



**SAFETY PLAN**  
**FORT LIARD AREA**  
**C-31-6040-12330 WELLSITE**  
**K-32-6010-12315 WELLSITE**

## **Introduction**

Obsidian Energy Ltd (Obsidian) has prepared this Safety Plan (SP) for the abandonment and reclamation activities being undertaken at their wellsite located north of Fort Liard, Northwest Territories. The plan demonstrates that Obsidian has appropriate Safety Planning, execution, measures and response capabilities in place to effectively address the safety management of the activities planned and to meet the various regulations of the Office of the Regulator of Oil and Gas Operations (OROGO)

## **Location and Mailing Address**

### **Site Location:**

C-31A-6040-12330

Well centre: 60.50053 deg N 123.61476 deg W

### **Access:**

Access to the site is via helicopter from Fort Liard. Access for equipment is by barge and road in the summer or ice road in the winter.

Paramount operates and maintains the road from the barge landing for approximately 29.5 km to the K-29 wellsite. Canadian Natural Resources operates the road from K-29 for 2.5km to the C-31 wellsite and beyond. Obsidian maintains agreements with Paramount and CNRL for road use.

Access and location are indicated in Figure 1.

K-32-6010-12315:

Well center: 60.013911 deg N 123.214963 deg W

### **Access:**

Access to the Site is via helicopter from Fort Liard. Access for equipment is by winter access road.

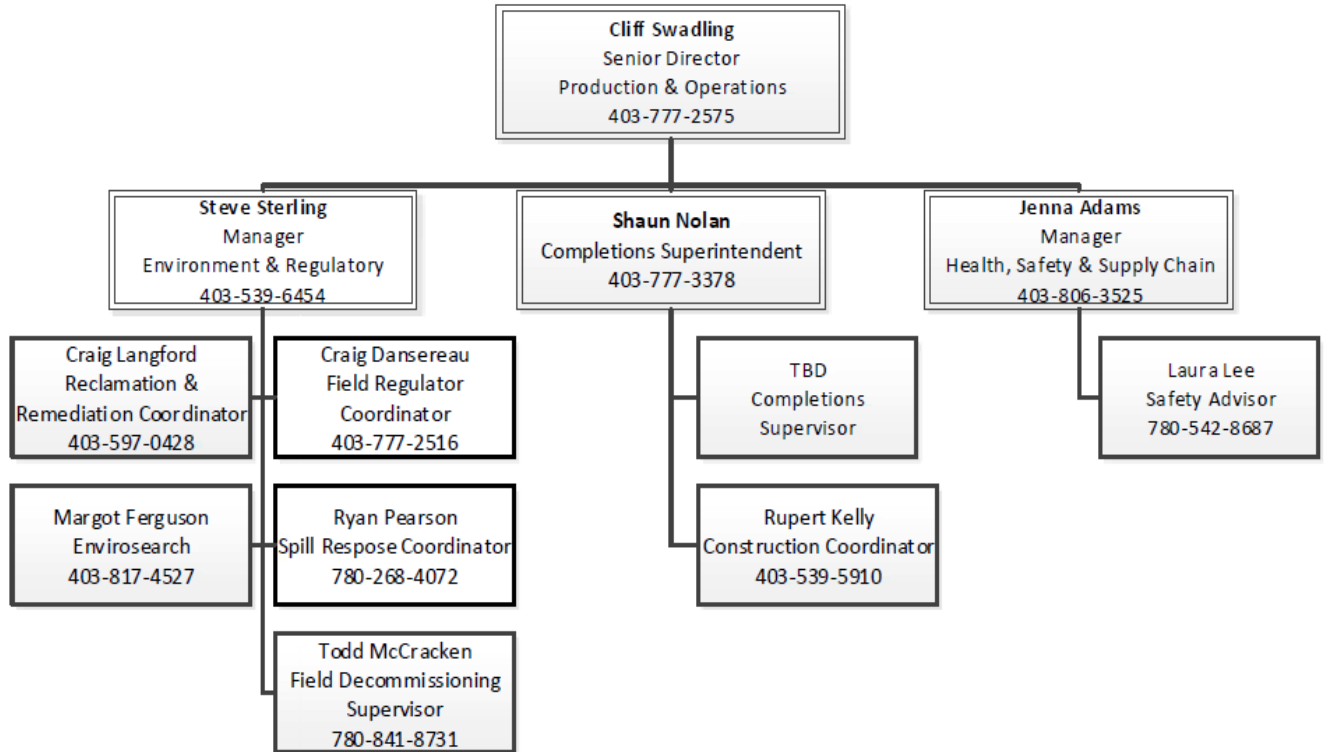
### **Mailing Address:**

Obsidian Energy Ltd  
200, 207 – 9<sup>th</sup> Avenue SW  
Calgary, AB T2P 1K3

### **Key Contacts:**

The following table contains key contacts for the safety plan, if an emergency exists, the Obsidian Site Specific and Corporate Emergency Response Plan (ERP) will be activated by the Environmental Coordinator or Production Superintendent.

**TABLE 1 CONTACTS AND RESPONSIBILITIES**



**Purpose**

The purpose of the safety plan is to provide reference and linkage to the Obsidian Energy Safety Management System – Safely Managing Accident Reduction Tactics (SMART Manual) and applicable practices and procedures that apply to this project. Obsidian Energy Ltd has a well-established Safety Management System that consists of the following elements:

<ul style="list-style-type: none"> <li>• Management Commitment</li> <li>• Communications</li> <li>• Hazard Identification, Assessment &amp; Control</li> <li>• Management of Change</li> <li>• Event Reporting, Investigation &amp; Analysis</li> <li>• Safety, Environmental &amp; Regulatory Inspections</li> <li>• Contractor/Vendor Management</li> </ul>	<ul style="list-style-type: none"> <li>• Occupational Health</li> <li>• Training</li> <li>• Personal Protective Equipment</li> <li>• Road Safety Management</li> <li>• Fire Prevention and Control</li> <li>• System Evaluation</li> </ul>
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The effective application of these standards will minimize the safety impact of the project scope.

**Project Scope**

The project is to abandon the C-31A and K-32 wells and reclaim the wellsites. The scope of work of the program includes:

- Abandonment of the wellbore (if required)
- Cutting and capping of the well,

- Environmental assessment of the wellsite and remote sump/campsite
- Remediation of impacts identified (if necessary) and,
- Recontouring, reclamation and revegetation of the wellsite and sump/camp site.

### **Health and Safety Policy Statement**

As a key component to Management Commitment Obsidian Energy Ltd re-commits and distributes its Policy Statement each year.

## **HEALTH AND SAFETY POLICY STATEMENT**

### **Safety at Obsidian Energy**

Safety is an integral part of Obsidian Energy's business. Working safely plays a vital role in our operations and in our efforts to protect people and the environment. Obsidian Energy will not place production ahead of safety.

Many costs result from accidents and unsafe work practices, the greatest being the human cost. The Obsidian Energy safety management system contributes to the development of safe work practices and procedures. Through our safety management system, we protect not only our employees and contractors, but also our friends, families, fellow workers, the public and the environment from the far-reaching effects of serious accidents. In the process, we protect our ability to continue to conduct business and employ people.

### **Who is Responsible?**

Everyone who works for Obsidian Energy are safety leaders who share the responsibility for workplace health and safety and are responsible for ensuring the physical, psychological and social well-being of workers. Each of our managers and supervisors has the added responsibility to lead by example, to communicate our safe work policies and practices, to prevent harassment or violence in the workplace and to ensure that all work is conducted while meeting or exceeding legislated safety standards and requirements. Their role is supported by Obsidian Energy, who will monitor performance through both internal and external audits.

All Obsidian Energy employees and others on Company work sites are responsible for obeying all safety rules, following safe work procedures, wearing personal protective equipment when required, refraining from participating in violence or harassment, participating in safety training and informing supervisors of unsafe work conditions. We all have rights and responsibilities related to safety – to take care of ourselves and each other by identifying and stopping unsafe work, to participate in safety activities and to identify and manage hazards.

Our behavior on the job will reflect our responsibility to maintaining a safe working environment. Individuals are accountable for their behavior, conduct, actions and performance. Employees and contractors who knowingly violate safety rules will face disciplinary action, dismissal or legal action.

By working safely and fulfilling responsibilities, everyone who works for Obsidian Energy will share the benefits from a healthy and safe workplace.

"Signed by Michael J. Faust"  
President and Chief Executive Officer

May 15, 2019  
Date

## Related Documents

The Safety Plan is not a stand-alone document but rather a reference for other documentation. Table 2 provides a summary of the related documents, their purpose and relation to the plan.

**Table 2 Documents Related to Safety Plan**

TITLE	AUTHOR	PURPOSE/SCOPE
<b>CORPORATE DOCUMENTS</b>		
Health & Safety Policy Statement	Obsidian Energy Ltd CEO	Management commitment to a healthy and safe workplace
Safely Managing Accident Reduction Tactics - SMART	Obsidian Energy Ltd	Safety Management System that provides the foundation for the planning, implementation, monitoring and continuous improvement of safety management
<b>PRACTICES AND PROCEDURES</b>		
Vendor/Contractor Management various documents	Obsidian Energy Ltd	Outlines the approval, selection and monitoring process for Vendors and Contractors to ensure that risks and liabilities are managed. Enables the employment of vendors with "Like" Safety Cultures
Site Supervisor Competency Process	Obsidian Energy Ltd	Obsidian has a rigorous process for the selection, orientation, training and evaluating the competency of our Site Supervisors. Competency includes the awareness and knowledge of industry and Obsidian safety and environmental policies and procedures, and applicable legislation, guidelines and regulations
Safe Work System - Practice	Obsidian Energy Ltd	Companywide process that identifies the responsible/accountable site supervisor; identifies site specific hazards and controls; and, establishes daily & task specific hazard identification, assessment, control and communication between all parties on site.
<b>SITE SPECIFIC</b>		
Emergency Response Plan	Obsidian Energy Ltd	Outlines the corporate and site-specific responsibilities and actions in the event of any emergency.
Environmental Protection Plan	Obsidian - for MVLWB LUP	Identifies potential waste streams, potential environmental impacts, waste handling and on-site and end-point management

# Site Hazard Assessment

## FORT LIARD AREA

C-31-6040-12330 wellsite (Well centre: 60.50053 deg N 123.61476 deg W)

K-32-6010-12315 wellsite (Well centre: 60.013911 deg N 123.214963 deg W)

<b>Site Description:</b>	The Fort Liard area wells are suspended vertical wells located remotely in the Fort Liard area. Well access is by helicopter or via barge and road in summer / ice road in winter for equipment.
<b>Mandatory Personal Protective Equipment:</b>	Fire resistant coveralls, hard hat, safety glasses, steel-toed boots
<b>Also Required:</b>	Personal gas monitor (min. 3-head: H <sub>2</sub> S, O <sub>2</sub> and LEL) where no engineered gas monitoring exists;  Effective 2-way communication system

### Site Hazards and Corresponding Controls

Site Hazards Identified	Risk Assessment*	Controls Identified
<p><b>Site Access</b></p> <ul style="list-style-type: none"> <li>• Ground access is generally only during winter/frozen ground conditions, during which the winter environment, driving, and road conditions present numerous associated hazards.</li> <li>• Ice roads present the additional hazards of insufficient ice strength.</li> <li>• At any time but primarily outside of frozen ground conditions, unscheduled small low-flying helicopters may access the site</li> </ul>	<ul style="list-style-type: none"> <li>• Serious/Occasional = 9 (Medium)</li> <li>• Serious/Occasional = 9 (Medium)</li> <li>• Serious/Remote = 6 (Medium)</li> </ul>	<p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>• Winter road maintenance including signage and assigned radio channels</li> <li>• Pre-access testing of ice roads for load capacity</li> <li>• Working Alone / check in process</li> <li>• Obsidian Energy vendor pre-qualification requirements and safety standards for Charter Air Carriers (fixed wing or helicopters)</li> <li>• Identification of a designated and maintained landing location in periods of high traffic.</li> </ul>
<p><b>Flammable/Explosive Hazards</b></p> <ul style="list-style-type: none"> <li>• Flammable/explosive hydrocarbons may be present</li> </ul>	<ul style="list-style-type: none"> <li>• Serious/Occasional = 9 (Medium)</li> </ul>	<p><b>Engineering</b></p> <ul style="list-style-type: none"> <li>• Grounding/bonding cables where required (e.g. fluid</li> </ul>

<p>or processed at these locations where due to equipment failure the potential for a release exists. Due to the suspended state of the well the likelihood of a release is low</p>		<p>transfer)</p> <ul style="list-style-type: none"> <li>Hydrocarbon/gas monitoring equipment is available on various equipment types that may be available on site. In cases where built-in gas monitoring equipment is not in place, PPE is required.</li> </ul> <p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>Policy and signage around no smoking/flames on site except in designated areas.</li> <li>WHMIS labelling on tanks and equipment on site as well as any fuels or chemicals</li> <li>Applicable Codes of Practice (COPs), procedures, Safe Work System, etc.</li> </ul> <p><b>Personal Protective Equipment</b></p> <ul style="list-style-type: none"> <li>Personal gas monitors where fixed monitoring not in place</li> <li>Fire resistant coveralls</li> </ul>
<p><b>Toxic Environment</b></p> <ul style="list-style-type: none"> <li>The subject wells have not been found to contain Hydrogen Sulphide (H<sub>2</sub>S) however all oil and gas operations have a potential for the presence of toxic substances which may pose a potentially life-threatening working environment. H<sub>2</sub>S may be found in pure forms or as a component of other products.</li> <li>Oxygen displacement due to the presence of hydrocarbons may also result in an anoxic environment which has effects similar to toxic substances.</li> </ul>	<ul style="list-style-type: none"> <li>Serious/Occasional = 9 (Medium)</li> </ul>	<p><b>Engineering</b></p> <ul style="list-style-type: none"> <li>Hydrocarbon/gas monitoring equipment is available on various equipment types that may be available on site. In cases where built-in gas monitoring equipment is not in place, PPE is required.</li> </ul> <p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>WHMIS labelling on tanks and equipment on site as well as any fuels or chemicals</li> <li>Applicable Codes of Practice (COPs), procedures, Safe Work System, etc.</li> </ul> <p><b>Personal Protective Equipment</b></p> <ul style="list-style-type: none"> <li>Personal gas monitors where fixed monitoring not in place</li> <li>Availability of SCBA on</li> </ul>

		location to support work or potential rescue activities
<p><b>Chemical Exposure</b></p> <ul style="list-style-type: none"> <li>Chemicals such as (but not limited to) cement, corrosion and/or scale inhibitor, demulsifiers, methanol, condensate, fuel, etc. may be stored and handles at the location(s) during abandonment activities</li> </ul>	<ul style="list-style-type: none"> <li>Serious/Remote = 6 (Medium)</li> </ul>	<p><b>Engineering</b></p> <ul style="list-style-type: none"> <li>Grounding/bonding cables where required (e.g. fluid transfer)</li> </ul> <p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>WHMIS labelling on tanks and equipment on site as well as any fuels or chemicals</li> <li>Applicable Codes of Practice (COPs), procedures, Safe Work System, etc.</li> </ul> <p><b>Personal Protective Equipment</b></p> <p><i>(in addition to mandatory requirements listed above)</i></p> <ul style="list-style-type: none"> <li>As identified through MSDS (e.g. goggles, chemical gloves and/or suit, cartridge respirator, SCBA, etc.</li> </ul>
<p><b>Noise Exposure</b></p> <ul style="list-style-type: none"> <li>Noise levels potentially exceeding regulated exposure limits of 85 dB may be generated at these facilities during work activities from sources such as pumps, electric motors, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate/Remote = 4 (Low)</li> </ul>	<p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>Signage in place where hearing protection required (indicating single or double hearing protection)</li> <li>Applicable Codes of Practice (COPs), procedures, Safe Work System, etc.</li> </ul> <p><b>Personal Protective Equipment</b></p> <ul style="list-style-type: none"> <li>Earplugs and/or earmuffs as identified.</li> </ul>
<p><b>Heat Exposure</b></p> <ul style="list-style-type: none"> <li>Various heat sources on active equipment may pose potential burn hazards to workers. These include but are not limited to engine components, exhaust systems, gas fired heaters.</li> </ul>	<ul style="list-style-type: none"> <li>Moderate/Remote = 4 (Low)</li> </ul>	<p><b>Engineering</b></p> <ul style="list-style-type: none"> <li>Where possible a barrier to radiant heat has been installed on equipment.</li> </ul> <p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>Where engineered barriers are not possible, signage or barricades will be erected to</li> </ul>



		<p>prevent contact with hot equipment.</p> <p><b>Personal Equipment</b>                      <b>Protective Equipment</b></p> <ul style="list-style-type: none"> <li>Listed required equipment above (particularly fire resistant coveralls)</li> </ul>
<p><b>Mechanical Equipment</b></p> <ul style="list-style-type: none"> <li>At times of high activity (such as abandonment operations), equipment on these locations may present pinch or entanglement hazards.</li> </ul>	<ul style="list-style-type: none"> <li>Serious/Occasional = 9 (Medium)</li> </ul>	<p><b>Engineering</b></p> <ul style="list-style-type: none"> <li>Potential pinch and entanglement point on equipment are identified and guarded to minimize the exposure potential.</li> </ul> <p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>Automatically starting equipment will be identified via signage.</li> <li>Site inspections and leading indicator reporting monitor for potential hazards associated with mechanical equipment including the completion of corrective or preventative actions.</li> <li>Applicable Codes of Practice (COPs), procedures, Safe Work System, etc.</li> <li>Specific Energy Isolation COP identified requirements for de-energizing and locking out mechanical hazards during maintenance.</li> </ul> <p><b>Personal Equipment</b>                      <b>Protective Equipment</b></p> <ul style="list-style-type: none"> <li>Listed required equipment above</li> </ul>
<p><b>Trip Hazards</b></p> <ul style="list-style-type: none"> <li>General site landscape as well as steps, stairs, walkways, grating on equipment as well as seasonal influences such as mud, snow and ice all present potential slip/trip hazards</li> </ul>	<ul style="list-style-type: none"> <li>Moderate/Occasional = 6 (Medium)</li> </ul>	<p><b>Engineering</b></p> <ul style="list-style-type: none"> <li>Grating in place on equipment to reduce snow/ice build-up</li> <li>Railings on stairways to minimize the impact of slips</li> </ul> <p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>Trip hazards that cannot be</li> </ul>

		<p>eliminated have been addressed through specific signage and bright contrasting paint at the edge of steps, stairs and walkways</p> <ul style="list-style-type: none"> <li>• Site inspections and leading indicator (hazard) reporting continually monitor for potential slip/trip hazards and corrective or preventative actions are completed</li> </ul> <p><b>Personal Protective Equipment</b></p> <ul style="list-style-type: none"> <li>• Mandatory items listed above (particularly sturdy, ankle-height boots)</li> <li>• Traction aids where weather conditions permit/necessitate</li> </ul>
<p><b>Natural Hazards</b></p> <ul style="list-style-type: none"> <li>• Due to the remoteness of the location, wildlife may be present in any season. This may include large predators such as bears or cougars as well as smaller but still potentially dangerous wildlife.</li> <li>• Insects such as wasps, bees, hornets, horseflies, mosquitos can also pose safety or health hazards to workers.</li> </ul>	<ul style="list-style-type: none"> <li>• Serious/Occasional = 9 (Medium)</li> <li>• Moderate/Occasional = 6 (Medium)</li> </ul>	<p><b>Administrative</b></p> <ul style="list-style-type: none"> <li>• Procedures for waste control to reduce potential attractants for both predators and insects</li> <li>• Access to predator repellants such as bear bangers and bear spray</li> <li>• Use of DEET-based bug repellent</li> <li>• Pre-job discussion to ensure that staff with allergies to stinging animals, local plants or other potential allergens have required medication (epipen) on location for personal use if required</li> </ul> <p><b>Personal Protective Equipment</b></p> <ul style="list-style-type: none"> <li>• Mandatory items listed above ensure coverage to minimize impacts of insects.</li> <li>• Additional clothing to be reviewed for safety around equipment.</li> </ul>

\*The Obsidian Energy **Risk Assessment Matrix (RAM)** was used to complete the risk assessments.

#### Important Notes:

- If any persons having authorized access to these sites believes that they have not been adequately trained to the hazards and/or controls identified for these sites, or believe they have identified a potentially serious hazard not listed here, they must immediately stop work and contact the Site Supervisor for assistance
- This **Site Hazard Assessment** is reviewed as changes are known to occur and represents general hazards of the site, but IS NOT intended to replace or eliminate the need for a pre-job hazards assessment (typically in the form of a **Safe Work Agreement**) for any work, task or project scope specifically being completed at these locations.

#### Accordance to Regulations

Table 3 Provides an Accordance Table that reference where documentation can be found to meet the requirements of the regulations. Details are not reproduced in this document to provide consistency and avoid duplication.

**TABLE 3 ACCORDANCE TABLE OF REGULAOTRY COMPLIANCE TO EXISITING OBSIDIAN DOCUMENTATION**

REGULATION			JUSTIFICATION	DOCUMENT REFERENCE	
OGDPR	8	a	a summary of and references to the management system that demonstrate how it will be applied to the proposed work or activity and how the duties set out in these Regulations with regard to environmental protection will be fulfilled	Obsidian Energy is committed to protecting its personnel, property and the public from accidents or incidents resulting from any of its operations. Obsidian Energy shall meet these obligations by providing resources and taking appropriate measures to protect and promote the health and safety of its employees and to ensure operations do not adversely affect the environment and the general public.	SMART Manual
		b	summary of the studies undertaken to identify hazards and to evaluate safety risks relating to the proposed work or activity;	Hazard and control recognition – Vendor Practices, procedures and equipment, JSA, Well control procedures Site Supervisor Competency Process	SMART Manual Execution Plan
		c	description of the hazards that were identified and the results of the risk evaluation;	Pre-Planning of project and the design stage. Daily/task Hazard identification, control & communication, JSA, OBE Procedures Site Supervisor Competency Process, Site Specific Orientation,	SMART Manual Safe Work System NWT ERP NWT Spill Manual
		d	a summary of the measures to avoid, prevent, reduce and manage safety risks;	Planned Inspections, PPE, Training, Risk Assessment Matrix, Leading Indicator Reporting	SMART Manual Codes of Practices Guidelines Industry Recommended Practices (IRP)
		e	list of all structures, facilities, equipment and systems critical to safety and a summary of the system in place for their inspection, testing and maintenance;	Berms in place around the site and any fuel storage areas, lock out tag out, PPE, Atmospheric Testing	Spill Contingency Manual, Safety Plan SMART Manual
		f	description of the organizational structure for the proposed work or activity and the command structure on the installation, which clearly explains their relationship to each other	Contacts and roles are outlined in applicable documents but summarized in the OROGO submission Safety Plan and ERP	SMART Manual Safe Work System Corporate ERP
			contact information and position of the person accountable for the safety plan and of the person responsible for implementing it;	Contacts and roles are outlined in applicable documents but summarized in the OROGO submission Safety Plan and ERP	SMART Manual Safe Work System
		g	If the possibility of pack sea ice, drifting icebergs, or land-fast sea ice exist at the drill or production site, the measures to address the protection of the installation, including systems for ice detection, surveillance, data collection, reporting, forecasting and if appropriate, ice avoidance or deflection	Not applicable	n/a
		h	a description of the arrangements for monitoring compliance with the plan and for measuring performance in relation to its objectives. and procedures for the treatment, handling and disposal of waste material;	Daily and Task Safe Work Agreements	SMART Manual Safe Work System Score Cards Vendor Evaluations
OGO	5	a	the equipment and installations that are to be used in the work or activity to be authorized are fit for the purposes for which they are to be used, the operating procedures relating to them are appropriate for those uses, and the personnel who are to be employed in connection with them are qualified and competent for their employment; and	No equipment is permanently on-site. Temporary equipment used in the program is evaluated through the Vendor Management Process	Vendor Management Program
		b	the applicant shall ensure, so long as the work or activity that is authorized continues, that the equipment and installations continue to be fit for the purposes for which they are used, the operating procedures continue to be appropriate for those uses, and the personnel continue to be so qualified and competent	No equipment is permanently on-site. Temporary equipment used in the program is evaluated through the Vendor Management Process	Vendor Management Program
	5	11	Awareness, Competence and Training	Obsidian has a thorough Site Supervisor selection and training process which includes the selection, training, understanding, evaluation and improvement mechanisms for our Site Supervisors. The program includes reviews of regulations, guidelines and Obsidian policies, procedures and standards.	Site Supervisor Program