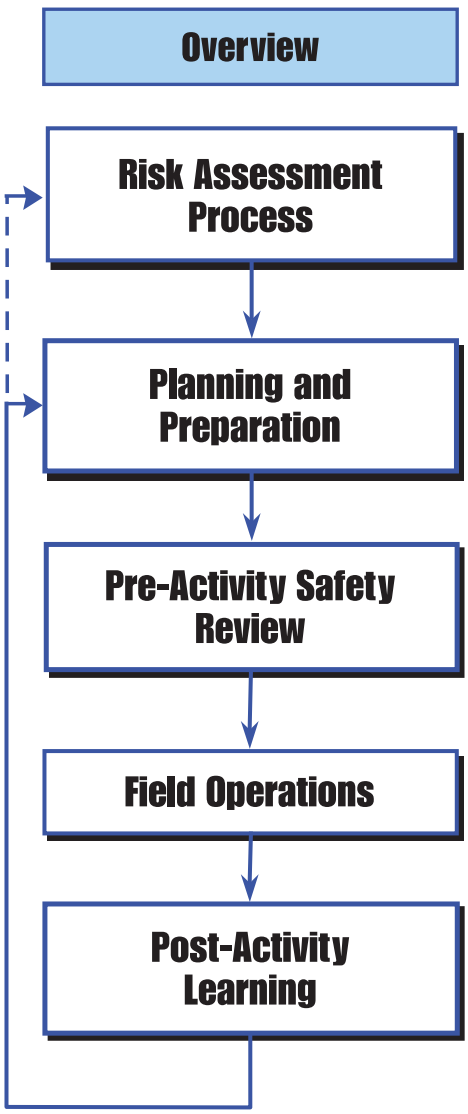
1 Overview


Overview
Risk Assessment Process
Planning and Preparation
Pre-Activity Safety Review
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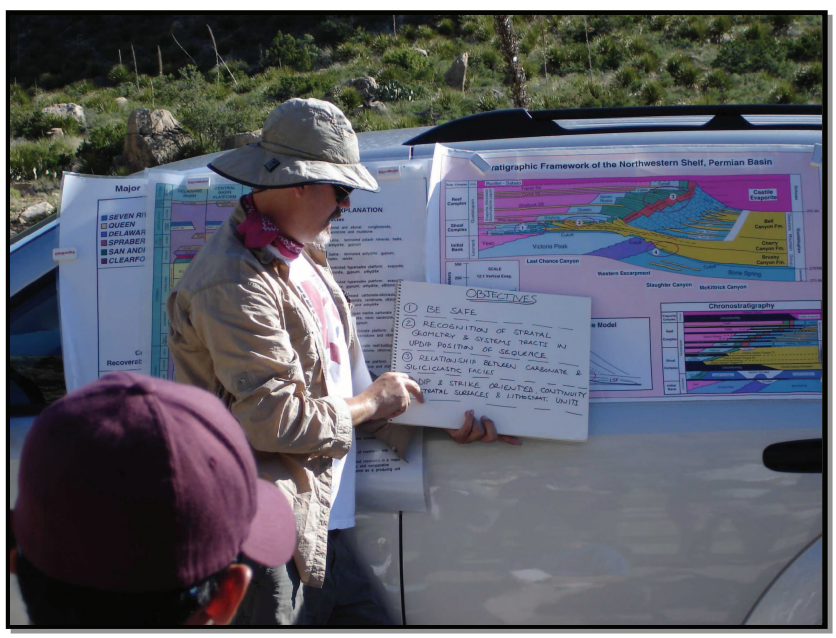
Post-Activity Learning


OBJECTIVES
1. BE SAFE
2. RECOGNITION OF STRATAL GEOMETRY & SYSTEMS TRACTS IN UPDIP POSITION OF SEQUENCE
3. RELATIONSHIP BETWEEN CARBONATE & SILICICLASTIC FACIES
DIP & STRIKE OBSERVED CONTINUITY STRATAL SURFACES & LITHOSOME UNITS

''Adventures, of course, are always associated with exploration. Yet they are the one thing which a real explorer tries to guard against. My favorite quotation is Stefansson's dicutm: 'Adventures are a mark of incompetence.' It says so much in a very few words. It means that if you have an adventurous expedition you did not prepare yourself adequately. Adventures are a nuisance. They interface with work . . . If the explorer has a clear-cut problem to solve and an honest desire to do something really worthwhile he will prepare against adventures.''

Roy Chapman Andrews, 1935, This Business of Exploring

SECTION 1

Overview

Although some degree of risk is inherent in every human activity, a primary goal of all field activities should be the safety and health of participants and staff. Those who sponsor, organize, and participate in these field activities have a responsibility to promote and support safety while achieving their technical, educational, or business objectives.

No one goes into the field with the intention of getting injured or killed. Most accidents, at root, result from a loss of perspective, a narrowing of focus, or developing tunnel vision: ''I only wanted to get a better look at the rocks by climbing up the cliff/leaning out of the boat/leaving the trail.'' ''Yes, people get hurt doing _____, but it's not going to happen to me.'' It's like driving down the road only looking ahead but never left, right, or behind—most of the time we get away with it, but such tunnel vision leaves us vulnerable to accidents. And, unfortunately, when an accident happens, it happens with such suddenness and severity that it breaks a person's life in two forever, into ''before'' and ''after.''

Experience and complexity theory indicate that it is commonly not one big dumb mistake that leads to an accident, but a series of apparently inconsequential misunderstandings, compromises, and missteps taken out of context, out of a broader perspective. Our field safety process is designed to break that chain, the downhill slide to misfortune, by addressing root causes directly through procedures designed to develop, communicate, and maintain the wider perspective. It draws on the perspective and experience of not only the group actively conducting field operations, but of similar groups in past activities, and of national and international outdoor-activity and safety groups. The entire approach boils down to ''Think before you do it'' and ''Think while you're doing it''—all the rest is help for building, communicating, and documenting a broad safety-based perspective on why we are in the field.

This field safety process was designed to provide a streamlined and scaleable framework for considering field hazards and devising policies and procedures to prevent and mitigate their impact. It works best as an integral part of an organization-wide comprehensive safety and security program. This manual is not intended as an encyclopedic compilation of safety procedures, but as a guide to a methodology for ensuring that appropriate information is considered in planning and conducting field operations. It draws upon a wide range of expertise from national and international safety, outdoors, and industry organizations (see Table 1). This system has been tested

Table 1. Partial List of Authorities used in developing safety procedures.

American Alpine Club	The Mountaineers
American Red Cross	National Fire Protection Association
Boy Scouts of America	National Outdoor Leadership School
Emergency Cardiac Care Committee, American Heart Association	National Safety Council
Girl Scouts of America	YMCA
Victorian Institute of Earth Sciences	British Geological Society

DOI:10.1306/1119797DEG3223

and refined based on decades of ExxonMobil's experience in fieldwork, schools, and trips in countries around the world. During a typical year, more than 500 ExxonMobil geoscientists visit more than 400 sites worldwide while participating in field activities. We have found that the procedures in this manual help ExxonMobil staff to plan field activities better and more efficiently.

SCOPE

This Field Activity Safety Manual is designed to cover most activities conducted in the field by individuals, groups from schools, universities, companies, and other organizations. The term ''Field Activities'' encompasses organization or job-related Field Schools, Field Trips, and Fieldwork undertaken or participated in by individuals in an outdoor environment. The term ''Organization'' refers to the entity to which an individual belongs that has a role in conducting or sponsoring the activity or approving the individual's participation, such as a business, professional society, or university.

This process explicitly excludes trips and excursions to ''controlled work environments'' such as geophysical surveys, ships, industrial plants, drilling rigs, etc., for which safety plans already exist.

Individuals and groups applying these processes to their activities retain final responsibility for awareness of and compliance with all applicable local laws, regulations, and organizational policies. These considerations are especially important when operating outside the home country of the organization. Potential issues include: accessibility for disabled persons, privacy of personal data, provision of medical services, and regulations concerning communications, safety, and first-aid equipment.

INTRODUCTION

This Field Activity Safety Manual was developed with the objective of enhancing the safe execution of all Field Activities by standardizing the manner in which the activities are planned and conducted. All forms referred to in this publication are printed in the sections in which they are referred to as well as being on the CD-Rom attached to the inside back cover of this book.

The following overview describes the process for developing a new Field Activity or for planning a new session of a recurring Field Activity. Detailed descriptions of the prescribed tasks and actions are located in the sections that follow the overview. The detailed descriptions also contain references to related procedures and forms that are included as attachments.

This manual was developed by a team with members from ExxonMobil Upstream Research Company, ExxonMobil Exploration Company, and ExxonMobil Upstream SHE group (Safety, Health, and Environment) with a broad range of skills and experience in field operations, emergency response, and safety and risk management with ExxonMobil and other organizations such as the American Red Cross, Boy Scouts, Mountain Rescue Association, and National Safety Council. The process was developed using standard company safety documents and procedures as a basis.

A concerted effort was made to make the process applicable to a broad range of activities and locations. Our recommendations follow currently accepted safety and outdoor work practices. We regret any errors or omissions and encourage the reader to bring these to the authors' attention. We welcome any suggestions for improvement, which can be sent to the authors or to your organization's Geoscience Field Safety Coordinator.

DEFINITIONS

The following terms and abbreviations will be used throughout this publication:

Field Activity (Activity)

This term encompasses the following activities undertaken in an outdoors environment, conducted or sponsored by an organization primarily for members of the organization:

- **Field Schools**—training sessions involving visits to sites not covered by other Safety, Health, and Environment (SHE) plans. These are typically recurring events that visit the same locations repeatedly to conduct a set series of learning exercises. Within a company, Field Schools may be coordinated by a Training group.
- **Field Trips**—visits to sites not covered by existing SHE procedures for observation or training or both. These activities are typically non-recurring events and may include many participants, some from outside the sponsoring organization.
- **Fieldwork**—visits to sites not covered by existing SHE procedures for purposes of performing work activities, collecting samples, or both. These activities typically involve small teams of experienced workers on an ad-hoc basis.

Field School

Field Trip

Fieldwork

Field Activities Operated by Others (OBO)

This term includes trips or schools that are not organized or led by a person's home organization. (Any activity that is led by a member of an organization that has adopted this safety process is to be treated as a Field Trip—see above). Since the home organization has no direct control over the preparation and organization of these activities, the individual participants are charged with the majority of their own safety preparations. Section 3 details the participant's responsibilities for these Activities.

PERSONNEL

Prior to implementing the development process for a specific Activity, an Activity Owner and an Activity Coordinator must be identified. Personnel as well as others involved in planning, conducting, and participating in a Field Activity include:

- **Activity Owner** is the person with direct responsibility for oversight of the described Activity. This is typically a first-line manager in industrial organizations.
- **Activity Coordinator (AC)** is the designated leader of the group actually entering the field to perform the indicated Field Activity.
- **Geoscience Field Safety Coordinator (GFSC)**—A permanent position whose responsibility is to help ensure that the safety and health considerations of all Field Activities have been appropriately and consistently addressed. This person serves as a single point of contact for initiating and conducting this field safety process. She or he also receives feedback on field operations and shares lessons learned with leaders of and participants in future activities.
- **Instructors**—Persons involved in teaching or delivering the message of the Activity.
- **Logistics Coordinator (LC)**—Person responsible for arranging the logistics for the Activity, including lodging, food, transportation, etc.
- **Activity Staff (Staff)**—a generic term for all personnel designated to assist with the preparation and delivery of the Activity—including the AC, Instructors, and LC.

NOTE: For Fieldwork, all participants are considered to be Activity Staff for the purposes of training and Activity execution.

- **Safety Watch**—The Staff Member charged with safety oversight and first aid response for the Activity on a daily basis. (See an expanded definition in Section 3)
- **Participant**—An organization member or other individual who is taking part in the Activity.

OVERVIEW OF FIELD ACTIVITY PROCESS

The process provides a systematic, thorough approach to:

- evaluating hazards that may be encountered,
- assembling means and equipment for preventing and mitigating their impact,
- communicating risks and preparations to participants,
- conducting safe field operations, and
- capturing lessons learned and suggestions for future activities.

Following is an overview of the entire process for planning, preparing, and conducting a defined Field Activity (Figure 1). Included are the prescribed dates

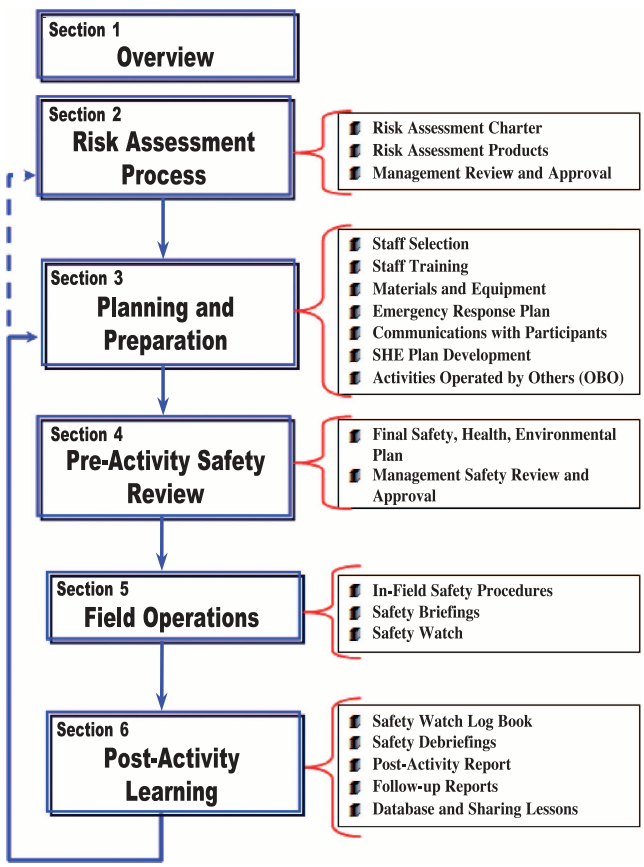


Figure 1

(relative to the start of the Activity) by which each step should be completed. Following this overview are sections containing detailed descriptions of the planning and preparation process with forms, examples, etc.

Develop/Review Field Activity Risk Assessment

A Base Risk Assessment must be in place for each Field Activity no less than 8 weeks before its start. The Base Risk Assessment identifies risks associated with the specific Field Activity, summarizes their consequences and probability of occurrence, and specifies prevention and mitigation measures to be implemented. The Risk Assessment process for each type of Activity is the same, but there are slight differences in the details of the methodology. The ***Risk Assessment Process Description and Charter Procedure*** in Section 2 defines the overall process and specific application in detail. OBO Activities need to be evaluated on a case-by-case basis in consultation with the organizer (see Section 3).

Prepare for Field Activity

The key to the safe and successful completion of any Field Activity is in the planning and preparation. In roughly chronological order, the general steps are: Coordinator selects staff; Coordinator makes sure that SHE training needed by the Staff is current; Staff reviews the Base Risk Assessment; Staff sends safety and logistical information to participants; Staff receives and reviews medical and disability information from participants; and the Staff modifies plans for SHE, Emergency Response, and course delivery as needed (Section 3). Preparations for an Activity need to be completed during the period from 8 to 2 weeks before the beginning of the Activity.

Examine Preparations with Independent Reviewer

In a commercial organization, Management approval to conduct an Activity is obtained at a Pre-Activity Safety Review meeting that occurs 1 to 2 weeks before the start of the Activity. In an academic setting, this review can be conducted with an academic supervisor or an experienced peer. The key point is to have a fresh, impartial look at the field plans and preparations by someone who is knowledgeable, experienced, and not directly involved with the particular Field Activity. A discussion and review of the SHE Plan is the centerpiece of this meeting to ensure that all preparations are complete (Section 4).

Conduct Field Activity Safely

Preparations are put into practice using a set of standard operating procedures and equipment. These include initial, daily, and site-specific safety briefings, protocols for driving, hiking, boating, and swimming, and SHE and Emergency Response plans. The attached ***Field Activity Safety Procedures*** document defines in detail safety-related processes and requirements for Field Activities (Section 5).

Capture and Share Lessons

An important tool for the continued safe and effective execution of all Field Activities is the identification, capture, and sharing of lessons learned, including proactive reporting of near misses. A one-page ***Field Activity Follow-up*** report provides a framework for this (Section 6).

QUICK GUIDE CHECKLISTS FOR SAFETY PREPARATIONS

Each of the Activities governed by this manual requires a different level of preparation and documentation as shown below. This is not to imply that the level of SHE preparedness is different, but certain activities allow the use of pre-existing base or generic Risk Assessments, Emergency Response Plans, etc., thereby reducing the amount of pre-Activity effort.

OBO Field Trips (typically takes 1 hour):
- ☐ Complete Potential Hazard Register
- ☐ Complete Personal Safety Plan
- ☐ Fill out personal Emergency Medical Information card
- ☐ Discuss preparations with supervisor and obtain endorsement on Personal Safety Plan.

Fieldwork (small groups, experienced workers) ***(typically takes 1–2 hours)*****:**
- ☐ Review existing Generic Fieldwork Risk Assessment using Hazard Register (modified as necessary).
- ☐ Complete Emergency Information and Medical Certification form, submit to activity coordinator.
- ☐ Develop a Field Activity SHE Plan (Section 3.6 of this publication), including Emergency Response Plan (use checklist on front page of SHE Plan, includes review of SHE training status).
- ☐ Conduct a Pre-Activity Safety Review Meeting with Activity Owner and obtain endorsement.
- ☐ IF applicable:
  - ☐ *Review host organization SHE Plan and develop bridging document or develop original SHE Plan*
  - ☐ *Non Scheduled/Charter transportation approval (process varies by organization)*
  - ☐ *Foreign Travel approval (process varies by organization)*

Field Schools (recurrent events, moderate-sized groups, less experienced) ***(typically takes 2–3 hours once Base Risk Assessment is constructed)*****:**
- ☐ Review existing Risk Assessment and Site-Specific Summary sheets, upgrade as necessary.
- ☐ Select Staff, review their SHE training status *(CPR, First Aid, Defensive Driving, Field Safety Leadership)*
- ☐ Prepare and send out pre-school information package to participants
- ☐ Review and Address Participants' Special Needs.
- ☐ Develop a Field Activity SHE Plan, including Emergency Response Plan (use checklist on front page of SHE Plan). Recommend doing as a staff team approximately 4 weeks before class.
- ☐ Obtain field safety gear (from Field Safety Coordinator or other source)
- ☐ Conduct a Pre-Activity Safety Review Meeting with Activity Owner and obtain endorsement.
- ☐ IF applicable:
  - ☐ *Non-scheduled/Charter transportation approval (process varies by organization)*
  - ☐ *Foreign Travel approval (process varies by organization)*

Field Trips (one-time events, large groups [>30 participants], wide range of experience) ***(typically takes 8–16 work hours)*****:**
- ☐ Conduct Risk Assessment using standard process in Risk Assessment Charter, using Standard Hazard Registers.
- ☐ Construct Site Specific Summary sheets for each field site.
- ☐ Select Staff, review their SHE training status *(CPR/First Aid, Defensive Driving, Field Safety Leadership).*
- ☐ Prepare and send out pre-trip information package to participants (by trip coordinator).
- ☐ Review and Address Participants' Special Needs.
- ☐ Develop a Field Activity SHE Plan, including Emergency Response Plan. Recommend doing as a team approximately 4 weeks before class.
- ☐ Obtain field safety gear (from Field Safety Coordinator or other source).
- ☐ Conduct a Pre-Activity Safety Review Meeting with Activity Owner and obtain endorsement.
- ☐ IF applicable:
  - ☐ *Review host organization SHE Plan and develop bridging document or develop original SHE Plan*
  - ☐ *Non-scheduled/Charter transportation approval (process varies by organization)*
  - ☐ *Foreign Travel approval (process varies by organization)*

For all Field Activities:
- ☐ Complete Field Activity Follow-up Report within 2 weeks of return and forward to Geoscience Field Safety Coordinator.

Table 2. Overview of Field Activity Safety Preparations.

	OBO	Work	School	Trip
Risk Assessment:				
» Construct NEW Risk Assessment				X
» REVIEW existing Risk Assessment		X	X	
– Use Standard Hazard Register	X	X	X	X
– Use Participant Information Forms		X	X	X
SHE Plan:				
» Personal Safety Plan	X			
» SHE Plan		X	X	X
– Site Safety Summary Sheet			X	X
» Emergency Response Plan (ERP)		X	X	X
– Bridge to Host Organization Plan		(X)		(X)
Participant Emergency and Medical Information:				
» Personal Medical Information Form	X			
» Emergency Information and Medical Certification		X	X	X
Travel Clearances:				
» Non-scheduled/Charter Transportation Approval	(X)	(X)	(X)	(X)
» Foreign Travel Approval	(X)	(X)	(X)	(X)
Safety Gear:				
» PPE as required	X	X	X	X
» Safety Watch Backpack		(X)	X	X
Safety Observations:				
» Safety Log Book			X	X
» Field Activity Follow-up Report	X	X	X	X

X = Required; (X) = As Necessary.