined space hazards and incorporates these sections into a comprehensive program.

Sites shall be aware that local regulations may impose requirements not reflected in this standard. ***The most stringent requirement shall apply.***

## 2. Management Responsibility

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.
- Communicate relevant information of this standard to people working on his/ her organization and other interested relevant parties. Line management has the responsibility to implement this standard.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

### Entry Supervisor

The entry supervisor shall be responsible for recognizing and evaluating the hazards throughout the entry, specifying the essential precautions, and authorizing the entry. The entry supervisor's responsibilities include:

- Knowing the potential hazards
- Evaluating changes to entry conditions as a result of the work being performed within the space
- Knowing how to control and manage hazards
- Verifying that the space is safe to enter, including checking that representative atmospheric sampling results are compatible with entry
- Helping ensure all roles supporting confined space entry are performed by qualified personnel
- Helping ensure a rescue plan is in place
- Authorizing confined space entry
- Cancelling confined space entry permits
- Terminating confined space entry
- Transferring duties formally

### Entrant

The entrant shall be responsible for entering the space and completing the authorized task. The entrant's responsibilities include:

- Knowing the potential hazards

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- Knowing how the hazards are controlled
- Evaluating changes to entry conditions as a result of the work being performed within the space
- Knowing how to use entry equipment and PPE and using them appropriately
- Evacuating the space
- Knowing the terms and conditions of safe entry and following them throughout entry
- Fulfilling and comply with all preventive measures pre-assigned before and while working in confined spaces

### Attendant

An attendant shall be responsible for remaining outside the space, monitoring conditions affecting it, communicating with those inside the space, and controlling access to the space. The attendant's responsibilities include the following:

- Knowing the potential hazards.
- Being aware of the effects of the hazards on the authorized entrants.
- Knowing how many and which personnel are in the space at all times.
- Maintaining constant communication with entrant (while inside confined space) to be sure that worker inside is ok.
- Knowing all important emergency numbers including rescue team and rescue arrangements.
- Keep constant monitoring to normal operations of any external equipment used to provide normal working conditions inside of confined spaces (forced-air ventilation, air fans and extractors etc.) and rescue equipment (tripods, winches, ropes etc.)

## 3. Guideline Contents

### 3.1 Definition for Confined Space

Confined space means a space in any vat, tank, pit, pipe, duct, flue, oven, chimney, silo, reaction vessel, container, receptacle, underground sewer, shaft, well, trench, tunnel or other similar enclosed or partially enclosed structure, if the space:

- is likely to be entered by any person; and
- has a limited or restricted means for entry or exit that makes it physically difficult for a person to enter or exit the space; and
- is at normal atmospheric pressure while any person is in the space; and
- contains an atmosphere that has a harmful level of any contaminant; or an atmosphere that does not have a safe oxygen level: or where stored substances that could cause engulfment; or where there is an excessive level of heat or cold.

### 3.2 Confined Space Entry Program

- 3.2.1 Each site where people enter confined spaces shall develop and implement a written confined space entry program that applies the requirements of this standard and is compliant with local regulations. The written program shall be available to all people who may enter confined spaces on site and their authorized representatives. These sites shall

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have written procedures that address eliminating, controlling, or isolating the hazards faced prior to and during entry.

- 3.2.2 The Confined Spaces Entry Program shall include the components:
  - Procedures for entry and for work to be performed will be evaluated prior to each entry and as a routine part of inspection activities.
  - Identification of Authorized People who have been trained in Confined Space Entry to conduct the work and provide emergency response.
  - Workers exposed to confined space risks shall have adequate and continuous safety training and practices regarding control, emergency and rescue actions needed.
  - Rescue plan and emergency procedures to be followed.
  - Communication procedures during entry and operations.
- 3.2.3 The written program shall be available to all people who may enter confined spaces on site and their authorized representatives. These sites shall have written procedures that address eliminating, controlling, or isolating the hazards faced prior to and during entry.
- 3.2.4 Each ContourGlobal business, subsidiary and contractor shall formally assign a site representative responsible for Confined Spaces Program.
- 3.2.5 The site program for confined space entry shall be reviewed annually. This review should include cancelled permits, changes to confined spaces, new potential hazards, and incidents.

### 3.3 Identifying Confined Spaces

- 3.3.1 Each facility shall conduct a facility review to determine the location of confined spaces. It is a good practice to develop a list and keep it evergreen.
- 3.3.2 Every facility shall maintain a listing/inventory (register of confined spaces) of all identified Confined Spaces, and each Confined Space shall be designated as and marked either a Permit Confined Space or Non-Permit Confined Space.
- 3.3.3 After identifying the confined space, the potential hazard before and during the entry need to be identified, addressed, and included in the work permit.
- 3.3.4 All confined spaces should easily and visually be identified and locked to prevent access from workers without proper training/preparation.
- 3.3.5 Confined spaces that are opened with keys or that have physical barriers shall have warning signs placed on them once the entrance to the confined space has been opened, in order to alert personnel and assist in avoiding unauthorized entry to confined spaces.
- 3.3.6 All signs for confined spaces shall include words "Danger Confined Space - Entry by Permit Only" to alert people to danger being present and that entry is only allowed if authorized.
- 3.3.7 All methods of carrying out the work which enable the purpose to be achieved without the need to enter the confined space should be considered.

### 3.4 Preparing confined spaces for entry

- 3.4.1 Prior to entry, all feasible controls shall be applied to prevent personal exposure to potential hazards and to maintain safe entry conditions. Potential hazards that could be

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created by the activity within the confined space shall be anticipated. The potential effects of activities outside the space on the conditions within the space shall also be anticipated.

3.4.2 Controls shall address individual hazards and contaminants and be used in the following order of effectiveness:

- 1) Eliminate the hazards.
- 2) Reduce the risks to an acceptable level.
- 3) Use personal protective equipment (PPE).

Prepare confined space for entry should be accomplished with the following steps:

**A) Isolate**

3.4.3 All confined spaces must be isolated from all external sources of energy and materials. An isolation check is included as an item of the confined work permit.

3.4.4 Pipelines attached to the confined space must be disconnected and completely separated from the confined space, if feasible. Isolation of pipelines must be accomplished using the following order of control:

- 1) Disconnect and blind the pipe side, verifying there is no pressure behind the blind via a bleed valve that remains open.
- 2) Double block and bleed, verifying there is no pressure between the blocks via a bleed valve that remains open.
- 3) Block, bleed and blank, verifying there is no pressure between the blocks and blank via a bleed valve that remains open.

3.4.5 If it is not feasible to isolate the confined space by methods 1, 2, or 3, a detailed procedure shall be developed to prescribe how the confined space is to be protected from release of energy and material into the space. The procedure shall be approved by the site manager; however, if the site manager is the entry supervisor, then off-site up-line approval is required.

**B) Clean**

3.4.6 Chemical and atmospheric hazards should be removed from the confined space. Cleaning a confined space includes, but is not limited to, the following actions:

- Emptying the space
- Clearing the space (e.g., flushing, washing, and rinsing)
- Neutralizing the hazards
- Ventilating the space for at least 12 hours prior to entry (or depending upon what local legislation states; the most stringent shall apply)

3.4.7 The Material Safety Data Sheets (MSDS) of all products and cleaning materials used in confined spaces shall be reviewed before entry. The MSDS shall be available with the permit at the permit-required confined space entry area.

**C) Monitoring**

3.4.8 Prior to entry into a confined space, a qualified person shall conduct the necessary hazardous atmospheric testing. There should be a table with hazardous atmospheric

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substances possible and safety limit parameter results to be able to crosscheck after atmospheric measures, before entering confined spaces. Only a properly trained and qualified person can perform atmospheric testing.

- 3.4.9 A qualified person shall possess the knowledge and skills necessary to use the atmospheric test equipment which includes calibration procedures, limitations of the test equipment, and understanding of how to interpret the results.
- 3.4.10 The atmospheric testing may be waived if there is no potential for a hazardous atmosphere during any period confined space entry takes place. Testing of the air or atmospheric monitoring within confined spaces shall be performed prior to entry to determine oxygen content, toxic gas potential, flammable or explosive atmospheres and hydrogen sulfide. Additional tests may be required depending upon the entry circumstances. Mechanical ventilation may be necessary to ensure an adequate supply of fresh air. This is essential where portable gas cylinders and diesel-fueled equipment are used inside the space because of the dangers from buildup of engine exhaust.
- 3.4.11 Entry shall not be allowed unless the atmosphere within the confined space is tested and the oxygen content is between 19.5 percent and 23 percent, and that the presence of any flammable gas or vapor does not exceed 10 percent of its respective Lower Explosive Limit (LEL), or according to local legislation.
- 3.4.12 Gas detectors shall be calibrated at least every six months or as recommended by the manufacturer. Meters shall be function checked or “bump” tested (i.e., operated on a known source for field verification) prior to each day’s use. Additional “bump tests” may be warranted based on manufacturer’s recommendations.
- 3.4.13 Continuous monitoring shall be used when the activity inside the confined space can alter atmospheric conditions or there is a known activity taking place outside the space during the entry that has direct potential to alter the atmospheric conditions inside the space.

**D) Confined space entry authorization and permitting**

- 3.4.14 Entry into a permit-required confined space must be authorized by the entry supervisor. They shall ensure that only authorized employees who have received the appropriate training are permitted to enter confined spaces.
- 3.4.15 For all confined spaces, a written Confined Space Entry Work Permit is required for each proposed entry into the space and includes:
  - Space to be entered
  - Purpose of entry
  - Date and authorized duration of entry
  - Names of the Authorized Entrants
  - Identified people serving as attendants
  - Identified the entry supervisors, who will be responsible for:
    - Evaluation of all confined spaces including those that are non-permit required to ensure that all hazards are controlled.
    - Completion of the work permit indicating the safety equipment required.
  - Special precautions to be observed.
    - The number of employees permitted to enter.

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- The duration of the permit.
  - Cancellation of the permit.
  - Hazards of the space to be entered.
  - Measures used to isolate the space and eliminate or control the space hazards before entry and during operations.
- 3.4.16 Each entry permit shall identify the length of time for which it is valid. The permit shall not last longer than the duration of the job, with a maximum duration of one shift.
- 3.4.17 If entrants have to use a SBA (Self Breathing Apparatus) they shall be properly trained to use it and successfully pass all medical checks. Persons attending must also have a SBA for a rescue attempt to be made.

**E) Entering and maintaining the continuity of conditions in the confined space**

- 3.4.18 Before entry into a confined space starts, appropriate rescue plans and the essential resources must be available.
- 3.4.19 Personnel should be aware of activities that can change the conditions in the confined space. If a change occurs that moves the confined space conditions outside those assessed in the permit, then the entry shall be ended immediately and reauthorized before work there continues.
- 3.4.20 Once a confined space has been opened, a warning sign and/or barricade with appropriate tags shall be placed at each point of entry to prevent inadvertent entry into the confined space. If fall hazards are created by opening a confined space, they shall be identified and protected against using appropriate combinations of rigid barriers, signs, warning barricades, and fall-arrest equipment.
- 3.4.21 Only low voltage lighting (max. 24 V AC or 48 V DC- depend of local legislation requirements) and low voltage electrical equipment shall be used inside of a confined space. When it is practically unavoidable to use electrical power tools inside a confined space, special measures should be taken to avoid electrocution (usage of special current separating transformers, 30 mA ground fault circuit breakers etc.). All of those preventive measures shall be properly described inside Method Statements and Risk assessments to work inside of confined spaces and verified by a competent electrical person and H&S representative. 110v CTE tools maximum voltage permitted protected by 30mA RCD.
- 3.4.22 An attendant shall be stationed outside each open entry point for each confined space entry. Attendants shall be in continuous contact with the authorized entrants (by agreed method[s]) and must understand the hazards that might be created by the tasks being performed in the space. Methods include visual and verbal communications and should take into account poor visibility arising from the configuration of the space or from the work being performed.
- 3.4.23 All workers entering and working inside confined spaces should have a limited allowance time to remain inside confined spaces, as a precaution safety measure.

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**F) Planning and preparing for rescue**

- 3.4.24 A written procedure must be developed, reviewed with personnel involved with the job, and implemented for summoning the rescue team and for rescuing authorized entrants from the space.
- 3.4.25 To maintain proficiency, each member of the rescue team shall participate annually in a confined-space rescue.
- 3.4.26 Each authorized entrant shall wear a safety harness and lifeline to facilitate rescue.
- 3.4.27 The written rescue plan shall identify the essential rescue equipment. The rescue team must have appropriate equipment to perform rescues involving entry. Rescue equipment shall be periodically inspected.

### 3.5 Training and Certification

- 3.5.1 Personnel acting in roles associated with confined space entry shall be trained to perform the activities defined in the site's confined space entry procedures. This training shall be provided before personnel perform any duties related to these roles. Training must be certified.
- 3.5.2 Training for personnel involved in confined space entry shall be provided by knowledgeable and experienced instructors and shall cover the content outlined in this standard. Training shall be documented and recorded according to ContourGlobal standards.
- 3.5.3 No persons shall enter or carry out work without having received the required confined space training. Training for entry to confined space shall be carried out by a competent training establishment. The complexity of the task and the responsibility of the role will determine the level of training required. Training should involve demonstrations and practical exercises as appropriate. Where practice is provided as part of the training it is important that this practice is realistic in simulating the actual conditions which are likely to be encountered.
- 3.5.4 Employees who are required to work in a confined space or in support of those working in confined spaces shall be trained in hazard control, including hands-on experience with the safety equipment involved, by a competent trainer and include:
  - Understanding the general and the specific hazards associated with hazards for each confined space that will be entered.
  - Recognition of the signs and symptoms of exposure to a hazard and the consequences of the exposure.
  - How the communications shall be maintained between the attendant and the workers in the confined space.
  - Emergency entry and exit procedures
  - Use of respirators and other protective equipment
  - First aid and CPR
  - Lock out and isolation procedures
  - Safety equipment use
  - Rescue procedures

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- Roles and responsibilities outlined in this standard
- 3.5.5 The individual in charge or authorizing the entry shall have additional training on how to evaluate the confined space ensuring that the permit calls for adequate safeguards. This individual needs to know how to use the testing and monitoring equipment and all other aspects of the entry procedure.
- 3.5.6 Simulated rescue drills shall be conducted annually for all personnel who assist in rescue operations.
- 3.5.7 Refresher training should be provided at an interval of no more than three years from the previous training.

### 3.6 Contractor Qualifications

- 3.6.1 Contract employees shall be trained to perform the duties associated with their assigned role during confined space entry. Sites must verify that contract employees who are working in confined spaces demonstrate appropriate knowledge of entry, rescue, and duty-specific tasks. The contractor should provide the training and determination of employee knowledge. The contractor's training program shall be at least as inclusive as what is outlined in this standard. Site-specific confined space entry requirements and procedures shall be coordinated with contractors before any entries commence.

### 3.7 Audits

- 3.7.1 Each business unit or region should audit compliance with this standard as part of its SHE audit program.

### 3.8 Deviation process

- 3.8.1 Deviations from this standard must be authorized by the operations leader with overall responsibility for the region after consultation with the HSE Director responsible for the site. Deviations must be documented, and documentation must include the relevant facts supporting the deviation decision. Deviation authorization must be renewed periodically and no less frequently than every three years.

## 4. References

- ContourGlobal Manual - *MHSE-001* - Health, Safety & Environment Management System Manual
- OSHAS: 18001 standards and guidelines

## 5. Appendices

- Not applicable.

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G08-S02  
Hot Work

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## 1. Purpose

This standard covers ContourGlobal guidance to prevent injuries, loss of life, environmental negative impacts, and property loss from fire or explosion as a result of performing hot work activities. It applies to, but is not limited to, the following:

*Type I* —applications producing ignition sources for combustible solids, flammable vapors and gases, and combustible dust in general areas, including:

- Open arc and open-flame welding and cutting
- Grinding, and spark-producing mechanical cutting, abrasive blasting
- Soldering and brazing
- Torch-applied roofing
- Temporary heating equipment (e.g., propane and kerosene), for equipment conditioning or for people in cold weather
- Any kind of open flames
- Similar applications producing or using a spark, flame, or heat

*Type II* —applications producing potential ignition sources for flammable vapors and gases, and combustible dust clouds (but not combustible solids) in electrically classified areas and in non-routine situations containing flammable atmospheres, including:

- Drilling
- Spark-producing hand-powered tools (e.g., hammers, chisels, shovels, and cutting saws)
- Powder-driven fasteners
- Fuel-powered tools (Fuel-powered tools may imply type I case, which will be applicable).
- Vehicles
- Unrated or improperly rated electrical equipment (e.g. unrated fiberscope, mobile phones, portable radios, cameras, various purposes field meters)
- Use of static-producing devices and materials
- Electrical testing or troubleshooting of energized equipment with the explosion mitigation devices removed or defeated.

This standard does not apply to operations in which flame is inherent to the process (fired boilers, cooking operations, designated smoking areas, firefighting training facilities).

Sites shall be aware that local regulations may impose requirements not reflected in this standard. ***The most stringent requirement shall apply.***

## 2. Management Responsibility

### Line Management

- Line management has the responsibility to implement this standard. Each site has the primary responsibility for leading and managing its own hot work program.

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## HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

## 3. Standard Contents

### 3.1 General Provisions

3.1.1 Each ContourGlobal business and operation has the primary responsibility for leading and managing its own hot work program. Site management is responsible for implementing a hot work program for the site, including:

- Establishing a written hot work program that includes a hot work permit system in accordance with this standard and complies with local regulations.
- Assigning a site hot work program manager.
- Committing resources to implement and maintain a hot work program.
- Providing training for hot work resources in accordance with this standard.
- Maintaining a first-party (site) audit program to confirm that the hot work program is being effectively applied.

3.1.2 The key objective of the hot work program shall be to prevent fires and explosions caused by hot work activities through:

- Avoiding hot work when possible
- Not allowing hot work in areas where fire and explosion risks cannot be controlled
- Relocating hot work to a safe area designated for hot work (see definitions)
- Managing hot work in areas that cannot be resolved by the above, using a formal permit system

3.1.3 Provisions involved in managing hot work therefore include:

- Considering alternative processes
- Using designated hot work areas
- Developing analyses and creating conditions for a safe operation through the work permit in non-designated areas by:
  - Analyzing local and boundary hazards of working area
  - Adopting pre-work control measures
  - Testing atmospheres prior and during the hot work activity
  - Supervising personnel performing hot work
  - Conducting post-work activities
- Written procedures, permits and Hazard Analysis (JSEA)
- Training the personnel
- Auditing the process periodically

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## 3.2 Specific Responsibilities for Key Roles in Hot Work Program

### Site hot work program manager

3.2.1 The site hot work program manager shall be responsible for:

- Confirming that the site's hot work program is implemented in accordance with this standard and that all personnel involved in the hot work program have received adequate training in accordance with this standard.
- Confirming that first-party audits are being conducted and any findings are being addressed. Annually reviewing the site hot work program.
- Confirming that contractors performing hot work have been trained on this standard and follow it.

### Permit starter

3.2.2 The permit starter is the individual who understands the task and begins filling in the hot work permit. The permit starter shall be responsible for:

- Determining if the work can be accomplished without hot work or can be performed in a designated hot work area.
- Being familiar with the potential hazards from the work itself and the operating area.
- Maintain compliance status of specific training received for this role, before issuing any hot work permits.
- Make all necessary provisions regarding the preventative requirements of the hot work permit, PPEs and emergency response equipment needed as well prior to issuing it.
- Posting approved permits.
- Re-initiating the permit after an emergency interruption.

### Site permit approver

3.2.3 The site permit approver shall be responsible for:

- Confirming that the proposed hot work is in accordance with this standard.
- Reviewing and approving the Job Safety and Environmental Analysis (JSEA).
- Conducting a field tour in the work area prior to approving the permit to begin any hot work.
- Confirming that required air monitoring is complete or ongoing and all conditions for hot work are met before approving a permit.
- Confirming that hot work is scheduled so that operations that could introduce a hazard to the hot work area are halted or not started during hot work operations.
- Confirming that the hot work has been completed.
- Sending copies of completed permits to the hot work program manager.

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## Fire watch

3.2.4 The hot work fire watch shall be responsible for:

- Understanding how to initiate the emergency alarm
- Understanding the evacuation plans and assembly points
- Knowing the location of area safety equipment
- Inspecting the hot work area before any hot work is conducted
- Confirming proper firefighting equipment is readily available
- Confirming that all conditions of the permit remain in place during the hot work
- Stopping the work if conditions are unsafe and notifying the permit starter
- Staying on watch as indicated by the permit
- Guaranteeing that combustible materials area absent from the working area, as a precaution measure

Refer to Appendix 1 for requirements and guidance for a fire watch.

## 3.3 Designated Hot Work Locations

Permanently Designated Hot Work Areas - These are essentially welding shops and fabrication shops. The main features for those areas are:

- 3.3.1 Shall be located in noncombustible buildings or building areas with secured and sealed 1-hour, fire-rated noncombustible barriers over combustible floors, walls, and ceilings.
- 3.3.2 Shall maintain the area free of flammable and combustible materials not associated with the hot work activity and isolated from surrounding combustible occupancies with physical noncombustible enclosures or open space of at least 11 m (35 ft.). This shall include:
  - Openings: Floor, wall, and duct openings within 11 m (35 ft.) are covered. Cover floor openings with a fire-stop material and/or hot work blankets, pads, or curtains.
  - Flammable and combustible materials: Remove any flammable liquids from the hot work area. Protect combustible and flammable materials that cannot be moved more than 11 m (35 ft.) away from the hot work with hot work blankets, pads, and curtains. This includes all storage of machinery with grease or lint deposits.
- 3.3.3 Shall be located in an area that is expected to be free of invading combustible dusts or flammable vapors.
- 3.3.4 Shall have a general purpose electrical classification.
- 3.3.5 Shall have area fire safety equipment operational and provide manual fire extinguishers (suitable amount – e.g., 2 pcs 6 kg dry powder fire extinguishers).
- 3.3.6 Shall have adequate means of egress.
- 3.3.7 Do not require (would not be entitled to) a hot work permit and a fire watch.
- 3.3.8 Shall be equipped with adequate “welding” screens to protect people passing nearby to be exposed to welding/cutting arc flashlight.
- 3.3.9 Welding and burning of certain materials may give rise to hazardous fumes. These activities shall be subject to a written assessment in compliance with the applicable

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[Country] Chemical Agents Regulations. (e.g., welding of galvanized fittings is to be avoided, but when required, respiratory protection must be worn, subject to risk assessment).

- 3.3.10 Where applicable local firefighting inspector (fireman) or HSE responsible personnel shall approve the area prior to starting hot works.
- 3.3.11 Temporarily Designated Hot Work Areas - An area can be temporarily designated as a hot work area. Typically, these are areas that involve few, if any, changes to be a suitable area, and provide adequate space for the work. These areas shall be approved by management, shall not be in production areas, and shall have the same properties of a permanent designated hot work area, as defined previously. Site procedures should use a permit system for them, with specified duration of the permit.

### 3.4 Permit Approved Hot Work Areas

- 3.4.1 Designating a hot work area by an approved permit includes the following steps:
  - Defining the scope of work.
  - Creating and approving the hot work permit. This includes documenting the air monitoring plan.
  - Completing a JSEA.
  - Performing the hot work and field auditing.
  - Closing the permit and returning the area to normal operations.
- 3.4.2 Conditions prohibited for hot work - a hot work permit shall not be issued if ANY of the following conditions exist:
  - Monitoring results that are at or above 5 percent of the LFL (lower flammable limit).
  - Appropriate fire-fighting equipment is not available as defined by the permit.
  - When performing Type I hot work, a permit shall not be issued if ANY of the following conditions exist:
    - In sprinkler-equipped buildings where sprinklers are impaired, unless appropriate countermeasures are in place to address the increased risk.
    - Combustible or flammable materials are within 11 m (35 feet) and cannot be moved or protected. The 11m (35 feet) distance must be aligned with local legislation and lenders/ insurers requirements.
    - Floor and wall openings cannot be covered.
- 3.4.3 A hot work permit shall be cancelled if ANY of the following conditions exist:
  - An emergency on site (e.g., a fume release or fire)
  - Any changes to the scope of work (conditions, methods, performing characteristics), including changes to personnel who signed the permit and people performing the work. The person conducting the review shall be a trained permit approver and shall sign the permit to approve the change.
  - Any condition that could result in undue hazards by performing the work

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## 3.5 Hot Work Permit

### Hot Work Permit Format

- 3.5.1 Sites shall develop a Hot Work Permit Format consistent with this standard. A basic format similar to the one that can be found on NFPA 51B (see References) can be used as a starting point and complemented with this standard's requirements.
- 3.5.2 Where the local legislation sets a specific format for a hot work permit, it should be used or updated to meet minimum requirements of the international fire prevention standards and lenders/insurers requirements.
- 3.5.3 Permit Typical General Information – it shall include:
- Date
  - Other needed permits to be integrated with (lock out, confined space, etc.)
  - Length (shift duration is the best policy)
  - Documented absence of alternatives to hot work
  - Detailed location (building, floor #, column #, equipment) including area hazards
  - Detailed description of the scope of work, including work hazards
  - PPE applicable
  - Provisions for area boundary/barricading
  - Impact of the work on area protection systems if degraded or disabled
  - Impact on escape routes (make provisions for alternatives and communicate)
  - Need and frequency of field audits
  - Availability/possibility of exposure to any explosive atmospheres and records of initial and regular surveys of the atmospheric conditions while performing hot works.

### JSEA (Job Safety and Environmental Analysis)

- 3.5.4 Prior to starting the work, a JSA shall be completed and documented to identify hazards and put into place any corrective actions deemed necessary to prevent an injury and/or incident.

### Permit closure and return to normal operations

- 3.5.5 Once the work is complete, the fire watch shall remain in the area for no less than 30 minutes (local regulations may impose different requirements. The most stringent requirement shall apply.) and carefully inspect the work and the adjacent areas for smoldering fires.
- 3.5.6 This inspection extends to floors above and below the work and adjacent rooms. Circumstances that could require an extension of the observation period shall be identified.
- 3.5.7 When the fire watch period has ended, the fire watch shall sign the permit and return it to the permit approver. The permit approver or designate shall conduct a final inspection of the area and sign the permit.

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## Permit Specific Requirements

- 3.5.8 No permits will be authorized when a fire suppression system is impaired, and permits will be cancelled if an emergency impairment occurs. No hot work (grinding, welding, soldering, etc.) is permitted in the location of a sprinkler impairment.
- 3.5.9 Basic Exclusion Radius of 11 m (35 feet) for combustible materials during hot work - the aim is to avoid the ignition of materials by the hot work. This radius is a basic reference for most situations at grade level, but can be extended to 15 m (50 ft.) or more if the source produces a greater particle speed and/or if particles are produced above ground (thus traveling more horizontally during the greater vertical travel).
- 3.5.10 Provisions for the area subjected to ignition (incandescent) particles
- Removal or proper protection of all flammable liquids, oils, and greases
  - Removal of combustible materials and dusts, which includes sweeping floors and removing trash
  - Protection of combustible floors with fire-resistive and/or noncombustible materials or equivalent, or wet them down. Protecting personnel from electrical shock when floors are wet.
  - Cover all wall and floor openings.
  - Cover, ventilate, or use water to protect ditches and floor drains.
  - In the case of elevated work, use of suspended covers/spark trapping devices around and beneath the work to collect spark. Relocate or protect combustible materials on levels below.
  - When working on ceilings or rooves, provide protection from ignition considering heat transfer on materials on the other side of those partitions.
  - When conducting hot work on enclosed equipment (piping, ducts, vessels, containers), special requirements apply, including lock out, isolation, cleaning and ventilating, and venting (general conditioning for hot work). Special procedures must be created and followed. Follow special guidance, e.g. NFPA 326.
  - Special care shall also be applied when working below grade (trenches, ditches, vaults, manholes). Confined spaces procedures may apply. Special hazards must be addressed considering heavy flammable vapors, contamination, leakage of utilities (including nitrogen) and others, impacting the need for an adequate JSEA development.

## 3.6 Hot Work Equipment

- 3.6.1 Welding sets shall be in good condition, properly maintained, and earthed. Sub-contractor's supervisors shall undertake a daily cable management inspection.
- 3.6.2 Isolation switches on welding sets shall be readily accessible.
- 3.6.3 Terminals and live components shall be adequately protected.
- 3.6.4 Cables shall be frequently inspected to ensure they are in good condition and the insulation is intact.
- 3.6.5 Damaged cables or electrical holders shall be properly repaired or replaced.

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- 3.6.6 The welding return cable shall be secured as near as possible, onto the work piece but shall not be connected to equipment.
- 3.6.7 Proper cable connectors shall be used when connecting runs of cables.
- 3.6.8 Strict cable management shall be enforced. Cables should be suspended off the ground by a minimum of two (2) meters and must not obstruct access to equipment or escape routes. When ground runs are unavoidable and trip hazards are identified, cable covers or ramps must be fitted.
- 3.6.9 Asbestos material or materials containing asbestos shall not be used on the site/plant.

#### **Use of gas cutting/welding equipment and compressed gas cylinders**

- 3.6.10 Cylinders shall:
  - Be in good condition and not suffering from corrosion.
  - Be properly color coded i.e. black-oxygen, maroon-acetylene, red-LPG, blue-argon etc. in accordance with [Country] National Standards.
  - Be individually identified.
  - Be correctly stored and segregated.
- 3.6.11 Hoses shall be properly color coded to the internationally recognized standard for the gas being used, in good condition, and fitted with hose connectors attached by permanent clips.
- 3.6.12 Check valves, and flashback arrestors must be used on both hoses at all times.
- 3.6.13 Users shall check the equipment for perished, damaged hoses, regulators, and pressure gauges, etc. Defects must be reported by users to their supervisors.
- 3.6.14 Gas cylinders shall not be left lying around. Arrangements should be made to store cylinders appropriately with clear segregation of full and empty bottles.
- 3.6.15 Compressed gas cylinders shall be stored upright in a purpose built secure enclosure with adequate ventilation. All compressed gas cylinders shall be transported and handled in approved carriers or cradles and may not be put into use unless secured in a purpose built trolley.
- 3.6.16 Suitable facilities to minimize manual handling of cylinders should be provided.
- 3.6.17 When in use, cylinders must be secured in trolleys and a bottle key shall be kept attached to the cylinders in use.
- 3.6.18 Stored oxygen and fuel gas cylinders shall be kept separate with a minimum separation distance of 5m. Cylinders shall never be transported, stored or used in a horizontal position but must be secured in an upright position.
- 3.6.19 All gas cylinders must be handled with care and they must not be misused or abused. They shall be properly shut off when not in use and safety caps must be fitted when being moved or stored.
- 3.6.20 Care must be taken to ensure that gas equipment, including hoses, is not allowed to cause obstruction of roadways, walkways, manholes, ladders or other means of access where they can cause hazards or be damaged. Hoses not in use should be coiled up and put in a safe place. Hoses should, whenever possible, be supported off the ground.

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### 3.7 Air Monitoring

- 3.7.1 Documented information about air monitoring shall include the specific statement of its need in the permit (yes or no), along with data on the instrument, calibration data and perfect traceability to the item actually used in the field; the permit shall include also the monitoring plan, the monitoring results and the person that performed air monitoring. Refer to Appendix 2 for more detailed requirements on Air Monitoring.

### 3.8 People

- 3.8.1 Personnel performing hot work and activities – names, PPE assigned, updated training status, equipment review, hazard review, hot work area adequacy, warning signs.
- 3.8.2 Fire Watch – name, updated training status, emergency equipment, register of nearest alarm pull station. Requirement of a minimum 30-minute watch after completion or relevant breaks in hot work.
- 3.8.3 Welders shall wear:
- Face and eye protection with correct grade of filter. This includes light eye protection under welding hood.
  - Welders apron or full body welder's overalls
  - Welder's gauntlets
  - Long sleeved flame retardant overalls
  - Neck protection as applicable
  - Welders shall wear safety helmets at all times, except while welding. When it is agreed as impractical by the use of a risk assessment, subject to mitigation of hazard, i.e., no work overhead, or shielded from falling objects.
- 3.8.4 Approval Signatures
- Permit initiator
  - Permit approver (a member of the line organization for the area where work is being done. Procedures shall define authorization levels related to the risk degree involved)
  - Fire Watch
  - Site HSE representative, fireman, and/or firefighting inspector
  - Re-approval process (only if suspension occurs for the shift the permit was approved) - can occur if the cause of suspension no longer exists and all the initial requirements for the permit still are met. Monitoring, duration and approvals must be updated.

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## 4 References

- ContourGlobal Manual
- *MHSE-001* - Health, Safety & Environment Management System Manual
- NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work
- NFPA 326, Standard for the Safeguarding of Tanks and Containers for Entry, Cleaning, or Repair

## 5 Appendices

- Appendix I – Fire Watch
- Appendix II – Atmosphere Testing

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## Appendix I - Fire Watch

The fire watch has responsibility to make sure the hot work area is maintained in a fire-safe condition throughout this work and has the authority to stop the hot work if unsafe conditions are observed.

- The hot work permit shall specify if a fire watch is needed, the number, the locations and how long they shall remain in place after the work is completed. A fire watch is not required for designated permanently or temporarily approved hot work areas.
- A fire watch must be someone that is not performing the hot work.
- During and following the hot work, the fire watch shall continually monitor:
  - the immediate work area
  - areas adjacent to the hot work
  - for conditions of the hot work permit
  - for changing wind and weather conditions
- The fire watch shall have the authority and shall have demonstrated ability to stop the hot work operations if unsafe conditions develop.
- Fire watch shall be maintained throughout the hot work operation, including breaks and meal times.
- The fire watch shall be maintained for at least 30 minutes after the completion of the work. The time could be extended beyond 30 minutes if there is the potential for a fire to develop slowly or be difficult to detect.
- The fire watch shall try to extinguish a fire only after stopping the hot work, activating the emergency response plan, and when a fire is within their training and the capacity of the available suppression equipment.
- Fire suppression equipment specified in the hot work permit shall be available at the location identified in the permit.
- The fire watch shall be trained in
  - the site hot work procedure
  - the use of fire response equipment and systems (hands-on)
  - the activation of the emergency response (without leaving the area – must have communication gear)

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## Appendix II - Atmosphere Testing

- Air monitoring shall be conducted by a trained individual (\*) prior to and during the hot work process as identified on the hot work permit, including, but not limited to, the immediate work area and all surrounding tanks, piping, ditches, diked or confining areas, sumps, vents, tank skirts, low-lying areas, or adjacent spaces for the presence of flammable vapors.
- Testing shall be conducted prior to the start of the hot work and upon return to the hot work after breaks or lunch. The hot work permit may identify an additional testing frequency when using periodic monitoring. The frequency shall not exceed a 2-hour period.
- If the meter registers any changes during the hot work activity, all work must immediately stop, and the permit initiator shall be contacted immediately.
- The following shall be documented on the hot work permit according to the sampling plan: monitoring results, including the percent LFL; name of the person performing the monitoring; and time.
- Continuous monitoring shall be used for a number of kinds of Type II (classified areas) hot work. Specific standards for those areas shall be developed with all relevant requirements included.
- Continuous monitoring shall also be used for Type I work in enclosed equipment and shall be considered in flammable materials warehouses and any areas that can be invaded by flammable vapors due to surrounding hazards.
- Permit shall identify the number and location of sampling points consistent with flammable hazards and work configuration (a task for the Permit Starter). In dedicated facilities, the site procedure may define optimal sampling points for specific areas, equipment or tasks. It is not the scope of this standard to provide this degree of detail.
- Any reading above 0 percent LFL and less than 5 percent LFL, prior to or at any time during hot work, shall suspend the hot work permit and be investigated immediately, and the results shall be documented. The work shall not begin or continue until the source is found and suitably mitigated. Properly calibrated air monitoring equipment should have a combustibility reading of 0 percent LFL, unless a source of flammable vapors is present. Equipment shall be reviewed prior to sampling, verifying that a daily calibration check (bump test) has been completed and the equipment and all accessories are in good working order.
- **At no time shall hot work be conducted if the combustibility reading on the air monitor is above 5 percent LFL.**
- A maximum limit of 5 percent LFL is used because meters are calibrated with a known gas, usually methane or pentane. When sampling for different gases, the reading on the meter is different than the true reading. Meter manufacturers can provide correction tables if the true percent LFL is needed. Also, when sampling in some spaces (e.g., enclosed equipment) the atmosphere is normally not well mixed. Therefore, the concentrations of flammable gases could vary at different elevations or in isolated pockets connected to the space.

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(\*) The person performing the monitoring, the permit approver, and the field auditors shall be qualified to operate the meter and aware of its limitations.

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G08 –S01  
Lock out & Tag out

**CONTOURGLOBAL®**





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## 1. Purpose

This standard covers ContourGlobal guidance to prevent incidents that may occur when performing interventions on plant equipment, basically associated with inspection, maintenance, cleaning, and similar operations. It specifies the requirements and guidance for controlling hazardous energy and/or materials. It also describes how to achieve and maintain the security of any isolation made.

Sites shall be aware that local regulations may impose requirements not reflected in this standard. ***The most stringent requirement shall apply.***

## 2. Management Responsibility

### Line Management

- Ensure this standard is properly implemented and is compliant with all relevant requirements.
- Ensure resources and personnel are available and trained to implement all requirements.

### HSE Organization

- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.
- Audit, jointly with Line Management, if all relevant requirements are implemented.

## 3. Standard Procedure Contents

Lock out & tag out is performed to prevent injury to personnel or damage to property by the unexpected release of hazardous energy. When planning a lock out, it is important to consider the nature of all hazardous energy that may be present.

### 3.1 General Provisions

- 3.1.1 Each site shall have the appropriate administrative controls in place to help assure lock out & tag out is implemented in an effective way. These shall include, but are not limited to the following:
- Local procedures consistent with this standard.
  - Training personnel on lock out & tag out.
  - Management of special hazards when implementing lock outs, including PPE for people involved. These shall be identified and documented in procedures.
  - Review of new installations and equipment modifications regarding adequacy for energy isolation.
  - Maintenance of the hazardous energy/materials isolation devices.
  - First-party audits

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## 3.2 Recognizing Hazardous Energy/Materials Sources

- 3.2.1 All sources of hazardous energy/materials shall be recognized prior to initiating any lock out/ tag out.
- 3.2.2 All hazardous energy/materials sources shall be controlled (removed/deactivated, isolated or blocked) prior to potential exposure. Examples:

Energy/Material Source Type	Action
Capacitance, Inductance	Isolating from means and discharging/grounding
Pressure	Isolating and releasing
Kinetic / rotating	Stopping and securing
Elastic (cables, springs, links)	Securing/removing tension before disconnecting or dismantling
Suspended weights	Lowering/securing to prevent movement
External forces (wind load, bumps or shocks)	Protecting, securing to avoid movement
Electrical/hydraulic	Looking for sneak circuits (multiple feeds) assuring complete isolation

## 3.3 Personal Expected Behavior

- 3.3.1 People involved with the area or task related to the lock out & tag out procedure is expected to behave/operate with the following provisions, as applicable to each role performed, as follows:
- Each authorized employee and each person potentially exposed to the hazardous energy shall place a lock and danger tag on the energy-isolating device or other appropriate location. Individuals who enter the hazard zone of a lock out shall be considered potentially exposed to the hazard.
  - Before starting work, each authorized employee working on a task shall determine to his or her satisfaction that the appropriate isolations are in place and the isolations are secure for the task in which he or she is involved.
  - Clear, effective, and ongoing communication of the lock out & tag out status shall be made to all affected personnel impacted by the lock out & tag out and all authorized personnel involved in the lock out & tag out. Communications shall also include the boundary of the lock out & tag out.

## 3.4 Lock out Written Procedure

- 3.4.1 Each site shall establish written procedures for controlling hazardous energy/materials and methods for isolating hazardous energy. These procedures shall include information on both Management and Procedural provisions.
- 3.4.2 Management Provisions - at a minimum, each site's lock out procedure must include details on:

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- The responsibilities of all personnel involved in the work, including who is responsible for determining that the hazardous energy sources are controlled for the duration of the work.
- Mandatory training requirements.
- Specifying measures to be used to enforce the procedure's requirements.

**3.4.3 Procedural Provisions** - at a minimum, each site's lock out procedure must include details on:

1. Hazardous energy/materials recognition
2. Identifying and controlling exposure to hazards while performing the lock out & tag out
3. Controlling (removing/deactivating/isolating/blocking) the source of hazardous energy and hazardous materials
4. Identifying in writing the isolation points for lock outs
5. Installing lock out devices (adequate and efficient physical blocking lock)
6. Identifying the lock out devices (tag or label)
7. Verifying that the hazardous energy source has been removed (TEST)
8. Trying to operate the equipment to determine that the hazardous energy is under control (TRY)
9. Achieving continuity of lock outs across shifts
10. Releasing the equipment from lock out
11. Specifying measures to be used to remove an employee's lock out lock when the employee who applied the lock is not available to remove it

## 3.5 Lock out Devices Management

The following provisions apply to lock out devices:

- 3.5.1 Installation must ensure that inadvertent operation of the isolating device is impossible.
- 3.5.2 Each site must define, in written procedures, the method of controlling or securing each individual key for each of the lock out devices for all lock outs.
- 3.5.3 Where work extends over multiple days or shifts, a lock out device may be permitted to remain in place for the duration of the work period. However, each individual shall verify the lock out is in place when returning from any absence from the work site.
- 3.5.4 Each person who installed a lock should remove it when his or her work is complete.
- 3.5.5 In the situation in which an authorized employee who placed the lock out device is not available to remove that lock out device, the device may be removed provided that the site's lock out program has site-specific procedures and training for that purpose.
- 3.5.6 When only a tag out is possible, due to equipment design, procedures shall address the tag out and additional steps, capable of providing the same safety level obtained by using a lock out.

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### 3.6 Verifying that hazardous energy/materials are controlled

- 3.6.1 All isolations shall be verified, considering the following:
- An effective try-step shall be performed, accordingly to procedures. Methods for verifying or double checking the isolation may include:
    - Opening drains or vents
    - Viewing gauges, level indicators, sight glasses (make sure they are in working order)
    - Visually checking mechanical/electrical items affected. Electrical absence of energy must be tested by site-approved voltage-detectors.
  - All interlocks that may prevent an effective try-step must be accounted for, including logical software interlock blocking. The software developed should be checked during the pre-startup safety review and included in the management of change process.
  - During the try-step the area must be cleared of people and any potentially affected materials or equipment.
  - The verifying task may impose hazards; those shall be anticipated and provisions made, including PPE.

### 3.7 Releasing equipment from lock out

- 3.7.1 Sites should develop equipment-specific startup procedures to help ensure safe startup of the equipment.
- 3.7.2 Before the equipment is released back to the proprietor, the authorized employees working on it shall determine that it is safe to reintroduce the hazardous energy or material to the equipment.
- 3.7.3 The equipment's status shall be conveyed to the proprietor when the equipment is released from lock out.
- 3.7.4 The proprietor shall inspect or otherwise verify the integrity of the equipment before hazardous energy or hazardous material is reintroduced. This verification may include leak testing, pressure testing, or simple visual inspection.
- 3.7.5 Partial release of the lock out could be authorized only under special circumstances and documented with LO-TO partial release protocol. For example, for pre-testing or pre-commissioning activities it could be essentially to release control voltage to some actuators or drives which are mechanically disconnected. For the purpose of loop checking on the low-voltage electrical circuits, they could be energized until the rest of the equipment is still locked and de-energized.
- 3.7.6 Software off-line testing followed by on-line testing shall be performed under dedicated written procedure ensuring that the equipment is safe to operate and people are removed from the area.

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### 3.8 Danger Tags

Provisions to be made regarding Danger Tags include, but are not restricted, to the following:

- 3.8.1 Danger Tags shall be designed to be different from all other tags available at the site.
- 3.8.2 Each site shall establish a requirement for Danger Tag design for all lock out applications.
- 3.8.3 The Danger Tag shall be readily identifiable as a Danger Tag.
- 3.8.4 Danger Tags shall not be used for any purpose other than to indicate an isolation point for controlling hazardous energy.
- 3.8.5 The Danger Tag must provide space for the name of the employee and the date the tag is installed. It may also provide space for other information (e.g., the craft or the reason for the tag, telephone number of the person who installed the lock, or his department telephone responsible for this isolation point).
- 3.8.6 Danger Tags must be able to withstand the environment in which they are used for the duration of the lock out.

### 3.9 Important Complementary Provisions

#### Lock out Process Provisions

- 3.9.1 In some cases, deactivation or isolation cannot be verified by the try-step with adequate reliability. These must be recognized and specific testing procedures developed.
- 3.9.2 Energy re-accumulation due to system design, configuration, or installation may occur, e.g. long cable capacitances. The same apply to sneak circuits, both electrical or hydraulic.
- 3.9.3 Devices not suitable for isolation:
  - Push buttons, selector switches, interlocks, and other control-circuit type devices are not hazardous-energy-isolating devices and shall not be used for lock out except as part of a fail-safe system. Safety switches or emergency push buttons cannot be considered as trusted isolation points. The machine or the equipment shall be isolated back at the switch gear room to ensure inadvertent operation.
  - Control and solenoid valves are not usually adequate means of providing isolation for fluids.
- 3.9.4 Potentially dangerous exposures during normal operations, like minor tool changes or servicing that is routine as well as repetitive tasks, shall also be protected by adequate lock out & tag out procedures or alternatively, by built-in, fail-safe devices. Provisions must be made in order to recognize that the equipment is in the “safe mode” during that operation (a specific try-step). Fail-safe circuitry must be tested at regular intervals.
- 3.9.5 Control (logical) circuits lock outs - the control device shall be part of a fail-safe system designed for lock out. A procedure shall be documented, including a try-step. A regular testing procedure shall be included. Logical changes can only be made by specially authorized personnel.

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- 3.9.6 Emergency stop devices shall not be used for lock out & tag out unless they are part of a fail-safe system specifically designed for the equipment.
- 3.9.7 Placing of high voltage circuit breakers at their test position as a primary isolation is forbidden. Circuit breakers shall be fully racked out to provide a safe isolation point.

#### **Shift and Personnel Changes**

- 3.9.8 Site-specific procedures shall be developed to provide continuity of lock out or tag out protection during shift or personnel changes.
  - Each affected incoming shift employee shall verify that the machine or equipment has been effectively de-energized and isolated to help assure continuity of protection.
  - The orderly transfer of personal lock out devices between outgoing and incoming employees shall help ensure that there is no gap in coverage between the outgoing employee's lock out device removal and the incoming employee's lock out device attachment.

#### **Lock out Keys and Removal Special Provisions**

- 3.9.9 A single, personal lock out lock that is issued to an employee shall be individually keyed from other employee personal lock out locks. If an employee is issued multiple personal lock out locks, the locks shall either be individually keyed or keyed alike as a personal lock out lock set.
- 3.9.10 No duplicate keys shall be permitted for personal or series locks.
- 3.9.11 In the rare situation in which an authorized employee who placed the lock out device is not available to remove that lock out device, the device may be removed provided that the site's lock out program has site-specific procedures and training for that purpose.
- 3.9.12 The following questions shall be addressed in the procedure:
  - How does the site positively verify that the authorized employee (who applied the lock out device) is not at the site?
  - What reasonable efforts does the site execute to contact the employee to inform him or her that the lock out device(s) has been removed?
  - How does the site help ensure that this employee is made aware of the removal of the lock out device before returning to work at the site?

#### **Interfacing other related Safety Standards**

- 3.9.13 This standard does not cover special measures related to other important safety standards, e.g.:
  - Electrical Hazards
  - Line Breaks
  - Confined Spaces
  - Machine Safety (and moving parts)

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- 3.9.14 Those standards must be correctly applied whenever applicable, and related items adequately linked with this standard, because additional provisions may apply regarding personnel and equipment safety.

### 3.10 Permit to Work

- 3.10.1 All lock out & tag out activities require a work permit. The permit must identify the equipment to be serviced, the types and unique energy characteristics to be encountered, methods for safe work, and the process or procedures to be used to accomplish the task.
- 3.10.2 If any simultaneous activities (routine/non-routine) are being carried out nearby, this shall be taken into consideration when issuing the work permit, and the concerned persons shall be alerted accordingly.

### 3.11 Contractor Management

- 3.11.1 The provisions of this standard shall apply to work performed by contractors and/or work involving contractors. However, whenever contractors participate in lock out & tag out, the contractors' programs shall be coordinated with the site program.

### 3.12 Auditing

- 3.12.1 The site shall conduct a periodic audit of each written lock out & tag out procedure while "in progress" to help ensure that the procedure is being followed.
- 3.12.2 The periodic audit shall be performed by an authorized employee other than the one(s) utilizing the lock out procedure being inspected. The periodic audit shall include an interview between the inspector and each authorized employee and affected person regarding their responsibilities under the lock out & tag out procedure being audited.

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#### 4. References

- ContourGlobal Manual  
*MHSE-001* - Health, Safety & Environment Management System Manual
- OSHAS: 18001 standards and guidelines

#### 5. Appendices

- Not applicable.

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# G06-S02 - HSE Inspections

**CONTOURGLOBAL®**



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## 1. Purpose

This standard includes ContourGlobal requirements and guidance for managing and conducting HSE inspections to identify potential hazards in the workplace and ensure compliance to internal and external requirements. It covers how and when to schedule HSE inspections, Level 1 and Level 2, assigning people to the inspections, what to look for, and how to document and report the findings.

## 2. Management Responsibility

### Line Management

- Perform Safety Tours (Level 1 Inspections) on a regular basis, defined with their line manager, and in accordance with this procedure.
- Manage Safety Tours feedback and ensure appropriate follow-up measures are implemented and monitored if required.
- Ensure the implementation of the Level 2 inspection process and the achievement of the site annual objective.

### HSE Organization

- Define annual HSE inspection target values for each site.
- Train ContourGlobal employees (or train-the-trainers) in the principals of this standard.
- Support Line Managers in technical aspects to comply with this standard.

## 3. Guideline Contents

### 3.1 HSE Inspections

- 3.1.1 Each facility shall conduct periodic HSE Inspections, Level 1 (“Safety Tours”) and HSE Inspections, Level 2.
- 3.1.2 HSE Inspection Level 1 is a high-level observation activity, performed by a ContourGlobal top manager, a local non-technical manager, or a manager from another site visiting the facility. The objectives of the HSE Level 1 (“Safety Tour”) are:
- To observe unsafe conditions and people’s behaviors in real work situations.
  - To engage them to discuss the consequences of their unsafe behaviors.
  - To change behaviors by mutual agreement:
    - their own unsafe behaviors to safe behaviors
    - other people’s behaviors so that they have safe behavior as well
    - your own behavior

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- To demonstrate visible leadership, support for safety and concern for people's welfare.
- 3.1.3 HSE Inspection, Level 2 is an activity which views closely and critically the work processes on ContourGlobal operation and construction sites, in order to:
- Identify potential hazards in the workplace involving personnel, plant, equipment, and work methods.
  - Ensure that internal and external requirements (ContourGlobal OHS Standards, legislation, IFC) are being met.
  - Ensure that workplaces have adequate space, access and facilities.

## 3.2 HSE Inspections, Level 1 – Qualification, Preparation and Training

- 3.2.1 For HSE Inspections Level 1, ContourGlobal top managers, sites/projects/offices managers shall be initially trained on the Safety Tour process by the HSE Organization. Training materials, including ContourGlobal Managers Safety Tours training modules and Safety Aide-Memoir leaflets to provide guidance on how to conduct a Safety Tour, shall be used for that purpose.
- 3.2.2 HSE Inspections Level 1 (Safety Tours) shall take about one hour and shall be performed in a relevant area of the site where there are people performing their activities.
- 3.2.3 Both unsafe conditions and people's behaviors shall be observed during a HSE Inspection Level 1. The following behavioral categories shall be observed:
- Reaction of people
  - Position of people
  - PPE
  - Procedures being followed
  - Tools and equipment
  - Housekeeping
- 3.2.4 Safety Tours shall be performed with a dedicated Safety Audit Checklist asking open questions and checking related site documentation such as work permits, qualification certificates, risk assessments or method statements.
- 3.2.5 It is not necessary to complete all sections of the Safety Audit Checklist. The HSE Inspection Level 1 performer shall select the most relevant sections regarding the type of site, the area inspected and the general condition of the tour. During and after the Safety Tour, feedback shall be provided to the local teams, verbally and in writing.
- 3.2.6 HSE Observations (Safety Tours) shall be reported by the site where the observations were made. The local HSE representative shall report the number of HSE Observations (Safety

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tours) conducted on site and all the CAPA related to them each month in the site HSE monthly report.

- 3.2.7 The Intellex management software shall be used to issue the Safety Tour checklist, report non-conformances or hazards identified during Safety Tours.
- 3.2.8 The sites shall document, maintain and keep a procedure which indicates the roles, responsibilities, procedural steps and resources allocated to perform HSE Observations.
- 3.2.9 All the documents and records related to the HSE Observations such as completed checklists and corrective action plans shall be identified, noted and kept on sites.

### 3.3 HSE Inspections Level 2 - Qualification, Preparation and Training

- 3.3.1 For Level 2 HSE Inspections, sites/projects shall establish at the beginning of the year an HSE inspection schedule including monthly number of inspections required, workplaces and units which shall be inspected, and nominated employees to perform the inspections. For each inspection conducted, a Safety Inspection checklist shall be completed.
- 3.3.2 A monthly and annual target of safety inspections shall be defined by the HSE team for each site and is part of the sites scorecards. This target is calculated at the beginning of the year based on the estimated site headcount (ContourGlobal employees and contractors):

*# Minimum of Safety Inspections = 30% × Headcount × 12 months*

*Example: 40 ContourGlobal employees & 60 contractors*

*30 inspections minimum per month & 360 for the entire year*

- 3.3.3 The headcount is based on the average headcount estimated by the sites/projects for the 1st semester and the 2nd semester. At the end of the 1st semester, the sites/projects can update their 2nd semester headcount in order to adjust the objective in the event of fluctuations.
- 3.3.4 The targets are defined only twice a year (in January and July); no changes are accepted during a semester, because the site's headcount fluctuation shall be estimated.
- 3.3.5 Employees who will perform Level 2 HSE inspections and employees who will report inspections, define, implement, and monitor corrective and preventive actions shall be initially trained on the process. The ContourGlobal HSE inspection training module shall be used for that purpose.
- 3.3.6 Technical inspections shall also include a checklist consisting of 30 questions grouped in several areas:
  - Housekeeping
  - Emergency response
  - Fire safety
  - Personal Protective Equipment

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- Safe workplace (physical, chemical, electrical hazards, etc.)
  - Environmental protection
- 3.3.7 Where observations do not meet ContourGlobal standards during a HSE inspection, a non-conformance is identified. Where a non-conformance is identified, the site/project team shall define and implement corrective and preventive actions.
- 3.3.8 When corrective/preventive actions (CAPA) are defined, the following points have to be documented:
- Responsible person for the implementation;
  - Responsible person for the monitoring and review of completion & effectiveness;
  - Target date for completion;
- 3.3.9 The monthly number of HSE Inspections Level 2 performed on a site/project shall be reported to the OHS corporate team through the OHS Monthly Reporting process as a leading indicator. Where the monthly value is below the target, the site/project team shall review their inspection schedules for the next month.
- 3.3.10 The Intelex Management Software shall be used to schedule HSE inspections, edit HSE inspections checklists, report HSE inspections performed, and record completed checklists. The corrective and preventive actions shall be documented and monitored through the Intelex module.
- 3.3.11 All the documents and records related to HSE Inspections process, such as completed checklists and corrective action plans, shall be identified, noted and kept on site.

## 4. References

- Occupational Health & Safety Assessment Series (OHSAS) 18001:2007
- US Department of Labor, Occupational Safety and Health Administration (OSHA) – An Overview: Recording Work-Related Injuries and Illnesses

This ContourGlobal procedure refers to the following internal documents (available on SharePoint in the Health & Safety Shared Documents folder).

- Safety Walkabout Aide-Memoir
- Safety Audit Checklist
- CONTOURGLOBAL Managers Safety Tours training module
- Intelex Level 2 Inspection Checklist Procedure
- Level 2 OHS Inspection Checklist
- Contractor Management Guidelines
- CONTOURGLOBAL Safety Inspections Training Module

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## 5. Appendices

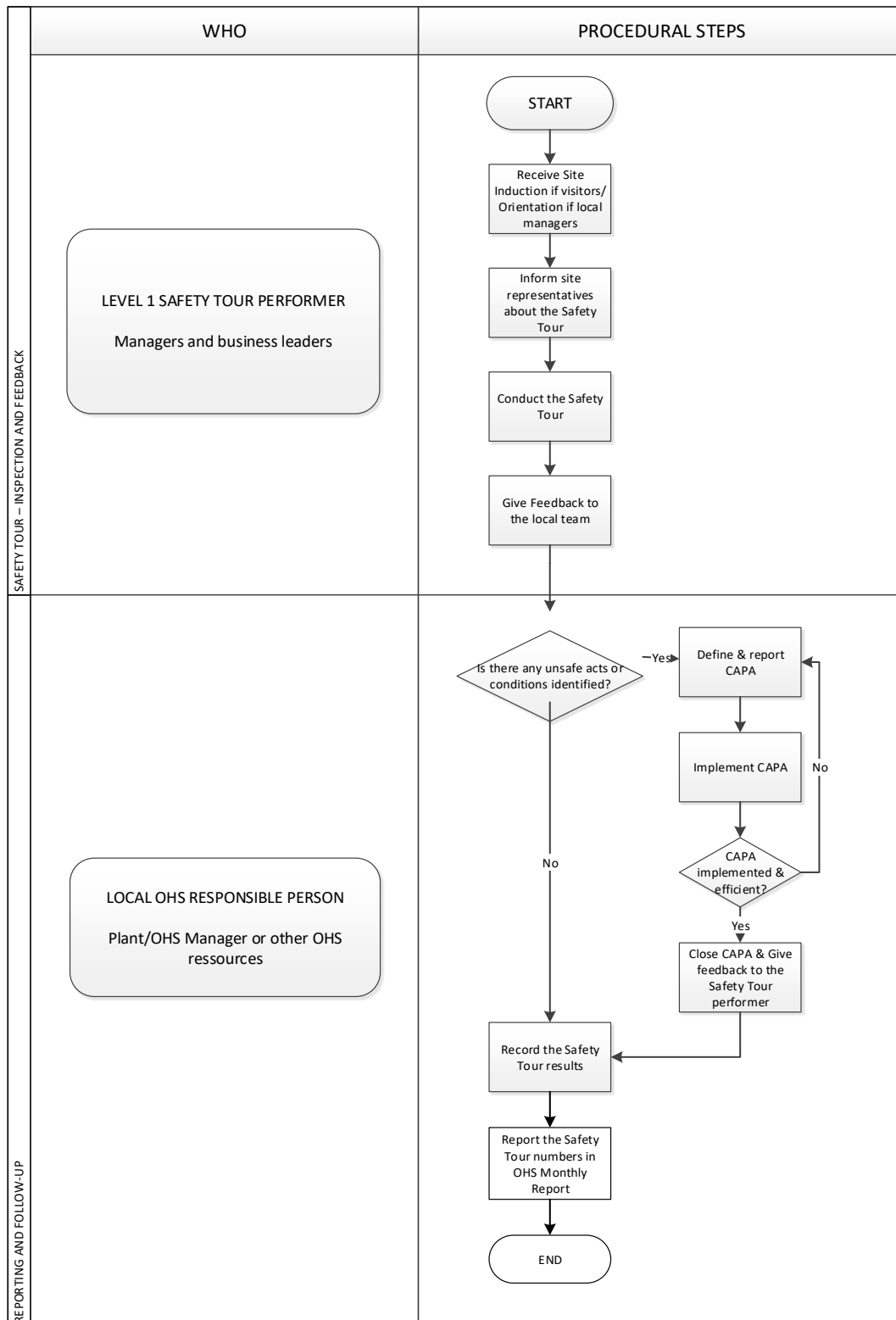
Appendix I - Process Flow, HSE Technical Inspection Level 1

Appendix II - Process Flow, HSE Technical Inspection Level 2

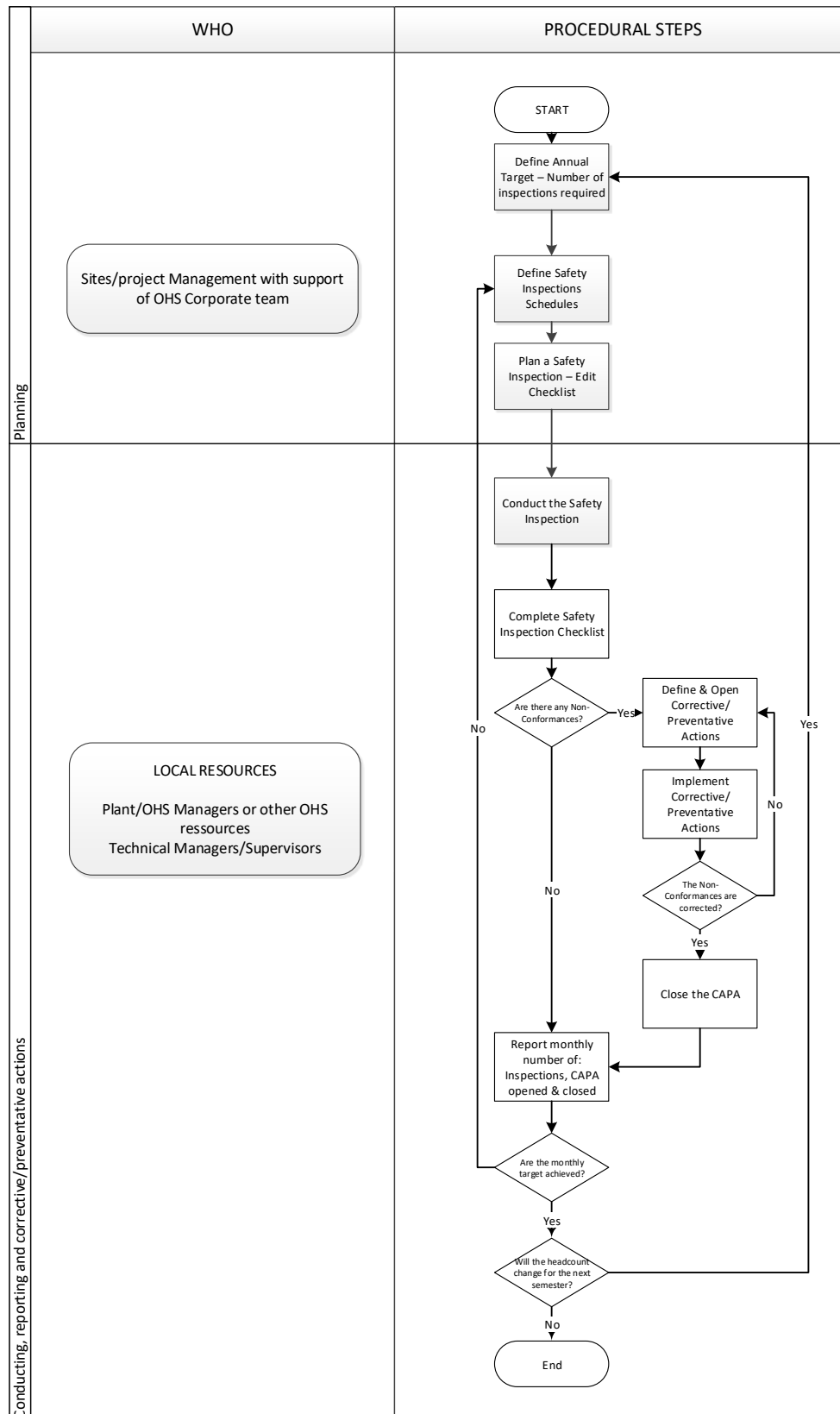
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## Appendix I - Process Flow, HSE Inspection Level 1



## Appendix II - Process Flow, HSE Inspection Level 2



## Level 2 OHS inspection checklist

		Yes	No	N/A	Corrective / Preventive action	Responsible	Target date
1	Is the general housekeeping on site acceptable?						
2	Are all passageways free from slipping or tripping hazards?						
3	Are pedestrians and mobile equipment and/or vehicles adequately segregated?						
4	Are all emergency exits clear of blockages?						
5	Are all fire extinguishers within their test date and free from obstruction?						
6	Are all safety signs and emergency lights clearly visible and in working order?						
7	Is the fire alarm tested weekly?						
8	Are all First Aid kits readily accessible and adequately stocked?						
9	Are the PPE requirements for each area clearly identified?						
10	Is everyone wearing the appropriate PPE in the designated areas?						
11	Are all moving or rotating parts of machinery adequately guarded?						
12	Are all emergency stops clearly labelled and regularly tested?						
13	Are people protected from contacting hot surfaces or exposure to high ambient temperatures?						
14	Are all compressed gas cylinders stored upright and secured with a chain or bar?						
15	Does all electrical wiring appear satisfactory and free from damage?						
16	Is permit to work documentation clearly displayed at the point of work?						
17	Are the procedures and risk controls identified in the PTW documentation being followed?						
18	Are people carrying out manual handling activities in a safe manner?						
19	Is the lighting adequate for the tasks being performed on site?						

		Yes	No	N/A	Corrective / Preventive action	Responsible	Target date
20	Is noise appropriately controlled on site?						
21	Is dust appropriately controlled on site?						
22	Are all storage areas in good order and tidy?						
23	Are there adequate facilities available for the disposal of general waste?						
24	Are there suitable facilities available for handling and disposing of hazardous waste?						
25	Are all items to be recycled in the correct recycling bins?						
26	Is waste water and other effluent appropriately controlled?						
27	Are all containers adequately identified with their contents and the potential risks to health and/or environment?						
28	Are material data safety sheets available where chemicals are stored and used?						
29	Are eye wash and or safety showers readily accessible and operating?						
30	Are there adequate spill kit facilities and are they suitably located on site?						