



SOCIETY OF EXPLORATION  
— GEOPHYSICISTS —

# Guidance on the development and implementation of HSSE plans for student field activities

Document Number SEG-GDE-HSSE-001

---

## Document History and Control

Version Number	Issue Date	Comments/ Reason for Issue	Prepared By	Approved By
0.5	10/17/17	Initial draft	SEG HSSE Committee	SEG Board
1.0	3/27/18	Proposal to SEG Board	SEG HSSE Committee	SEG Board

---

Document Review Due: 03/27/2020

### DISCLAIMER

This document is provided as guidance for individuals and organizations involved in field activities that might involve some safety risks. It is an example of the duty of care that an organization should follow when safety risks exist. The SEG can provide no financial assistance for the development of such plans.

## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>5</b>
1.1	Purpose & Scope .....	5
1.2	Comparative industry use of HSSE systems & plans .....	5
1.3	Academic equivalent HSSE systems & plans .....	5
<b>2</b>	<b>CONTENTS OF A PROJECT SPECIFIC HSSE PLAN .....</b>	<b>7</b>
2.1	Introduction, Purpose & Scope.....	7
2.2	Project Description .....	7
2.3	Management System Interfaces.....	8
2.4	Organization, Resources & Documentation .....	8
2.5	Hazard & Risk Management .....	8
2.6	Planning           9	
2.7	Implementation & Monitoring.....	9
2.8	Emergency Response Plans .....	9
2.9	Appendices       10	
<b>3</b>	<b>FIELD IMPLEMENTATION OF THE HSSE PLAN .....</b>	<b>11</b>
<b>4</b>	<b>AFTER THE ACTIVITY IS COMPLETED .....</b>	<b>11</b>
<b>5</b>	<b>OTHER APPLICABLE INDUSTRY GUIDANCE.....</b>	<b>12</b>
5.1	International Association of Geophysical Contractors .....	12
5.2	International Association of Oil and Gas Producers .....	12
5.3	Ground Geophysical Surveys Safety Association .....	13
5.4	Additional Resources for Ground-Penetrating Radar and Near-Surface Geophysical Prospecting       13	
<b>6</b>	<b>APPENDICES .....</b>	<b>14</b>
6.1	Acronyms         14	



## 1 INTRODUCTION

The Society of Exploration Geophysicists (SEG) sponsors or manages several types of field activities for student chapters and members. This includes Field Camps and also Geoscientists *Without Borders* (GWB) projects.

Each field activity should have a Health, Safety, Security and Environmental (HSSE) plan developed to help manage the risks involved with the tasks involved during the field activity. It is important that the development of an HSSE plan is understood to be not just a step in applying for funding but an important risk control and mitigation tool for the field activity it covers. All personnel involved in the activity should be intimately aware of the plan's contents, and understand how to implement its requirements.

### 1.1 Purpose & Scope

The purpose of this document is to provide guidance to student chapter members and faculty advisers on what should be included in a field activity HSSE plan, and how the plan should be utilized during the project.

This guidance document is applicable to all field activities and projects that receive funding from the SEG or SEG Foundation, or are managed by the SEG or SEG Foundation, and is based on industry guidance for commercial geophysical operations.

### 1.2 Comparative industry use of HSSE systems & plans

Within the geophysical industry there are several tiers of HSSE plans for a geophysical operation. The highest level will be a head-office or corporate HSSE management system for the geophysical company (IOGP Report 510 and IOGP Report 511).

Next, on each seismic crew there will be a Crew HSSE Plan which is the field implementation of the corporate system (IOGP Report 432). This contains all the policies, procedures, work instructions, etc. that are specific to this particular crew.

As a crew will go from project to project, it will also develop Project Specific HSSE plans, containing all the details that are specific to each project. IOGP Report 432 contains very specific recommendations for the contents of an industry Project Specific HSSE Plan.

### 1.3 Academic equivalent HSSE systems & plans

Many universities will have HSSE management systems in place for ongoing activities such as laboratories and field activities. These are equivalent to the corporate HSSE management systems in the business world.

For field activities, a Project Specific HSSE Plan is also needed to complement the University management system. As student field activities are relatively short in duration, it

makes sense to create an HSSE plan that combines the content of the industry Crew and Project HSSE plans. It is recommended that the contents of this combined Project Specific HSSE Plan that are covered in the remainder of this guidance document.

---

## 2 CONTENTS OF A PROJECT SPECIFIC HSSE PLAN

It is recommended that the following topics be covered in a Project Specific HSSE Plan. Each item is covered in further detail in the remainder of this section.

- Introduction & Purpose;
- Project Description;
- Management System Interfaces;
- Organization, Resources & Documentation;
- Hazard & Risk Management;
- Planning;
- Implementation & Monitoring;
- Emergency Response Plan;
- Appendices.

### 2.1 Introduction, Purpose & Scope

In this section the following introductory topics should be covered:

- The purpose of the document;
- Who is the custodian/owner of the document;
- Revision status of the document;
- The scope of the document.

### 2.2 Project Description

In this section of the document the following topics are examples of what should be covered:

- Country or location involved;
- Project area overview;
- Any permit or license requirements or approvals needed;
- Terrain;
- Major physical hazards such as rivers, lakes, pipelines, etc.;
- Any access issues or restricted areas;
- Any social, cultural or linguistic issues in the project area;
- Summary of the geophysical methods to be used;
- Equipment to be used;
- Number and types of vehicles used including for transportation;
- Accommodation;
- Any conflicting or parallel operations;
- Number of people involved;
- Other logistical information.

## 2.3 Management System Interfaces

This section of an HSSE plan should include topics such as the following:

- What university (or hosting organization) safety management system will apply;
- List university specific procedures or work practices that will apply;
- List any appropriate university or hosting organization policies (attach copies if important).

## 2.4 Organization, Resources & Documentation

This section of an HSSE plan should include topics such as the following:

- The organizational structure and responsibilities in the field;
- What standards, rules or regulations are applicable (e.g. the Universities Code of Conduct);
- The personnel resources (and back-ups) available for HSSE support; including but not limited to first aid. What level of medical training is needed for risks involved and remoteness of the activity?
- Summarize project specific training requirements, as determined by risk assessment, e.g. induction, tests, etc.;
- Summarize project specific competence assurance processes for safety critical positions, as determined by risk assessment.

## 2.5 Hazard & Risk Management

This section should include information on how the risk management process works:

- Summarize the process used for identifying the project hazards and how risks are managed;
- Provide details of all the project specific hazards, and risk reduction measures in the form of a risk register;
- The risk register should be a table that at a minimum includes columns for:
  - Activity,
  - Hazard description;
  - Worst case consequences of the hazard;
  - Control measures and mitigations in place (this should be more than just Personal Protective Equipment or PPE);
  - Risk severity (based on a simple risk matrix);
  - Risk probability (based on a simple risk matrix);
  - Overall level of risk (High, medium or low);
  - Any additional controls that need to be developed and the person responsible for doing this.
- Whenever there is uncertainty on any aspect of safety, it is recommended that risk assessment be used to determine the best alternatives.



## 2.6 Planning

This section should include the following items at a minimum:

- Any project specific procedures that people need to be aware of (over and above those listed in section 2.3);
- Any project specific rules or policies to be followed;
- Any safety critical information about the project or area;
- List any emergency preparedness exercises or drills to be carried out;
- A summary of any operational restrictions (e.g. where parallel activities might take place or not; or weather operating constraints, etc.);
- Describe the minimum PPE requirements for the project;
- Describe how changes to the program will be addressed including re-assessing risk and approvals. This is called a Management of Change (MoC) process in industry;
- A Travel or Journey Management Plan for the field activity (which describes a process for planning and carrying out land transportation activities, on any given day during the project).

## 2.7 Implementation & Monitoring

This section will include the following items at a minimum:

- Incident reporting and investigations
  - Describe the process to be used
- Inspection program
  - Summarize any planned checks and inspections used to ensure the HSSE plan is being followed, and the frequency of the inspections:
  - List the persons responsible for doing the inspections.

## 2.8 Emergency Response Plans

This section will include the following at a minimum:

- Summarize the emergency response procedures and evacuation plan if applicable;
- List all the various emergency scenarios for the project;
- Define roles and responsibilities;
- Detail the Emergency Response Center or ERC (where any response will be coordinated from);

- Describe how Next of Kin (NoK) information has been gathered and who maintains it (e.g. ERC);
- Describe all available Emergency Services including laying out the call out procedures for the various emergency scenarios (including transportation);
- Provide all contact details (including telephone, fax, email, radio, etc., numbers) for relevant project personnel, third parties and emergency services.

## 2.9 Appendices

The following topics should be covered as needed by appendices in the document:

- References;
  - Definitions or Glossary;
  - Acronyms;
  - Template forms.
-

### **3 FIELD IMPLEMENTATION OF THE HSSE PLAN**

The HSSE plan, once developed, should be readily available for reference purposes to all participants during the planning stages for the field activity and also during the field activity itself.

During the planning and field activity stages, the HSSE plan should be updated whenever any safety critical information changes.

Any updates to the HSSE plan should be circulated to all participants.

Signed acknowledgement should be made by all participants before the field activities commence that they have read and understand the HSSE plan.

Remember the HSSE plan is one of the risk management and mitigation tools available when the field activity is taking place.

---

### **4 AFTER THE ACTIVITY IS COMPLETED**

It is important to document any important lessons learned during a field activity, so that this can be shared and hopefully prevent others from having to learn the same lesson by themselves. This is especially critical if it is a lesson learned from an accident.

It is equally important to document any best practices from a field activity that can be shared with other to help keep their operations safe in the future. Any lesson's learned, or best practice documents should be shared with the SEG Field Camps coordinator for eventual building into a database.

The following information should be captured:

- Title of activity;
- Short description of what happened;
- Whether this is a lesson learned or a best practice;
- For a best practice: what should be specifically done
- For a lesson learned: what should be done differently in future to prevent reoccurrence;

Video or photos might also be useful, if taking them does not entail any risk to, or violate the privacy and security of, the persons involved.

## 5 OTHER APPLICABLE INDUSTRY GUIDANCE

There are a large number of HSSE guidance documents and links available through various trade associations in the geophysical industry. Some are more applicable than others for student and academic field activities. Below are listed the documents that anyone organizing or managing a field camp should be aware of, and utilize where possible in planning and executing a field activity where risks are involved. These can quite often be downloaded free of charge in Adobe Acrobat pdf form, or purchased in printed form.

### 5.1 International Association of Geophysical Contractors

The International Association of Geophysical Contractors or IAGC is a trade association for geophysical contractors and service companies. <http://www.iagc.org>. The important documents they provide include:

- **Land Geophysical Safety Manual**, 10th Edition, 2012; Available in several languages, and printed in a pocket sized version; THIS DOCUMENT PROVIDES GUIDANCE ON HOW THE GEOPHYSICAL INDUSTRY RECOMMENDS SAFELY MANAGING NUMEROUS HAZARDS FOUND IN INDUSTRY ACTIVITIES.
- **Marine Geophysical Safety Manual**, 10th Edition, 2012; Available in several languages, and printed in a pocket sized version;
- **IAGC Environmental Manual for Worldwide Geophysical Operations**; 2nd Edition, 2013;
- **Aide Memoir**, a global geophysical industry fatality database; <http://www.iagc.org/AideMemoir/>; for use when doing risk assessments.

### 5.2 International Association of Oil and Gas Producers

The International Association of Oil and Gas Producers or IOGP is a trade association for international oil and gas companies. <http://www.iogp.org>; some of the IOGP's applicable documents are listed below:

#### Management systems:

- IOGP 510, **Operating Management System Framework**, June 2014;
- IOGP 511, **OMS in practice**, June 2014;
- IOGP 423, **HSE management - guidelines for working together in a contract environment**, June 2010;
- IOGP 432, **Managing HSE in a geophysical contract**, December 2009.

#### Specific topics:

- IOGP 245, **Guidelines for HSE Auditing in the Geophysical Industry**, September 1996;
- IOGP 292, **HSE competency management guidelines for the geophysical industry**, version 3.0, December 2014.

- IOGP 365, **Land transportation safety recommended practice**, issue 2, September 2014. This document also has a large number of associated guidance notes on specific sub-topics, which include:
  - IOGP 365-2, Journey Management
  - IOGP 365-10, Journey Management Process
  - IOGP 365-15, Bus and Coach Safety, September 2014

### 5.3 Ground Geophysical Surveys Safety Association

The Ground Geophysical Surveys Safety Association or GGSSA has an initial document available from its website <http://www.ggssa.org>

- **Industry Guidelines For Electrical Geophysics**, version 0.4, August 26, 2013.

### 5.4 Additional Resources for Ground-Penetrating Radar and Near-Surface Geophysical Prospecting

**Recommendations for the Safety of People and Instruments in Ground-Penetrating Radar and Near-Surface Geophysical Prospecting**, July 2015, Edited by R. Persico et al. Published by the EAGE.

---

## 6 APPENDICES

### 6.1 Acronyms

The following acronyms are utilized in this document:

ERC	Emergency Response Center
GGSSA	Ground Geophysical Surveys Safety Association
GWB	Geoscientists <i>Without</i> Borders
HSSE	Health, Safety, Security and Environment
IAGC	International Association of Geophysical Contractors
IOGP	International Association of Oil and Gas Producers
MoC	Management of Change
NoK	Next of Kin
PPE	Personal Protective Equipment
SEG	Society of Exploration Geophysicists