

Long Lake Commercial Operations

Contractor

Safety, Environment and Social Responsibility

Handbook

January 2007 Edition

Table of Contents

Long Lake Commercial Statement of
 Safety, Environment & Social Responsibility Policy 6

1.0 Introduction 8

1.1 Glossary of Terms 8

2.0 Responsibilities of Long Lake, Contractors, and Others 9

2.1 Long Lake Commercial Operations 9

2.2 Long Lake Commercial Operations Representative(s) (Inspectors) 10

2.3 Contractor(s) 10

2.4 Contractor’s Employees/Subcontractors 11

2.5 Alcohol and Drug
 Policy 12

2.6 Visitors 12

2.7 Meetings and Documentation 12

3.0 Personal Protective Equipment 13

3.1 Safety Hats and Safety Boots 13

3.2 Eye Protection 13

3.3 Hearing Protection 13

3.4 Hand Protection 13

3.5 Clothing 14

3.6 Fall Protection 14

3.7 Lifelines 15

3.8 Personal Monitors 15

4.0 Training 16

5.0 Health Hazards 17

6.0 First Aid Services 17

7.0 Incident Reports 17

8.0 External Permit & Approvals 18

9.0 House Keeping/Work Site Inspections 18

9.1 Informal Inspections 18

9.2 Formal Inspections 18

10.0 Security 18

11.0 Safety Equipment & Safe Operating Procedures 19

11.1 Abrasive Blasting 19

11.2 Air Hoist, Cathead and Catline 19

11.3 Air Hoses 19

11.4 Area Designations 19

11.5 Man-Made Mineral Fibre (MMMMF) 20

11.6 All Terrain Vehicles 20

11.7 Fuel Storage Requirements 20

11.8 Barricades, Flagging and Signage 20

11.9 Cathodic Protection 21

11.10 Cell Phones 21

11.11 Chain Saws 21

11.12 Changing Oil/Serviceing Vehicles 22

11.13 Chemical, Product & Material Handling 22

LLk Commercial Operations

11.14	Compressed Gas Cylinders	22
11.15	Confined Spaces.....	22
11.16	Drilling.....	23
11.17	Drilling and Service Rigs.....	23
11.18	Emergency Response Planning.....	24
11.19	Emergency Preparedness	24
11.20	Emergency Vehicles	25
11.21	Engine-Driven Equipment	25
11.22	Equipment and Piping Isolation.....	25
11.23	Equipment and Tools	26
11.24	Excavation and Trenchways (Ground Disturbance).....	26
11.25	Extension Cords/Cheater Cords.....	27
11.26	Fire Alarms	28
11.27	First Aid	28
11.28	Fire Extinguishers	28
11.29	Fire Prevention.....	28
11.30	Firewalls.....	29
11.31	Fuel Tanks.....	29
11.32	Guardrails, Handrails, Platforms and Barricades.....	29
11.33	Heaters (Portable)	29
11.34	Hot Tapping	29
11.35	Housekeeping.....	30
11.36	Ladders (Portable).....	30
11.37	Manual Lifting	30
11.38	Cranes & Lifting Devices	31
11.39	Lightning	32
11.40	Load Binders (Boomers).....	32
11.41	Lockout/Tagout of Equipment.....	33
11.42	Machinery Guards.....	34
11.43	Man Baskets and Man Lifts	34
11.44	Overhead Work.....	34
11.45	Perforating	35
11.46	Photographic Equipment.....	35
11.47	Pigging and Pressure Testing.....	35
11.48	Pipe Handling	35
11.49	Pipe Line and Utility Crossings	36
11.50	Radiation Sources	36
11.51	Power Lines	37
11.52	Pumping Services.....	37
11.53	Respirators	38
11.54	Rig Equipment	38
11.55	Rig Moving Activities	39
11.56	Full Body Harness	40
11.57	Process Safety Devices	40
11.58	Safe Work Permits	40
11.59	Scaffolding/Platforms	41
11.60	Shelters.....	41
11.61	Supplied Air Breathing Apparatus (SABA), Self Contained Breathing Apparatus	

LLk Commercial Operations	
(SCBA)	41
11.62 Testing and Monitoring Equipment	41
11.63 Tie-Ins to Long Lake Commercial Operations Equipment.....	42
11.64 Tool Usage	42
11.65 Transferring Fluid by Truck	42
11.66 Trucking General	43
11.67 Using Long Lake Commercial Operations Equipment.....	43
11.68 Vehicles and Mobile Equipment.....	43
11.69 Welding/Welders	44
11.70 Winching and Towing.....	45
11.71 Electrical Operations.....	45
12.0 Environmental Considerations.....	45
12.1 Introduction.....	45
12.2 General Requirements.....	46
12.3 Spills	46
12.4 Hazardous Materials and Waste Management.....	47
12.5 Noise	48
12.6 Archaeological Resources.....	48
12.7 Vegetation Control.....	48
12.8 Wildlife and Habitat Control	48
12.9 Reclamation	48
Questions to Answer Before You Start Work.....	49
Spill Response – Reporting Volumes Chart	52
References	53
SAFETY & ENVIRONMENT ORIENTATION ACKNOWLEDGMENT	72



SAFETY, ENVIRONMENT & SOCIAL RESPONSIBILITY POLICY

VISION

The Long Lake Owners are recognized as leaders in sustainability, maximizing value for their shareholders and other key stakeholders by integrating safety, economic, environmental and social considerations into decision-making. All activities will be conducted by the companies, employees and contractors involved in the Long Lake development in a way that safeguards this vision.

MISSION

Everyone involved in the Long Lake development has a proactive role in achieving our Safety, Environment and Social Responsibility (SESR) goals and objectives and to strive for 100% Safe Performance in all associated operations and activities.

BELIEFS

We believe that:

- Management and staff commitment to SESR is essential to ensuring a safe and environmentally acceptable operating environment.
- Employee, contractor and public safety shall be uppermost in the minds of all personnel.
- All personnel have a responsibility in achieving our vision and to perform their jobs with integrity and in a safe and environmentally acceptable manner.
- Excellence in SESR performance adds value, and is critical to our business sustainability.
- Public perception and attitudes are important considerations to the successful management of our business.
- Community consultation is the preferred mechanism to resolve SESR issues of concern to the public.

VALUES

We value:

- Our people are our most important asset and we will not compromise our safety standards to achieve other project and operations goals.
- The experience, professionalism and integrity of our people.
- The commitment, leadership, accountability and continuous improvement of all personnel for SESR performance.
- Continual improvement of our SESR performance.
- The health, welfare and safety of our people, contractors and the public.
- The concept of "sustainable development": a balance of environmental protection, economic growth and social responsibility.
- Prompt, open, frank and complete communication with our stakeholders on SESR issues.

PRINCIPLES

We will:

- Maintain high standards of SESR performance, conduct our business with integrity, and ensure that the actions of our contractors, suppliers, customers, partners and agents are consistent with this Policy.
- Meet or exceed regulatory requirements and apply industry standards, codes and best practices in the absence of regulations.
- Proactively and constructively participate in the formulation of public policy.
- Integrate SESR planning and management into our day-to-day activities, and define individual responsibilities, authority and accountability.
- Ensure emergency response capability is in place.
- Establish measurable targets and assess for SESR performance.
- Apply science-based risk assessment and cost-benefit analysis to SESR decision-making.
- Recognize and reward SESR excellence.
- Strive to optimize the safety of all work sites by hiring only contractors who have superior safety performance and management systems.
- Adopt a "Pollution Prevention" approach to project planning and strive towards the reduction of emissions and wastes.
- Inform stakeholders of our health and SESR performance, and engage them in a meaningful way in our planning and operations.

Charles W. Fischer
President & Chief Executive Officer



Sid W. Dykstra
President & Chief Executive Officer

LONG LAKE COMMERCIAL

SAFETY, ENVIRONMENT & SOCIAL RESPONSIBILITY POLICY

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INTRODUCTION

A worker must have a continual awareness of Environmental Health and Safety requirements associated with their workplace, and must have the ability to take appropriate proactive protective measures when hazards are to be encountered.

This booklet advises you of some common workplace hazards associated with the oil and gas industry and provides a summary of the Long Lake Commercial Operations safe operating practices to be followed when on the job to control or eliminate those hazards.

Despite the urgency or importance of work requirements, the Long Lake Commercial Operations expects it to not be carried out at the expense of the environment or the health or safety of people.

All applicable government Rules, Regulations or Restrictions, Federal or Provincial, now in effect or which may be introduced take precedence over these requirements.

The safe work practices outlined in this Handbook are considered general work practices or rules.

. Before work begins on any Long Lake Commercial Operations area, a site specific work site hazard assessment / field level hazard assessment (FLHA) or Job safety analysis (JSA) must be completed and documented. The pre-job type assessment will further outline specific work requirements and controls needed for the hazards identified specific to the work tasks being undertaken.

1.1 GLOSSARY OF TERMS

Approved in the absence of an associated regulation or standard, means approved by Long Lake Operations

Code of Practice - definition, is intended to meet the requirements of OHS code Part 2 - Hazard Assessment 7(1). They are written as "umbrella" documents that clarify related regulatory requirements, key terminology and establish minimum level of hazard controls common to the site specific to a critical activity. Benzene COP, Safe Work Permit COP, Hot Work COP and Blind Management COP are examples of Codes of Practice.

Competent means possessing the knowledge, experience and training to perform an unsupervised task without putting themselves or others at risk.

Contractor means the Contractor(s) contracting to Long Lake Commercial Operations to perform certain services for the Long Lake Commercial Operations. Equipment / Material Suppliers are different from Service Contractors.

Contractor SESR requirements means Long Lake Commercial Operations requirements for the Contractor **and other non-Long Lake Commercial Operations employees, outlined in this booklet.**

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Contractor's Supervisory Personnel means a person that has been assigned by the Contractor and/or by the Long Lake Commercial Operations to oversee a task or project. Usually be the receiver of safe work permits.

Long Lake Representative means any one that has entered into agreement and has been delegated authority by Long Lake Commercial Operations Inc as part of the Joint Venture Agreement.

Pre-Job Meeting – Formal or informal meeting held with the workers to communicate specifics of certain tasks or job scope. Type and duration of the meeting can range from daily tool box talks (informal) to confined space entry planning (formal documented). Meetings can be held at the different contractor kick-off and pre-mobilization to site.

Regulations means all statutes, laws, rules, orders and regulations, including the conditions of any approvals required for the Work, in effect from time to time and made by governments or governmental boards or agencies having jurisdiction over the work or work site activities (federal, provincial, state or otherwise).

Naturally Occurring Radioactive Materials (NORM) is present to some degree in oil field waste. NORM wastes can be found in liquid & sludge accumulations, liberated scale deposits, contaminated soil, production equipment deposits and gas plant film deposits. These materials contribute to natural background radiation levels and can result in elevated levels of ionizing radiation exposure in certain instances.

Radiological Workers are persons who in the course of their work may be exposed to an effective ionizing radiation dosage of more than 1 mSv over a one year period. All other workers at the work site will not be exposed to ionizing radiation dosages in excess of 1 mSv over a one year period.

Site SESR Orientation – All workers (staff, consultant and contractor) must take the LLK SESR orientation before beginning work at the site. This is orientation consists of the general hazard awareness information for the site, the systematic administrative processes and business systems that are in place to control those hazards, and emergency response information required in the event of an incident. . Standard operating procedures, SESR Codes of Practice and your company's work procedures are all part of this "system" of rules to follow on this site.

SESR abbreviation for Safety, Environment and Social Responsibility

Subcontractor means any party that has entered into contract with a Contractor to perform part of the services for Long Lake Commercial Operations.

2.0 RESPONSIBILITIES OF LONG LAKE COMMERCIAL OPERATIONS, CONTRACTORS AND OTHERS

2.1 The Long Lake Commercial Operations

Will:

LLk Commercial Operations

- Maintain a high level of commitment to SESR in the workplace for the benefit of its employees, contractors and the general public. It is clearly in everyone's interest that safety, health and environmental considerations be an integral part of every project.
- Assign a Long Lake Commercial Operations Representative to serve as liaison between the Contractor and Long Lake Commercial Operations.
- Provide a site specific SESR requirement orientation session before commencement of work for any and all Contractor employee's working at the Long Lake Commercial Operations Site.

2.2 Long Lake Commercial Operations Representative(s) (Supervisors, Managers, Inspectors)

Will:

- Ensure that Contractors inform their employees and sub-contractors (those workers under the Contractor's supervision) about safe practices and any hazardous conditions associated with each particular job being done by the person.
- Ensure Contractor has a copy of their company safety manual at the LLK site.
- Present to the Contractor applicable site specific SESR information as determined at any pre-job meetings orientation to all Contractors working at the Long Lake Commercial Operations Site prior to commencement of work.
- Issue Safe Work Permits to the Contractor in conjunction with operating personnel at existing Company facilities and ensure a site specific hazard assessment has been completed and documented prior to on site work starting. At major facilities, Site Specific Permits may be issued and will originate through the control room.
- Ensure that all workers are aware imminent danger provisions and of their right to refuse unsafe work or perform work for which they are not adequately trained.

2.3 Contractor(s)

Will:

- Meet with the appropriate Long Lake Commercial Operations management, team leader and or site supervisor prior to start of work.
- Take all necessary steps to protect all workers, employees and sub-contractors from any potential injury or illness and take all the necessary steps to protect property, equipment and the environment from damage as a result of the work being carried-out.
- Provide appropriate tools and safety equipment that is maintained in good operating condition which meets Regulations and Company requirements.
- Maintain compliance with government regulations industry standards and Long Lake Commercial Operations guidelines.
- Maintain MSDS binders on site for their work area.
- Be held responsible for any violations of Long Lake Commercial Operations SESR Requirements by their own employees, or sub-Contractors employees or any persons carrying out business on the work site on behalf of the Contractor.
- Address any Non Compliance issues in regards to Long Lake Commercial Operations SESR Requirements. Non Compliance to Long Lake Commercial Operations SESR expectations could result in activation of our contractor corrective measures policy.
- Cease all work in the area of a defined Health & Safety or Environmental hazard until it is resolved.
- Plan all work procedures in advance to meet or exceed Long Lake Commercial Operations SESR Requirements and the Regulations.

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- Supervisors are required to hold daily toolbox talks/pre-job meetings with workers in order to keep them informed of work conditions and job expectations.
- Bear all costs associated with a safety, health or environmental infraction caused by the Contractor which results in a delay of the work.
- Report immediately to the Long Lake Commercial Operations Representative, all Events that result in illness, injury, death, property/ environmental damage or high-potential near-miss. Promptly thereafter, a detailed written report shall be submitted to the Long Lake Commercial Operations **within 24 hours**. The Contractor will cooperate with the Long Lake Commercial Operations in any accident investigation to determine underlying causes, in an effort to prevent reoccurrence.
- Support and encourage safety, health and environmental meetings. The frequency of these meetings will be determined by the onsite Long Lake Commercial Operations Representative in consultation with the Contractor and Contractor employees.
- Effectively communicate Long Lake Commercial Operations SESR Requirements and policies, procedures and practices to all employees on a timely basis.
- Provide feedback to the Long Lake Commercial Operations Facility Project Manager, Construction Superintendent, Safety Coordinator, Safety Manager, Environmental Coordinator, or Environmental Manager, on the development and implementation of SESR policies.
- Have a sufficient number of competent employees at the work site trained as Confined Space Monitors, Spark Watch, Gas tester and other industry specific programs as noted in the contract.
- Ensure all contractors' employees are properly trained for tasks being conducted including adequate training in hazard identification, hazard assessments and hazard control measures.
- Ensure working alone legislation in province of work is implemented and being complied with.
- Ensure that all workers are aware imminent danger and of their right to refuse unsafe work or perform work for which they are not adequately trained.

2.4 Contractor's Employees/Subcontractors

Will:

- Be aware of and abide by all Long Lake Commercial Operations SESR Requirements and the Regulations.
- Have the right to refuse work that is unsafe to themselves or fellow workers. Any unsafe act(s), conditions and/or equipment must be reported to your supervisor immediately.
- Be responsible to conduct yourself in a manner that has regard for the well-being of yourself, fellow workers, equipment, property and the environment.
- Be knowledgeable of the work area and know the potential safety, health or environmental hazards and control measures associated with their specific work tasks.
- Avoid distractions, concentrate on the job at hand, and work in a manner so as not to cause injury to yourself, other workers or the public.
- Take an active part in all phases of the safety health and environmental programs and review materials provided by the Contractor or the Long Lake Commercial Operations.
- Report all Events on the job to your Supervisor as soon as practicable.
- Refrain from scuffling, practical joking, harassment or horseplay. Such conduct is strictly prohibited.
- Obey "No Smoking" signs and smoke only in designated areas. Smoking is not permitted while loading or unloading flammable liquids.

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- Use only safety matches or approved lighters where permitted to be carried in process or production areas, drilling/service rigs or work site/storage areas containing flammable atmosphere.
-
- Know the location and use of all emergency equipment in the working area.
- Avoid unnecessary risks and promptly report all unsafe practices or hazardous conditions to their supervisor.
- Call for assistance when required. (Do not perform a hazardous job alone).
- Facial hair can constitute a hazard due to, improper seal on a face mask, wicking effects from chemicals, and burns from a flash fire. Beards, long side burns and excessive mustaches are not permitted in process areas, well sites, or drilling/service rig areas.
- Scalp hair must be trimmed short enough or contained so that it will not become entangled in rotating equipment or interfere with the effective sealing of respiratory protective or resuscitation equipment.
- Use personal protective equipment as required by the Company or the Regulations. The Contractor shall provide such equipment.

2.5 Alcohol and Drug Policy

- All Long Lake workers must abide by the requirements of Long Lake's Alcohol and Drug policy. Contracted companies and their employees are required to comply through their own policies. In both cases, workers will be required to submit to:
 - Pre-access Testing,
- And may be required to submit to:
 - Post Incident Testing, and
 - Reasonable Cause Testing.
- No worker is allowed to accept relief from another, if in the opinion of the on-shift employee or his supervisor, the relieving worker is in any way impaired by fatigue or intoxication due to the use of alcohol or drugs.
- Alcoholic beverages and non-prescription drugs are NOT permitted in the Long Lake facility, and this includes employee and contractor vehicles.
- Prescription drugs must be discussed with your health care provider to determine your ability to operate any equipment. Your SUPERVISOR must be aware of any medication you are taking before operating any motorized equipment.

2.6 Visitors:

Will:

- report to the security office before entering site
- Be escorted at all times by their site contact

2.7 Meetings & Documentation

- Pre-job and/or contractor kick off meetings must be held at the beginning of complex contract jobs. Scope of the job and any Hazard Assessments must be reviewed at that time.
- Morning meetings or toolbox talks should held to review activities.
- Decision and actions logs are to be maintained and apply to those persons in attendance at meetings.

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- Weekly Operational / Maintenance planning meetings and/or monthly safety meetings may be required depending on the contract terms and decisions by Long Lake Management. Contractors are expected to attend or send representatives as required and appropriate.

3.0 PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment must be properly used and maintained.

3.1 Safety Hats and Safety Boots

- Class 1 CSA approved safety boots (green triangle) covering the ankle and CSA or ANSI approved hard hats must be worn on ALL Long Lake Commercial Operations Work Sites.

3.2 Eye Protection

- CSA approved safety glasses complete with side shields shall be worn by all workers while performing work at Long Lake Commercial Operations Work Sites.
- Additional eye and face protection (chemical goggles, full face shields, etc) is mandatory for specific tasks where potential for eye injuries exist. For more information refer to LLK Safety Environment Practices Manual, “Personal Protective Equipment: Eye Protection”.

3.3 Hearing Protection

- Approved hearing protection devices must be worn at all times where noise levels exceed 85 DBA. These areas will usually be marked with signage stating that hearing protection is required.

3.4 Hand Protection

- Appropriate and suitable hand protection specific to the work being done must be identified and communicated to the contractor as part of the permitting and assessment of work process.
- Hand protection requirements identified in above assessment of work shall be worn by all contractors involved in the work process. Examples of appropriate Hand Protection includes:
 - Cut Resistant – Kevlar
 - Light oil – HyFlex CR
 - Chemical protection – Nitrile external layer
 - -Fuels, solvents, lubes, Corrosives – Sol-Nit
 - Construction /Maintenance – Leather external (clothback or full glove)
 - Winter – insulated leather
 - Electrical – Class 0, 1, or 2 rubber gloves based on low energy or high energy voltage.
- Note – Kevlar Wrist-o-lets shall be used to cover area of the wrist and forearm between the glove and coverall sleeve.

3.5 Clothing

i) Fire Resistant Clothing

- All Contractors entering a Long Lake Commercial Operations Work Site must wear flame resistant clothing fully covering the arms, legs and torso and all other outer wear (hard hat liners, bunny hugs, hoodies, balaclavas, wristolets, rainwear. etc) must be made of fire resistant material as well. Flame resistant garments being used by on site workers must meet CGSB 155.20 standard and rainwear used by on site workers must meet ASTM F 1891(b) standard for hydrocarbon flash fires. Garment tags must be left intact as these tags will show what standard garments were tested to.
- In addition, under layers of clothing should be made of 100% natural fibers. If the work area is considered “new construction” and has never had flammable products through it, then the need for fire resistant clothing may be waived if an approved request for variance has been completed.
- Reflective striping used on garments must be flame resistant materials meeting CSA Z796.02 standard and garments must be ordered with the following WCB of BC Equivalent: 2” wide stripes Yellow/Silver/Yellow in colour, drop down X on back, 2 front vertical stripes, circular stripes around lower forearms and circular stripes around lower legs. Note: Stripe around waist is not required.

ii) Chemical Resistant Clothing

- Employees and all Contractors on site must wear approved protective clothing, when handling acid, caustics or other harmful substances which could cause injury.

iii) Electrical Safety – Outerwear

Electricians and power line / utility workers will require additional FRC clothing when working on exposed electrical systems over 750 v.

iv) General Clothing

- Rings on fingers shall be removed while performing any duties and/or operating any machinery while on any Long Lake Commercial Operations work site.
- Loose clothing, neck chains and other articles shall be removed or worn in a manner which inhibits contact with moving parts of machinery.
- When wearing Medical Alert devices, necklaces with a designed “break-point” are preferred over bracelets. Medical necklaces shall be worn in a manner which inhibits contact with moving parts of machinery.
- Facial rings and earrings are discouraged as they create exposed and hard to clean areas when contamination hazards exist such as being splashed by chemicals, solvents, hydrocarbons, paints, etc.

3.6 Fall Protection

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- Long Lake Commercial Operations SESR Requirements follow the site requirement of the use of fall protection harnesses for temporary platforms over 2 meters (6 feet).
- A worker must wear fall protection devices with the shock absorbing lanyard tied off to a fixed anchor support where required by applicable Regulations, and/or at the worker's request.
- A worker must wear fall appropriate fall restraint devices for any leading edge work with the life line tied off to a fixed anchor support where required in accordance with applicable Regulations, and/or at the worker's request.
- All workers using fall protection devices must be trained by Oil Sands Safety Association (OSSA) accredited provider and follow requirements established regarding use, care, and maintenance of these fall protection devices.
- A worker must wear fall protection devices with the lanyard (safety-line) tied off to a fixed support where required by Long Lake Commercial Operations SESR Requirements, applicable Regulations, and/or at the worker's request.
- All workers using fall protection devices must be trained and fully aware of OH&S regulations regarding use, care, and maintenance of these safety equipment devices.
- When the use of these fall protective devices is required, contractors and supervisors must ensure that workers are using the protective equipment effectively and that they are at all times 100% tied off.
- Prior to using fall protection and/or working at heights, a site specific/work task specific fall prevention and rescue plan must be established, documented, and communicated to all workers involved. Fall Protection plans are available as part of the LLk SESR Fall Protection code of practice.

3.7 Lifelines

- Any time a life line is used, a Confined Space Monitor/ Standby person with suitable safety equipment and PPE is required for areas that could bring immediate danger to a worker's health and safety. This person must be able to affect a rescue without entering the contaminated area, or confined space area and be able to sound an alarm to get help from additional rescue personnel.

3.8 Personal Monitors

- On all Long Lake Commercial Operations, workers within process unit areas shall wear, as a minimum, personal two sensor monitors. These monitors must be worn capable of monitoring immediate work area for flammable or explosive environments (LEL) and Hydrogen Sulphide (H₂S) They are to be maintained according to Manufacturers recommendations and workers must be trained in the care, use and maintenance of this safety equipment. (More information on H₂S can be found in reference materials at end of this handbook).
- BW GAS ALERT MICRO 2 sensor (LEL & H₂S) is the current standard for personal gas monitors.

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- When work activities are being conducted in areas considered to be non-hazardous work locations such as on new construction or pipeline projects, the need for personal monitors may be waived if written approval is obtained by a Long Lake Commercial Operations Representative through the Request for Variance process.

4.0 TRAINING

All contractor employees shall arrive at site qualified to perform the work as assigned.

All workers arriving on site shall keep copies of the appropriate certifications with them at all times. The certificates shall be made available to Long Lake representatives as required.

Mandatory training certification for all Category 1 (field based) contract workers on the Long Lake Commercial Operations Site includes:

- Valid St. Johns Ambulance Standard First Aid/ CPR Certificate or equivalent for supervisors;
- Hydrogen Sulfide (H₂S) Training, where exposure to H₂S is possible, (H₂S Alive unless otherwise approved by Long Lake Operations);
- Workplace Hazardous Materials Information System (WHMIS) certification;
- IRP16.0 Basic Safety Awareness Training or equivalent such as Construction Safety Training System (CSTS) certificate.

Contract companies shall provide appropriately trained Supervisors when apprentice workers and /or non-qualified workers are part of work crews. These workers shall work under the direct supervision of a competent worker.

In addition to job specific technical qualifications and mandatory training, the contractor's employees may also require to completed other industry certified training specific to their work which may include but is not limited to :

- Aerial Lift Platforms (OSSA Accredited);
- Confined Space Monitor - (OSSA Accredited);
- Confined space Entry – for all workers required to go inside vessels; (OSSA Accredited);
- Confined space Entry and Rescue – designated rescue crews only; (OSSA Accredited);
- Detection and Control of Flammable Substances –for the upstream oil and gas industry or equivalent in house program – use of 4 or 5 sensor portable Gas Detection Monitors.
- Fire Extinguisher training
- Fire Watch / Spark Watch training
- Proper handling and storage of gasoline, volatile solvents, chemicals or other flammable substances;
- Defensive Driving;
- Fall Protection; (OSSA Accredited);
- Fall Arrest and Rescue (OSSA Accredited);
- Ground Disturbance Training Certification.
- Hazard Identification and or Job Safety Analysis training;

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- Site Supervisor Safety Training;
- OHS Supervision and Regulatory Awareness Training;
- Off Road operator - ATV, and Snowmobile;
- Rigging and Hoisting Equipment certification
- Transportation of Dangerous Goods (TDG) certification;
- Well Servicing/Drilling BOP certification; (Well servicing Supervisors)

Long Lake In-house training programs will be made available to resident or long term contracting company supervision dependant on the type of work. Examples of in house training include:

- Blind Management – Red/Green /Yellow tagging routines for installing blinds
- Critical Lift – Crane & Rigging Practices
- Electrical Safety Awareness – Electrical workers
- Ground Disturbance permits
- Lock out procedure – Operations Locks, Maintenance Locks etc.
- Safe Work Permit Receiver – General Foreman during Commissioning, Supervisor/Lead foreman once in operations
- Fall Protection planning
- Confined Space Entry planning

5.0 HEALTH HAZARDS

During Long Lake construction, commissioning and operations activities, you may be exposed to WHIMIS controlled products or processes that may be harmful to your health.

- Proper Personal protective equipment is required when working with controlled products such as benzene, hydrogen sulfide, pesticides, radioactive sources, solvents and acids.
- Refer to the MSDS sheets available at www.msdsbinders.com or work specific paper copies kept at the control room office.
- Respiratory codes of practice must be maintained based on the type of product.
- Trade specific health monitoring requirements-such as heavy metal exposure for welders-must be considered.

6.0 FIRST AID SERVICES

- All injuries must be reported to the medical attendant on site.
- The medical centre is located on the West of the CMT complex.
- All potentially debilitating injuries must be examined at the onsite medical center and further treatment provided by Northern Lights Regional Health Centre emergency department.
- All field supervisors must be first aid trained.
- Modified work shall be available to all workers.

7.0 INCIDENT REPORTS

- All incidents, injuries and near misses must be reported to your supervisor and to Long Lake management immediately. A written preliminary notification report must be submitted within 24 hours. For any OH&S Serious Incident, EUB or AB Env Reportable event, the written report must be done in 4 hours.

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- Long Lake SESR personnel shall be the point of contact with all regulatory agencies, WHS, AB Environment, EUB etc in the event of a serious or reportable incident.

8.0 EXTERNAL PERMITS & APPROVALS

Long Lake is coordinating all new external Permits and approvals with the Regional Municipality of Wood Buffalo. Contact Alberta Permit Pro to assist with any of the following:

- Building permits (over 28 days for construction trailer placement)
- Natural Gas, or Propane Permits
- Plumbing Permits (Potable Water or Sewage)

Other agencies -

- Electrical permits – Emerson is the contact for these permits at Long Lake
- Fire Inspections, Fuel tank Inspections or Occupancy Permits – RMWB Fire Marshall..

9.0 HOUSE KEEPING / WORK SITE INSPECTIONS

9.1 Informal Inspections

In addition to inspections by Long Lake Commercial Operations Representative(s), the Contractor's Supervisory Personnel and/or contractor employees, shall conduct ongoing safety, health and environmental inspections as part of their daily activities at each work site. Unsafe, unhealthy and/or environmentally damaging conditions or practices found during inspections shall be identified and immediately corrected. All related work shall immediately cease until the unsafe, unhealthy and/or environmentally damaging condition(s) or practice(s) are remedied or controlled. Results of Inspections must be documented. (Log book or day timer).

9.2 Formal Inspections

The Contractor's Supervisory Personnel and/or Long Lake Commercial Operations Representative shall conduct a planned formal safety, health and environmental inspection of their areas of responsibility at least once a week. Immediate corrective action must be taken to resolve all problems identified. The results of the inspection shall be promptly documented, forwarded to the Long Lake Commercial Operations Representative and kept on file, complete with follow-up actions.

10.0 SECURITY

- Employees will be banned from site for any of the following:
 - 1) Breach of business conduct
 - 2) Illegal activities
 - 3) Harassment or
 - 4) Malicious or intentional act.
- LONG LAKE, in its sole discretion, reserves the right to refuse access and /or entry to its premises to any individual.
- In the event a Contractor must take disciplinary action against any one of their employees, LONG LAKE will require confirmation of any lay off, dismissal or termination from site.
- Visitors must be escorted.

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- Tours require Area Approval
- Prior approval must be given in order to enter another contractor's work area or the pilot plant.

11.0 SAFETY EQUIPMENT & SAFE OPERATING PROCEDURES

11.1 Abrasive Blasting

- During abrasive blasting precaution must be taken to ensure that no employee/contractor is exposed to inhalation of any blasting dust. Samples of spent blasting material must be taken to determine if the material is a hazardous waste or not, before it is disposed of.
- Blasting Materials must meet applicable regulations.

11.2 Air Hoist, Cathead and Catline

- Any worker who operates this type of hoisting equipment must be trained in its proper use and safe operating procedures. A worker must have knowledge of the working limits of the hoisting equipment prior to lifting any load. Inspect Cathead and Catline regularly.

11.3 Air Hoses

Compressed air shall not be used:

- to clean-off a worker's clothing.
- to clean equipment, such as ball bearings, unless the balls are held securely.
- as a carrier agent for solvents while cleaning equipment.
- for pressure testing vessels or pipelines unless specifically authorized by a Long Lake Commercial Operations Representative(s) and SESR Department.
- When any soft line air hoses are in use at pressures over 15 PSI, a securing system over the hose connections must be used. Most common type of securing system is the "whip-check" system. Manufacturer specifications must be followed to ensure securing systems are used correctly and properly fitted, depending on pressures and hose sizes. No homemade and/or uncertified securing system will be accepted.

Use with hydraulic systems: When any soft line hose over 2 meters in length is used on hydraulic systems operating at a pressure greater than 100 PSI, including soft line connected to steel piping, a securing system over the connection points must be used. Most common type of securing system is the "whip-check" system. Manufacturer specifications must be followed to ensure securing systems are used correctly and properly fitted, depending on pressures and hose sizes. No homemade and/or uncertified security system will be accepted

11.4 Area Designations

Area designations will be determined by Long Lake Commercial Operations Representative(s) during the work permitting process and communicated to those performing the work. The potential hazards associated with these areas and type of work being performed, must be taken into account when issuing safe work permits. Area designations can include:

LLk Commercial Operations

- Free areas or Non Process areas (no flammable or toxic atmosphere potentials)
- Classified or Process areas (potential exists for flammable and/or toxic atmospheres)
- Radiographic areas (radioactive hazards exist due to equipment or work activities)
- Mustering areas (gathering point when emergency evacuation is required)
- Restricted areas (off limits to personnel unless authorized to enter)

11.5 Man-Made Mineral Fibre (MMMMF)

- Any MMMF removal shall be in compliance with applicable regulations.

11.6 All Terrain Vehicles

- The use of all terrain vehicles is restricted to only the necessary use of either a four-wheeled motor cycle (Quad) or in winter conditions a snowmobile. When using an all terrain vehicle a DOT approved safety helmet and eye protection (if the helmet is not fitted with a shield) must be worn. All operators of all terrain vehicles must have taken an all terrain vehicle certification course. ATV's are not to carry passengers (driver only) unless they are designed for passengers.
- Recreational use or personal use of ATV's is prohibited. ATV's are not to be used in construction areas.

11.7 Fuel Storage Requirements

- Only CSA certified metal or plastic portable gas cans in good condition are allowed.
- Any permanent or semi-permanent storage tanks must be constructed to minimize potential environmental impact with the following minimum criteria
 - Surrounded by a dyke to contain 110% capacity of the tank.
 - Diked area lined with compatible material to the material being stored (e.g. 30 mil HDPE liner).
 - Graded to a low area to collect rainwater.
 - No openings in the dyke.
 - Areas shall be inspected monthly.
 - Nozzles, spouts and valves on tanks must be kept within the dyke when not in use.
 - Any permanent or semi-permanent fuel tanks must have the appropriate municipal fire inspection permits.
 - Must be positioned away from buildings as per Alberta Fire Code and/or federal legislation.

11.8 Barricades, Flagging, and Signage

- Whenever a temporary hazard exists due to operations or maintenance work, the necessary signs and barricades must be in place.

LLk Commercial Operations

- Flagging should be used to warn workers of hazards in work areas as required. Color coded flagging tape can easily identify actions needed by workers in vicinity of these hazardous areas. Red flagging tape indicates “Do Not Enter” and is used where there is a danger of hazards such as falling objects or overhead lifts. Only those involved in the work are allowed in these areas. Yellow or orange flagging tape indicates “caution” and provides a warning that a hazard exists in the area. Increased awareness of the surrounding work area is required.
- All flagging tape must be removed when the hazard no longer exists or the work has been completed.

11.9 Cathodic Protection

- Work shall not commence on equipment protected by an impressed current protection system until Long Lake Commercial Operations personnel or the Long Lake Commercial Operations site representative has made a determination whether the protection system should be left on or off. A documented risk/hazard assessment will be done prior to the work starting and determinations made shall be communicated to all workers as part of the tailgate or pre-job meetings.

11.10 Cell Phones

- Cell phones are not intrinsic devices and therefore shall be treated as flame type equipment under provincial equipment spacing requirements (see pages 45 to 48 in this handbook). These devices as well as other electronic devices such as pagers and blackberries cannot be used or turned on in potentially flammable or otherwise hazardous atmospheres such as around well sites, battery sites, fluid transfers, storage tanks, etc).
- If having to use cell phones or other electronic devices as part of work activities, then work must be treated as hot work with permits issued and atmospheres tested and monitored.
- Cell phones are not to be used while driving on site.

11.11 Chain Saws

- Before using chainsaws on the Long Lake Commercial Operations site a safe work permit must be issued and adequate control measures and safety precautions must be implemented.
 - When using chain saws: head, ear, foot, leg and eye protection must be worn.
- Chainsaws must conform to CSA standards and be equipped with a chain brake and anti-kickback chains.
- Chainsaws should be fuelled and used only in well-ventilated areas, and fuelling may not be done with the motor running or while the chainsaw is still hot.
- When starting a chainsaw, place it on the ground or another level area with the chain pointing away from the body and clear of any obstructions. Never “drop” start a chainsaw.
- When carrying or transporting chainsaws, the chain bar guard must be in place, the chain brake must be engaged, and the motor must be shut off.
- No worker other than the faller and the trainees shall be closer than twice the height of the tree being felled. When falling a tree, a proper notch shall be made at least 1/4 of the

LLk Commercial Operations

diameter of the tree at the butt. Snags and trees that may create a danger to a worker shall be felled or removed prior to falling a tree.

- Any worker using a Chain Saw must have a valid chain saw training certificate.

11.12 Changing Oil/Servicing Vehicles

- All waste products generated by the servicing of equipment must be properly collected, stored, transferred and disposed of.

11.13 Chemical, Product & Material Handling

- All employees handling chemicals at a work site shall be trained in accordance with the Work-place Hazardous Materials Information Systems (WHMIS) and Transportation of Dangerous Goods (TDG) requirements.
- Before a new chemical or controlled product is brought to a Long Lake Commercial Operations site the contractor is responsible to ensure that prior approval has been received. Discuss with the Long Lake Commercial Operations representative before bringing a new product onto location or using and if required, they will submit a chemical review form on the contractor's behalf and ensure that the product is managed and handled in accordance to the approval given. This requirement does not apply to products purchased or used in quantities available for retail sale.
- The chemical Review process will involve msdsbinders.com.

11.14 Compressed Gas Cylinders

- All compressed gas cylinders shall be returned promptly to a suitable storage area after use.
- Storage areas shall be located away from general traffic paths.
- Cylinder storage areas shall be divided into areas marked as 'full' and "empty" or the cylinder(s) obviously tagged.
- Appropriate measures shall be taken to separate cylinders containing substances which, if mixed, could produce an explosive or fire hazard.
- When not in use, cylinder valves shall be closed and connecting hoses shall be depressured.
- Cylinders shall have valve protection caps in place whenever they are not connected for use or while they are being transported.
- All cylinders shall be stored, transported and used in accordance with manufacture's specifications.
- Cylinders shall be secured to some substantial stationary object or structure by a chain or by another suitable means capable of supporting the weight of the cylinder.

11.15 Confined Spaces

- Where a worker must enter a confined space, suitable procedures must be in place to protect the worker. The required LLk SESR Confined Space Entry Code of Practice work plans must be readily available at the CSE location / work site. The procedures shall meet all the requirements of Long Lake's Confined Space Entry Code of Practice and applicable regulations.

LLk Commercial Operations

- To reflect the relative hazards, and to ensure a consistent approach among oil sand facilities, confined space entries are classified. The classification is based on the conditions present at the time of entry with consideration for potential changes of conditions as identified in the hazard assessment.
 - **LEVEL 1:** A confined space that presents a situation that is immediately dangerous to life or health (IDLH). These include but are not limited to oxygen deficiency, explosive or flammable atmospheres, and/or concentrations of toxic substances.
 - **LEVEL 2:** A confined space that presents a situation is not immediately hazardous to life or health, but has the potential to cause injury and illness if preventive measures are not used.
 - **LEVEL 3:** A confined space where the potential hazard does not require any special modification of the work procedures.
- The Oil Sands Safety Association CSE training program shall be the recognized certification for Long Lake confined space entry.

11.16 Drilling and Service Rigs

- Before commencement of any Drill Stem Tests, licensees must review and meet the requirements of the current edition of EUB *Guide 60: Upstream Petroleum Industry Flaring Guide*. In addition, when conducting a DST, the following minimum requirements must also be met:
 - A reverse-circulating sub must be installed in the drill string.
 - A remote-controlled master valve must be installed on the testing head.
 - A separate DST line(s) must be installed for testing purposes, and the end of the line(s) must terminate at least 50m from the well.
 - The DST line must have a minimum nominal internal diameter of 50.8 mm throughout.
 - The DST line must have a working pressure equal to or greater than 14MPa.
 - DST line connections may be made up using flanged, hammer union, or threaded connections.
 - The DST line(s) must be secured at 10m intervals. Stakes or weights must be used (as dictated by the soil conditions).
 - The DST manifold must have the same minimum pressure rating as the required BOP system.
 - The DST manifold must be secured to restrict it from movement.
 - If liquids are produced during a DST, the liquids must be separated.
 - Liquids produced during a DST must not be directed to an earthen pit.
 - Disposal of waste fluids must be in accordance with EUB *Guide 58: Oilfield Waste Management Requirements for the Upstream Petroleum Industry*.
 - Drillstem testing is not permitted on critical sour wells.

LLk Commercial Operations

- For additional information on drillstem testing, see *IRP4: Well Testing and Fluid Handling*, Section 4.1.

11.17 Drilling and Service Rigs

- Drilling and service rig Contractors shall provide equipment that is well maintained and in a safe operating condition.
- This equipment shall comply with all requirements stipulated by the Regulations, the manufacturer, and industry standards.
- The Contractor must conduct inspections of these rigs as required by the governmental agencies and/or regulation. Company Representatives must perform inspections of a rig to ensure its safe operation. The Contractor shall repair or replace any item(s) found to be deficient during any of these inspections.
- The drilling Contractor and service rig Contractor shall provide the Company with the latest governmental agencies inspection report for the rig to be used to perform work for the Company.
- Before a new service rig is used on Long Lake Commercial Operations locations, an inspection must be conducted by the Appropriate Well pad Operator / supervisor Representative and Service Rig Personnel.
- Before driving onto locations where service or drilling rig activities are taking place all vehicles must remain at the entrance to the well site until being given approval to enter by the on site Long Lake Commercial Operations Representative. This is to ensure that vehicles or personnel coming onto the work site will not be detrimental to the work activities being conducted at the time of arrival.

11.18 Emergency Response Planning

Each person on site must have access to the site specific emergency response plan and emergency contact numbers. For any emergency, the order of importance of activities is as follows:

1. Protect people and get immediate help for the injured.
2. Protect the environment
3. Protect company assets

11.19 Emergency Preparedness

PHONE 780 334 3911•

LONG LAKE & Contractor Emergency response plans must be posted at inside office buildings and trailers and field locations.

- LONG LAKE emergency meeting points and Muster areas must be identified and communicated to workers.
- Emergency radio call channel: A1/B1/C1

If calling by telephone, say “I have an emergency”

If calling by radio, say “Emergency, Emergency, Emergency.”

Be prepared to give the following information:

- Your name
- Your location (provide location of nearest Emergency Meeting Point)
- The name of your employer
- What is the nature of your emergency (fire/injury/vehicle accident)
- The number of persons involved in the incident
- Is the area accessible by vehicle? ATV?
- Where are emergency responders to meet you?
- Do not reveal casualty(s) name over the radio

Stay on the radio or telephone and maintain contact with emergency personnel. Emergency response personnel will be dispatched to your location to assist. If there is someone present with first aid training, have them assist with the injury partly until emergency response personnel arrive. When an incident occurs, immediately ensure proper protection of people, property, and the environment to prevent further harm from occurring.

Do Not move the injured person unless:

- There is the potential or the possibility of imminent danger or further injury.
 - There has been initial first aid treatment rendered by qualified emergency medical personnel.
- In the event of a serious OH&S incident, ALL work must cease pending an accident investigation by OH&S personnel. Do not disturb the incident scene unless required to administer initial first aid. Preserve evidence that may be useful in an investigation.

11.20 Emergency Vehicles

- LLk has Fire and Medical Emergency vehicles available to respond across site as part of the services provided by the Upgrader. Any additional emergency vehicles for construction or specialized project work must be brought to that location in accordance to applicable regulations.

11.21 Engine-Driven Equipment

- Permission must be granted before entering a potentially hazardous area with engine-driven equipment.
- All diesel-driven equipment entering a potentially hazardous area (battery, well site, etc.) must be equipped with a positive-air-intake shutoff and spark-arresting exhaust
- A safe distance of 6 m must be maintained with EDE close to classified areas of the process plant.

11.22 Equipment and Piping Isolation

- Blind insertion / removal shall meet the requirements of LLk's Blind Management Code of Practice – Red, Green, Yellow 3 inch “round” tag system.
- All equipment and associated piping must be properly isolated, de-pressured, and/or de-energized before any maintenance or repair work is done.
- Isolation methods can include lockout and tagging of electrical equipment and the use of blinds and/or valves to secure piping associated with equipment being serviced.

***NOTE* all blinds are to meet or exceed the requirements of the American Society of Mechanical Engineering (ASME) B31.3 Process Piping Code.**

- When breaking the integrity of piping or equipment a safe work permit must be issued before starting the work and necessary safety equipment such as fire extinguishers and respiratory protection must be in place if there is potential to expose the worker to hazardous substances.
- Blind locations are identified by a 2”square brass tag, installed by equipment number, a record of blind number, location, size, and pressure rating.
- Blinds must be kept and blinds and gaskets must be correctly pressure rated for the service in which they are to be used.
- Gaskets used in conjunction with blinds should be installed on the pressure side and where possible, on both sides of the blind.
- Valves used for isolation of equipment must be tagged “Do Not Operate” and a record must be kept identifying location and position left in for isolation (open, closed).
- Before removing locks, blinds or valves, the isolation log must be checked in order to ensure that all blinds have been removed and that all valves have been put back to normal operating position.
- When isolating equipment for confined space entry all associated piping must be physically disconnected, blinded, or isolated using the double block and bleed method.

11.23 Equipment & Tools

- All equipment and tools necessary to complete the task must be in good condition and used for their intended purposes.
- Guards on all power tools and equipment must be in place and not modified.
- All portable electric hand tools shall be equipped with a three-conductor cable, be Double Insulated or have a “Ground Fault Interrupter”.
- Electrical hand tools shall not be used in a combustible environment until the supervisor certifies that conditions are safe and a Hot Safe Work Permit has been issued.

11.24 Excavation & Trenchways (Ground Disturbance)

- Shall meet the requirements of LLK Ground disturbance Code of Practice.
- Ground Disturbance is any excavation or construction activity that involves the use of powered mechanical equipment resulting in penetration of ground to any depth, or the use of hand tools (including hydrovac) to depth greater than 300 mm (one foot). This does not include regular road maintenance activities on existing roadways such as grading or dragging.
- Permits that outline the mandatory requirements necessary to ensure worker safety and to avoid accidental contact with pipelines and underground utilities during ground disturbance activities must be completed prior to any “Ground Disturbance”.
- A competent supervisor must be in attendance at all times during ground disturbance activities. A Long Lake Commercial Operations Representative must be on site during line crossings to witness crossing activities, when power mobile equipment is being used.
- Where applicable contact Alberta First Call before starting ground disturbance activities.

LLk Commercial Operations

- Before any excavation is started, available drawings, electronic and/or other appropriate equipment to locate underground pipelines and electrical lines should be utilized. When all lines have been located, the excavation work area will be rechecked to ensure that no lines have been missed. When lines have been located they shall be exposed by hand or hydrovac before using mechanical excavators near them.
- Sheeting, shoring, cutbacks, fencing, bracing or approved temporary protective structures that may be required for safe operations, shall be provided for and used as per OH&S Regulations.
- Temporary railings, barricades, fencing, lanterns, reflective flagging or yellow illuminated warning devices will be placed around excavations left open at night or where there is a hazard to personnel and the general public (roadways and household).

i) Cave Ins

- Trench collapses can be caused by a variety of factors:
 1. The ground might become saturated with water from rain or snow.
 2. Equipment working near the trench, such as soil compactors or backhoes, or pressure from the weight of nearby buildings, may cause sudden ground movement.
 3. Thawing and freezing can destroy soil stability.

ii) The Excavation Regulation Summary:

- To protect the health and safety of workers in the industry, The Occupational Health and Safety Regulations require that minimum safety standards be met whenever workers are required or permitted to work in a trench. No more than 1.2 metres (4 feet) of the trench is permitted to have straight walls. Trenches deeper than this must be dug out at the specified angle, depending on soil conditions. As an alternative, the trench may be supported by shoring or a strong metal box (properly engineered), known as a trench cage.
- A competent worker must be positioned at the surface to warn workers in the trench of danger and assist in an emergency.
- Appropriate means of escape are to be provided along the trench at suitable intervals.
- All ground disturbance activities must be conducted in accordance with Long Lake Ground Disturbance Program and safe work permits.

11.25 Extension Cords/ Cheater Cords

Most power tools and portable electrical test equipment are not rated for use in hazardous areas and are equipped with standard non-explosion-proof plug ends making it sometimes necessary to use a "cheater" cord when plugging into explosion-proof receptacles. Due to the hazard of arcing electrical equipment or connections when plugging in this equipment, the following practices must be used:

- All electrical equipment not approved for use in a hazardous area must not be used until a hot work permit has been issued and the atmosphere has been tested to ensure gas free conditions.
- All connections made with non-explosion-proof ends must be made outside of the hazardous areas and taped to prevent them from pulling apart.

LLk Commercial Operations

- The last connection made must be the cheater cord being plugged into the explosion-proof receptacle.
- When the job is completed the connection at the explosion proof receptacle must be broken first.
- Extension cords that are frayed, taped or otherwise damaged should be removed from service and tagged "Do Not Use".

11.26 Fire Arms

- Fire arms are not permitted on the Long Lake Commercial Operations site without written permission from Long Lake Commercial Operations Management.

11.27 First Aid

- All first aid equipment is maintained in the Fire Hall / Health Center operated on a 24/7 basis by both Emergency Medical Technicians and Occupational Health Nurse.

Contractors must provide Standard first aid training to their personnel based on a 1 in 5 per work crew requirements.

- All first aid equipment and first aid training requirements as specified by Regulations and the Long Lake Commercial Operations requirements must be met.
- First aid services will be shared between Construction and Operations business units on site. Medical services will transition during construction to Upgrader management in 2007.
- Contractors must report all injuries to the first aid center before leaving site for any additional treatment or examination. Upon return to site, the contractor's personnel must report through the first aid center and receive a Fit for Work Clearance certificate issued by LLK health center staff.

11.28 Fire Extinguishers

- Properly maintained and appropriate fire extinguishers for the class of fire to which the worker might be exposed to at the Work Site, must be made available to workers as required by work activities.
- The fire extinguisher of choice within Long Lake Commercial Operations is a 30 lb. Low Temperature dry chemical type portable extinguisher- ABC type - Model - Sentry .

11.29 Fire Prevention

- The Contractor shall take all necessary precautions to prevent fires and shall provide and maintain regular inspections of all fire fighting equipment in their area of responsibility.
- Storage containers containing flammable liquids must be stored away from the work area, traffic areas and any source of ignition. Portable flammable containers shall be of CSA safety can design.
- Flammable liquids being transferred from one container to another, must be electrically bonded or grounded to prevent static discharge.
- Prior to any hot work taking place in process areas or other potentially hazardous areas, a hot work permit must be issued by a Long Lake Commercial Operations representative and work

LLk Commercial Operations

area must be tested and continuously monitored. Hot work can include use of welding/torch equipment, electrical work, use of open flame heaters, use of cameras or other non intrinsic devices, or any work where there is a potential to create heat and/or sparks.

For further information on fire prevention and hot work refer to Long Lake Commercial Operations Hot Work Code of Practice

11.30 Firewalls

- Contractors shall not make an opening in a firewall or berm which may affect its integrity without written approval from a Long Lake Commercial Operations Representative.
- The Contractor shall not leave a firewall open overnight without written permission from a Representative.

11.31 Fuel Tanks

- All flammable fuel tanks and trucks carrying flammable materials shall have grounding devices and workers shall follow fuel storage or transfer procedures. Trucks shall be properly placarded per TDG regulation, and tanks shall have appropriate WHMIS labels.
- Tidy tanks (less than 230L) in truck boxes shall meet CSA B367-M as per the Alberta Fire Code section 4.2.3.1

11.32 Guardrails, Handrails, Platforms and Barricades

- These must be installed as required by the Regulations.
- All signs, barriers, flag persons, etc. necessary to protect all workers at the work site and the general public from injury shall be provided and maintained.
- Barricades at public areas (for example, road crossings) shall have flashing lights during hours of darkness or where there is poor visibility.
- Suitable fencing shall be installed where a work site is accessible to the general public, livestock and wildlife.
- All work areas, walkways, platforms, or other elevated areas, 1.2 metres (4 feet) or more from ground level, whether permanent or temporary, shall have an approved guard rail (upper, intermediate rail and toe board) and safe, sturdy walking surfaces.
- All floor openings shall have a securely installed temporary covering or proper guard rails.

11.33 Heaters (Portable)

- Only competent workers shall install, ignite and service portable heaters.
- Repairs and maintenance shall be performed by a competent/ qualified person.
- Operational flame-failure shut-down devices shall be on all portable fired heaters.
- Contractors must ensure adequate ventilation is available to prevent the build-up of carbon monoxide where there could be a lack of breathable air in a confined area or hoarded structure.

11.34 Hot Tapping

- No hot-tapping will be done without the written consent of a Long Lake Commercial Operations Representative. If a hot-tap is to be performed, the Contractor's or Long Lake's written hot tap procedure must be reviewed by the workers performing the hot tap before the hot tap commences. Hot tap procedures must comply with and be approved as per applicable regulations and legislation.

11.35 Housekeeping

- Work sites, equipment and buildings shall be kept clean and orderly at all times.
 - Regular housekeeping inspections are preformed.
 - Follow up on hazardous conditions documented.
 - Ensure vents are not draining onto ground.
 - Pick up all garbage from your work area on a daily basis –separate wastes where possible.
 - Store all food wastes in wildlife proof containers.
 - Ensure all equipment is in good working condition (e.g. not leaking)
 - Work areas must be kept clean and free of obstructions.

11.36 Ladders (Portable)

- Only CSA approved ladders may be used. Ladders with weakened, broken or damaged rungs, broken side rails or missing side rails or missing non-slip devices at the base shall be removed from service and labeled Do Not Use.
- Ladders must be equipped with non-slip feet. Extension ladders must be equipped with suitable extension locks.
- Fiberglass ladders (Dielectric) must be used when working near or with electrical circuits. Metal ladders must not be used in this application.
- When in use, the ladder must extend 1 metre past any platform or landing and be secured from movement. It must be positioned so that it is no more than one quarter of its height away from the wall or structure against which it stands, and the worker must not work from either of the top two rungs or steps. The ladder should be moved as the work progresses.
- If a ladder is used for a height over 3 metres, the ladder must be secured against accidental movement during use. For heights over 6.5 metres, scaffolding must be in place as a replacement for a ladder. In applications between 3 and 6.5 metres, scaffolding is recommended as an alternative to a ladder.
- When climbing ladders 3 point contact must be maintained at all times
- When using ladder as an elevated work area over 3 meters in height the worker must use fall protection and be tied off to a suitable anchor point
- When using extension ladders, at least three rungs of ladder extension must overlap.

11.37 Manual Lifting

- Most back injuries are caused by negligence or violation of basic safe lifting rules. You can prevent a painful back injury if you first assume a squatting position. Keep the object close to your body and raise the object by straightening your legs. Get help lifting when needed.
 - 1) Be sure your footing is secure.

LLk Commercial Operations

- 2) Keep your body erect. Always lift with your legs and not your back.
- 3) Assess the weight before lifting. If the object is too heavy, get help. To avoid the load on one person, pick up or lay down the object on a given signal.
- 4) Take advantage of skids, hoist, bars, jacks, blocking, rollers or hand trucks when moving heavy material.
- 5) Never pick up or put down an object while in a twisted position.
- 6) Never place yourself under a heavy object when it is being lifted.
- 7) Use the correct lifting procedures for lightweight objects as you would for heavy weight. Failure to do so may result in needless injury.

11.38 Cranes and Lifting Devices

- All lifting devices and material hoists must meet OH&S requirements and be labeled with maximum lifting capacity.
- Only competent / qualified, authorized workers shall operate lifting devices.
- One person shall be designated as a spotter (flagman) and the lifting device operator shall take direction or instruction from the spotter only.
- Prior to performing a lift, the operator shall determine the weight of the object to be lifted and ensure that cables, lifting devices, slings, wire ropes, chains, etc. are of sufficient strength, in proper condition, and positioned to support the weight of the load.
- Where critical lifts (heavy lifts, lifts over process equipment, lifts involving two cranes, lifts where the operator can not see the load, etc.) are involved, written lifting procedures are required.
- No worker shall allow any part of his body to extend under any load being lifted by a crane, side-boom, or other lifting device.
- Never attempt to lift unbalanced loads or lift materials directly above workers and do not use a lifting device to pull loads sideways.
- Never leave a load suspended while the lifting device is unattended. When shutting down a lifting device leave all the controls in neutral, the brakes locked and loads lowered to ground level.
- When hoisting materials, loads should be kept as close to ground level as possible.
- Tag lines shall be used to guide the load.
- The inspection and maintenance records for each lifting device shall be available for review by the Long Lake Commercial Operations Representative.
- All rigging equipment must be tagged for safe working loads and loads exerted on rigging shall not exceed the safe limits established by the manufacturer. If rigging equipment is not tagged or marked for safe workloads, it must not be used until a rating of the equipment can be determined.
- Contractors must ensure that running lines of the sling do not contact the shackle bolt.
- Slings shall be protected from any cutting edges.
- Do not shorten legs of a chain sling using knots and/or bolts
- Use shackles with the pin to the eye of the sling or lifting lugs. Do not allow pins to come in contact with the running part of any sling.
- All hooks on lifting and rigging equipment must have functioning safety latches.

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- Do not use hooks or other lifting attachments on buckets, front end loaders, backhoes, etc. for hoisting unless they are designed and certified by a professional engineer for purpose being used and applied.

When using cranes, pickers or hoisting equipment always consider the following:

- Proximity to power lines
- Proximity to other personnel and equipment
- Wind velocity
- Temperatures
- Ground conditions for outriggers
- Reach or extension of lifting equipment
- Weight of the load including the rigging being used

11.39 Lightning

- Lightning is an electrical discharge caused when static electricity builds up between thunderclouds, or thunderclouds and the ground. Lightning strikes carry up to 100 million volts of electricity and leap from cloud to cloud, or cloud to ground and vice versa. Lightning tends to strike higher ground and prominent objects, especially good conductors of electricity such as metal. Each year in Canada, lightning kills an average of 16 people and causes more than 20 percent of all forest fires. Lightning also starts about 2000 fires annually on private property.
- Because light travels at a faster speed than sound, you can see a lightning bolt before the sound of thunder reaches you. To judge how close lightning is, count the seconds between the lightning flash and the thunderclap. Each second represents about 300 metres. For every 5 seconds you count, the lightning flash is approximately one and a half kilometers away. (e.g. You see lightning and count to 6 before you hear the thunderclap. The lightning would be approximately 300 meters x 6 seconds = 1800 meters away). If you count less than 5 seconds, **take shelter**, preferably in a building/trailer, vehicle or in a low-lying area.
- Note that lightning may strike several kilometres away from the parent cloud. Precautions should be taken even if the thunderstorm is not directly overhead. If you see a flash of lightning but don't hear the thunder, the lightning was probably too far away to hear. Thunder from lightning discharged fifteen or more miles away is not usually heard.

11.40 Load Binders (Boomers)

Load binders can cause serious injury if not used properly because they are often tightened and released under extreme torque and pressures.

- Secure load binders to a chain so it can be operated while standing firmly on the ground.
- Position the load binder so its handle can be pulled downwards when tightening the chain.
- Always ensure secure footing and be aware of slippery surfaces that can affect your footing such as ice, snow, mud, or oil.
- Never use a handle extender (snipe) on a load binder handle. If the lever type load binder doesn't give enough leverage, use a ratchet-style binder.
- Never attempt to open or close a load binder with more than one person.
- Never attempt to operate a load binder while standing on the load being secured.

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- During and after tightening the chain, check the load binder handle position and be sure it is in the locked position with its bottom side touching the chain links.
- To be sure the load binder remains in proper position, secure handle to chain by wrapping the loose end of chain around the handle, or tie handle to tightened chain with soft wire.
- When releasing a load binder, remember that there is a great deal of stored energy in the stretched chain. This will cause the load binder handle to move very quickly and with a lot of force when it is unlatched. Move the handle with caution and keep your body clear. If need be, use a steel bar to pry the handle upwards while keeping your body clear of the path of the handle as it moves upward. Never use a snipe or cheater bar to release the handle on load binders.
- If you are releasing the load binder by hand, use an open hand under the handle and push upward. Do not close your hand around the handle and always keep yourself away from the moving handle and potential strike zones.
- Routinely check load binders for wear, bending, cracks, nicks, gouges, etc. If defects are noticeable, do not use the binder. Take it out of service and tag as defective.

11.41 Lockout/Tag out of Equipment

- When performing maintenance or repair work on air, gas, diesel, electrical, hydraulic or steam driven equipment, an approved lockout device shall be used in conjunction with other blocking devices as necessary to ensure that all equipment is in a zero energy state.
- No one is to remove another worker's lock without the approval of a Long Lake Commercial Operations representative.
- A secure lock and chain must be used on valves if accidental opening or closing will create a hazard to workers. An alternative would be use of blinding/blanking or double block and bleed systems.
- Electrical Switches must be tried to ensure that the equipment is locked out before starting work.
- Neither a "DO NOT OPERATE" tag nor a lock alone constitutes a lockout device; a combination of a lock and tag is required to ensure an effective lockout.
- Place "DO NOT OPERATE" tags on all necessary valves and engagement devices used in isolating or locking out of equipment.
- All Contractor DNO Tags must include the following contact information a 24 hour phone number, name, date, and signature and say "Do Not Operate".

Operations Lock Colours:

Operations Personnel	Brown
Operation's Lock Sets	Gold (Upgrader)
Identification tag attached to each lock ring with serial number of the set and the number of locks in the set	Blue (SAGD) Purple (C&Su)
Operations Control Locks (Supervisor)	Black
High Voltage	White
Operation Electrical & Instrumentation	Red
Operations Maintenance	Green
Engineering	Orange
Contractor Personnel Locks	Aluminum / Steel

Activate the proper blocking, braking and securing devices of all equipment. Examples may include:

- Vehicles - Remove keys, set parking brake or block wheels. Lock transmission in “Park,” tag unit as out of service.
- Electrical - De-energize all panels relevant to area of maintenance or service and install locks and tags to switches and power disconnects.
- Rotating equipment - Lock, secure and block all movement. Tag unit.
- Auxiliary power - Turn off equipment, disconnect battery or starter cables, shut off and tag fuel sources on gas engine drivers. Tag unit.
- Remove or control all hazards, pressure conditions, tension or toxic substances.

11.42 Machinery Guards

- Before any equipment is put in service, the worker in charge is responsible for ensuring that all machinery guards are in place.
- Machinery guards must be kept in place at all times when the equipment is in operation.
- A sign must be posted or a barricade erected if a guard must be removed.
- A Long Lake Commercial Operations representative must be contacted and approve the running of equipment without guarding if required.

11.43 Man Baskets and Man Lifts

- Special precautions must be taken by both the operator of this hoisting equipment and those working from this equipment.
- All man baskets and man lifts used must follow specific provincial regulations including that a Commercially manufactured man basket or suspended cage is erected, used, operated and maintained in accordance with the manufacturers’ specifications or specifications certified by a professional engineer, and that the man basket or suspended cage that has not been Commercially manufactured is designed and certified by a professional engineer.
- Where it is impractical to provide a separate fall arrest lifeline, a separate cage support must be attached between the suspended cage and the hoist line above the hook assembly. This cage support has to be capable of withstanding the weight of the cage, materials, equipment and workers in case the hook assembly fails.
- Only trained and qualified workers shall operate man baskets or man lifts and a review of safe work procedures for equipment being used must be conducted before hoisting begins.
- All parts of worker’s body must be kept inside the man basket or man lift during all raising, lowering, and positioning movement.
- Man basket or man lift equipment must be on a level grade with outriggers and outrigger pads properly in place to provide firm support to equipment before workers are hoisted.
- Man basket or man lift equipment shall not be moved from one location to another while personnel are in the equipment.
- Man basket and man lift components must be inspected by a competent person before being used to hoist workers. If any defects are noted, lifts shall not proceed.
- A trial lift should be made with the man basket or man lift unoccupied at each new work location to ensure there are no obstructions and that all controls are operating properly.
- Use of a full body harness with the lanyard tied off to the frame of the lifting device is required when working from a man lift or man basket.

11.44 Overhead Work

- Tools and equipment shall be raised to the work site in a bag or utility belt designed for that purpose.
- Overhead work should not be carried out above other workers unless the workers below are adequately protected by the installation of an overhead barrier.
- Every area where a worker could be struck by a falling object shall be clearly marked by barriers, notices, warning lights or other warning devices.

11.45 Perforating

When perforating guns are being loaded or handled on surface:

- Only authorized persons will be allowed in the area.
- All types of phones and radios will be turned off, including SCADA Systems.
- Job will not proceed if lightning storms are in the area.
- Ensure Cathodic Protection System has been turned off.
- Vehicles equipped with an “On Star” system should be moved away from immediate area.

11.46 Photographic Equipment

- The use of cameras and video recorders is prohibited unless authorized to do so by a Long Lake Commercial Operations Representative. If authorized to be used in potentially hazardous atmospheres such as inside process building areas, storage tank areas, pressure vessels, etc then a hot work permit must be issued and atmospheres must be proven safe before using.
- A camera pass is required by all personnel taking photographs.

11.47 Pigging and Pressure Testing

- Where pigging and testing are to be conducted, procedures satisfactory to the Long Lake Commercial Operations shall be developed prior to work being started. Before a test head is removed or a pig sender or catcher is opened, a competent Long Lake Commercial Operations Representative shall verify that the line and/or pig trap (launcher) is depressurized.
- Only workers directly involved with the pigging or testing operation shall be in the immediate vicinity during the work.
- Warning signs shall be posted and no workers shall be in the immediate vicinity of either end of the pipe when the pipe or pig catcher is under pressure.

11.48 Pipe Handling

- Pipe stringing procedure is to be discussed with the Long Lake Commercial Operations Representative prior to the job starting.

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- Saw horses and stools shall be used on two and three inch pipe only. Four inch pipe and larger shall be placed on skids. Any exceptions shall be discussed with the Long Lake Commercial Operations Representative.
- When transporting a partial load of pipe from the right of way to another location it shall be tied down as it would be for highway transportation.
- Standing or walking on pipe should be avoided as much as possible. All coated pipe must be cement dusted to prevent slipping or as conditions dictate.
- When handling pipe with hooks over pipe ends, the metal hook shall be insulated from the pipe material.
- Tiers of pipe must be properly blocked and secured to control the hazard of rolling pipes and to prevent pipe from falling to ground level or striking nearby workers.
- Do not use hands and feet to position pipe as this allows for great risk of crushing injuries.
- Never walk or work under or near a suspended pipe, unless the load is fully secured or supported by blocking.
- All suspended loads must be controlled by the use of tag lines so workers can keep clear of suspended loads.

11.49 Pipe Line and Utility Crossings

- All pipelines and utility lines shall be hand exposed or Hydrovaced before using mechanical equipment.
- All Long Lake Commercial Operations and foreign pipeline crossing work must have a safe work permit issued prior to activities.
- Crossings by heavy equipment may require padding or corduroy at the discretion of the Long Lake Commercial Operations Representative.
- When crossing Long Lake Commercial Operations pipelines the Contractor shall:
 - not use any excavating equipment unless the Long Lake Commercial Operations Representative is present.
 - plan and schedule work to ensure Long Lake Commercial Operations Personnel can review the crossing prior to backfilling.
 - When crossing foreign pipelines the Contractor shall follow the Regulations stipulated in the particular foreign crossing agreement issued.

11.50 Radiation Sources

Contractors shall be responsible for ensuring strict adherence to Long Lake Project site's radiation safety plan requirements. This will also include the following:

- Developing and implementing work practices when workers deal with or approach a radiation source including well servicing or fixed radioactive source devices.
- Informing the workers of potential hazards of ionizing radiation and the radiation source during Non-Destructive Testing and /or radiography activity.
- Vehicles transporting radioactive equipment and materials shall be properly marked and the operator trained in the handling and transportation of radioactive dangerous goods.
- Whenever possible radiography shall be done outside normal work hours. When it is necessary to do radiography during regular work hours, or when personnel are present in the work areas, the following shall apply:
 - Personnel shall be posted at perimeter barricades to decrease the possibility of unauthorized personnel from entering radiography zones.

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- Portable red flashing lights shall be placed at perimeter in addition to signs in areas of poor visibility.

11.50 Portable Heaters

All portable heaters installed or used on the Long Lake Commercial Operations site must conform to National Standards of Canada and be CSA approved.

- Only competent, trained workers can install, ignite and service portable heaters.
- When placing portable heaters in work areas, adequate clearances must be maintained from combustible materials and there must be adequate ventilation to avoid build-up of exhaust gases.
- When using portable heaters in potentially hazardous atmospheres, a hot safe work permit must be issued and a trained watchman must be present at all times to monitor the atmosphere in the open flame area.
- Under no circumstances should tiger torches be used as heating devices.

11.51 Power lines

Extreme caution should be used when operating equipment near power lines and other overhead structures in order to avoid the possibility of electrocution or injury from dislodged falling objects.

- All work in vicinity of power lines requires a safe work permit to be issued prior to work.
- The Contractor when working near overhead power lines shall mark these areas with signs indicating “HIGH VOLTAGE OVERHEAD”. Goal post style guards will be erected as per Long Lake Commercial Operations “Using Equipment Near Overhead Electrical Lines” safe work procedure the found in Long Lake Commercial Operations Safety & Environment Practices Manual. This procedure shall be reviewed with all persons who will be active in the area of power lines as part of work permit, to ensure that they are fully aware of the location and hazard.
- No part of a lifting device or other equipment being operated around electrical lines or equipment shall be operated closer than the distance listed in the Regulations or Long Lake Commercial Operations Safety Procedure, and which ever is more stringent will be applied. A guideline showing minimum safe clearances can be found in the reference section of this handbook.
- If it is necessary to work closer than the minimum distance, authorization shall be obtained from the Long Lake Commercial Operations Representative and local utility company.
- All sources of temporary electrical power shall be properly installed, clearly marked, maintained in good condition and comply with all Regulations respecting electrical codes.
- Ground fault interrupters shall be used for all vessel entry work where electrical power is required, such as lighting, angle grinders etc.
- Where possible power lines should be de-energized before work activities start.
- Be aware that ground level build-up from snow, ice, dirt, gravel, etc. may decrease clearances from overhead lines.

11.52 Pumping Services

- All lines must be pressure tested to a minimum of the maximum anticipated pressure to be reached on the job. (Twenty to fifty percent over pumping pressure is preferred).
- All lines must be properly secured before pumping starts. Extra care is required when pumping gaseous fluids such as N₂ and CO₂.
- A shower unit is required on all acid jobs where the pumping pressure will exceed 7Mpa or the pumping rate exceeds 1m³/min.
- When two or more pumping units are pumping flammable fluids.
(*Definition of a flammable fluid: Reid Vapour pressure (RVP) above 7 kpa or Open Cup Flash Point (OCFP) below 27°C*)
- Two Emergency Medical Technicians (EMT) and an ambulance are required.
- Extra burn kits must be readily available.
- All tanks and equipment must be properly grounded.
- A fire truck is required.
- IRP 8.0 pumping of flammable fluids should be referred to and followed.

11.53 Respirators

- Properly fitted and suitable respirators and other approved personal protective equipment will be used by workers for protection against dust, paint fumes, Hantavirus and various noxious fumes when a hazard exists.

11.54 Rig Equipment

The Supervisor must ensure:

- that the safety shutdown devices are working at all times.
- all equipment is adequately installed and guards, handrails and safety devices are operational before commencing drilling operations.
- equipment which is being repaired is completely locked-out from the power supply.
- all hole fill equipment, pit volume monitors and flow indicators are operating correctly.
- check the crown saver and ensure it is functional, especially after cutting and slipping drilling line.
- the rig has accurate pressure gauges for the mud pumps, manifold, standpipe and casing pressures (this is a minimum amount).
- the weight indicator shows an accurate measurement for the string weight.
- the drillers have knowledge of the hoisting limitations related to the drilling operation.
- there is a full opening drill string safety valve and an inside valve capable of stopping back flow so the drill string can be stripped back in the well either on drill pipe or on drill collars.
- there is a functional relief valve installed on the mud pump system upstream of the check valve, and set at appropriate pressure.
- there is a functional check valve to prevent flow from the well back from the mud pump.
- all trip sheets, hole fill equipment and procedures are followed to ensure proper well control.

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- that all current well data (casing depths, holdback pressures, burst pressures, leak off gradients, pit volumes, hole volumes, etc.) be posted in the event a well control situation arises.
- tongs are always used to break out drill pipe connections, under no circumstances are chains to be used.
- there are air horns or similar devices used to alert and warn personnel on location.
- ensure the bail links, block, boom pole line and sheaves, BOP slings, drawwork brakes, deadline anchor, hook, hydromatic, swivel, tong lines, etc. are all in functional and good condition prior to any work being done. This list is not complete by any means and is intended as a reminder for items to periodically check.
- that all hazardous products and wastes are properly stored.
- that all tanks are free of leaks.
- that leaks from equipment do not result in releases to the environment.

It is standard procedure to fill various types of casing with drilling fluid while running the casing into the wellbore. Under no circumstances will the rigs high-pressure mud pump be used to fill casing. The operation will be conducted by utilizing a low-pressure fill device such as the hole fill pump or mud mix pump.

The safety buggy escape line for the derickman shall be securely anchored at all times to its own anchor point as per Occupational Health and Safety (OH&S) Regulations. To warn vehicle drivers of these installations, all anchor lines shall be flagged with bright colored ribbon material. The escape line will be installed and maintained as per OH&S Regulations.

11.55 Rig Moving Activities

- Extra precautions must be exercised during rig moves due to the non-routine nature of the work and the additional trucks and people on the lease. Rig moves have proven to be a very hazardous operation. The largest factor contributing to accidents during rig moves is the lack of communication between drilling crews and the subcontractors hired to move the rig. Other factors, which also contribute to the hazard, are winching or hoisting loads, improper hand signals, weather and poor visibility. Prior to any rig move the following steps will be taken and not limited to just these points:
 - Orientation or Safety meeting
 - Hazards identified by the Long Lake Commercial Operations supervisor, rig manager and truck push
 - The use of proper hand signals as described in the Canadian Association of Oil well Drilling Contractors (CAODC) Rig Move Manual
 - Winching operations, loading and unloading pipe as described in the CAODC Rig Move Manual
 - Personnel must be cautioned to stay from between the trucks and out of the areas of poor visibility

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- When rig moving trucks must pass under power lines if adequate distance cannot be maintained contact utility company and have the line de-energized
- Only qualified personnel are to lift power lines to allow load through a minimum 7 meter buffer zone must be maintained at all times from any utility company overhead power line on location. Consult regulations for spacing that apply regarding spacing from different voltages of power lines.
- Proper lighting must be maintained on all worksites at all times.

11.56 Full Body Harness

- A full body harness must be worn for:
 - Fall protection from height above 2.0 meters vertical from a temporary work site, and/or above 1.2 metres vertical from a permanent work site.
 - When entering confined space.
 - When using a man basket as part of the work.
- All Contractors must be fully aware of and following the Regulations regarding the use of full body harnesses. When the use of one of these devices is required the Contractor must ensure that they are properly maintained and used.

11.57 Process Safety Devices

- Process Safety devices, such as alarms or equipment interlocks shall not be altered adjusted or repaired except by qualified persons designated by the supervisor in charge. Bypass of Alarms and Safety Interlocks form must be completed in conjunction with a safe work permit.

11.58 Safe Work Permits

- Safe work permits are intended to ensure potentially hazardous work is carried out under safe working conditions. The permit system is a two-way arrangement and the responsibility for taking special precautions rests on both the issuer and the receiver of the permit.
- When a safe work permit is issued from an area other than at the immediate work site an agreement will be made between the two parties regarding who will be responsible to perform the site hazard assessment prior to work starting and which hazard assessment form will be used to document the assessment.
- Designed as a “checklist” to aid in decisions pertaining to the work to be done. It is not an exhaustive list, but a trigger to aid in making decisions and reducing the chance of omitting key items
- Safe Work Permits are required for work involving:
 - Confined space entry
 - Ground disturbance
 - Hot work
 - Working in hazardous atmospheres
 - Working with radioactive material
 - Handling explosives
 - Isolating electrical, mechanical, pressure sources

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- Temporary defeat of an alarm system
- If conditions change from those outlined in the safe work permit, the permit becomes invalid and the work must stop. The activity must be reassessed with the personnel and a new safe work permit issued and changes reviewed & documented.

Note: This booklet cannot state all situations that require a Safe Work permit, therefore, the Long Lake Commercial Operations Representative or Contractor must become knowledgeable of and deal with the hazards at the location.

11.59 Scaffolding/Platforms

- Toe boards and guardrails will be provided on any work platforms above 2 metres (10 feet) in case of a temporary installation or 1.2 metres (4 feet) in case of a permanent installation.
- Scaffolds or platforms used for installation, maintenance or removal of equipment shall be constructed, maintained and used in accordance with the Regulations and industry standards.
- All scaffolding must be erected by a competent person. Scaffolding must be anchored to prevent accidental movement, and must be equipped with guard rails and toe boards if the working height exceeds three metres or if the scaffold is erected over an area where others will be working or passing by.
- Before using scaffolding, it must be inspected and tagged by a competent person. Scaffold identification tags are colour coded for each reference and should be located at point of access.

Green tag - No restrictions: Safe for use

Yellow tag – Caution: Scaffold has special requirements for safe use

Red tag – Danger: Do not use as it has been deemed unsafe

White tag – DO NOT REMOVE

11.60 Shelters

- Shelters, tool sheds, field offices and similar structures erected in restricted areas shall not be heated by any non-explosive proof device without written approval of the Long Lake Commercial Operations Representative.

11.61 Supplied Air Breathing Apparatus (SABA), Self Contained Breathing Apparatus (SCBA)

- Supplied Air Breathing Apparatus must be equipped with egress air supply bottles. Egress bottles may be used only for emergencies only.
- Approved, positive pressure SCBA's and SABA's shall be available for emergency situations and/or work situations where applicable and as identified in safe work permit.
- Air supply shall be 30 minute minimum.
- All workers wearing breathing air equipment must ensure a proper fitting of masks.
- Air quality tests should be known to confirm sufficient air quality.

11.62 Testing and Monitoring Equipment

- All atmospheric testing and monitoring equipment shall be made available by the contractor as required by the Long Lake Commercial Operations and/or by applicable Regulations.

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Monitoring equipment required for this specific work will be properly maintained and all workers using this detection equipment will be adequately trained. (i.e. Sour Sites – H₂S/LEL monitor; Sweet Sites – LEL monitor; Confined Space – LEL/O₂/H₂S/CO monitors, etc).

11.63 Tie-Ins to Long Lake Commercial Operations Equipment

- Contractors must not tie into existing Long Lake Commercial Operations facilities, including pipelines, electrical power circuits and all other equipment without specific written approval from the Long Lake Commercial Operations Representative.

11.64 Tool Usage

- Tools shall be used for their proper function only and shall be maintained in good condition. Defective or altered tools shall not be used.
- Operators shall visually inspect equipment and verify it is in safe operating condition before starting work.
- The power source must be disconnected from a tool and/or depressurized before any adjustment is made to the tool.
- All guards shall be properly fitted and in good condition at all times.
- All grinders and grinding discs shall be labeled to indicate maximum rpm and checked for correct size and speed prior to fitting.
- Appropriate personal protective equipment shall be worn at all times when using any tools.
- The Contractor shall meet all statutory requirements for the use of power tools and equipment. Only competent and properly trained workers shall operate power tools. Only CSA approved properly grounded electrical tools with three-pronged plugs or double insulation or ground fault insulation shall be used. Switch lock-on devices shall not be used with any electrical or air-powered tool.
- Explosive-actuated fastening tools shall meet all requirements of the current CSA Standard Z166 and shall be used only by trained, competent workers.
- Before using electric tools in potentially flammable atmospheres a hot work permit must be issued and suitable testing must have been conducted and documented that:
 1. indicate whether the atmosphere contains a flammable substance in a quantity sufficient to create an explosive atmosphere; and
 2. confirm that the work may be safely performed.

11.65 Transferring Fluid By Truck

- All haulers must comply with applicable Regulations and especially with requirements of Transportation of Dangerous Goods Regulations.
- All diesel engine vehicles must be equipped with a positive inlet air shut off.
- During loading or unloading the driver must directly supervise the operation by staying at the vehicle; no truck maintenance can be performed at this time.
- All vehicles must be grounded before loading or unloading commences and during loading or unloading. If grounding is not possible, trucks must not commence loading or unloading.
- If on uneven terrain during loading or unloading, wheels must be chocked to prevent accidental movement.

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- While loading, the truck must have a method of determining the level in the tank without the driver being on top of the tank.
- Ensure that cam lock fittings are secured to prevent uncoupling while transferring fluids.
- Vacuum trucks must be equipped with vent stacks or vent line hoses if loading or unloading toxic or flammable product.
- Operators of vacuum trucks should wear hearing protection when close to vacuum pump discharge.
- All pumps on pressure trucks must be equipped with a set relief valve and relief valve discharge must be put in a non-hazardous location or tied back into suction line of pumps.

11.66 Trucking General

- A spotter must be used when backing trucks or trailers into congested or occupied areas.
- If flatbed trucks are equipped with gin poles, the poles must be in down position each time the truck is moved from one location to another.
- If gin poles are being used to lift materials, a tie back safety chain must also be in place with adequate connection points.
- All loads and loose parts on flat beds must be properly secured and tied down before moving loads.
- All loose gravel and rocks on flatbed trucks must be cleaned off before moving loads down public roads.
- All trucks equipped with knuckle booms or pickers must be equipped with outriggers to provide adequate support to the truck when lifting. Outriggers must always be used when lifting devices are activated and an adequate base must be used under outriggers to prevent them from sinking into soft ground.

11.67 Using Long Lake Commercial Operations Equipment

- Contract personnel must not operate any switches, valves or controls on Long Lake Commercial Operations equipment unless specifically authorized to do so by the Long Lake Commercial Operations Representative.
- Contractors shall not tie in to existing Long Lake Commercial Operations facilities including pipelines, sewer system, electrical power circuits or any other equipment, without specific approval from Long Lake Commercial Operations Representative. Blinds, locks and other safeguards shall be installed to the satisfaction of Long Lake Commercial Operations and all other affected personnel. Once approved tie-ins have been made to existing Long Lake Commercial Operations equipment, the entire system is considered as Long Lake Commercial Operations property for the purpose of control.

11.68 Vehicles and Mobile Equipment

- Speed limit is 30 km/h unless otherwise posted
- Provincial rules of the road apply-seat belts are mandatory when operating light vehicles on site.
- Emergency Vehicles and heavy equipment have the right of way.
- Do not pass Buses stopped with 4 way flashers activated (loading or unloading passengers)
- Temporary parking and access will be clearly marked.

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- All contractor vehicles at shall be maintained in a safe operating condition and shall meet any special requirements of the Long Lake Commercial Operations.
- Only competent, suitably licensed workers shall operate vehicles.
- Personal vehicles shall be parked in a pre-designated area, away from the work site.
- Workers shall not ride on the outside of any vehicle such as on fenders, tailgates, hitches or bumper.
- All mobile welding rigs must be equipped with an approved fire extinguisher. All welders and welder's helpers must be trained and competent in the use of such extinguishers.
- Any vehicle with restricted vision shall not be moved while in the vicinity of other workers, processing equipment or servicing/drilling equipment except under the direction of a designated flagman.
- All personnel must follow all posted or stated speed limits and all other Regulations.
- All personnel should walk around their vehicle to inspect for abnormal conditions before driving away.
- Vehicles shall be parked in assigned areas only.
- Only designated lease entrances, access roads, government road allowances and Long Lake Commercial Operation's rights of ways are to be used.
- Non-designated areas are off limits.
- Vehicles should be parked in accordance to the Long Lake Commercial Operations Back in Policy where possible so that forward movement is easily done when leaving site.
- The flagman must be in a position to ensure that the path to be traveled is "clear".
- Back-up alarms must be installed and used in accordance with the Regulations.
- Positive air shut-off valves shall be in place on any diesel-powered vehicle working on the Long Lake Commercial Operations work sites where an explosive environment could exist.
- Equipment shall be refueled in an area isolated from the general work area and from any source of ignition, including smoking. Adequate fire protection equipment and proper fuel containers shall be available in the refueling area. During refueling, the equipment being filled shall be turned off and safe practices shall be followed to prevent fires, explosions or spills.
- Oil removed from vehicles during oil changes shall be contained in a proper container and adequately disposed of.

11.69 Welding/Welders

- Only competent, or qualified and authorized workers shall use welding and burning equipment.
- All welding and "hot work" must be done with the permission of the Long Lake Commercial Operations Representative, Welding Inspector or person with delegated authority.
- Welding on any vessel or pipe which has contained or contains hydrocarbons requires a HOT WORK PERMIT.
- The Supervisor responsible for the job must ensure that all safe welding procedures are followed, including proper welding grounding procedure, the use of welding flash shields and eye protection for all helpers.
- Gas cylinders should be handled carefully; they should never be dropped or left free standing. They must be secured in an upright position with caps on when not in use.
- Any worker welding in a bell hole, trench or cellar shall have an assistant stand by with a fire extinguisher and be capable of rescue in case of emergency.

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- Adequate ventilation is to be provided and a ventilated mask must be used (if appropriate) to avoid breathing dust or hazardous fumes when welding.
- A fire extinguisher must be available at all locations where welding is being conducted.
- Welders shall wear hard hat protection in designated areas when not welding.
- All welders are to wear CSA approved combination headwear helmet when welding.
- Welders shall wear Fire Resistant Clothing (FRC) under their welding garments as needed to ensure that body parts not covered by these welding garments are adequately protected.
- Suitable precautions shall be taken to prevent exposure to personnel from excessive ultraviolet radiation, fire, explosion, asphyxiation, toxic gases, fumes or dust when welding or cutting equipment is being used.
- Welding or burning in the vicinity of flammable items shall be done only under controlled conditions.
- All gas welding hoses shall be equipped with appropriate flame arresters or check valves.

11.70 Winching and Towing

- Workers should never position themselves between the winching vehicle and the load being winched.
- Winch lines on trucks must be properly rated and never exceed limits of other lifting components.
- Always wear leather gloves when handling cable to avoid injury from pieces of wire protruding from the cable.
- Use hand over hand action; the winch line should not be allowed to slip through the hands.
- Workers must not use hands, feet or any hand-held object to guide rope or cable onto winch drums.
- If towing a vehicle, a tow strap must be used and be directly connected to both units involved.
- Tow straps containing metal parts are not to be used at the Long Lake Commercial Operations site.
- Never try to tow or pull a vehicle that is larger than the tow vehicle. Slack should be taken up until the line is taut, then steady power should be applied to control both vehicles.

11.71 Electrical Operations

- Shall meet all the requirements of LLk's Electrical Code of Practice.
- Installation, maintenance and electrical repair work must be performed by qualified electrical certified personnel.
- Equipment must be properly locked out before electrical maintenance can be performed.
- Workers must maintain appropriate distances between power lines and equipment.

12.0 ENVIRONMENTAL CONSIDERATIONS

12.1 Introduction

Environmental awareness and good operating practices are very important to the Long Lake Commercial Operations. As a result, the Long Lake Commercial Operations has and enforces a

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Safety, Environment & Social Responsibility Policy for all of its operations, facilities and construction programs. In addition to the requirements outlined in this handbook, Contractors must adhere to all applicable regulatory requirements, and to any site-specific standards which may be required for the contracted services.

12.2 General Requirements

All Contractors, Subcontractors and Workers must adhere to and comply with:

1. applicable Federal, Provincial and Municipal environmental legislation, regulations and government guidelines
 2. commitment made by the Long Lake Commercial Operations in any submissions to government associated with the work
 3. commitments made by the Long Lake Commercial Operations in any landowner agreements.
- The Long Lake Commercial Operations shall provide the contractor with copies of any regulatory authorizations, and shall identify any site-specific corporate standards relevant to the work.
 - All contractors shall follow “good environmental operating practices” in addition to any regulatory requirements and site-specific standards.
 - The Contractor is responsible for ensuring that all of its employees, representatives and Subcontractors, are aware of and abide by all applicable company and regulatory requirements.
 - Environmental issues will be addressed during the required SESR Orientation(s). The Long Lake Commercial Operations or its representative and the Contractor must be in attendance at these meetings. Discussion items shall include the provisions outlined in this handbook, and site-specific environmental protection requirements. A list of those in attendance, the topics discussed, date, time, location, etc. must be recorded. A copy shall be retained by the Contractor and another forwarded to Long Lake Commercial Operations.

12.3 Spills

- ***All spills, whether on-lease or off-lease, associated with the work shall be reported immediately to Long Lake Commercial Operations or its representative.***
- All precautions shall be taken to prevent spills and contamination of the environment.
- The Contractor shall provide basic spill response capability.
- Spills shall be prevented from entering any water body or environmentally sensitive area. Surface drainage in contaminated areas shall be segregated from other areas of surface runoff.
- As necessary, larger-volume spills shall be contained by constructing an earthen dyke, ditch or hole.
- Personnel, livestock or wildlife shall be removed from the spill area, as necessary.
- If the spill consists of flammable material, all ignition sources shall be removed.
- All spills shall be cleaned up immediately. All contaminated materials shall be placed in appropriate containers (e.g., 205 litre/45 gallon drums).
- The Contractor shall promptly report the event to the Long Lake Commercial Operations or its representative, utilizing whatever form the Long Lake Commercial Operations designates. Alternately, the Contractor may prepare and utilize a “spill or environmental incident” reporting form, approved by the Long Lake Commercial Operations.

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- The Long Lake Commercial Operations or its representative will then contact the appropriate regulatory agencies, as necessary. If directed by the Long Lake Commercial Operations or its representative, Contractors shall report directly to the regulatory authorities.
- Any accident/incident shall be investigated by the Contractor to determine its cause. On request, the Contractor's first line supervisor will complete or participate in Long Lake Commercial Operations investigation of the event.
- The Long Lake Commercial Operations and the Contractor's supervisors will review all investigation reports and monitor the status of the follow-up action. The Contractor shall ensure suitable corrective action is taken to eliminate the potential for a recurrence.

12.4 Hazardous Materials and Waste Management

- Hazardous materials and waste shall be handled, stored, transported and disposed of in accordance with applicable regulatory requirements and Long Lake Commercial Operations standards.
- The Contractor shall have in place a complete hazardous materials handling program which includes all the requirements of the Workplace Hazardous Materials Information System (WHMIS). The program shall include:
 1. proper labeling of all hazardous materials and hazardous waste containers
 2. suitable equipment to minimize and clean up potential spills or releases
 3. suitable equipment to store and use all hazardous materials needed for the work
 4. suitable equipment to store and dispose of hazardous waste.
- Hazardous materials and waste shall be stored in a manner consistent with the requirements of applicable environmental legislation and regulations and Long Lake Commercial Operations standards. For longer-term projects, the Long Lake Commercial Operations may require additional environmental protection measures such as the provision of secondary containment dikes.
- Where reasonably practicable, and consistent with environmental protection goals, storage areas shall be kept free of grass, weeds and all other combustible materials.
- Storage areas shall be clearly marked or barricaded to prevent damage by moving vehicles.
- Unless otherwise approved by the Long Lake Commercial Operations or its representative or the presiding regulatory authority, liquid fuel or chemical storage areas shall be at least 100 metres (300 feet) away from a permanent water body.
- Where liquid fuel is stored on site, all employees of Contractors shall be instructed in procedures to dispense fuel in a manner which minimizes the potential for spills.
- The contractor shall not litter. Debris, including litter, shall be picked up and removed off-site to an appropriate waste disposal facility.
- Hazardous materials and hazardous wastes – both liquids and solids – shall be disposed of in a manner approved by the Long Lake Commercial Operations, its representative or the presiding regulatory authority.
- Non-hazardous heavy solids such as wood and metal, debris, bagged material, cables, pails, and other similar materials shall be removed from the site. Materials, which are deemed to be safety or fire hazards, shall require special handling as specified by the Long Lake Commercial Operations or its representative. No materials shall be buried unless approved by the Long Lake Commercial Operations, its representative and/or regulatory authorities.
- The contractor shall track and record all waste disposal activities noting:
 1. waste type
 2. origin/site of generation

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3. volume
 4. carrier/transporter
 5. recycle/disposal facility.
- Any manifests, shipping documents, bills of lading, truck tickets, tracking spreadsheets or other documentation associated with waste disposal activities shall be provided to the Long Lake Commercial Operations or its representative.

12.5 Noise

- Noise shall be minimized. Mufflers on all equipment shall be in proper working order. Defective equipment shall be replaced with properly functioning equipment as soon as possible.

12.6 Archaeological Resources

- If historical sites or artifacts are encountered during construction, all work in the vicinity of the find shall cease immediately, and the Long Lake Commercial Operations or its representative shall be notified. All artifacts shall remain undisturbed where they are found. Removal could result in charges by regulatory authorities. Examples of archaeological or historical artifacts include: old bones, skeletons, graves, effigies, fossils, and lithics.

12.7 Vegetation Control

- All development areas must be kept free of restricted and noxious weeds.
- Equipment should be weed and weed seed free prior to transportation into the area.
- Only certified applicators or someone under their direct supervision may apply herbicides.
- Soil sterilants will not be used.
- Ensure herbicide applicator provides accurate records of spray locations, dates, herbicide used, target weeds etc. and forward information to the SESR Manager.
-

12.8 Wildlife and Wildlife Habitat

- The Contractor shall comply with the requirements of applicable legislation, regulations and government guidelines, and shall take all practicable steps to minimize disturbance/damage to trees, shrubs and undisturbed native prairie habitats.
- All wildlife encountered on access roads or ROW's shall be given the right-of-way. Vehicles shall stop and allow wildlife to pass without blowing horns or harassing the animals.
- Feeding of wildlife or stray domestic animals is prohibited.

12.9 Reclamation

- Reclamation of disturbed lands shall be conducted in a manner acceptable to the Long Lake Commercial Operations.

13.0 BURNING

- No burning shall commence without prior approval from the Long Lake Project representative.
- No person shall light an outdoor fire on the Long Lake Project site during the fire season (April 01st to October 31st, or as otherwise extended or shortened by Ministerial Order) unless that person is the holder of an existing fire permit (refer to the *Forest and Prairie Protection Act, Sections 17 & 19*).

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- Burning debris piles is evaluated on a case by case basis, considering conditions such as location, weather, material, and time of year

14.0 WATERCOURSES

- General procedures will be followed during construction and operation of the central facilities, well pads and roads to ensure that good drainage at the site is maintained.
- Establish a 100m setback from watercourses to the maximum extent practical for placement of all facilities, including wells, roads, pads, pipelines, etc. and for chemical storage and fueling of equipment.
- Prohibit the operation of construction equipment close to the banks of watercourses where there is a risk of bank sloughing, failure of the vehicle crossing, or flooding of the work area.

15.0 SOIL SALVAGE

- Hold site meetings to brief all site personnel on the goals of the project prior to initiating any soil salvage operations.
- Vehicles will not trespass off the Right-of-Way (RoW); all construction activities will be restricted to the designated RoW, existing roads and approved working space. All safety and road closure regulations will be adhered to. Temporary access and extra work space will be clearly marked.

16.0 WILDLIFE

- All wildlife sightings must be reported to the Long Lake Project representative, accompanied by a completed wildlife sighting form (see Appendix 1). Reports are required within 24 hours of sighting.
- Pets (e.g. dogs, cats, etc.) are not allowed on the Long Lake Project lease area.

17.0 PUBLIC CONCERNS/COMPLAINTS

- Notify your Long Lake Project representative promptly with details of a public concern/complaint.

Questions to answer before you start work.....

- 1. Do you know your responsibilities as a contractor or subcontractor?*
- 2. Have you reviewed today's hazards as part of your daily meetings or toolbox talks?*
- 3. Are you familiar with the LONG LAKE Standards or Practices that apply to your job?*
- 4. Is special training required for today's task?*
- 5. What additional personal protective equipment is required to be worn?*
- 6. What are the emergency procedures specific to your area?*

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7. *Where are the fire extinguishers, first aid kits and other emergency equipment?*
8. *Do you need a safe work permit or other permit approvals?*
9. *Did an operations rep go out to view the actual task location as part of the Safe Work Permit process?*
10. *When are SESR Incident Reports required?*
11. *Have you completed your company's job orientation/task assignment before you start work?*

IMPORTANT NUMBERS

Emergency Services (Fire/Medical)

780-334-3911

Security Gate- 780-334-3777

First Aid / Medial Office (Non-Emergency) 780-334-3651

SAGD Ops Control Room 780-334-3401

Pipelines and offsite Communication 780 334 2121

SPILL RESPONSE – REPORTING VOLUMES FOR SELECTED MATERIALS

MATERIAL	National Energy Board / Transportation Safety Board	Transportation of Dangerous Goods	Alberta Environment	Alberta Energy & Utilities Board
REFINED PRODUCTS				
<ul style="list-style-type: none"> ▪ flammable liquids (Cl.3) <ul style="list-style-type: none"> - gasoline - diesel - methanol 		200 litres (L) 200 L 5 L	200 litres (L)	
<ul style="list-style-type: none"> ▪ flammable solids (Cl.4) 		25 kilograms	25 kilograms	
<ul style="list-style-type: none"> ▪ lube oil (Cl. 3) 		200 L		
<ul style="list-style-type: none"> ▪ waste lube oil (Cl. 9) 		25 L	5 L or 5 kg	
<ul style="list-style-type: none"> ▪ other petroleum products 		crude - 200 L		
<ul style="list-style-type: none"> ▪ oxidizers (Cl.5) 		1 or 5 L : 1 or 5 kg	50 L or 50 kg	
<ul style="list-style-type: none"> ▪ poison (Cl.6) glycol 		1 or 5 L : 1 or 5 kg	5 L or 5 kg	
<ul style="list-style-type: none"> ▪ corrosives (Cl.8) 		5 L or 5 kg	5 L or 5 kg	
OTHER				
<ul style="list-style-type: none"> ▪ pipeline break 				ALL
<ul style="list-style-type: none"> ▪ natural gas 	ALL			
<ul style="list-style-type: none"> ▪ produced fluids <ul style="list-style-type: none"> - on-lease - off-lease 	1.5 m3	determine Class of material and see criteria for Refined Products (above)		incl. oilfield wastes 2 m3 ALL
<ul style="list-style-type: none"> ▪ any other pollutant 				
<ul style="list-style-type: none"> ▪ cause significant env. effect (see note*) 	ALL		ALL	ALL

FOR OTHER MATERIALS – CONTACT THE BUSINESS UNIT ENVIRONMENTAL CO-ORDINATOR

Does not cover unscheduled emergency flaring, releases that cause visibility or odour problems, etc.

NOTE – Significant environment effects would include:

- any third party (offsite) impact such as crop damage or livestock impacts
- unrecovered material which has or is likely to contaminate surface or groundwater
- any release or spill with the potential for offsite odour complaints
- toxic or flammable release to air going offsite.

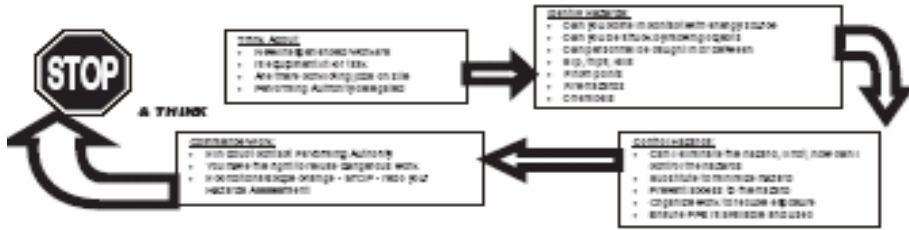
If in doubt, contact the Environmental Co-coordinator.

REFERENCES



Worksite Hazard Assessment (WHA)

As indicated on the front of this permit, THIS WHA form or OTHER comparable Job Hazard assessment (JHA/JSA) form must be completed BEFORE any work commences. Contractors can complete parts of this form JHA/JSA form in advance. Applicable WHA's MUST be reviewed and signed by all workers performing the work. Upon completion of the work, all WHA or contractor JHA/JSA must be returned WITH THE PERMIT to the permit issuer. The PERMIT RECEIVER is responsible to ensure WHA/JHA/JSA are completed and communicated.



If the conditions/scope of the work do not agree with the conditions of the permit - work must be stopped, re-evaluate permit

- Is everyone clear on their roles and responsibilities:
- Y N Front part of permit reviewed and completed All workers familiar with their job specific roles and responsibilities
- Y N New/inexperienced workers identified and provided a coach/trainer Site Supervisor identified & review permit

- Review/Identify all potential hazards:
- | | | |
|---|--|--|
| Y N <input type="checkbox"/> Pressure | Y N <input type="checkbox"/> Gas Release | Y N <input type="checkbox"/> Overhead Lines |
| <input type="checkbox"/> Weather | <input type="checkbox"/> Adjacent Activities | <input type="checkbox"/> Electrical |
| <input type="checkbox"/> LEL | <input type="checkbox"/> Communication | <input type="checkbox"/> Wildfire/Insects |
| <input type="checkbox"/> H2S | <input type="checkbox"/> Working at heights | <input type="checkbox"/> Am the monitoring wells or passive air samplers in the work area? |
| <input type="checkbox"/> Fire & Explosion | <input type="checkbox"/> Equipment Hazards | <input type="checkbox"/> Will any waste be generated? |
| <input type="checkbox"/> Heat | <input type="checkbox"/> Open Excavation | <input type="checkbox"/> Is there potential for spill? |
| <input type="checkbox"/> Cold | <input type="checkbox"/> Chemical Hazards | <input type="checkbox"/> Will work take place on or near reclamation areas? |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Other _____ | |
- Weld direction _____
 Emergency Muster point _____
 Emergency Meeting Point _____

Additional Hazards Identified and Discussed: _____

All hazards recognized posing a risk, MUST be mitigated before work commences and listed below.
 Controls/Corrective Actions Identified to reduce or eliminate hazard: "If you cannot eliminate the hazard - you must control it".
 Some controls to consider:
 + Job specific training + Lockout + Tagging + Task specific PPE + Isolation + Variance
 + Barricade + Guards + Procedures + Monitors + Communication + Additional workers + Equipment Specific

Hazard	Recommended Action	By Whom

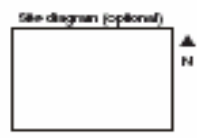
Personnel Present: I have participated in this Worksite Hazard Assessment, have the required training/certification and clearly understand all the above information reviewed. In the event of an emergency, this list will act as the muster point roll call list when the job is stopped.

Name	Signature	Company

When job task is done complete sections below (Attach page for explanation if necessary.)

Has area been cleaned up Yes No Any hazards remaining Yes No Did a new Miss/Spill occur from Job Yes No Incident report submitted Yes No

Permit Receiver Sign-off _____
 Date _____
 Time _____
 Site Emergency #9911 _____
 Radio Channel _____



CONVERSIONS AND ABBREVIATIONS

Imperial	Metric
1 cubic foot	= .028317 m ³
1 barrel	= x 0.159 = Cu. Meter (m ³)
	= 45 gallons Can. x 4.5461 = Litres
	= 42 gallons USA x 3.7854 = Litres
1 inch	= 25.4 mm
	= 2.54 cm
1 foot	= 305 mm
	= 30.5 cm
1 yard	= 91 cm
	= .91 m
1 mile	= 1.609 km
	= 1609 m
1 acre	= 0.405 H
1 ton	= 0.9842 tonne
Celsius to Fahrenheit	C = 5/9(F-32)
Fahrenheit to Celsius	F = 9/5C +32

LAND DESCRIPTION

13	14	15	16
12	11	10	9
5	6	7	8
4	3	2	1

		L.S.D TOWNSHIP N						Twp. 50
W		31	32	33	34	35	36	E
		30	29	28	27	26	25	
		19	20	21	22	23	24	
		18	17	16	15	14	13	
		7	8	9	10	11	12	
		6	5	4	3	2	1	
Rge. 8	S	Rge.7						Twp. 49

Minimum Safe Clearances

Line Operating Voltage	Safe Limit of Approach Distance for Persons and Equipment
0 – 750 volts Insulated or Polyethylene Covered Conductors (1)	300 mm
0 – 40,000 volts	3.0 metres
69,000; 72,000 volts	3.5 metres
128,000; 144,000 volts	4.0 metres
230,000; 240,000 volts	5.0 metres
500,000 volts	7.0 metres

WORK WARM-UP SCHEDULE FOR OUTDOOR ACTIVITIES

(information applies to any four (4) hour period. Warm-up breaks are assumed to provide ten (10 minutes in a warm environment.)

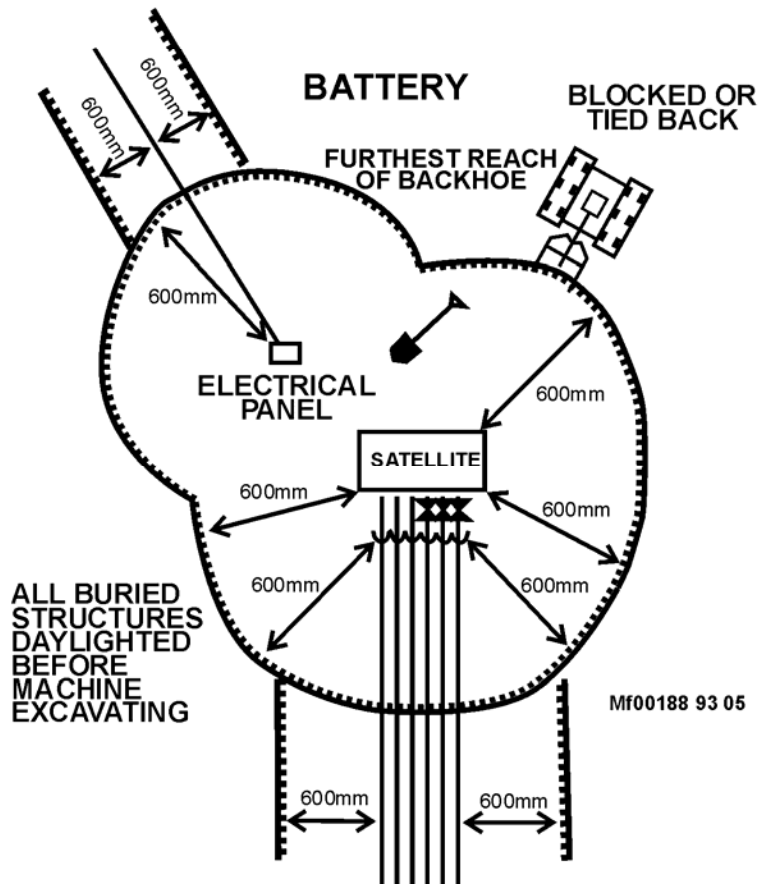
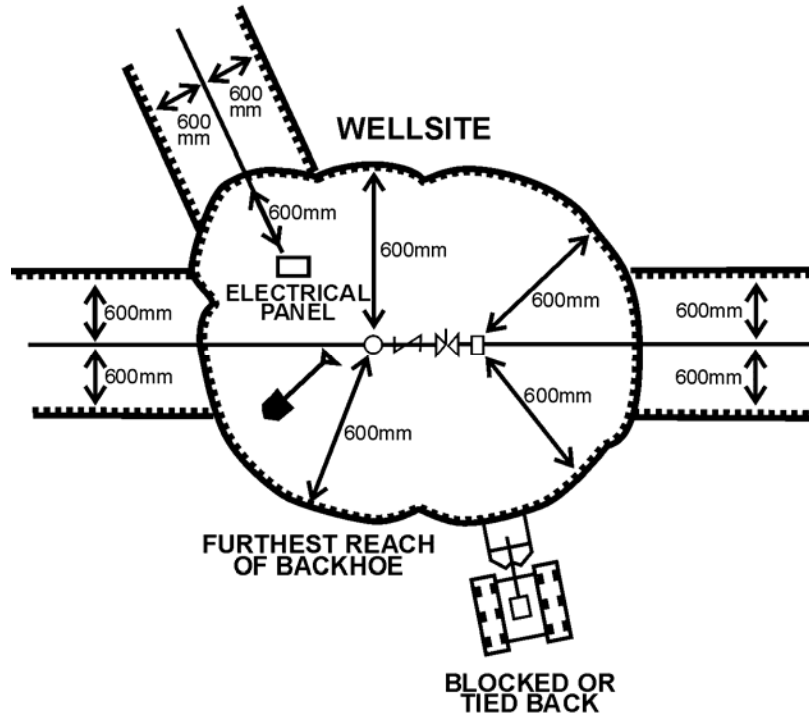
Air temperature – sunny sky		No noticeable wind		8 km/h wind (5 M.P.H.)		16 km/wind (10 M.P.H.)		24 km/h wind (15 M.P.H.)		32 km/h wind (20 M.P.H.)	
(approx)	(approx)	maximum work period	of breaks	maximum work period	of breaks	maximum work period	of breaks	maximum work period	of breaks	maximum work period	of breaks
26° to -28°	15° to -19°	40 minutes	1	40 minutes	1	40 minutes	2	40 minutes	3	40 minutes	4
29° to -31°	20° to -24°	40 minutes	1	40 minutes	2	40 minutes	3	40 minutes	4	40 minutes	5
32° to -34°	25° to -29°	40 minutes	2	40 minutes	3	40 minutes	4	40 minutes	5	-emergency work should stop	
35° to -37°	30° to -34°	40 minutes	3	40 minutes	4	40 minutes	5	-emergency work should stop			
38° to -39°	35° to -39°	40 minutes	4	40 minutes	5	-emergency work should stop					
40° to -42°	40° to -44°	40 minutes	5	-emergency work should stop							
43° & below	45° & below	-emergency work should stop									

1. Apply the schedule one step lower for work with limited physical activity. For example, at -35°C (-30° F) with no noticeable wind (Step 4), a worker with a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4 hour period. (Step 5)
2. If accurate information is not available, the following may be used as a guide for estimating wind velocity. Wind at 8 km/h (5 mph) will move a light flag; at 16 km/h (10 mph) it will fully extend the flag; at 24 km/h (15 mph) it will raise a newspaper sheet; and at 32 km/h (20 mph) it will produce blowing and drifting snow.
3. If only the Wind Chill Factor (Watts Per Square Metre) is available, a rough guide for applying it rather than the temperature and wind velocity factors given above would be: (1) Special warm-up breaks should be initiated at a wind chill of about 1750, and (2) all non-emergency work should cease at or before a wind chill of 2250.

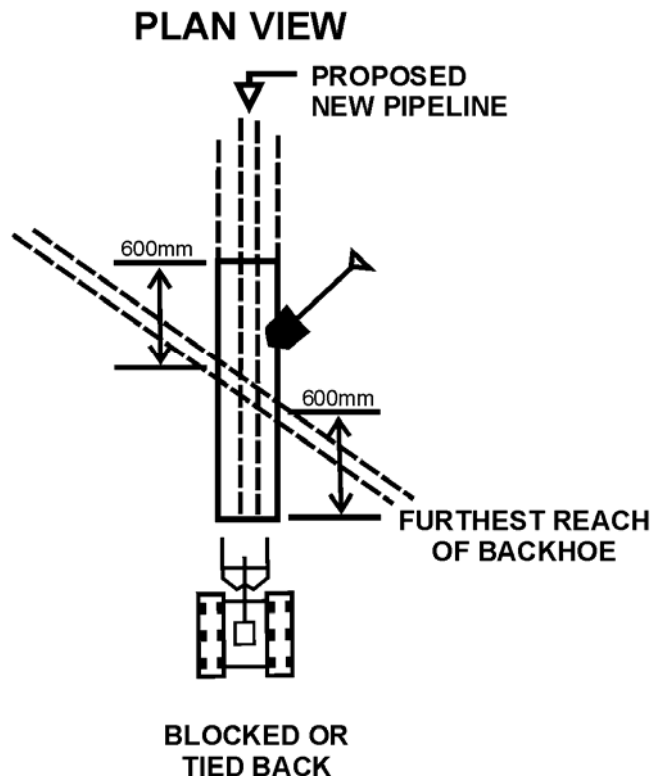
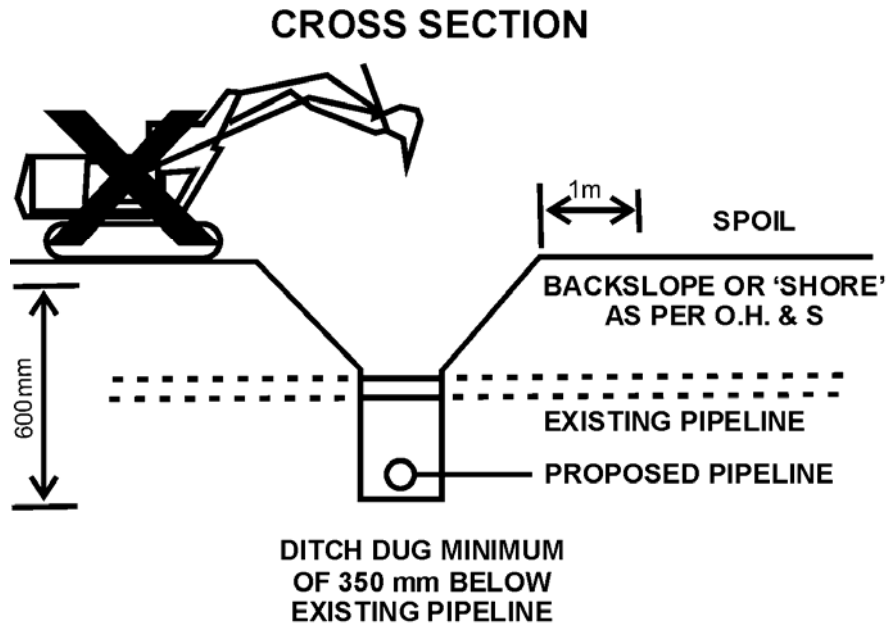
WIND CHILL CHART

		Ambient Temperature (°C)								
		4	-1	-7	-12	-18	-23	-29	-34	-40
Wind Velocity km/h mph		Equivalent Chill Temperature (°C)								
Calm										
0	0	4	-1	-7	-12	-18	-23	-29	-34	-40
8	5	3	-3	-9	-14	-21	-26	-32	-38	-44
16	10	-2	-9	-16	-23	-30	-35	-43	-50	-57
24	15	-6	-13	-20	-28	-36	-43	-50	-58	-65
32	20	-8	-16	-23	-32	-39	-47	-55	-63	-71
40	25	-9	-18	-26	-34	-42	-51	-59	-67	-76
48	30	-16	-19	-22	-36	-44	-53	-62	-70	-78
56	35	-11	-20	-29	-37	-46	-55	-63	-72	-81
64	40	-12	-21	-29	-38	-47	-56	-65	-73	-82
<small>Source: Threshold Limit Values (TLV™) and Biological Exposure Indices (BEI™) booklet; published by ACGTH. Cincinnati, Ohio</small>		Little danger in less than one hour exposure of dry skin			WARNING – Exposed flesh freezes within one minute			GREAT DANGER – Flesh may freeze within 30 seconds		

HAND EVACUATION REQUIREMENT



HAND EVACUATION REQUIREMENT (con't)



Doing the Job Safely in Excavations and Trenches

Definitions under the regulations

Excavation – means a dug-out area of ground other than a trench, tunnel or excavated shaft.

Temporary protective structure – means a structure or device in an excavation, trench, tunnel or excavated shaft that is designed to provide protection from cave-ins, collapse, sliding or rolling materials, and includes shoring, trench shields and similar structures.

Type 1 soil – Means soil that most closely exhibits the following characteristics:

- is hard in consistency, very dense in compactive condition and, if a standard penetration test is performed, has a standard penetration resistance of greater than 50 blows per 300 millimeters
- can be penetrated only with difficulty by a small, sharp object
- has a dry appearance
- has no signs of water seepage
- can be excavated only by mechanical equipment
- does not include previously excavated soils

Type 2 soil – Means soil that most closely exhibits the following characteristics:

- is very stiff in consistency, dense in compactive condition and, if a standard penetration is performed, has a standard penetration resistance of 30 to 50 blows per 300 millimeters
- can be penetrated with moderate difficulty by a small, sharp object
- is difficult to excavate with hand tools
- has a low to medium natural moisture content and a damp appearance after it is excavated
- has no signs of water seepage
- does not include previously excavated soils

Type 3 soil – Means soil that most closely exhibits the following characteristics:

- is stiff in consistency, compact in compactive condition and, if a standard penetration test is performed, has a standard penetration resistance of 10 to 29 blows per 300 millimeters
- can be penetrated with moderate ease by a small, sharp object
- is moderately difficult to excavate with hand tools
- exhibits signs of surface cracking
- exhibits signs of localized water seepage – or
- is previously excavated soil that does not exhibit any of the characteristics of type 4 soil

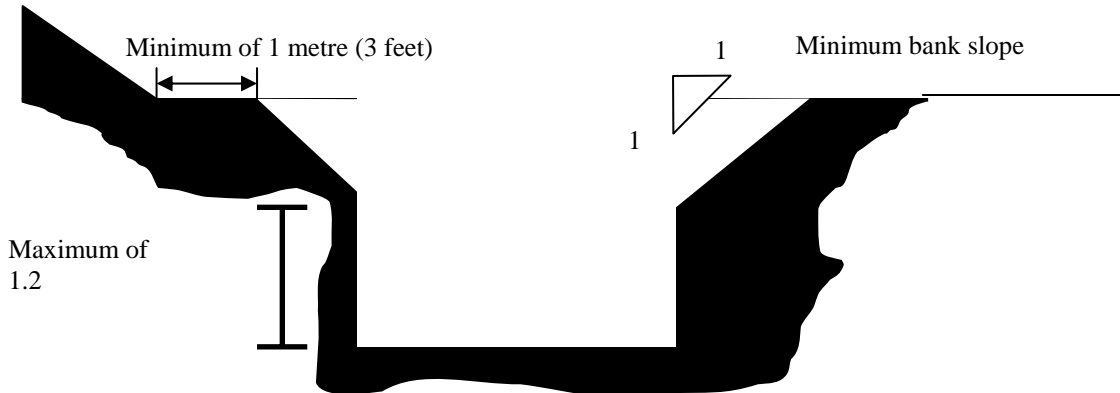
Type 4 soil – Means soil that exhibits any of the following characteristics:

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- is firm to very soft in consistency, loose to very loose in compactive condition and, if a standard penetration test is performed, has a standard penetration resistance of less than 20 blows per 300 millimeters
- is easy to excavate with hand tools
- is cohesive soil that is sensitive and, on disturbance, is slightly reduced in internal strength
- is dry and runs easily into a well-defined conical pile
- has a wet appearance and runs easily or flows
- is granular soil below the water table, unless the soil has been dewatered
- exerts substantial hydraulic pressure when a support system is used; or
- is previously excavated soil that exhibits any of the characteristics set out in the seven paragraphs above

WORKING WITH TYPE 1 AND 2 SOIL

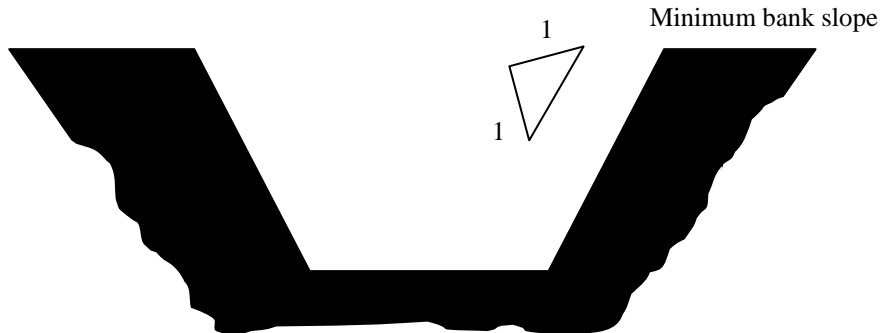
Good Soil



Type 1 and 2 solid must be sloped to within 1.2 metres (4 ft.) of the bottom of the excavation or trench, with a slope at an angle not steeper than one horizontal to one vertical, or 45° measured from the horizontal.

WORKING WITH TYPE 3 SOIL

Fairly Good Soil



Type 3 soil must be sloped from the bottom of the excavation or trench, with a slope at an angle not steeper than one horizontal to one vertical, or 45° measured from the horizontal.

WORKING WITH TYPE 4 SOIL

Bad Soil



Type 4 soil must be sloped from the bottom of the excavation or trench, with a slope not steeper than three horizontal to one vertical, or 19° measured from the horizontal.

MARKING FOR UNDERGROUND FACILITIES

A series of stakes with coloured surveyor’s tape/paint and notation of size, number, and approximate depth of underground facilities must be on the stakes. This is required to clearly indicate the location and alignment of the underground facilities and must extend 30 meters beyond the perimeter of the work area/right-of-way.

The markings of the locations of the buried facilities should follow the International Color Code introduced by the Utility Location and Coordination Council of the American Public Works Association and recognized in Canadian Standards Association C22.3.

The following Color Code should be used:

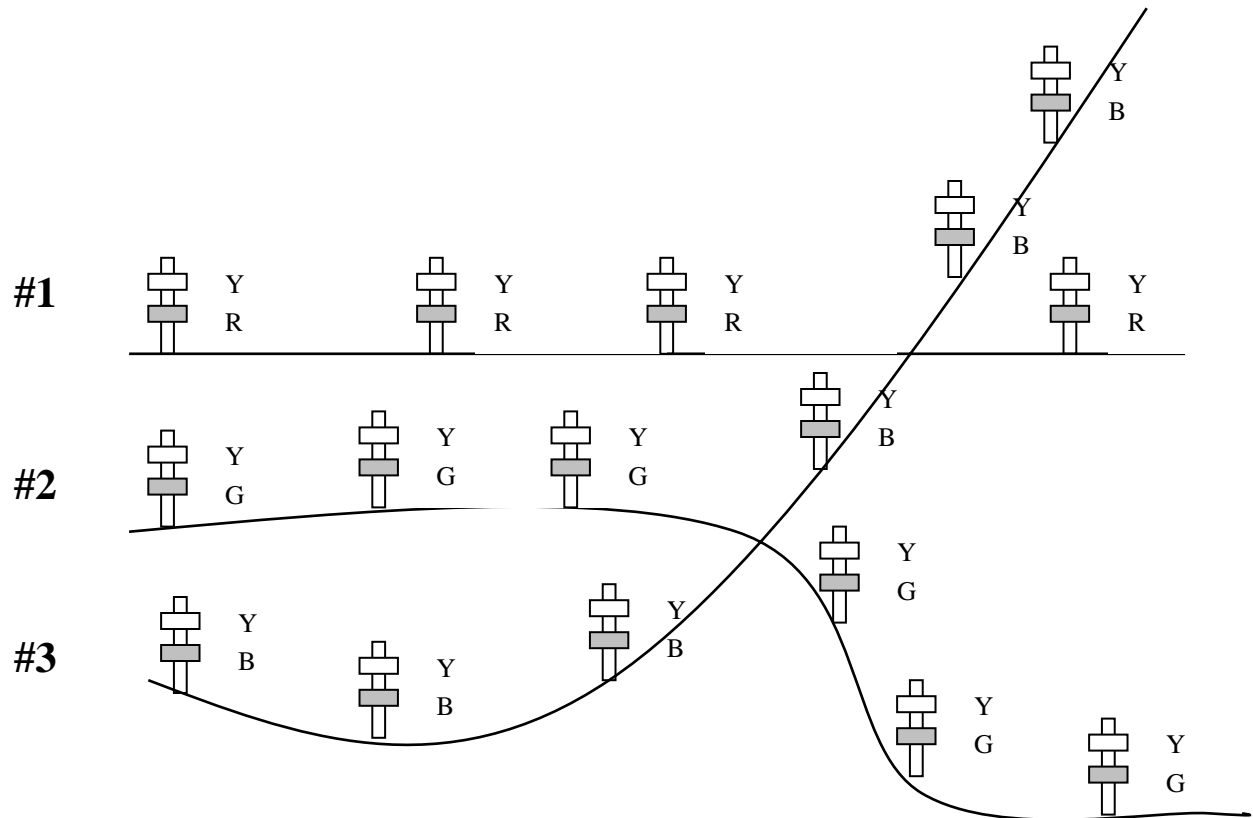
RED	Electric power lines, cable, conduits and ducts or lighting wires and cables
YELLOW	Gas, oil, petroleum, steam or gaseous material
ORANGE	Telephone, cable TV, communications, alarm or signal lines, wires, cables, conduits or ducts
BLUE	Water, irrigation or slurry lines or pipes
GREEN	Sanitary sewer, storm sewer, culvert, or drain lines
PINK	Temporary survey marks
WHITE/BLACK (black in Winter)	Limits of proposed excavation

MARKING FOR UNDERGROUND FACILITIES.... Continued

In the case of congested lines, e.g. lines of similar products (2 or 3 gas/oil lines) crossing each other, the flag configuration will consist of two colors of tape:

- The TOP tape/paint color will indicate the underground facility – e.g. yellow for oil and gas.
- The SECOND tape/paint color would be different from the top tape for each separate line, but would be the same for the entire line.

NOTE: The second color is only to indicate line direction NOT facility description.



- #1 – Yellow + Red
- #2 – Yellow + Green
- #3 – Yellow + Blue

HYDROGEN SULPHIDE GAS (H₂S)

WARNING

**YOU CANNOT RELY ON YOUR
NOSE TO TELL YOU HOW MUCH H₂S
GAS IS PRESENT. WEAR YOUR
BREATHING APPARATUS**

Hazards of H₂S Gas

All workers shall be provided with written instructions on the hazard of hydrogen sulphide as required and shall be trained and fit tested on respiratory equipment required for specific work tasks.

Detection

There are several ways you can be alerted to the presence of **H₂S** gas. Your nose is usually the first and, unfortunately, sometimes the last. You can smell as little as one part of **H₂S** in a million parts of air. However, if the concentration of gas is in the 100-150 ppm range, the sense of smell is quickly lost giving a false sense of security. When testing for **H₂S** breathing apparatus must be worn or remote testing shall be conducted.

When monitors alarm (10ppm), workers should immediately evacuate to safe area.

Air Sampling Gas Detector Tubes

The concentration of **H₂S** is registered by the length of discoloration when air is drawn through the tube. There are several reliable makes and types available but their accuracy will depend on the training and practice of the operator.

Sensing Device

In plants/facilities a system of continuous monitoring normally is used whereby samples from hazard areas are tested by mechanical means at regular intervals. An alarm system activated by a sensing unit will warn when the **H₂S** concentration rises above certain fixed limits.

If alarm sounds, workers should immediately evacuate to safe area or pre-determined mustering area.

PROPERTIES OF H₂S

ColorColorless

Odor Very offensive, commonly referred to as
 odor of rotten eggs

Vapor Density.....1.189 (air = 1.0) H₂S is heavier than air

Boiling Point - 60°C (-76°F)

Explosive Limits..... 4.3 to 46 percent by volume in air

Ignition

Temperature..... 260 °C (500°F)

Water Soluble Yes (4 volumes gas in 1 volume
 water at 0°C) (32°F)

Flammability Forms explosive mixtures with air
 oxygen

EMERGENCY PROCEDURES FOR WORKERS OVERCOME BY H₂S

Use the 7 step **INITIAL Response Strategy** In the event of a H₂S emergency:

1. **EVACUATE** – protect yourself and others from being overcome by H₂S

2. **ALARM** - Listen for H₂S alarm (portable, personal or fixed sensing device)
Call for or seek help and proceed only when a response is obtained.

3. **ASSESS** - determine H₂S & other atmosphere or physical hazards,
number of rescuers available,
location of injured,
other potential injuries

4. **PROTECT** - Rescuers shall always put on breathing apparatus before attempting any rescue in
an H₂S contaminated atmosphere.

5. **RESCUE** - Remove the patient to fresh air and give oxygen, if available.

6. **REVIVE** - If the patient is not breathing, start artificial respiration. Use a barrier device, if
available, before mouth-to-mouth respiration is started. If there is no pulse, start
full Cardio-Pulmonary Resuscitation using External Cardiac Massage.

7. **MEDICAL AID** - Keep the patient warm.
Arrange for medical treatment with the nearest doctor or hospital.
If the eyes are irritated wash with clean water for several minutes. If irritation
persists the worker should be seen by a doctor as soon as possible.

Recovery from minor exposures to H₂S is generally rapid.

TOXICITY TABLE

1 ppm = .0001 % (1 /1 0,000 of 1 %)
Can smell.

10 ppm = .001 % (1/1000 of 1 %)
Allowable for 8 hours exposure.

OVER THE ALLOWABLE CONCENTRATION PROTECTIVE EQUIPMENT WILL BE NECESSARY.

100 ppm = .01% (1/100 of 1%)
Kills smell in 3 to 15 minutes.
May burn eyes and throat.

200 ppm = .02% (2/100 of 1%)
Kills smell rapidly. Burns eyes and throat.

500 ppm = .05% (5/1 00 of 1%)
Loses sense of reasoning and balance.
Respiratory disturbances in 2 to 15 minutes.
Needs prompt artificial resuscitation.

700 ppm = .07% (7/100 of 1%)
Will become unconscious quickly.
Breathing will stop and death will result if not
rescued promptly. Immediate artificial resuscitation.

1,000 ppm = .1% (1 /10 of 1%)
Unconscious at once.

PERMANENT BRAIN DAMAGE MAY RESULT UNLESS RESCUED PROMPTLY.

ppm - parts of gas per million parts of air
by volume. 1% = 10,000 ppm.

SAFETY & ENVIRONMENT ORIENTATION ACKNOWLEDGMENT

This acknowledgment is to acknowledge that I have received and am familiar with the **Long Lake Commercial Operations SESR Handbook**. I understand the following Hazards and the Controls put in place for:

- Long Lake Site Orientation
- Industry Recommended Practice (IRP) 16 or CSTS requirements
- Contractor Worksite Hazard Analysis Responsibilities
- Hazard Identification / Job Safety Analysis
- Safe Work Permits
- Emergency Meeting Points / Emergency Muster areas – Contact No. 334 3911
- Personal Conduct/ Fit for Work Responsibilities
- Excavation Requirements
- Restricted Areas Access
- Vehicle Usage
- Designated Smoking Areas
- Reporting of Incidents – immediate Verbal, Written within 24 hours or 4 hours if Serious.
- Personal Protective Equipment requirements in addition to regular issue
- H2S Alive (In process unit) and H2S Awareness (within 30 of process unit)
- First Aid Station Medical Service Location
- Domestic Facilities - Drinking Water/Toilets/Lunch Rooms
- Fall Protection requirements – 2 metre
- Confined Space Entry requirements
- Hot Work Requirements
- Lock Out / Tag out requirements
- Blind Management
- Electrical Safety Awareness
- Burning
- Work within 100m of water course
- Sediment, erosion and weed controls
- Spills over 1 liter requirements
- Waste and Hazardous material disposal
- Wildlife considerations

I hereby agree to comply with the **SESR Requirements** outlined in this booklet and as amended from time to time and the **Regulations**.

Date: _____

Name: _____

Company: _____

Signature: _____

Long Lake Commercial Operations Location: _____

Long Lake Commercial Operations Representative



Note: This acknowledgment and agreement is to be returned to your **Long Lake Commercial Operations Representative BEFORE** commencing work.

Notes

Notes

MARKING FOR UNDER ABOVE GROUND PIPING

The markings of the locations of the above ground facilities should follow the convention for WHMIS labeling based on CSA 24.1 Pipe Identification. Colours are based on Long Lake Specific requirements for both the Upgrader and SAGD facilities.

	COMMODITY	COLOUR		PANTONE NUMBER
1	Fresh or Potable Water	Light Blue		Process Pantone Cyan C
2	Process Water	Dark Blue		293 C
3	Steam	White		
4	Toxic	Yellow		Process
5	Hydrocarbon	Orange		021 C
6	Natural Gas or Synthetic Fuel Gas	Brown		476 C
7	Nitrogen	Pink		212 C
8	Air	Green		341 C
9	Fire/Safety Equipment	Red		200 C
10	Vacuum	Black		Process
11	Radiation	Violet		Violet C