



**LOGAN
DRILLING
GROUP**

Safety Manual

LOGAN
SAFETY FIRST
QUALITY ALWAYS
IMPROVEMENT CONTINUOUSLY



Revised February 2015

LOGAN DRILLING GROUP

Safety Manual

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HEALTH & SAFETY POLICY

LOGAN DRILLING LIMITED AND LOGAN GEOTECH INC

The management of this company is committed to a strong and progressive health & safety policy, which will ensure the protection from accidental loss of all its resources, including employees and physical assets.

In fulfilling this commitment to protect both people & property, Management will provide and maintain a safe and healthful work environment in accordance with industry standards and in compliance with legislative requirement. We will strive to eliminate any foreseeable hazards, which may result in property damage, accidents, or personal illness.

Employees at every level, including management, are responsible and accountable for the company's overall safety initiatives. Complete and active participation by everyone, everyday, in every job, is necessary for the safety excellence the company expects.

This policy will be implemented through:

- The meaningful involvement and participation of all employees through a cooperative, open, and positive attitude to health and safety issues
- The provision of safe and appropriate equipment and working conditions
- The development and maintenance of work practices and procedures ensuring the ongoing health, safety, and well being of all employees
- The training and education of all employees in safe work practices and procedures
- Emergency preparedness training and practices to minimize losses or injury arising from an accident or incident

All employees of Logan Drilling Limited have the right & obligation to work together in an environment that promotes and maintains everyone's well being.

All employees and the Joint Health & Safety Committee are committed to protecting everyone from risks arising from short cuts, poor practices, procedures, conditions, or acts.

An injury and accident free work place is our goal. We will meet or exceed all applicable rules and regulations by establishing, practicing, and maintaining the highest standards of health & safety.

Mark D. Bormann
V.P Operations, Logan Drilling Group

January 3, 2013
Date

Policy Responsibilities

Assignment of Responsibility And Accountability for Safety

Managers

1. To provide information, instructions, and assistance to all supervisory staff in order to protect the health and safety of all our employees.
2. To understand and enforce our accident prevention policy as well as the Occupational Health and Safety Act.
3. To provide all supervisory staff with an understanding of our accident prevention program as well as relevant sections of the Occupational Health and Safety Act.
4. To provide all supervisory staff proper, well maintained tools and equipment plus any other special personal protective devices which may be required.
5. To provide on going safety education programs and approved first aid training as required.
6. To monitor departments and projects and hold them accountable for their individual safety performance.

Supervisors

1. To know and apply Logan Drilling Group's Safety Policy and relevant sections of the Occupational Health and Safety Act.
2. To ensure that all employees are educated to work in a safe manner and that they use all protective devices and procedures required by Logan Drilling Group and by legislation to protect their health and safety.
3. To advise all employees of any potential or actual dangers and how to isolate, prevent or remove them.
4. To arrange for medical treatment as required, in case of injury or illness including transportation to a doctor or hospital as necessary.
5. To report all accidents immediately, to investigate all accidents fully, and to advise management on how to prevent similar accidents in the future.
6. To carry out regular inspections of the workplace to ensure a safe and healthy environment.

Policy Responsibilities

Assignment of Responsibilities and Accountability for Safety Cont'd.

Employee

1. To read, understand, and comply with Logan Drilling Group's Safety Policy, safe work practices, procedures, and rules.
2. To wear the safety equipment and personal devices and clothing required by regulations and his/her employer.
3. To notify his/her supervisor of any unsafe conditions or acts that may be of danger to other workers or himself/herself.
4. To report all accidents and injuries to his/her supervisor as soon as possible.
5. To take every responsible precaution to protect the safety of other workers and himself/herself.

Policy Responsibilities

The Safety Supervisor

The Safety Supervisor for the drill crew will in most cases be the drill rig operator. The safety supervisor must:

- Consider the “responsibility” for safety and the “authority” to enforce safety to be a matter of first importance.
- Be the leader in using proper personal safety gear and set an example in following the rules that are being enforced on others.
- Enforce the use of proper personal protective safety equipment and take appropriate corrective action when proper personal protective safety equipment is not being used.
- Understand that proper maintenance of tools and equipment and general “housekeeping” on the drill rig will provide the environment to promote and enforce safety.
- Before drilling is started with a particular drill, the safety supervisor must be assured that the operator (who may be the safety supervisor) has had adequate training and is thoroughly familiar with the drill rig, its controls and its capabilities.
- Inspect the drill rig at least daily for structural damage, loose bolts and nuts, proper tension in chain drives, loose or missing guards or protective covers, fluid leaks, damaged hoses and/or damaged pressure augers and pressure relief valves.
- Check and test all safety devices such as emergency shut-down switches at least daily and preferably at the start of a drilling shift. Drilling should not be permitted until all emergency shut-down and warning systems are working correctly. Do not wire around, bypass or remove an emergency device.
- Check that all gauges, warning lights and control levers are functioning properly and listen for unusual sounds on each time the engine is started.
- Ensure that every drill rig worker is informed of safe operating practices on and around the drill rig. Provide every drill rig worker with a copy of the organization’s drilling operations safety manual, and when appropriate, the drill rig manufacturer’s operations and maintenance manual. Ensure that every employee reads and understands the safety manual.

Policy Responsibilities

The Safety Supervisor Cont'd

- Carefully instruct a new worker in drilling safety and observe the new worker's progress towards understanding safe operating practices.
- Assess the mental, emotional, and physical capability of each worker to perform the assigned work in a proper and safe manner. Remove any worker from the drill site whose mental and physical capabilities might cause injury to the worker or co-workers.
- Ensure that a first aid-kit and a fire extinguisher, which are properly maintained, are on each drill rig and each additional vehicle.
- Be well trained in and capable of using first-aid kits, fire extinguishers, and all other safety devices and equipment. Train crew members.
- The safety supervisor should assure that there is a first-aid kit on each drill rig and a fire extinguisher on each drill rig and on each additional vehicle and assure that they are properly maintained.
- The safety supervisor (and as many crew members as possible) should be well trained and capable of using first-aid kits, fire extinguishers and all other safety devices and equipment.
- The safety supervisor should maintain a list of addresses and telephone numbers of emergency assistance such as (ambulance services, police, hospital, etc.) and inform other members of the drill crew of the existence and location of the list.

Work Site Hazard Assessment

Date: _____

Logan Drilling Group
 P.O Box 188
 Stewiacke, N.S
 B0N 2J0

Date of Assessment: _____

Location of Assessment: _____

Assessment Team (Include names and positions) : _____

Items to Check	Action Required	On Site Conditions	Action Required
Safety Requirement	_____	Excessive Noise	_____
Safety Manual	_____	Particle in the Air	_____
Safety Policies Posted	_____	Lighting	_____
Job Procedures/Safe Work Practices	_____	Temperature	_____
OH&S Act and Regulations	_____	Falling Objects	_____
Inspection/Investigation	_____	Stacking of Material	_____
First Aid Personnel/facilities	_____	Tripping/Falling	_____
First Aid Kits	_____	Hazards	_____
Fire Extinguishers	_____	Barricades, Tape,	_____
PPE Hard Hats, Safety Boots, Safety	_____	Tarps, Screens etc.	_____
Glasses, Ear Protection etc.	_____	Welding	_____
Warning Signs	_____	Entrance/Exits	_____
Emergency Numbers/Procedures	_____	Traffic Control	_____
Job Specific Training	_____	Machinery, Moving Parts	_____
General Housekeeping	_____	Ventilation	_____
Site Rules		Building (windows, doors)	_____
Non Smoking	_____	Material Storage	_____
Required PPE	_____	Sanitation	_____
Hours of Operation	_____	Overhead Power Lines	_____
Non-Access (danger/secure areas)	_____	Underground Services	_____
Identify Contractor in Charge	_____	Electrical Lockout	_____
Security	_____	Temporary Installation	_____
		Road Signs/Speed Limit	_____
Site Equipment			
Ladders, Scaffolds	_____		
Containers, Trolleys	_____		
Hand and Power Tools	_____		
Hoses, Cords, Ropes	_____		
Vehicles and Trailers	_____		
Hoisting Equipment	_____		
Machinery	_____		
Inspection/Maintenance	_____		

Office And Warehouse Hazard Assessment

Date: _____

Logan Drilling Group
 P.O Box 188
 Stewiacke, N.S
 B0N 2J0

Date of Assessment: _____

Location of Assessment: _____

Assessment Team (Include names and positions) : _____

Items to Check	Action Required	On Site Conditions	Action Required
Safety Requirements	_____	Excessive Noise	_____
Safety Manual	_____	Particle in the Air	_____
Safety Policies Posted	_____	Lighting	_____
Job Procedures/Safe Work Practices	_____	Temperature	_____
OH&S Act and Regulations	_____	Falling Objects	_____
Inspection/Investigation	_____	Stacking of Material	_____
First Aid Personnel/Facilities	_____	Tripping/Falling	_____
First Aid Kits	_____	Hazards	_____
Fire Extinguishers	_____	Barricades, Tape,	_____
Emergency Exits	_____	Tarps, Screens etc.	_____
PPE Hard Hats, Safety Boots, Safety Glasses, Ear Protection, etc.	_____	Welding	_____
Warning Signs	_____	Entrance/Exits	_____
Emergency Numbers/Procedures	_____	Traffic Control	_____
Job Specific Training	_____	Machinery, Moving Parts	_____
General Housekeeping	_____	Ventilation	_____
Site Rules		Building (windows, doors)	_____
Non Smoking	_____	Material Storage	_____
Required PPE	_____	Sanitation	_____
Hours of Operation	_____	Overhead Power Lines	_____
Non-Access (danger/secure areas)	_____	Underground Services	_____
Identify Contractor in Charge	_____	Electrical Lockout	_____
Security	_____	Temporary Installation	_____
		Road Signs/Speed Limit	_____
Site Equipment			
Ladders, Scaffolds	_____		
Containers, Trolleys	_____		
Hand and Power Tools	_____		
Hoses, Cords, Ropes	_____		
Vehicles and Trailers	_____		
Hoisting Equipment	_____		
Machinery	_____		
Inspection/Maintenance	_____		

Safe Work Practices

Introduction to Drilling Safety

General

Logan Drilling Group is interested in your safety. The management of the company cares about your safety not only when you are working on or around a drill rig, but also when you are traveling to and from a drilling site, moving the drill rig and tools from location to location on a site, or providing maintenance on a drill rig or drilling tools. This safety guide is for your benefit. Failure to heed the safety procedures contained in this manual could result in serious injury or death.

Every drill crew should have a designated safety supervisor who has the authority to enforce safety on a drilling site. A rig worker's first safety responsibility is to obey the directions of the safety supervisor.

This guide contains suggested safety procedures. It is not intended to set forth any standard industry procedures or requirements. This manual is to be used as a guideline for the safe operation of drilling equipment. Many aspects of drilling safety cannot be expressed in detail and cannot be met by mechanical means; drilling safety can only be accomplished with the exercise of intelligence, care and common sense.

Governmental Regulations

All local provincial and federal regulations or restrictions, currently in effect or effected in the future, take precedence over the recommendations and suggestions which follow. Government regulations will vary from country to country and from province to province.

Safe Work Practices

Housekeeping on and Around the Drill Rig

The first requirement for safe field operations is that the safety supervisor understands and fulfills the responsibility for maintenance and “housekeeping” on and around the drill rig. The Safety Supervisor **MUST**:

- Provide suitable storage locations for all tools, materials and supplies so that tools, materials and supplies can be conveniently and safely handled without hitting or falling on a member of the drill crew or a visitor.
- Avoid storing or transporting tools, materials or supplies within or on the mast (derrick) of the drill rig.
- Stack pipe, drill rods, casing, augers and similar drilling tools in orderly fashion on racks or sills to prevent spreading, rolling or sliding.
- Place penetration or other driving hammers at a safe location on the ground or secure them to prevent movement when not in use.
- Keep work areas, platforms, walkways, scaffolds and other access ways free of materials, debris and obstructions and substances such as ice, grease or oil that could cause a surface to become slick or otherwise hazardous.
- Keep all controls, control linkages, warning and operation lights and lenses free of oil, grease and/or ice.
- Store gasoline only in a non sparking red container with a flame arrester in the fill spout and having the word “gasoline” easily visible.

SAFE WORK PRACTICES

Hand Tools

There are almost an infinite number of hand tools that can be used on or around a drill rig and in repair shops and more than an equal number of instructions for proper use. “**Use the tool for its intended purpose**” is the most important rule.

The following are a few specific and general suggestions which apply to safe use of several hand tools that are often used on and around drill rigs:

- When a tool becomes damaged, either repair it before using it again or get rid of it.
- When using a hammer, any kind of hammer for any purpose, wear safety glasses and require all others around you to wear safety glasses.
- When using a chisel, any kind of chisel or punch, for any purpose, wear safety glasses and require all others around you to wear safety glasses.
- Keep all tools cleaned and orderly stored when not in use.
- Use wrenches on nuts – don’t use pliers on nuts.
- Use screwdrivers with blades that fit the screw slot.
- When using a wrench on a tight nut – first use some penetrating oil, and use the largest wrench available that fits the nut. When possible, pull on the wrench handle rather than pushing and apply force to the wrench with both hands when possible and with both feet firmly placed. Don’t push or pull with one or both feet on the drill rig or the side of a mud pit or some other blocking. Always assume that you may lose your footing – check the place where you may fall for sharp objects.
- Keep all pipe wrenches clean and in good repair. The jaws of pipe wrenches should be wire brushed frequently prevent an accumulation of dirt and grease which would otherwise build up and causes wrenches to slip.
- Never use pipe wrenches in place of a rod holding device.
- Replace hook and heel jaws when they become visibly worn.
- When breaking tool joints on the ground or on a drilling platform, position your hands so that your fingers will not be smashed between the wrench handle and the ground or the platform if the wrench should slip or if the tool joint should suddenly let go.

SAFE WORK PRACTICES

Defective Tools

General

Defective tools can cause serious and painful injuries. If a tool is defective in some way, **DON'T USE IT.**

Be aware of problems like:

- Chisels and wedges with mushroomed heads
- Split or cracked handles
- Chipped or broken drill bits
- Wrenches with worn out jaws
- Tools which are not complete, such as files without handles
-

To ensure safe use of hand tools, remember:

- Never use a defective tool
- Double check all tools prior to use
- Ensure defective tools are repaired

Air, gasoline, or electric power tools require skill and complete attention on the part of the user even when they are in good condition. Don't use power tools when they are defective in any way.

Watch for problems like:

- Broken or inoperative guards
- Insufficient or improper grounding due to damage on double insulated tools
- No ground wire (on plug) of cords of standard tools
- The on-off switch not in good working order
- Tool blade is cracked
- The wrong grinder wheel is being used
- The guard has been wedged back on a power saw

SAFE WORK PRACTICES

Overhead and Buried Utilities

General

Both supervisors and members of the exploration crew must take special precautions when a drill rig will be used on a site or project within the vicinity of electrical power lines and other utilities.

Electricity can shock, it can burn, and it can cause death.

- Locate, note, and emphasize overhead and buried utilities on all boring location plans and boring assignment sheets.
- When overhead electrical power lines exist at or near a drilling site or project, consider all wires to be alive and dangerous.
- Watch for sagging power lines before entering a site. Do not lift power lines to gain entrance. Call the utility and ask them to lift or raise the lines or de-energize (turn off) the power.
- Before raising the drill rig mast (derrick) on a site in the vicinity of power lines, walk completely around the drill rig. Determine what the minimum horizontal distance from any point on the drill rig to the nearest power line will be when the mast is raised and/or being raised. If this horizontal distance is less than 100 ft (30 m), first consult the local utility company before commencing operations.
- Keep in mind that both hoist lines and overhead power lines can be moved toward each other by the wind.
- In order to avoid contact with power lines, only move the drill rig with the mast (derrick) down.
- If there are any questions concerning the safety of drilling on sites in the vicinity of overhead power lines, call the power company. The power company will provide expert advice at the drilling site as a public service and at no cost.
- Electricity is as dangerous underground as overhead. Be aware of and always suspect the existence of underground utilities such as electrical power, gas, petroleum, telephone, sewer, and water.

SAFE WORK PRACTICES

Overhead and Buried Utilities Cont'd

- If a sign warning of underground utilities is located on a site boundary, do not assume that underground utilities are located on or near the boundary or property line under the sign. Call the utility and check it out. The underground utilities may be a considerable distance away from the warning sign.
- Always contact the owners of utility lines or the nearest underground utility location service before drilling. Determine jointly with utility personnel the precise location of underground utility lines, mark and flag the locations, and determine jointly with utility personnel what specific precautions must be taken to ensure safety.
- Always contact the owners of utility lines or the nearest underground utility location service before drilling. Determine jointly with utility personnel the precise location of underground utility lines, mark and flag the locations, and determine jointly with utility personnel what specific precautions must be taken to ensure safety.

SAFE WORK PRACTICES

Emergency Stops/Panic Button

Purpose: To stop an engine or moving part in case of an emergency.

This device is a Red Button located on the outside of the drill on the head side of the drill at the front door on the left hand side when walking into the drill shack. Emergency stops are also located at the operator station and at the helpers station. See Attached picture.

To operate push the red button in to make the engine stop. Note: This button is one to be pushed in an emergency situation.

If button is pushed because of an emergency situation, this must be reported immediately to management and investigated promptly. All near misses are considered reportable incidents.

SAFE WORK PRACTICES

Supplying Power to the Job Site

General

Drilling projects sometimes require around-the-clock operations and, therefore, require temporary electrical lighting. In general, all wiring and fixtures used to provide electricity for drilling operations should be installed by qualified personnel in accordance with recommended practices for electrical installations for production facilities. Lights should be installed and positioned so that the work area and operating positions are well lit without shadows or blind spots.

The following specific recommendations emphasize the safe use of electricity during land-based drilling operations:

- Before working on an electrical power or lighting system, lock-out the main panel box with your own lock and keep the key on your person at all times.
- All wiring should be installed using high quality connections, fixtures and wire, insulated and protected with consideration of the drilling environment. Makeshift wiring and equipment should not be permitted.
- Place all lights positioned directly above working areas in cages or similar enclosures to prevent loose or detached lamps or vapor tight enclosures from falling on workers.
- Install lights so as to eliminate glare or “blind spots” on tools, ladders, walkways, platforms, and the complete working area.
- Locate and guard electrical cables to prevent damage by drilling operations or by the movement of personnel, tools, or supplies.
- Use only three-prong, U-blade, grounded type plug receptacles and have adequate current carrying capacity for the electrical tools that may be used.
- Use only electrical tools that have three-prong, U-blade, ground wire plugs and cords.
- Do not use electrical tools with lock-on devices.
- Provide adequate grounding for all electrical welders, generators, control panels, and similar devices.
- Provide secure protective enclosures on control panels, fuse boxes, transformers, and similar equipment.
- Avoid attaching electrical lighting cables to the derrick or other components of the drill rig. If this must be done, use only approved fasteners. Do not “string” wire through the derrick.

SAFE WORK PRACTICES

Supplying Power to the Job Site Cont'd

- Do not use poles used to hold wirings and lights for any other purpose.
- Turn power off before changing fuses or light bulbs.
- Require all workers in a drilling area illuminated with electrical lighting to wear safety head gear that protects the worker's head, not only against falling or flying objects, but also against limited electrical shock and burns.
- Allow only trained, designated personnel to operate electrical equipment.
- Do not permit unqualified field personnel to work on or near electric lines or devices.

SAFE WORK PRACTICES

Contact with Electricity

If a drill rig makes contact with electrical wires, it may or may not be insulated from the ground by the tires of the carrier. Under either circumstances, if the human body simultaneously comes into contact with the drill rig and the ground, it will provide a conductor of the electricity to the ground. Death or serious injury can be the result.

If a drill rig or a drill rig carrier makes contact with overhead or underground electrical lines:

- Under most circumstances, the operator and other personnel on the seat of the vehicle should remain seated and not leave the vehicle. Do not move or touch any part, particularly a metallic part, of the vehicle or the drill rig.
- If it is determined that the drill rig should be vacated, then all personnel should jump clear and as far as possible from the drill. Do not step off –jump off, and do not hang on to the vehicle or any part of the drill when jumping clear.
- If you are on the ground, stay away from the vehicle and the drill rig; do not let others get near the vehicle and the drill rig. Seek assistance from local emergency personnel such as the police or a fire department.
- When an individual is injured and in contact with the drill rig or with power lines, attempt rescue with extreme caution. If a rescue is attempted, use a long, dry, unpainted piece of wood or a long, dry, clean rope. Keep as far away from the victim as possible and do not touch the victim until the victim is completely clear of the drill rig or electrical lines.
- When the victim is completely clear of the electrical source, is unconscious, and a heart beat (pulse) cannot be detected, begin cardiopulmonary resuscitation (CPR) immediately.

SAFE WORK PRACTICES

Fire and Use of Fire Extinguishers

General:

Good housekeeping is essential in the prevention of fires. Fires can start anywhere and at any time. This is why it is important to know which fire extinguishers to use and how to use it.

Always keep fire extinguishers visible and easy to get at. Fire extinguishers have to be properly maintained to do the job. Where temperature is a factor, ensure that care is taken in selecting the right extinguisher.

Types of Fires:

Class A: These fires consist of wood, paper, rags, rubbish, and other ordinary combustible materials.

Recommended Extinguishers

Water from a hose, pump type water can or pressurized extinguisher, and soda can extinguishers.

Fighting the Fire

Soak the fire completely – even the smoking embers.

Class B: Flammable liquids, oil, grease, and soda

Recommended Extinguishers

ABC units, dry chemical, foam, and carbon dioxide extinguishers

Fighting the Fire

Start at the base of the fire and use a swinging motion from left to right, always keeping the fire in front of you.

Class C: Electrical equipment

Recommended Extinguishers

Carbon dioxide and dry chemical (ABC units) extinguishers

Fighting the Fire

Use short bursts on the fire. When the electrical current is shut off on a Class C fire, it can become a Class A fire if the materials around the electrical fire are ignited.

SAFE WORK PRACTICES

Use of Cleaning Solvents and Flammables

General

Cleaning solvents are used in day-to-day construction work to clean tools and equipment. Special care must be taken to protect the worker from hazards which may be created from the use of these liquids. Wherever possible, solvents should be nonflammable and nontoxic.

The foreman must be aware of all solvents/flammables that are used on the job, and be sure that all workers who use these materials have been instructed in their proper use and any hazard they pose.

The following instructions or rules apply when solvents/flammables are used:

- 1) Use nonflammable solvents for general cleaning.
- 2) When flammable liquids are used, make sure that no hot work is permitted in the area.
- 3) Store flammables and solvents in special storage areas.
- 4) Check toxic hazard of all solvents before use (MSDS).
- 5) Provide adequate ventilation where all solvents and flammables are being used.
- 6) Use goggles or face shields to protect the face and eyes from splashes or sprays.
- 7) Use rubber gloves to protect the hands.
- 8) Wear protective clothing to prevent contamination of workers' clothes.
- 9) When breathing hazards exist, use the appropriate respiratory protection.
- 10) Never leave solvents in open tubs or vats – return them to storage drums or tanks.
- 11) Ensure that proper containers are used for transportation, storage, and field use of solvents/flammables.
- 12) Where solvents are controlled products, ensure all employees using or in the vicinity of use or storage are trained and certified in the Workplace Hazardous Materials Information System. Ensure all WHMIS requirements are met.

SAFE WORK PRACTICES

Use of Portable Arc Welders

General

Portable arc welders are a piece of equipment that has to be treated like a vehicle. Do not operate them indoors.

- 1) Be sure the machine is firmly attached to the transporting unit.
- 2) Check all fluid levels, water, oil, and gas to be sure they are at acceptable levels for operation.
- 3) When fueling, **DO NOT** “top off” the gas tank. Gasoline expands as the outside temperature rises. This may result in seepage and an ensuing fire.
- 4) Do not fuel the machine while it is running.
- 5) Be sure the radiator and gas caps are in proper working order and securely attached.
- 6) Do a “walk around” to check for damage and obvious leaks.
- 7) Any repairs should be done by qualified mechanics or technicians.
- 8) Make sure all cables are wound securely when transporting.
- 9) Ensure the side covers are kept closed to protect the machine from any damage from external objects and outside weather, as well to protect the operator and other from the moving parts of the machine.

SAFE WORK PRACTICES

Use of Chain Saws

General

Chain saws are used for many jobs in construction. Since this tool was primarily meant for use in the logging industry, it can be an unfamiliar tool to some workers.

Workers must be trained in its safe use before using a chain saw.

This training must include a minimum of the following elements:

- 1) The proper personal protective equipment to be worn is set out by the manufacturer and Occupational Health & Safety Legislation.
- 2) Fueling of the saw must be done in a well ventilated area and not while the saw is running or hot.
- 3) An approved safety container must be used to contain the fuel used along with a proper spout or funnel for pouring.
- 4) The correct method of starting, holding, carrying, or storage and use of the saw as directed by the manufacturer must be used.
- 5) Ensure that the chain brake is functioning properly and adequately stops the chain.
- 6) The chain must be sharp, have the correct tension, and be adequately lubricated.
- 7) When carrying or transporting a chain saw, the bar guard must be in place, the chain bar must be toward the back, and the motor must be shut off.
- 8) The chain saw must not be used for cutting above shoulder height.

Chain saws will comply with CSA Standards Z62, I-M-77.

SAFE WORK PRACTICES

Use of Hand-Held Power Circular Saws

General

This type of power hand tool is one of the most commonly used in construction. Because of this common use, there are numerous accidents due to thoughtless acts.

The following are the minimum accepted practices to be used with this saw:

- 1) Approved safety equipment such as safety glasses or a face shield are to be worn.
- 2) Where harmful vapours or dusts are created, approved breathing protection is to be used.
- 3) The proper sharp blade designed for the work to be done must be selected and used.
- 4) The power supply must be disconnected before making any adjustments to the saw or changing the blade.
- 5) Before the saw is set down, be sure the retracting guard has fully returned to its down position.
- 6) Both hands must be used to hold the saw while ripping.
- 7) Maintenance is to be done according to the manufacturer's specifications.
- 8) Ensure all cords are clear of the cutting area before starting to cut.
- 9) Before cutting, check the stock for foreign objects or any other obstruction which could cause the saw to "kick back".
- 10) When ripping, make sure the stock is held securely in place. Use a wedge to keep the stock from closing and causing the saw to bind.

SAFE WORK PRACTICES

Use of Portable Ladders

General

Ladders can be used safely if they are given the respect they deserve.

Before using any ladder, make sure that it is in good condition and is the right ladder for the job to be done.

- 1) When setting up a ladder, secure the base and “walk” the ladder up into place.
- 2) The ladder should be set up at the proper angle of one (1) horizontal to every four (4) vertical.
- 3) Before using a ladder, make sure it is secured against movement.
- 4) When in position, the ladder should protrude one (1) metre above the intended landing point.
- 5) Workers shall not work from the top two rungs of a ladder.
- 6) Don't overreach while on a ladder. It is easier and safer to climb down and move the ladder over a few feet to a new position.
- 7) Always face the ladder when using it. Grip it firmly and use the three-point contact method when moving up or down.
- 8) The minimum overlap on an extension ladder should be one (1) metre unless the manufacturer specifies the overlap.
- 9) Keep both metal and wood ladders away from electrical sources.

SAFE WORK PRACTICES

Use of Step Ladders

General

As with all ladders, make sure that the step ladder is in good condition, and is the right ladder for the job to be done.

Step ladders are to be used only on clean and even surfaces.

- 1) No work is to be done from the top two steps of a step ladder, counting the top platform as a rung.
- 2) When in the open position ready for use, the incline of the front step section shall be one (1) horizontal to six (6) vertical.
- 3) The step ladder is only to be used in the fully opened position with the spreader bars locked.
- 4) Tops of step ladders are not to be used as a support for scaffolds.
- 5) Don't overreach while on the ladder. Climb down and move the ladder over to a new position.
- 6) Only CSA Standard ladders will be used.

SAFE WORK PRACTICES

Use of Wood Scaffolds

General

The construction of wood scaffold is closely regulated by legislation. Materials and material dimensions are specified in detail in the O.H.&S. General Safety Regulations.

Because the construction of these scaffolds can vary greatly as to use, shape, location, and the type of job to be done, they sometimes are built in a haphazard manner. To avoid this, the following Safe Work Practices are minimum.

- 1) Construction, alteration, design, and removal of wood scaffolds is to be done by competent workers.
- 2) The material used to construct these scaffolds should be sound, close grained, and finished on all four sides.
- 3) The scaffold must be capable of supporting four (4) times the load that might be imposed upon it.
- 4) All component parts should be tight together and properly fixed to each other.
- 5) Proper perimeter railing must be set in place. Top rail-intermediate rail – toe board.
- 6) Scaffold work platforms shall be at least 500 millimetres wide for light duty and 1 meter wide for heavy duty scaffolds.
- 7) When used as a scaffold work platform, planks shall be secured from movement by cleats or by being wired in place.
- 8) Safe access and egress is to be provided to all work platforms by the use of ladders.
- 9) Scaffold work platforms shall not span more than 3.1 metres on light duty scaffolds or 2.3 metres on heavy duty scaffolds.

SAFE WORK PRACTICES

Use of Metal Scaffolds

General

There are various types of metal scaffolds and they all have a right and wrong way to be erected.

The misuse of scaffolding is the cause of numerous serious injuries. Every worker who designs or constructs a scaffold should be competent and know what the manufacturer's specifications are for that type of scaffold.

The scaffold type which will be best suited for the job and capable of withstanding the loads to be imposed on it must be determined before the job begins.

Ensure that:

- 1) The scaffold you intend to use is the correct one for the job.
- 2) The location in which the scaffold is to be constructed is level or is capable of presenting secure footing by use of mudsills or some other device.
- 3) The scaffold will be erected by a competent worker.
- 4) Legislative and manufacturer's requirements have been complied with.
- 5) Safe access and egress to both the scaffold and the general work area has been provided.
- 6) Levelling adjustment screws have not been over extended.
- 7) Tower scaffolds have outriggers or are guyed and have all component parts secured in place (i.e. cross braces, lateral braces).
- 8) Scaffold work platforms have perimeter guardrail –

Horizontal rail – 0.92 metres to 1.07 metres above the platform.

Intermediate rail horizontal rail - midway between scaffold platform and top rail.

Toe board – horizontal member at platform level no less than 140 mm in height above the platform level.

- 9) Scaffold planks are of number one grade materials with maximum spans of 3.1 metres on light duty and 2.3 metres on heavy duty with a maximum projection beyond the ledger of no more than 300 mm.

SAFE WORK PRACTICES

Use of Compressed Air

General

Air powered tools in construction range from stapling guns to jack hammers. If not treated with respect, these tools can become a powerful enemy rather than a servant.

- 1) Compressed air must not be used to blow debris or to clear dirt from any worker's clothes.
- 2) Ensure that the air pressure has been turned off and the line pressure relieved before disconnecting the hose or changing tools.
- 3) All hose connectors must be of the quick disconnect pressure release type with a "safety chain/cable".
- 4) Wear personal protective equipment such as eye protection and face shields and ensure other workers in the area are made aware of or have restricted access to the hazard area.
- 5) Hoses must be checked on a regular basis for cuts, bulges, or other damage. Ensure that defective hoses are repaired or replaced.
- 6) A proper pressure regulator and relief device must be in the system to ensure that correct desired pressures are maintained.
- 7) The correct air supply hoses must be used for the tool/equipment being used.
- 8) The equipment must be properly maintained according to the manufacturer's requirements.
- 9) Follow manufacturer's general instructions and comply with legislated safety requirements.

SAFE WORK PRACTICES

Use of Propane

General

Since propane is heavier than air and invisible, it is a special concern when it is used on the job site.

All installations and use of this product on the job site must comply with the Government Legislation set out for its safe use.

Supplier delivering the product or setting up the equipment at the site must be part of the safe work practices.

- 1) Nylon slings must be used in a “choker” fashion when loading, off-loading, or lifting propane tanks.
- 2) “Lifting lugs” provided on tanks are not to be used. Slings are to be wrapped around the shell of the tank.
- 3) Tank valves and regulators are to be removed from the tank prior to any movement of the tank.
- 4) Crane hooks shall be equipped with a “safety latch”.
- 5) All trucks, cranes, or equipment used to handle propane tanks must be equipped with a fire extinguisher appropriate for the size and type of tank being handled.
- 6) Except in an emergency, any movement or repositioning of tanks shall be performed by a competent worker.
- 7) Tanks are not to be heated to increase flow.
- 8) When in use, propane bottles are to be securely held in an upright position.
- 9) Tanks are not to be hooked up and used without proper regulators.

SAFE WORK PRACTICES

Welding, Cutting, and Burning

General

Work involving welding, cutting, and burning can increase the fire and breathing hazard on any job, and the following should be considered prior to the start of work.

- 1) Always ensure that adequate ventilation is supplied since hazardous fumes can be created during welding, cutting, or burning.
- 2) Where other workers may also be exposed to the hazards created by welding, cutting, and burning, they must be alerted to these hazards or protected from them by the use of "screens".
- 3) Never start work without proper authorization.
- 4) Always have fire fighting or prevention equipment on hand before starting welding, cutting, or burning.
- 5) Check the work area for combustible materials and possible flammable vapours before starting work.
- 6) A welder should never work alone. A fire or spark watch should be maintained.
- 7) Check cables and hoses to protect them from slag or sparks.
- 8) Never weld or cut lines, drums, tanks, etc, that have been in service without making sure that all precautions have been carried out, and permits obtained.
- 9) Never enter, weld, or cut in a confined space without proper gas tests and a required safety lookout.
- 10) When working overhead, use fire resistant materials (blankets, tarps) to control or contain slag and sparks.
- 11) Cutting and welding must not be performed where sparks and cutting slag will fall on cylinders. Move all cylinders away to one side.
- 12) Open all cylinder valves slowly. The wrench used for opening the cylinder valves should always be kept on the valve spindle when the cylinder is in use.

SAFE WORK PRACTICES

Use of Tiger Torches

General

Tiger torches, although valuable to a job site, are sometimes misused in a manner that can make them dangerous.

Tiger torches are only to be used for preheating or piping etc, prior to welding.

- 1) When a torch is used, an adequate fire extinguisher must be present.
- 2) Torches are not to be used for heating of work areas or thawing of lines and equipment etc, when not in use.
- 3) Ensure that the propane bottles are properly shut off.
- 4) Fuel lines are to have regulators.
- 5) Propane bottles shall be secured in an upright position.

SAFE WORK PRACTICES

Grinding

General

Severe injury may occur if proper protective equipment is not used and properly maintained.

- 1) Check the tool rest for the correct distance from the abrasive wheel, maximum 1/8" or 3 mm.
- 2) Replace the grindstone when adjustment of the rest cannot provide 1/8 or 3 mm clearance.
- 3) If the wheel has been abused and ground to an angle or grooved, reface the wheel with the appropriate surfacing tool.
- 4) Protect your eyes with goggles or a face shield at all times when grinding.
- 5) Each time a grinding wheel is mounted, the maximum approved speed stamped on the wheel bladder should be checked against the shaft rotation speed of the machine to ensure the safe peripheral speed is not exceeded. A grinding wheel must not be operated at peripheral speed exceeding the manufacturer's recommendation.
- 6) The flanges supporting the grinding wheel should be a maximum of 1/3 the diameter of the wheel, and must fit the shaft rotating speed according to the manufacturer's recommendation.
- 7) Bench grinders are designed for peripheral grinding. Do not grind on the side of the wheel.
- 8) Do not stand directly in front of the grinding wheel when it is first started.

SAFE WORK PRACTICES

Use of Portable Grinders

General

Abrasive wheels can cause severe injury. Proper storage of wheels, proper use of wheels, and proper maintenance of wheels must be observed.

- 1) Familiarize yourself with the grinder operation before commencing work.
- 2) Ensure proper guards are in place and that safety glasses, face shields, gloves, and safety boots are worn when using portable grinders.
- 3) Never exceed the maximum wheel speed (every wheel is marked). Check the speed marked on the wheel and compare it to the speed on the grinder.
- 4) When mounting the wheels, check them for cracks and defects. Ensure that the mounting flanges are clean and the mounting blotters are used. Do not overtighten the mounting nut.
- 5) Before grinding, run newly mounted wheels at operating speed to check for vibrations.
- 6) Do not use grinders near flammable materials.
- 7) Never use the grinder for jobs for which it is not designed, such as cutting.

SAFE WORK PRACTICES

Augers

General

Follow these general procedures when starting a boring with continuous flight or hollow-stem augers:

- Start an auger boring with the drill rig level, the clutch or hydraulic rotation control disengaged, the transmission in low gear, and then engine running at low RPM.
- Apply an adequate amount of down pressure prior to rotation to seat the auger head below the ground surface.
- Look at the auger head while slowly engaging the clutch or rotation control and starting rotation. Stay clear of the auger.
- Slowly rotate the auger and auger head while continuing to apply down pressure. Keep one hand on the clutch or on the rotation control at all times until the auger has penetrated about one foot or more below ground surface.
- If the auger head slides out of alignment, disengage the clutch or hydraulic rotation control and repeat the hole starting process.
- An auger guide can facilitate the starting of a straight hole through hard ground or a pavement.
- Establish a system of responsibility for the operator and tool handler to follow during the series of various activities required for auger drilling (connecting and disconnecting auger sections, and inserting and removing the auger fork).

The operator must ensure that the tool handler is well away from the auger column and that the auger fork is removed before starting rotation. In addition:

- When rotating augers, stay clear of the rotating auger and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason whatsoever.
- Only use the manufacturer's recommended method of securing the auger to the power coupling. Do not use an overlength pin or bolt. Do not touch the coupling or the auger with hands, a wrench, or any other tools during rotation.
- Whenever possible, use tool hoists to handle auger sections.

SAFE WORK PRACTICES

Augers Cont'd

- Never place hands or fingers under the bottom of an auger section when hoisting the auger over the top of the auger section in the ground or other hard surfaces such as the drill rig platform.
- Never allow feet to get under the auger section that is being hoisted.
- When rotating augers, stay clear of the rotating auger and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason whatsoever.
- Use a long-handled shovel to move auger cuttings away from the auger. Never use your hands or feet to move cuttings from the auger.
- Do not attempt to remove earth from rotating augers. Augers should be cleaned only when the drill rig is in neutral and the augers are stopped from rotating.

SAFE WORK PRACTICES

Rotary and Core Drilling

General

Rotary drilling tools should be safety checked prior to drilling.

- Lubricate and check for frozen bearings before using water/air swivels and hoisting plugs. Water/air swivel bearings must be free before using, and stay clear of water/air swivel hose when rotating.
- Drill rod chuck jaws should be checked periodically and replaced when necessary.
- The capacities of hoists and sheaves should be checked against the anticipated weight to the drill rod string plus other expected hoisting loads.

Special precautions that should be taken for safe rotary or core drilling involve chucking, joint break, hoisting, and lowering of drill rods:

- Only the operator of the drill rig should be allowed to brake or set a manual chuck so that rotation of the chuck will not occur prior to removing the wrench from the chuck.
- Drills rods should not be braked during lowering into the hole with drill rod chuck jaws.
- Drill rods should not be held or lowered into the hole with pipe wrenches.
- If a string of drill rods is accidentally or inadvertently released into the hole, do not attempt to grab the falling rods with your hands or a wrench.
- In the event of a plugged bit or other circulation blockage, the high pressure in the piping and hose between the pump and the obstruction should be relieved or bled down before breaking the first tool joint.
- When drill rods are hoisted from the hole, clean them only with a wiper made of rubber or other suitable material. Do not use hands to clean drilling fluid from drill rods.
- If work must progress above a portable drilling fluid (mud) pit, do not attempt to stand on narrow sides or cross members. Equip the mud pit with rough surfaced, fitted cover panels of adequate strength to hold drill rig personnel.

SAFE WORK PRACTICES

Rotary and Core Drilling Cont'd

- Do not lift or lean insecure drill rods against the mast. Either provide some method of securing the upper ends of the drill rod sections for safe vertical storage or lay the rods down.

SAFE WORK PRACTICES

Safe Use of Cathead and Rope Hoists

The following safety procedures should be employed when using a cathead hoist:

- 1) Keep the cathead clean and free of rust, oil and/or grease. The cathead should be cleaned with a wire brush if it becomes rusty.
- 2) Check the cathead periodically, when the engine is not running, for rope grooves. If a rope groove forms to a depth greater than 1/8 inch (3 mm), the cathead should be replaced.
- 3) Always use clean, dry, sound rope. A wet or oily rope may “grab” the cathead and cause drill tools or other items to be rapidly hoisted to the top of the mast. Should the rope “grab” the cathead or otherwise become tangled in the drum, release the rope and sound an appropriate alarm for all personnel to rapidly back away and stay clear. The operator should also back away and stay clear. If the rope “grabs” the cathead and tools are hoisted to the sheaves at the top of the mast, the rope will often break, releasing the tools. If the rope does not break, stay clear of the drill rig until the operator cautiously returns to turn off the drill rig engine and appropriate action is taken to release the tools. The operator should keep careful watch on the suspended tools and should quickly back away after turning off the engine.
- 4) The rope should always be protected from contact with all chemicals. Chemicals can cause deterioration of the rope that may not be visibly detectable.
- 5) Never wrap the rope from the cathead (or any other rope, wire rope, or cable on the drill rig) around a hand, wrist, arm, foot, ankle, leg, or any other part of your body.
- 6) Always maintain a minimum of 18 inches clearance between the operating hand and the cathead drum when driving samplers, casing, or other tools with the cathead and rope method.
- 7) Be aware that the rope advances toward the cathead with each hammer blow as the sampler or other drilling tool advances toward the ground.
- 8) Never operate a cathead (or perform any other task) around a drill rig with loose, unbuttoned, or otherwise unfastened clothing, or when wearing gloves with large cuffs, or loose straps or lacings.

SAFE WORK PRACTICES

Safe Use of Cathead and Rope Hoists Cont'd

- 9) Do not use a rope that is any longer than necessary. A rope that is too long can form a ground loop or otherwise be entangled with the operator's legs. Do not use more rope than is required to hoist a load.
- 10) Do not leave a cathead unattended with the rope wrapped on the drum.
- 11) Position all other hoist lines to prevent contact with the operation cathead rope.
- 12) When using the cathead and rope for driving or back-driving, make sure that all threaded connections are tight and stay as far away as possible from the hammer impact point.
- 13) The cathead operator must be able to operate the cathead standing on a level surface with good firm footing conditions without distraction or disturbance.

SAFE WORK PRACTICES

Proper Lifting Practices – Hoisting

General

Determine the weight of the object or load prior to a lift to make sure that the lifting equipment can operate within its capabilities.

Balance Loads

Estimate the centre of gravity or point of balance. The lifting device should be positioned immediately above the estimated centre of gravity.

Landing the Load

Prepare a place to land the load, lower the load gently, and make sure it is stable before slackening the sling or chain.

- 1) Select only alloy chain slings and **NEVER** exceed the working load limits.
- 2) Make sure the hoist or crane is directly above the load.
- 3) Use slings of proper reach. Never shorten a line by twisting or knotting. With chain slings, never use bolts or nuts.
- 4) Never permit anyone to ride the lifting hook or the load.
- 5) Make sure all personnel stand clear from the load being lifted.
- 6) Never work under a suspended load unless the load is properly supported.
- 7) Never leave a load suspended when hoist or crane is unattended.
- 8) Inspect all slings thoroughly at specified intervals and maintain them in good condition.
- 9) Inspect each chain or sling for cuts, nicks, bent links, bent hooks, etc, before each use. If in doubt, don't use it.
- 10) Ensure that safety latches on hooks are in good working condition.
- 11) Ensure that the signaller is properly identified and understand proper signalling.
- 12) Make sure a tagline is used to control the load.

SAFE WORK PRACTICES

Wire Line Hoists, Wire Rope, and Hoisting Hardware

General

The use of wire line hoists, wire rope, and hoisting hardware should be as stipulated by the Wire Rope Users Manual.

Visually inspect all wire ropes and fittings during use and thoroughly inspect them at least once a week for abrasion, broken wires, wear, reduction in rope diameter, reduction in wire diameter, fatigue, corrosion, damage from heat, improper reeving, jamming, crushing, bird caging, kinking, core protrusion, and/or damage when lifting hardware. Replace wire ropes when inspection indicates excessive damage, as when described in the Wire Rope Users Manual.

Thoroughly inspect all wire ropes that have not been used for a period of a month or more.

Install all connections and end fittings, which consist of spliced eyes and various manufactured devices, according to the manufacturer's specifications. Do not exceed ratings specified by manufacturer.

If a ball bearing type hoisting swivel is used to hoist drill rods, inspect and lubricate swivel bearing daily to assure that the swivel freely rotates under load.

If a rod slipping device is used to hoist drill rods, do not drill through or rotate drill rods through the slipping device. Do not hoist more than 1 ft (0.3 m) of the drill rod column above the top of the mast (derrick). Do not hoist a rod column with loose tool joints. Do not make, tighten, or loosen tool joints while the rod column is being supported by a rod slipping device. If drill rods should slip back into the borehole, do not attempt to break the fall of the rods by hand or by tensioning the slipping device.

Most sheaves on exploration drill rigs are stationary with a single part line. Never increase the number of parts of line without first consulting with the manufacturer of the drill rig.

Wire ropes must be properly matched with each sheave. If the rope is too large, the sheave will pinch the wire rope. If the rope is too small, it will groove the sheave. Once the sheave is grooved, it will severely pinch and damage larger-sized wire ropes.

SAFE WORK PRACTICES

Wire Line Hoists, Wire Rope, and Hoisting Hardware Cont'd

The following procedures and precautions must be understood and implemented for use of wire ropes and rigging hardware:

- Use tool handling hoists only for vertical lifting of tools (except when angle hole drilling). Do not use tool handling hoists to pull on objects away from the drill rig; however, drills may be moved using the main hoist of the drill if the wire rope is spooled through proper sheaves according to the manufacturer's recommendations.
- When stuck tools or similar loads cannot be raised with a hoist, disconnect the hoist line and connect the stuck tools directly to the feed mechanism of the drill. Do not use hydraulic leveling jacks for added pull to the hoist line or to the feed mechanism of the drill.
- When attempting to pull out a mired down vehicle or drill rig carrier, only use a winch on the front or rear of the vehicle and stay as far away as possible from the wire rope. Do not attempt to use tool hoists to pulled out a mired down vehicle or drill rig carrier.
- Apply loads smoothly and steadily to minimize shock loading of a wire rope.
- Avoid sudden loading in cold weather.
- Never use frozen rope.
- Protect wire rope from sharp corners or edges.
- Replace faulty guides and rollers.
- Replace worn sheaves or worn sheave bearings.
- Replace damaged safety latches on safety hooks before using.
- Know the safe working load of the equipment and tackle being used. Never exceed this limit.
- Periodically inspect and test hoist clutches and brakes.
- Know and do not exceed the rated capacity of mast hooks, rings, links, swivels, shackles, and other lifting aids.
- Always wear gloves when handling wire ropes.

SAFE WORK PRACTICES

Wire Line Hoists, Wire Rope, and Hoisting Hardware Cont'd

- Do not guide wire rope on hoist drums with your hands.
- Following the installation of a new wire rope, first lift a light load to allow the wire rope to adjust.
- Never carry out any hoisting operations when the weather conditions are such that hazards to personnel, the public, or property are created.
- Never leave a load suspended in the air when the hoist is unattended.
- Keep your hands away from hoists, wire rope, hoisting hooks, sheaves, and pinch points while slack is being taken up, or when the load is being hoisted.
- Never hoist the load over the head, body, or feet of any personnel.
- Never use a hoist line to “ride” up the mast (derrick) of a drill rig.
- Use replacement wire ropes that conform to the drill rig manufacturer’s specifications.

SAFE WORK PRACTICES

Rigging

General

Rigging looks like an easy operation that requires no particular skill or experience. But if you have an idea that just anybody can do it, you're on the wrong track. Too many men have lost fingers or hands or have suffered more serious injuries because they thought, "Anybody can do that".

Here are some do's and don'ts to remember:

- 1) Name one member of the crew to act as a signalman, and instruct the equipment operator to recognize signals from that person only. The signalman must be careful not to order a move until he has received the "all ready" signal from each member of the crew.
- 2) Each rigger must be sure he's in the clear before he gives an "all ready" to the signalman. When you have positioned the sling or choker you're using, release it, if possible, before you give the "all ready" signal.
- 3) If you must hold the sling or choker in position, be sure your hand is clear of pinch points. In fact, your hand should be far enough away so there's no possibility of a frayed wire catching your glove and jerking your hand into a pinch point (of course, frayed cables should never be used).
- 4) Watch out for the roll or swing of the load. Since it's almost impossible to position the hook exactly over the load centre, there will almost always be a swing or roll. Anticipate the direction of the swing or roll and work away from it.
- 5) Never place yourself between material, equipment, or any stationary object and the load swing. Stay away from stacked material that may be knocked over by a swinging load.
- 6) Never stand under the loda, and keep from under the boom as much as possible. Chances are that nothing will break, but something might.
- 7) Look over the place where the load is to be set. Remove unnecessary blocks or other objects that might fly up if struck by the load.
- 8) When lowering or setting the load, be sure your feet and all other parts of your body are out from under it. Set the load down easily and slowly so that if it rolls on the blocking, it will be a slow shift that you can get away from.
- 9) Identify the designated signalman by the use of distinctive vests, armllets, etc.
- 10) Use tag lines to control the leads.

Safe Work Practices

Rigging

SAFE WORKING LOADS - WIRE ROPE SLINGS

The following methods apply to loads with their center of gravity located at their geometric center. Lifting irregularly shaped loads will result in unequal sling angles and/or unequal load distributions. If in doubt don't guess. Seek professional assistance.

SAFE WORKING LOAD OF SINGLE VERTICAL SLINGS (TONS)

SWL (single vertical) - DIAMETER (inches) x DIAMETER (inches) x 8 = D² X 8

This formula applies to new improved plow steel wire rope slings with thimbles in both ends. Flemish spliced eyes, mechanical steel sleeves and a factor of safety of five. For a choker hitch multiply SWL (single vertical) by 3/4.

SAFE WORKING LOAD OF 2-LEG BRIDLE SLINGS (TONS)

METHOD 1

SWL = SWL (single vertical) x $\frac{H}{L}$ x 2

Example 1/2 wire rope slings

SWL (single vertical) = D x 8
- 1/2 x 1/2 x 8
= 2 tons



SWL = SWL (single vertical) x $\frac{H}{L}$ x 2

- 2 x $\frac{6}{8}$ x 2

= 3 tons



Safe Work Practices

Rigging Cont'd.

METHOD 2

Use this method when it is difficult to measure the entire length of the slings.

$$SWL = SWL \text{ (single vertical)} \times \frac{H}{L} \times 2$$

Example 1/2" wire rope slings

$$SWL = SWL \text{ (single vertical)} = 2 \text{ tons}$$

$$SWL = SWL \text{ (single vertical)} \times \frac{H}{L} \times 2$$

$$= 2 \times 3/4 \times 2$$

$$= 3 \text{ tons}$$



SAFE WORKING LOAD OF THREE AND FOUR LEG BRIDLE SLINGS (TONS)

$$SWL = SWL \text{ (single vertical)} \times \frac{H}{L} \times 3$$

or

$$SWL = SWL \text{ (single vertical)} \times \frac{H}{L} \times 3$$



EFFICIENCIES OF EYE SPLICES

Flemish eye and pressed steel sleeve 100%. Hand-tucked eyes 80-90%. Eyes formed with cable clips 80%. Hand-tucked eyes must not be used where the sling or load may rotate.




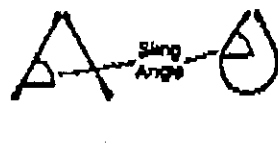
Safe Work Practices

Wire Rope Slings

6 X 19 Classification Group Improved Plow Steel IWRC

MAXIMUM SAFE WORKING LOADS - POUNDS

Safety Factor = 5 per OH & S Regulations

Rope Diameter (inches)	Single Vertical Hitch	Single Choker Hitch	Single Basket Hitch	2-Leg Bridle Hitch and Single Basket Hitch with Legs Inclined
				

				60 Degrees	45 Degrees	30 Degrees
35504	650	480	1300	1100	900	650
35433	1150	860	2300	2000	1600	1150
15/16	1750	1300	3500	3000	2500	1750
35496	2550	1900	5100	4400	3600	2550
35626	3450	2600	6900	6000	4900	3450
1/2	4700	3500	9400	8150	6650	4700
35688	5700	4200	11400	9900	8050	5700
35557	7100	5300	14200	12300	10000	7100
35492	10200	7650	20400	17700	14400	10200
35618	13750	10300	27500	23800	19400	13750
1	17950	13450	35900	31100	25400	17950
1 1/8	22750	17000	45500	39400	32200	22750
1 1/4	28200	21200	56400	48800	39900	28200
1 3/8	34800	26100	69600	60300	49200	34800
1 1/2	41300	31000	82600	71500	58400	41300

If used with Choker Hitch
 - multiply above values by 3/4.
 For Double Basket Hitch
 - multiply above values by 2.

NOTE: Table values are for slings with eyes and thimbles in both ends, Flemish Spliced Eyes and Mechanical Sleeves.

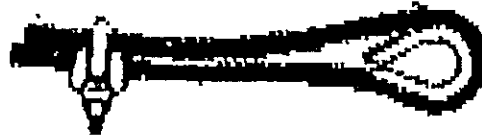
Safe Work Practices

Wire Rope Clips (Develop 80% of Rope Strength)

Rope Diameter (inches)	Minimum No. Of Clips	Amount of Rope Turn Back From Thimble (inches)	Torque in Foot-Pounds Unlubricated Bolts
35433	2	4 3/4	15
35565	2	5 1/2	30
35496	2	6 1/2	45
35626	2	7	65
1/2	3	11 1/2	65
35688	3	12	95
35557	3	12	95
35492	4	18	130
35618	4	19	225
1	5	26	225
1 1/8	6	34	225
1 1/4	6	37	360
1 3/8	7	44	360
1 1/2	7	48	360

Use only drop-forged steel clips - not cast.

Safe Work Practices



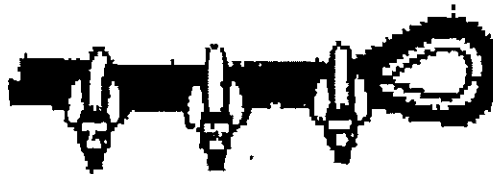
STEP 1: APPLY FIRST CLIP - One base width from dead end of wire rope - U-Bolt over dead end - live end rests in clip saddle. Tighten nuts evenly to recommended torque.



STEP 2: APPLY SECOND CLIP - Nearest loop as possible - U-Bolt over dead end - turn on nuts firm but **DO NOT TIGHTEN**



STEP 3: ALL OTHER CLIPS - Space equally between first two.



STEP 4: Apply tension and tighten all nuts to recommended torque.



STEP 5: Recheck nut torque frequently after rope has been in operation.

Safe Work Practices



INCORRECT
Do not stagger clips



INCORRECT
U-Bolt of all clips on live end of rope

Safe Work Practices

Chain Slings

Chain Size (inches)	Single Vertical Hitch	Single Choker Hitch	Single Basket Hitch (Vertical Legs)	2-Leg Bridle Hitch & Single Basket Hitch With Legs Inclined		
				60 Degrees	45 Degrees	30 Degrees
35433	2800	2100	5600	4850	3959	2800
35496	5680	4260	11360	9838	8032	5680
½	9600	7200	19200	16627	13574	9600
35557	14480	10860	28960	25079	20475	14480
35492	22640	16980	45280	39212	32013	22640
35618	27360	20520	54720	47388	38687	27360
1	38160	28620	76320	66093	53968	38160
1 1/4	57840	43380	115680	100179	81786	57840
Size by this diameter				If used with Choker Hitch - multiply above values by 3/4 For Double Basket Hitch - multiply above values by 2		
Use only alloy steel chain. Links will be stamped with 8 or T						

Strength based on ISO Standards and adjusted to reflect a Safety Factor of 5

Safe Work Practices

Weights of Materials (All weights are approximate)

ALUMINUM	165 lbs/cu ft	ROUND STEEL	BARS AND ROD
ALUMINUM (1 X 1 X 1)	13.5 lbs	Diameter (inches)	Weight (Lbs) per ft.
ASPHALT AND TAR	80 lbs/cu ft	35504	1
BRICKS - COMMON	121 lbs/cu ft	35433	2
CONCRETE	4.050 lbs/cu yd	35565	3
CONCRETE	150 lbs/cu ft	35496	4
CONCRETE BLOCK	52-84 lbs/cu ft	35626	5
CONCRETE BLOCK - 4"	24 lbs each	½	6
CONCRETE BLOCK - 6"	35 lbs each	35688	8
CRUSHED ROCK	2.550 lbs/cu yd	35557	10
CRUSHED ROCK	95 lbs/cu ft	35492	15
DRYWALL	52 lbs/cu ft	35618	20
DRYWALL (4'X8'X1/2")	55 lbs	1	27
EARTH - DRY	2.050 lbs/cu yd	1 1/8	34
EARTH - DRY	75 lbs/cu ft	1 3/16	38
MORTAR	100 lbs/cu ft	1 1/4	42
PIPE STEEL - SCHEDULE 40		1 3/8	51
1" ID	1.7 lbs/ft	1 ½	60
2" ID	3.7 lbs/ft	1 5/8	71
3" ID	7.6 lbs/ft	1 3/4	82
4" ID	10.8 lbs/ft	1 7/8	94
PORTLAND CEMENT - LOOSE	94 lbs/cu ft	2	10.7
SAND	3.250 lbs/cu yd	2 1/8	12.1
SAND	120 lbs/cu ft	2 1/4	13.5

STEEL	490 lbs/cu ft	2 3/8	15.1
STEEL (1'X1'X1")	40 lbs	2 1/2	16.7
WATER	62 lbs/cu ft	2 5/8	18.4
WOOD - DRY HARDWOOD	40 lbs/cu ft	2 3/4	20.2
WOOD - DRY SOFTWOOD	30 lbs/cu ft	2 7/8	22.1
WOOD - WET	50 lbs/cu ft.	3	24

Safe Work Practices

Hand Signals for Hoisting Operations

Load Up



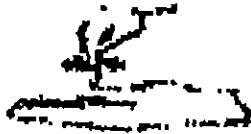
Load Down



Load Up Slowly



Load Down Slowly



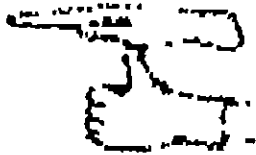
Boom Up



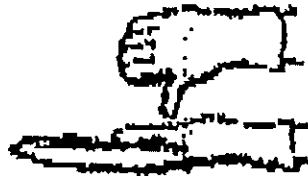
Boom Down



Boom Up Slowly



Boom Down Slowly



Boom Up Load Down



Boom Down Load Up



Everything Slowly



Use Whip Line



Safe Work Practices

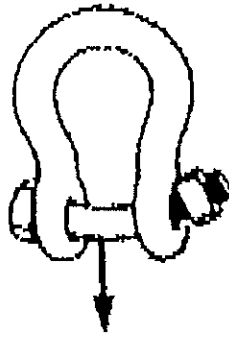
Shackles

SHACKLES (ALL TYPES) - Weldless Construction - Forged Alloy Steel		
Stock Diameter (Inches)	Inside Width At Pin (Inches)	Max Safe Working Load Single Vertical Pull (Pounds)
35504	35496	665
35433	15/32	1000
35565	35796	1500
35496	21/32	2000
35626	23/32	3000
35431	35810	4000
35557	1 1/16	6500
35492	1 1/4	9500
35618	1 7/16	13000
1	1 11/16	17000
1 1/8	1 13/16	19000
1 1/4	2 1/32	24000
1 3/8	2 1/4	27000
1 1/2	2 3/8	34000
1 3/4	2 7/8	50000
2	3 1/4	70000
2 1/2	4 1/8	100000
3	5	150000
3 1/2	5 3/4	200000
4	6 1/2	260000
Size by Stock Diameter - not pin diameter		

Safe Work Practices

Shackles Cont'd.

NEVER REPLACE A SHACKLE PIN WITH A BOLT



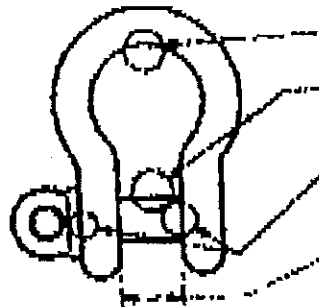
THE LOAD WILL BEND THE BOLT

Check

Check

Check

Check



for wear

for wear and straightness

that pin is always seated

that shackle is not opening up

Safe Work Practices

Nylon Web Slings

6800 lb/in material						
MAXIMUM SAFE WORKING LOADS - POUNDS (SAFETY FACTOR =5) (Eye & Eye, Twisted Eye, Triangle Fittings, Choker Fittings)						
Web Width (Inches)	Single Vertical Hitch	Single Choker Hitch	Single Basket Hitch (Vertical Legs)	2-Leg Bridle Hitch & Single Basket Hitch With Legs Inclined		
				60 Degrees	45 Degrees	30 Degrees
1	1100	825	2200	1950	1555	1100
2	2200	1650	4400	3810	3100	2200
3	3300	2475	6600	5715	4665	3300
4	4400	3300	8800	7620	6220	4400
5	5500	4125	11000	9525	7775	5500
6	6600	4950	13200	11430	9330	6600
				If used with Choker Hitch - multiply above values by 1/4. For Double Basket Hitch - multiply above values by 2.		
1. For safe working loads of endless or grommet slings, multiply above values by 2. 2. Values have been adjusted to reflect fabrication efficiency (FE) using formulas and tables developed by the Web Sling Association. This accounts for strength loss due to stitching and manufacture. 3. All web slings must carry a load rating tag as specified in OH&S Regulations						

Safe Work Practices

Fibre Rope

APPROXIMATE SAFE WORKING LOADS OF NEW FIBRE ROPES - POUNDS					
3-Strand Ropes Safety Factor = 5					
Normal Rope Diameter (Inches)	Manila	Nylon	Polypropylene	Polyester	Polyethylene
3/16	100	200	150	200	150
1/4	120	300	250	300	250
5/16	200	500	400	500	350
3/8	270	700	500	700	500
1/2	530	1250	830	1200	800
5/8	880	2000	1300	1900	1050
3/4	1080	2800	1700	2400	1500
7/8	1540	3800	2200	3400	2100
1	1800	4800	2900	4200	2500

REMEMBER - KNOTS CUT ROPE STRENGTH IN HALF

RULES OF THUMB FOR SWL

The following rules of thumb work well for new ropes when load tables are not available	
<p>MANILA ROPE</p> <ul style="list-style-type: none"> - Change the rope diameter into eighths of an inch - Square the numerator and multiply by 20 	<p>POLYPROPYLENE ROPE</p> <ul style="list-style-type: none"> - Change the rope diameter into eighths of an inch - Square the numerator and multiply by 40
<p>EXAMPLE</p> <p>(a) 1/2 inch manila rope = 4/8 inch diameter SWL = 4 x 4 x 20 = 320 lb.</p> <p>(b) 5/8 inch manila rope SWL = 5 x 5 x 20 = 500 lb.</p> <p>(c) 1 inch manila rope = 8/8 inch diameter SWL = 8 x 8 x 20 = 1280 lb.</p>	<p>EXAMPLE</p> <p>1/2 inch polypropylene rope = 4/8 inch diameter SWL = 4 x 4 x 40 = 640 lb.</p>
<p>NYLON ROPE AND POLYESTER ROPE</p> <ul style="list-style-type: none"> - Change the rope diameter into eighths of an inch - Square the numerator and multiply by 60 	<p>POLYETHYLENE ROPE</p> <ul style="list-style-type: none"> - Change the rope diameter into eighths of an inch - Square the numerator and multiply by 35
<p>EXAMPLE</p> <p>1/2 Inch Nylon Rope - 4/8 Inch Diameter SWL = 4 X 4 X 60 = 960 LB.</p>	<p>EXAMPLE</p> <p>1 inch polyethylene rope = 8/8 inch diameter SWL = 8 x 8 x 35 = 2240 lb.</p>

Safe Work Practices


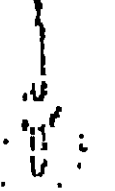



Eye Bolts

Stock Diameter (inches)	SAFE WORKING LOADS (LBS.) CORRESPONDING TO ANGLE OF PULL			
	Vertical	60 Degrees	45 Degrees	Less than 45
1/4	500	175	125	NOT RECOMMENDED
5/16	800	280	200	
3/8	1200	420	300	
1/2	2200	770	550	
5/8	3500	1225	875	
3/4	5200	1820	1300	
7/8	7200	2520	1800	
1	10000	3500	2500	
1 1/4	15200	5320	3800	
1 1/2	21400	7490	5350	

1. SWL for plain (shoulderless) eye bolts are same as for shoulder bolts under vertical load. Angular loading is not recommended

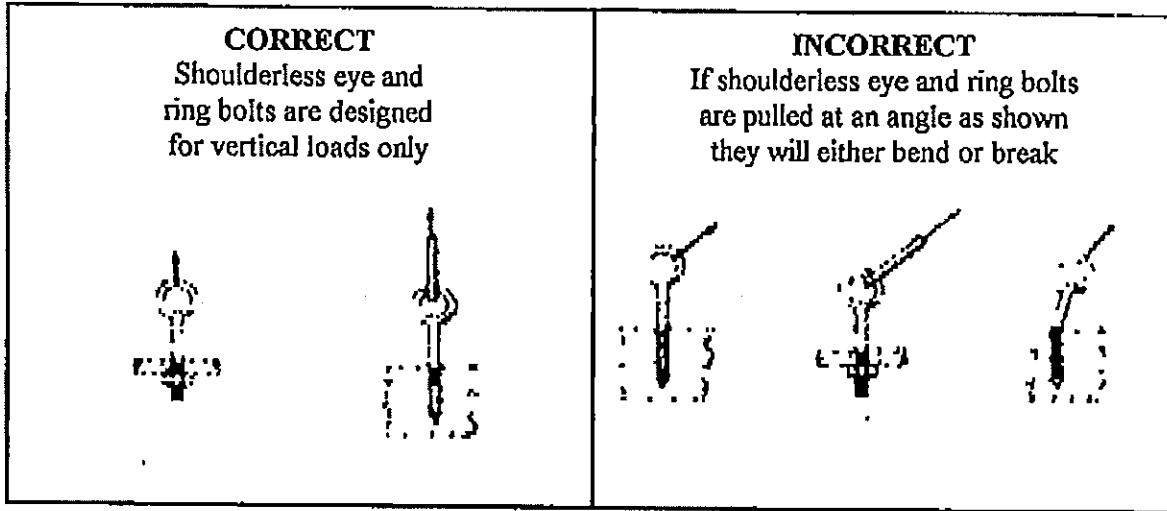
2. Use only forged steel eye bolts.

Shoulder Bolts

Correct for Shoulder Eye and Ring Bolts Providing loads are reduced to account for angular loading				Incorrect
				
nut must be properly torqued	ensure that bolt is tightened into place	ensure that tapped hole is deep enough	pack with washers to ensure that shoulder is firmly in contact with surface	Shoulder must be in full contact with surface

Safe Work Practices

Shoulderless Bolts



Safe Work Practices

Working Around Drill Equipment

Hazards

There are certain recognized hazards associated with work around the drill equipment and drill work zones. These include:

- Overhead towers and moving equipment
- Rotating mechanical devices such as chucks, winches, and drill rods
- Slippery conditions. Drill shack floors and surrounding areas are usually slippery due to water and drilling fluids.
- Exposed engine parts and devices may be hot or rotating.
- External exhaust pipes may be hot
- External and internal fuel containers
- Noise hazards
- Drillers moving equipment such as drill rods and tools

Precautions

The following precautions will be taken by all Logan Drilling Group employees:

- Check the entrance leading into the workplace
- Check for potential hazards associated with your surroundings
- Avoid unnecessary entrance and time in the drill shack
- Ensure your work area (core examination) is at a safe distance from the drill area
- Check equipment and ensure proper working order
- Ensure equipment is free from known hazards
- Wear CSA approved personal protective equipment including safety footwear, hard hats, safety glasses, and hearing protection.
- Do not assist drillers with drill equipment operation for safety and liability reasons.
- Ensure all personnel are working safely, including all people in your work area, both supervised and unsupervised.

SAFE WORK PRACTICES

Drill Rig Utilization

General

Do not attempt to exceed manufacturer's ratings of speed, force, torque, pressure, flow, etc. Only use the drill rig and tools for the purposes which they are intended and designed.

Drill Rig Alterations

General

Alterations to a drill rig or drilling tools should only be made by qualified personnel and only after consultation with the manufacturer.

SAFE WORK PRACTICES

Safety Standards for Electric Diamond Drills

- 1) Should a short circuit occur when more than ONE DRILL is in operation, diamond drillers may reset the MAIN BREAKER on the 550 volt line at the TRANSFORMER to determine which of the drills is shorting out. Should the BREAKER kick out twice on any one line, the BREAKER is to be left OPEN and the electrical department notified immediately. The electrical department MUST be notified of any BREAKER KICK OUT.
- 2) The POWER is to be TURNED OFF AND LOCKED OUT AT THE DRILL AND PUMP BEFORE THE MAIN BREAKER IS TRIPPED.
- 3) The Main Breaker is to be TRIPPED AND LOCKED OUT BEFORE A CABLE LEAD TO A DRILL IS PLUGGED IN or unplugged from a TRANSFORMER.
- 4) When a drill is to be left unattended, the drill and pump are to be turned off on the control switch panel. The main switches on the switchboard of the drill pump and lighting circuits are to be turned off. When turning on and off the main switches on the switchboard, always stand to the RIGHT of the SWITCH. NEVER STAND IN FRONT OF A SWITCH when turning it on or off.
- 5) The main control switch panel MUST ALWAYS be installed in a vertical position and in a dry place.
- 6) ALL POWER CABLE LEADS from the switch board to the drill MUST BE HUNG OVERHEAD.
- 7) TWO DRY CHEMICAL FIRE EXTINGUISHERS (cartridge type) MUST BE MAINTAINED in good working order at the entrance to the working area.
- 8) The working area is to be well illuminated.
- 9) Any auxiliary ventilation will be designated by Mine.
- 10) Lock out/Tag out procedures are to be followed at all times.

SAFE WORK PRACTICES

Electric Drills

- 1) Electrically powered drills shall be properly grounded before they are energized and put to use.
- 2) A ten pound dry chemical fire extinguisher shall be located within easy reach of the drill operator and another ten pound dry chemical fire extinguisher shall be located at the entrance to the drill station.
- 3) When auxiliary ventilation is required, it shall be activated before power is turned on to any electric drill, pump, or lights.
- 4) The ventilation must be kept on as long as the power is on for the drill, pumps, or lights.
- 5) A compressed air line, which connects to the main air supply line, must be installed to all locations using electric drills. This air line must be slightly opened at all times in case of a stench gas warning.

SAFE WORK PRACTICES

Travel in Remote Areas

Hazards associated with travel in remote areas include hypothermia, frostbite, accidental injury, and drowning. The following procedures should be followed for work in remote areas:

- If possible, conduct your work with an assistant or coordinate it with another member of the work crew. If this is not possible, carry a two-way radio or cellular telephone with sufficient range to contact help in an emergency.
- Dress appropriately for the conditions you may encounter. If you are working in the woods during big game season, wear a hunter orange vest and hat. Avoid wearing white or brown clothing at this time since it may be mistaken for a deer. It is generally a good idea to carry a compact rain suit in your pack, particularly in the spring and fall when a soaking could lead to hypothermia. In the winter, carry spare mitts and wool socks in a waterproof bag in your pack. In the summer, if you are working in an area where Lyme's disease has been reported, tuck your pant cuffs into your socks or wear pants with drawstring cuffs to prevent ticks from crawling up your legs.
- Carry basic survival equipment including a compass, knife, waterproof matches or butane lighter, a topographical map of the area you are working in, and a First Aid kit. In the summer, ensure that you carry enough insect repellent to last several days.
- Do not take unnecessary chances, particularly if you are alone. Handle tools and vehicles carefully to avoid debilitating accidents. Travel in hazardous areas such as steep slopes, frozen rivers, extensive blow downs, and quaking bogs should be avoided.
- Leave a travel plan with someone. The travel plan should include your destination and the time that you expect to return. If you are driving a vehicle, it is a good idea to include the make, model, colour, and license number of the vehicle in the travel plan. It is easily spotted from the air and is a good indicator of your general location. Contact the person with whom you have left your travel plan when you return.
- Make sure you have First Aid training so you can handle basic medical emergencies in the field.

SAFE WORK PRACTICES

Travel in Remote Areas Cont'd

- Jobs conducted in the far north may require carrying firearms for protection against polar or grizzly bears. Ensure that personnel using firearms have a valid Firearms Acquisition Certificate and firearms safety training. They should also be trained in the appropriate methods to be used during a bear encounter. The firearms used must be powerful enough to deal with bears. Please see Human-Animal Encounters (Page 3.58) for more information.
- Personnel working alone in a remote area must report to a supervisor at a predetermined time daily in accordance with the Forestry Act.
- Should the contact time not be established as required, the contact person is to initiate a call to the authorities to start rescue procedures from the point of last contact. A log is to be kept to record the last known position and the planned itinerary until the next call.

Safe Work Practices

Human – Animal Encounters

General

This section of the Logan Drilling Group Safety Manual is aimed at providing employees with practical information to:

- Avoid bears and other potentially dangerous animals
- Prevent damage to a camp
- Prevent injuries
- Avoid harming wildlife

Precautions

The following precautions must be taken when working in areas known to be inhabited by bears and other potentially dangerous animals:

- Delegate a person(s) to watch for bears and other animals
- Select a route that is open and well cleared (if possible)
- Be aware of the wind direction and walk with the wind whenever you can. Don't investigate bad smells, as bears are usually attracted to them
- Have binoculars readily available to help spot bears from a safe distance.

When designing a camp or rest spot:

- Avoid sites with a history of bear problems. Check with the Wildlife Officer and local residents to obtain details and advice
- Keep all sleeping tents together and ensure they are situated away from kitchen, food storage and garbage collection or disposal areas

How to React to a Bear Encounter

Bears normally avoid encounters with humans. However, there is always a possibility you may surprise a bear at close range or meet a bear which is not afraid of people. There is no guaranteed method for reacting to a bear encounter because each encounter is different. However, the following guidelines can help minimize the risk:

- Assess the situation and think about your surroundings before you react
- Try to stay calm and keep the bear in sight at all times
- If traveling in a group, stay close together

SAFE WORK PRACTICES

Human – Animal Encounters Cont'd

- Do not run unless you are reasonably sure you can reach a safe place before the bear catches you. Running may invite the bear to pursue you and a bear can run faster than a human.
- Continue to walk slowly in the opposite direction from the bear.
- In close confrontations, the bear is likely to feel threatened. Its natural tendency is to remove the threat. Try to act as non-threatening as possible, particularly if it is an adult bear or a female with young. Do not make direct eye contact.
- Give the bear an opportunity to leave, making sure it has an escape route.

SAFE WORK PRACTICES

Utility Clearance

- A variety of underground and aboveground utilities (e.g. electricity, water and sewer lines, pipelines, and railways) may be encountered during the field investigations.
- Field personnel involved in intrusive activities (drilling supervisors, technicians) in conjunction with the Field Coordinator will be responsible for confirming that their investigation areas have been cleared at least 24 hours prior to initiating field work in new areas. Field personnel will check with the Field Coordinator prior to proceeding with subsurface investigations in any new and/or previously unmarked/unstaked locations. In such new areas, the existence of known utilities will be checked by the Field Coordinator who will determine whether there is any need for further reconnaissance and/or clearance work.
- Field Coordinator will obtain authorization from utility company prior to commencement of work.
- If unknown utilities or other unknowns are contacted during the investigation, work will stop and the Field Coordinator will be contacted prior to proceeding with further work at that specific location. The locations of such utilities or sources will be carefully marked and will be included in subsequent site plans.
- The Field Coordinator will be responsible to contact the appropriate rail company to obtain clearance for working adjacent to the railway at least 24 hours prior to work. Field personnel will not advance to additional work near railways until notification of proper clearance is obtained.

Safe Work Practices

Work Over Water (Barges, Boats, Bridges, etc.)

The Nova Scotia Construction Safety Regulations contains the following section (332) for work on vessels:

1. Where there is water at a project into which a workman might fall with risk of drowning, the employer shall provide the rescue equipment prescribed by subsection (2), ready for use.
2. The rescue equipment shall consist of a combination of one or more of the following measures as approved by the inspector:
 - (a) *A boat in operating condition and equipped with*
 - (i) *A ring buoy attached to fifty feet of three eighths of an inch manila or equal rope, and*
 - (ii) *a boat hook*
 - (b) *A line across the water to which there is attached,*
 - (i) *floating planks at close intervals, or*
 - (ii) *other floating objects capable of providing support for a persons in water*
 - (c) *A life vest for each workman exposed to the hazard of falling into the water.*

The Canadian Coast Guard (part of the Federal Dept. of Transport) has specific minimum requirements for safety equipment on board vessels of various lengths. The requirements are outlined in the Safe Boating Guide, which should be distributed to all Logan Drilling Group personnel working over water.

For Logan Drilling Group investigations, the minimum safety requirements for working over water are:

1. A boat in operating condition (for both logistics and safety), containing at least the minimum safety equipment
2. A ring buoy attached to fifty feet of rope and mounted on the work vessel or platform, if other than a boat
3. A life vest for everybody working in any area where they could fall into the water, this should include subcontractors as well.

Safe Work Practices

Work Over Water (Barges, Boats, Bridges, etc.) Cont'd

In Addition:

1. Floater suits or jackets will be available upon request
2. Cellular telephone and/or VHF radio communication systems will be available for work on board the vessel.

Logan Drilling Group will conform to the Nova Scotia Construction Safety Regulations section (333) when working on bridges over water:

1. *A safety belt or life net shall be provided for the use of a workman employed on a bridge more than 50 feet above water or land where*
 - (a) *There is danger of the workman falling from the structure*
 - (b) *No scaffold or similar device is provided to prevent his falling from this working position.*
2. *Subsection 1 does not apply where the work of placing structural members prevents the use of such protective measures.*

This activity will also comply with the **Fall Restraint and Scaffolding Regulations** under the NSOHSA (Section 1.1).

Safe Work Practices

Boat Safety

Working or Living on a Boat

Logan Drilling Group employees may be required to work and/or live onboard a vessel. While staying and working onboard a vessel, Logan Drilling Group employees must comply with all vessel safety procedures established by the Captain. The Captain's authority must not be challenged on matters related to safety. Employees must:

- Observe and comply with the vessel's standing orders
- Attend onboard orientations provided by the Captain or his/her designate
- Be aware of their surroundings and ask for an orientation to the vessel if one is not provided
- Not enter into restricted areas on the vessel
- No smoke in restricted areas
- Note all emergency exits, understand emergency procedures and participate in emergency drills
- Use personal flotation devices as required by the Captain or their supervisor
- Use personal protective equipment as required by the Captain or their supervisor

In keeping with Section 41(2) of the Occupational Health and Safety Regulations, Logan Drilling Group employees must observe the following:

- The Small Vessel Regulations made pursuant to the Canada Shipping Act and those amendments which apply to boats used to transfer workers.
- Details of maximum load and horsepower for safe operations when a boat is used to transfer workers. It is the employee's responsibility to post these details in a conspicuous location on the boat. No worker will operate the boat in excess of these limits.
- When adverse conditions of weather and water or other conditions prevail that might endanger workers, the employer or worker in charge of the boat must exercise caution by decreasing the speed of the boat, adjusting the load or taking other appropriate action.
- Have personal flotation devices readily available for each worker transported by boat. Personal flotation devices must be worn when adverse weather, water or other conditions could create a hazardous situation, or when workers are transported in open boats or on rafts, barges or similar equipment.
- Ensure power driven boats used for transporting workers have a foam, carbon dioxide, or dry chemical type fire extinguisher which is readily available for use.

SAFE WORK PRACTICES

Travel By Boat

Travel by boat can be safely carried out by complying with safe boating practices and avoiding the common risks associated with boating. Risks of drowning and hypothermia can be minimized by:

- Ensuring all passengers in the boat are supplied with a Canadian Coastguard/DOT approved personal flotation device.
- Ensuring passengers wear flotation suits when operating in low water temperatures.
- Equipping small power boats with oars or paddles and a bailer.
- Equipping canoes with extra paddles.
- Ensuring all personnel working in boats have approved first aid training.
- Ensuring all personnel operating boats receive small craft safety training by a recognized service provider in small craft safety, such as the Canadian Red Cross.
- Ensuring a travel plan is left with the supervisor or project officer, including an expected time of return. The holder of the travel plan should be contacted upon return.

SAFE WORK PRACTICES

Sediment Sampling

Sediment samples may be collected from rivers and streams by wading into the water body. Such activities will require a minimum of two people per sampling team, with at least one person staying on-shore.

Required safety equipment for such sampling includes chest waders and personal flotation devices. For fast moving streams and rivers, the person sampling is required to be harnessed to a tree, large boulder, or other immovable object on shore. The on shore personnel are required to have with them at all times a ring buoy attached to fifty feet of rope and preferably attached to an immovable object on shore.

SAFE WORK PRACTICES

Skidders Prepare for Safe Operation

General

This safety manual is intended to point out some of the basic safety situations which may be encountered during the normal operation and maintenance of your skidder and to suggest possible ways of dealing with these conditions.

Additional precautions may be necessary, depending on attachments used and conditions at the drill site. The manufacturer has no direct control over machine application, operation, inspection, lubrication, or maintenance. Therefore, it is YOUR responsibility to use good safety practices in these areas.

Know Your Machine

Know your skidder. Know how to operate all equipment on your machine. Know the purpose of all the controls, gauges, and indicators. Know the rated load capacity, speed range, braking and steering characteristics, turning radius, and operating clearances. Keep in mind that rain, snow, ice, loose gravel, soft ground, etc. change the operating capabilities of your machine.

Read and if you don't understand, have someone explain the meaning of the DANGER, WARNING, CAUTION, and other signs on your machine.

Read the manufacturer's operator's manual before starting the engine. If there is manual with the machine – get one and study it before you start work.

Use all available protective and safety devices

Keep all protective devices in place and tightly fastened. Make certain all guards, screens or panels, and safety signs are installed on the skidder as provided by the manufacturer.

SAFE WORK PRACTICES

Skidders Prepare for Safe Operation Cont'd

Your skidder may be equipped with:

- A seat belt or other type of restraint.
- Falling object protective structure and roll over protective structure.
- Side, front, and rear shields, screens, or doors.
- Warning lights and devices

Know which devices are required for protection in your operation. Never remove or modify any safety equipment.

Warning: All operators should be trained and receive proper instructions before operating a skidder. For your safety, warnings are on the skidder and in the manufacturer's manual. Failure to obey warnings can cause injury or death.

Check the equipment

Before you begin your workday, you should inspect your machine and have all systems in good operational condition. Do not operate the machine until all deficiencies are corrected.

- Check fire extinguishers and fire suppression system (if so equipped). Make sure it is fully charged and in good working order.
- Check for broken, missing, damaged, or loose parts. Make necessary repairs.
- Check the tires for cuts, bulges, and correct pressure. Replace badly worn or damaged tires.
- Check service and parking brakes for proper operation. Adjust as necessary.
- Perform all maintenance procedures outlined by the manufacturer of your machine.
- Check for and clean out trash buildup, especially in engine compartment, the underside of machine, and around rotating components.
- Check winch, cables, chokers, grapple and blade and adjust or replace as necessary.
- Check fairlead and rollers. Repair as necessary.
- Check the fuel and hydraulic system. Have any leaks repaired and fill to required level.

Safe Work Practices

Skidders

Prepare for Safe Operation Cont'd.

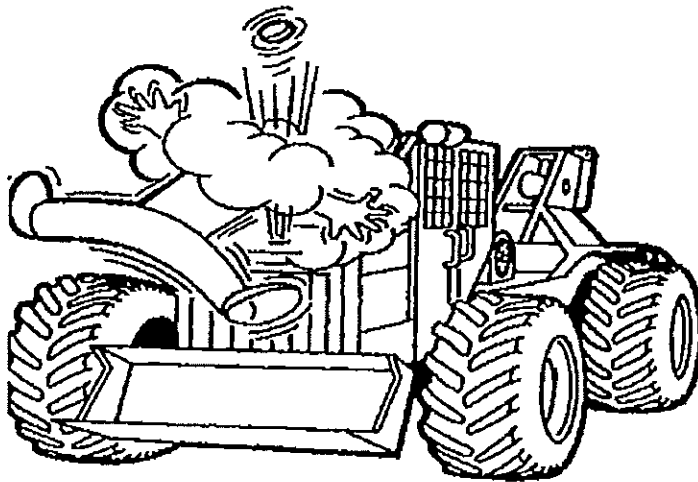
Warning: Diesel fuel or hydraulic fluid under pressure can penetrate the skin and cause serious personal injury, blindness or death. If any fluid is injected into the skin it must be surgically removed within a few hours by a doctor familiar with treating this type of injury. Fluid leaks under pressure may not be visible. When searching for leaks, **NEVER** use your hand, use a piece of cardboard or wood. Wear work gloves and keep your hands well away from possible source of leakage. Wear safety goggles for eye protection.

Check engine cooling system when it is cool and add coolant as required

Warning: If the radiator is hot, permit it to cool before checking the level.

Keep radiator clean and free of oil and grease and trash build up.

WRONG



SAFE WORK PRACTICES

Skidders Prepare for Safe Operation Cont'd

Clean Up

Keep work surfaces and engine compartments clean and free of debris.

Always lower the blade and other equipment or loads to the ground, engage the parking brake, and turn off the engine before cleaning the machine.

Clean handholds, steps, pedals, and floor. Remove grease or oil. Brush away dust or mud. In the winter, scrape away snow and ice.

Remember – slippery surfaces can be hazardous.

Remove or put away containers, tools, lunch buckets, chains, cables, and hooks. Do not carry loose items in the operator's compartment.

Check the Work Area

Ground Level: Check drill area and skidding trails for hazards. Inspect the surface over which you will travel so that you can avoid hazards. Look for stumps, rocks, holes, drop-offs, and slide areas. Look for steep slopes and gullies, brush piles, and excessive debris. Be aware of springs, mud holes, creeks, and standing water.

Overhead: Check overhead hazards and make sure there is sufficient clearance under electric power and phone lines and other overhead obstructions. Avoid hangers and snags.

Safe Work Practices

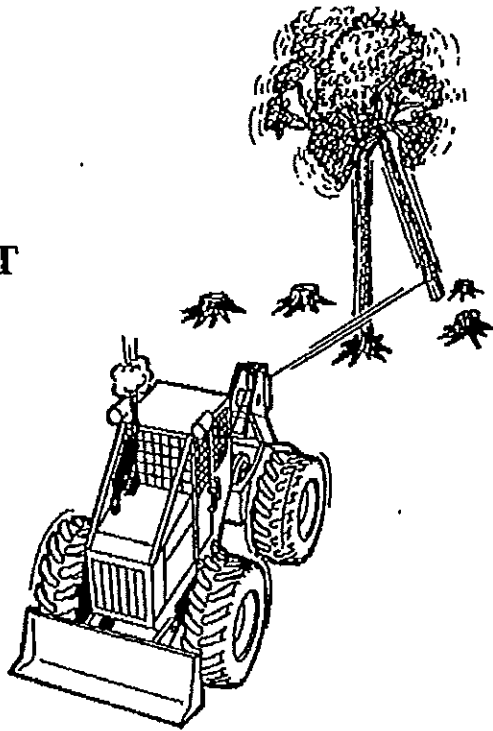
Skidders

Prepare for Safe Operation Cont'd.

Warning: Never approach electric power lines with any part of your machine unless all local, provincial and federal (OHSA) required safety precautions have been taken. Use extreme caution because high voltage lines can arc without contact.

Warning: Snags (dead standing trees) and hangers (cut trees prevented from falling by leaning against other trees) are extreme hazards and must be brought down immediately in a safe manner (check with your supervisor for instructions)

RIGHT



Safe Work Practices

Skidders

Prepare for Safe Operation Cont'd.

Use Caution When Fuelling

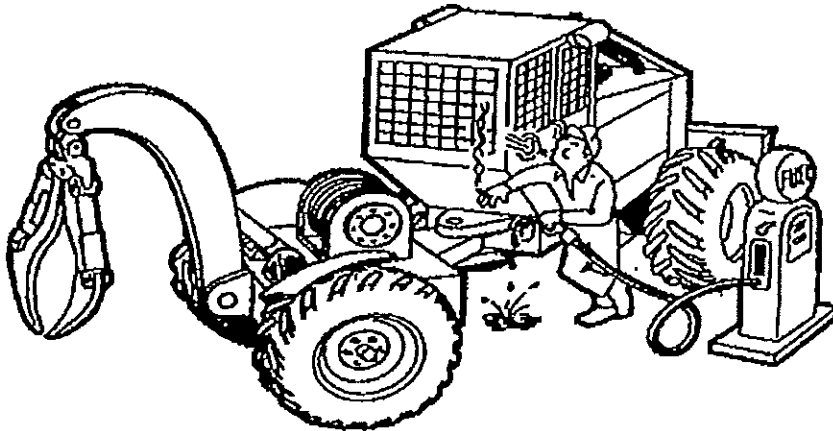
Never fill the fuel tank with the engine running, while you, or anyone nearby is smoking or when near an open flame.

Avoid overfilling the tank or spilling fuel. If fuel is spilled, clean it up immediately.

Be sure to use the correct type and grade of fuel.

Ground the fuel funnel or nozzle against the filler neck to prevent sparks and be sure to replace the fuel tank cap.

WRONG



Safe Work Practices

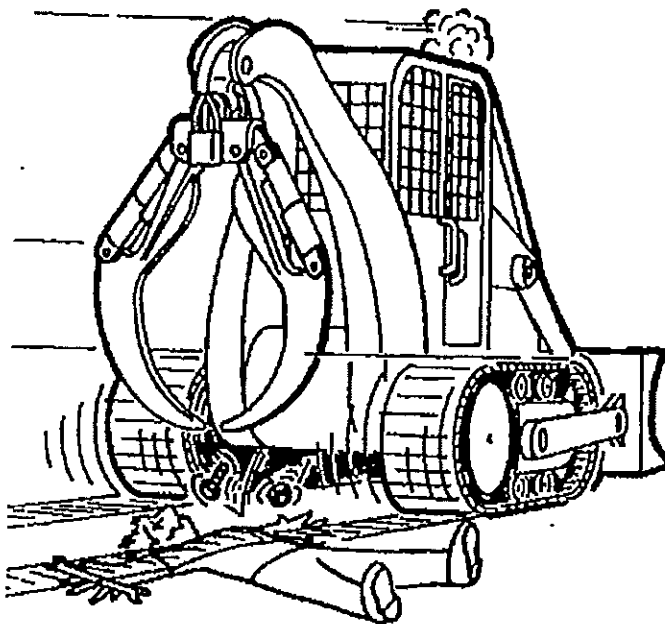
Skidders

Prepare for Safe Operation Cont'd.

Look Out For Others

Before starting, walk completely around your machine. Make sure no one is under it, on it or close to it. Let other workers and bystanders know you are starting up and don't start until everyone is clear of the machine.

WRONG



Safe Work Practices

Skidders Start Safely

Mount Properly

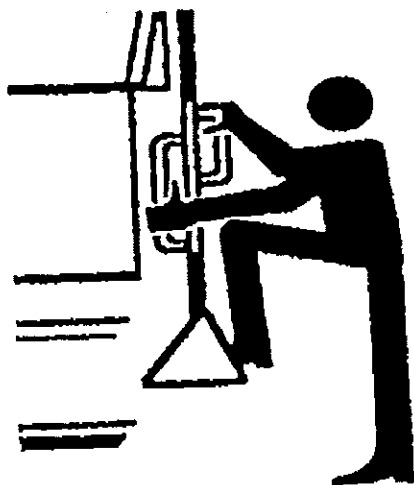
Always use “three point support” with the machine, and face the machine while you enter or leave it (“Three point support” means that 3 out of 4 arms and legs are in contact with the machine at all times during mount and dismount.)

Clean your shoes and wipe your hands before attempting to climb on the machine. Use handholds, ladders or steps (as provided) when mounting.

Never use control levers as a hand hold when climbing on or off. Never step on foot controls when mounting or climbing off.

Never attempt to mount or dismount a moving machine.

RIGHT



Safe Work Practices

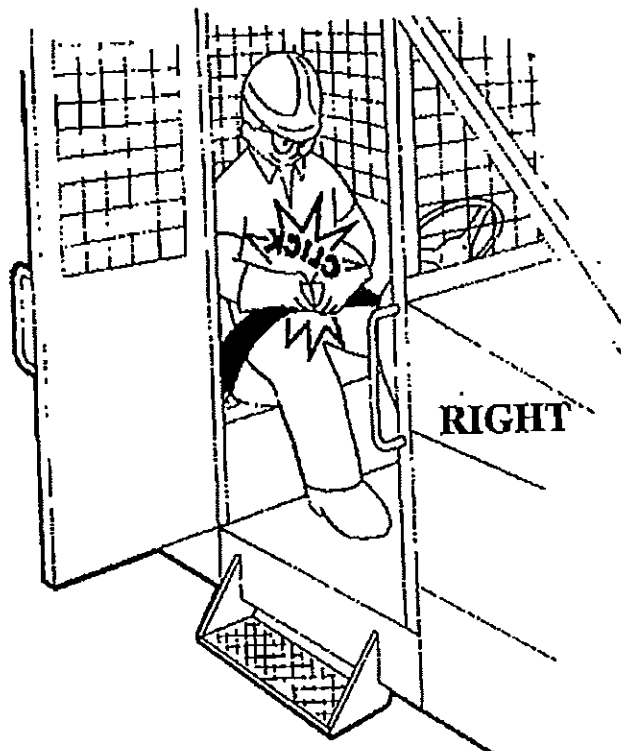
Skidders Start Safely Cont'd.

Start Safely

Adjust the seat, fasten the seat belt/operator restraint, be certain the blade is on the ground, check that the parking brake is engaged and that all controls are in neutral position before attempting to start the engine.

Warning: Start the engine from the operator's seat only. Never attempt to start the engine by shorting across starter terminals. The machine will start in gear if neutral-start circuitry is bypassed. This could cause machine to move suddenly and cause serious injury or death to anyone in its path.

Never start up until you have warned others in the area.



Safe Work Practices

Skidders Start Safely Cont'd.

Follow Recommended Starting Procedures

Follow the starting procedures recommended in the manufacturer's manual of your skidder. Check all instruments, gauges and indicator lights.

Check for instructions in the manufacturer's manual for cold weather starting.

Follow the manufacturer's instructions for use of starting fluids. Don't carry loose cans of starting fluid on the machine while operating.

Warning: Starting fluids are highly flammable and explosive.

When starting your equipment in an enclosed space, make sure there is enough ventilation.

Warning: Exhaust fumes can kill.

WRONG



Safe Work Practices

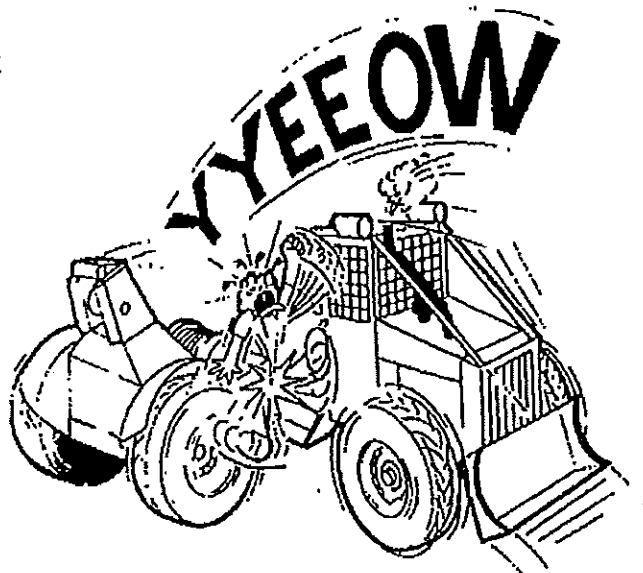
Skidders Start Safely Cont'd.

Test the Controls

After starting, recheck all indicators, gauges and lights. Check the horn and backup alarm (if provided). Make sure everything is functioning correctly. Before moving, make sure the steering frame lock has been disengaged, release the parking brake and raise the dozer blade. If the skidder does not respond correctly when each control is operated, do not use the machine until it is repaired.

Warning: Do not allow anyone to stand between the front and rear wheels. This is a crush point and if the articulated steering is activated, severe injury or death could occur.

WRONG



Safe Work Practices

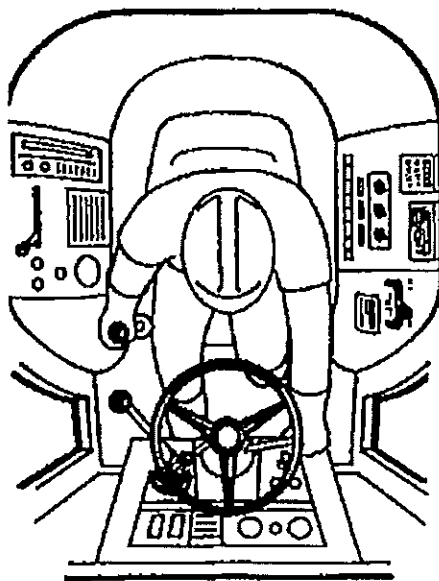
Skidders Start Safely Cont'd.

If your unit is equipped with air brakes, DO NOT attempt to move the skidder until the recommended air pressure is reached.

Warning: Be certain you can control both speed and direction before moving.

Move slowly until you are certain everything is operating properly. After starting, recheck the steering, right and left. Be certain you have full steering and brake control.

RIGHT



Safe Work Practices

Skidders Work Safely

Make the Right Start

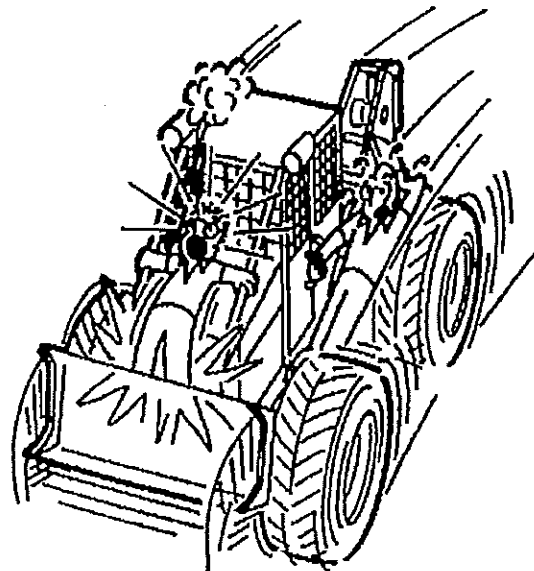
Warning: Your skidder is a one-person machine. Never permit anyone to ride on your machine.

Be alert. Be aware of what is going on around you. Maintain a safe operating distance between your machine and other equipment and personnel.

If you are working with a choke setter, be sure the setter is clear of your work area before winching. When working with a choke setter, remember the setter is the boss. Do nothing on your own. Follow the setter's direction and respond only to the setters signals.

Warning: You must know the exact meaning of all hand signals used in your operation. Failure to correctly respond to a hand signal could result in severe injury or death for you or those around you.

WRONG



Safe Work Practices

Skidders Work Safely Cont'd.

Travelling Empty

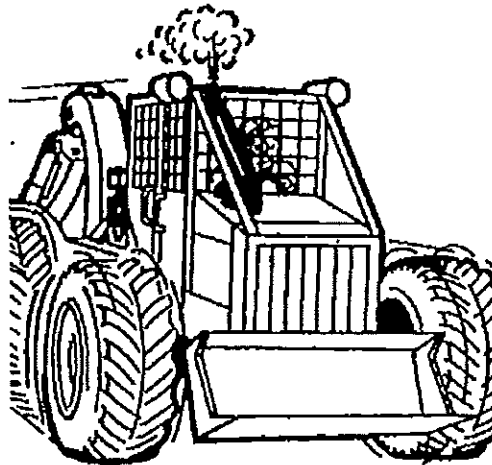
Know the drill site and surrounding area.

Keep roads, secondary trails and drill area clear of debris and in good level condition. When travelling empty, pause to scrape away debris, fill holes and level ruts with the blade.

Keep the blade up, the mainline, chokers and/or grapples off the ground, high enough to clear obstructions and prevent swinging, whipping or snagging.

Match your travel speed to the traffic, weather and ground conditions.

RIGHT



Warning: When empty, excessive ground speed can cause your skidder to bounce sufficiently for you to lose control.

Safe Work Practices

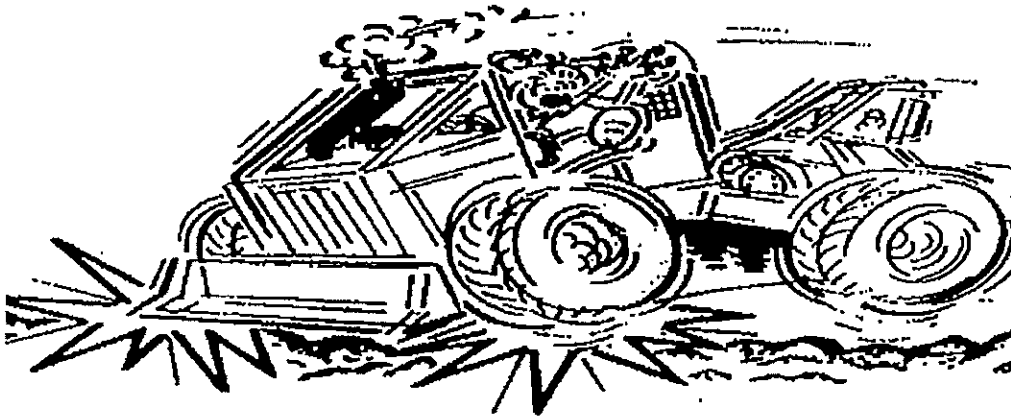
Skidders Work Safely Cont'd.

Cable Skidding

Warning: Do not operate in areas where skidder will not be in a stable condition. Stay on skid trails as much as possible especially on steep terrain.

Always give a loaded machine the right-of-way

WRONG



Plan your skidding operation to avoid the drill area. If you must enter this area, sound your horn and make sure everyone is aware of your presence.

When manoeuvring the skidder into position, keep your machine on a flat level area, if possible.

SAFE WORK PRACTICES

Skidders Work Safely Cont'd

Warning: NEVER travel across a steep slope or side hill either empty or loaded.

Warning: If you travel across a moderate slope, never attempt to make a turn uphill. You could be in imminent danger of tipping over.

If you must load on a slope, travel only uphill or downhill to reach your loading position.

Warning: If an object is in an unstable condition (especially on a slope), do not approach it from the downhill side. Use your skidder blade to push it into a stable position or position your machine on the up-hill side and attach the choker to the up-hill end of the object.

Warning: Do not work directly below a skidder parked on a grade. Park the skidder to one side, set the skidder wheels against a rock, tree, or other secure object. Engage the parking brake, lower the dozer blade to the ground, and put the transmission in neutral before dismounting. After completing work on the ground, align the skidder with the load before winching it.

Warning: You must wear your safety gloves when handling cable, attaching chokers, or handling logs. Broken cable strands, splinters, and slivers can cause severe hand injuries.

Warning: Always use the parking brake to secure the machine before dismounting. Never use other brakes as a substitute for the parking brake. A brake lock is only intended to hold the machine in position when winching in.

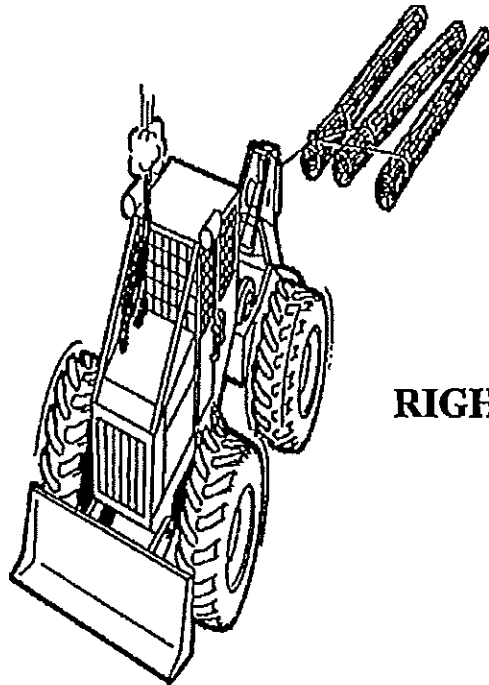
Safe Work Practices

Skidders Work Safely Cont'd.

Warning: Never operate the winch from the ground. Operate it only from the operator's seat. Severe injury or death could result from the uncontrolled movement of an object or the whipping action of a broken cable.

Warning: Do not winch in a load at a sharp angle. This could cause your machine to tip over.

Keep your machine lined up (front to rear) in a straight line with the mainline (cable) and winch in smoothly. Winch the load up to the butt plate and raise the log ends to clear the ground and obstacles in your path. If necessary, ease the skidder forward as you reel in to assist in bunching the load.



RIGHT

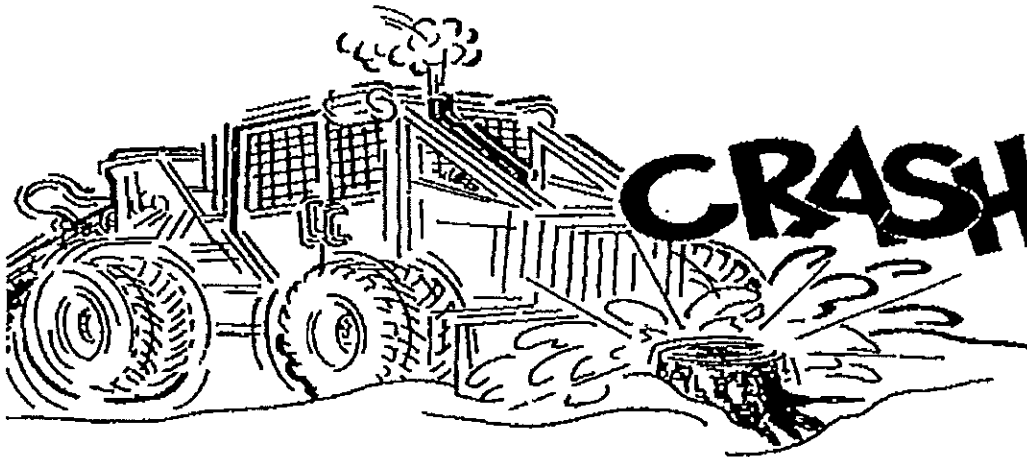
If an object gets trapped in the load, stop winching, and either drop the object or place a choker on it.

Safe Work Practices

Skidders Work Safely Cont'd.

Warning: When operating in deep snow, use extreme caution. Many hazards may be hidden from sight.

WRONG



SAFE WORK PRACTICES

Skidders Work Safely Cont'd

Travelling Loaded (with cable)

Warning: Do not overload your skidder. Overloading can make a machine unstable and create a roll-over hazard.

Adjust the carrying height of the load to suit the skidding conditions.

If you carry the load too high, it may sway or bump against your machine.

Always travel straight up or down a steep slope – NEVER across it.

Exercise caution when going DOWN a steep slope. Engage a low gear. It may be necessary to lower the load to act as a drag and to keep the load from slamming into the rear of the skidder.

When going UP a steep slope, it may be necessary to lower the load and pay out cable until the skidder reaches a level spot. Then reel in the load and proceed.

When skidding over soft, boggy-type ground, lower the load and pay (reel) out cable. When the skidder reaches solid footing, reel in the load.

Drive defensively: Plan your route to avoid brush piles, stumps, rocks, and other obstacles. Go around them rather than over them. Avoid snags, hangers, limbs, and sapplings which can enter the operator's compartment.

Warning: If you hang up the load on an obstacle, your skidder may come to a sudden stop so always keep your seat belt/operator restraint fastened tightly.

Avoid sharp turns. The rear end of your load could swing wildly out of control.

Keep your speed down when travelling with a heavy load. Maintain control at all times.

Warning: Never drive under or even near a snag or hanger. Such practices are extremely dangerous and could result in serious injury or death.

Safe Work Practices

Skidders Work Safely Cont'd.

The Drill Area

When approaching the drill area, be extremely cautious. This is usually the busiest and most congested area of the drill operation.

Look out for personnel on foot. Warn them of your presence. Watch for other machines travelling in your immediate area.

When you reach the drill, pull up parallel to an existing pile but at a safe distance from it. Lower the load briskly to separate chokers.

If a choke setter is available, the setter will unfasten your chokers. Follow the setter's signals. If a choker cannot be freed, the setter will signal you to move your machine forward.

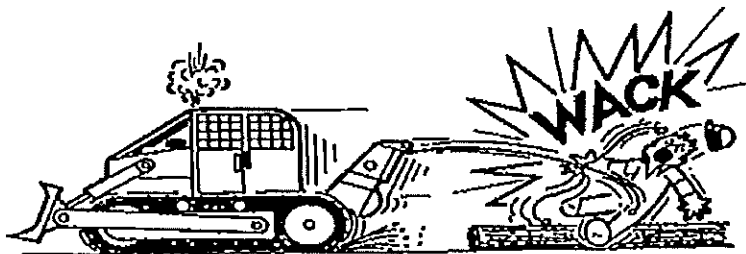
Warning: Never move your machine until the choke setter is well clear of the danger area.

If you are unfastening your own chokers, lower the blade to the ground, place transmission in neutral and engage parking brake before leaving the operator's seat.

When all chokers are unhooked, return to the operator's seat and fasten your seat belt/operator restraint before winching in the mainline (cable) rigging.

Warning: When reeling in, make sure all personnel are far enough away so they are in no danger from rolling logs or whipping cables. Reel in slowly until mainline (cable) and chokers are in the travel position.

WRONG



SAFE WORK PRACTICES

Skidders Work Safely Cont'd

Grapple Skidding

Warning: Observe all of the safety precautions under “Cable Skidding”. In addition, there are a number of other safety precautions to be considered when using a grapple.

Travelling – Loaded (with grapples)

When travelling with a loaded grapple, observe all precautions noted under Travelling Loaded.

The load must be securely within the belly of the grapple, not clamped into the grapple tips like a pair of ice tongs. When backing up with a load, be very cautious. The load must be straight in line with the skidder. Use the butt place or base of the boom to push the load.

If the load starts to angle out of control, stop, pull forward to realign the skidder and load. Then proceed to back up again.

Warning: Back up slowly and cautiously. If a load strikes an obstacle, it could be pushed forward through the grapple and rammed into the operator’s cab.

As in cable skidding, the load may be lowered with the grapple to act as a brake when travelling down a steep slope. Periodically, check and adjust the grapple snubber to prevent fore, aft, and side-to-side swinging when grapple is empty. Keep grapple tongs closed when travelling empty to prevent striking tires or machine.

Safe Work Practices

Skidders Work Safely Cont'd.

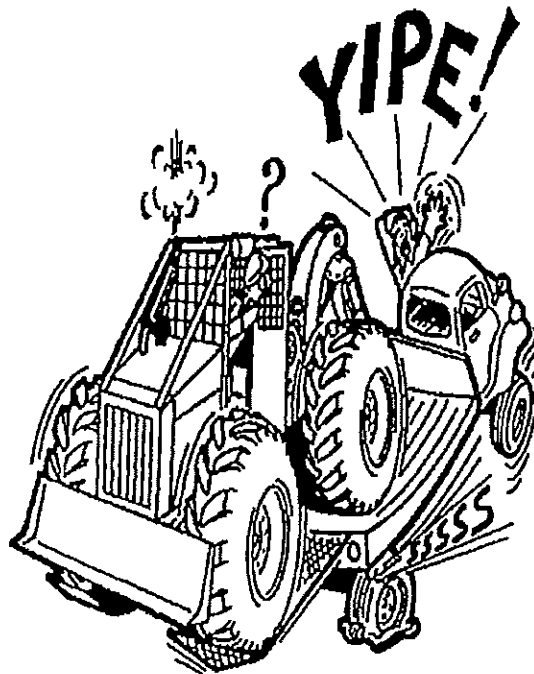
Transporting Procedures

When transporting a skidder on a truck or trailer, know the overall height to avoid contacting overhead obstructions such as bridges, electric power lines, etc. If the machine is wider than the truck, make sure it is appropriately flagged according to local traffic regulations.

Refer to manufacturer's manual when preparing your skidder for transport

Refer to the manufacturer's manual for loading procedures

Check truck and ramp capacities. Make sure there are sufficient tie downs, that blocks are in place and blade and grapples are lowered. Connect the frame locking bar (if so equipped) for transporting.



WRONG

SAFE WORK PRACTICES

Skidders Work Safely Cont'd

Rules of the Road

If the skidder is to be driven over the road, refer to the manufacturer's manual for instructions. Be sure all local and provincial laws and regulations are followed.

Make sure clearance flags, all lights and warning signs are in place and visible. Make sure the "Slow Moving Vehicle" emblem is visible to any vehicle approaching from the rear.

When travelling on public roads or streets, obey all local traffic regulations appropriate to skidder use and local classification. Make sure the blade is in travel position and that winch cable and chokers are properly secured. With grapple machines, raise the grapple high enough to clear any obstacle. Prevent it from swinging by tightening the snubber assembly or by securing the grapple to the machine with cable or chains. Approach intersections with caution, observe speed, and traffic control signs. Don't speed. Avoid panic stops and sharp turns.

Safe Work Practices

Skidders Park Safely

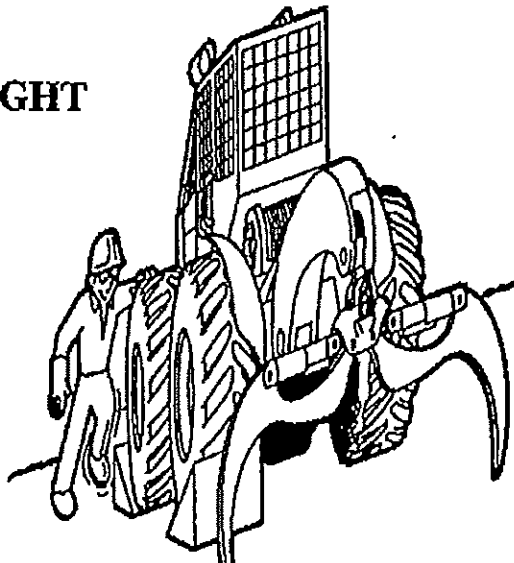
Safe Parking and Shutdown

Park your machine in a designated area or out-of-traffic, preferably on level ground. Lower dozer blade and grapples to the ground. At night, pull off the road and set up flares or reflectors.

Correct shutdown is important to safe operation. Refer to your manufacturer's manuals. Follow these general steps.

- Come to a full stop.
- Engage parking brake.
- Place controls in neutral or park.
- Lower blade, grapples and other equipment to the ground.
- Idle engine for gradual cooling.
- Shut off engine.
- Cycle hydraulic controls to eliminate residual pressure.
- Remove ignition key. Shutdown at the electric master disconnect (if so equipped).
- Lock anti-vandalism covers and closures.
- Dismount.
- If on a slope or incline, park at an angle and block the wheels.
- Check for and clean out trash build up especially in engine compartment, underside of machine, and around rotating components.

RIGHT



Safe Work Practices

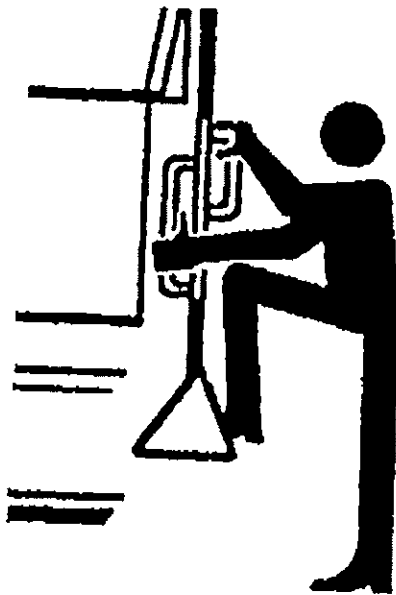
Skidders Park Safely Cont'd.

Safe Dismounting

Never dismount from moving equipment. Observe proper shutdown practices before dismounting. Check for slippery steps and handholds.

Dismount carefully using three point support facing the machine. Keep your feet and hands away from the controls. Never jump off the machine.

RIGHT



Safe Work Practices

Skidders Perform Maintenance Safely

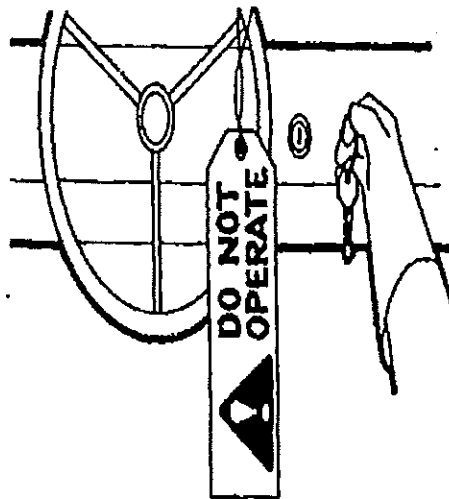
Before You Do Anything Else

If your skidder becomes disabled, attach a warning tag to the steering wheel. If the equipment should not be started, remove the ignition key and shut down at the electric master disconnect (if so equipped).

Before you do any maintenance or repair work, get permission. Do not perform any maintenance without authorization.

If you have been authorized to do maintenance, read the service manuals. Study the instructions; check the lubrication charts; examine all the instruction messages on the machine.

RIGHT



Safe Work Practices

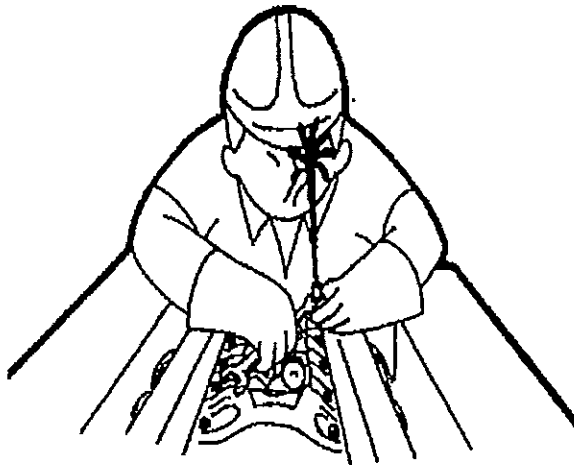
Skidders Perform Maintenance Safely Cont'd.

Prepare Yourself - Protect Your Eyes

Safety glasses or goggles are always needed for eye protection from electric arcs from shorts, fluids under pressure, and flying debris or loose material when engine is running or when tools are used.

Wear a face-shield when you disassemble spring loaded components or work with battery acid.
Wear a helmet or goggles with special lenses when you weld or cut with a torch.

WRONG



Prepare Yourself - Wear Safe Clothing and Equipment

Wear all the protective clothing the job requires. Wear a rubber apron and rubber gloves when working with corrosives. Wear gloves and safety shoes when handling wooden blocks, sharp-edged metal or cables.

Never wear a watch or ring or a necktie around machinery. Keep your feet, hands, clothing and your hair away from moving parts.

Safe Work Practices

Skidders

Perform Maintenance Safely Cont'd.

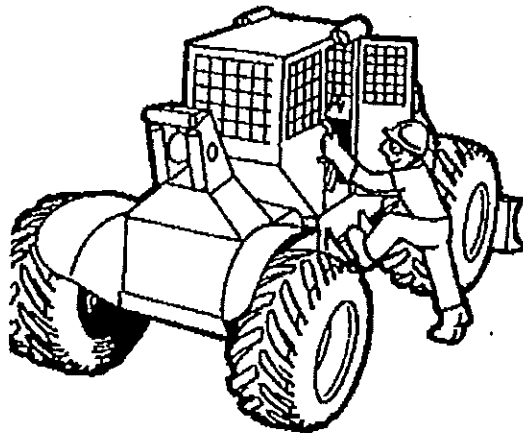
Prepare the Work Area

Choose a clean, level work area. Make sure you have sufficient room. Check clearances. Make certain there is adequate light and ventilation. Clean the walking and working surfaces. Remove oil, grease, and water to eliminate slippery areas. Sand slippery areas.

Make sure you have the correct tools. Keep your tools clean. Inspect power cords. Make sure jacks and hoists are in good condition and are of adequate capacity. Make use of mechanical assists. Use proper lifting methods. Save your back.

Prepare the Machine

RIGHT



Warning: Start the engine from the operator's seat only. Never attempt to start the engine by shorting across starter terminals. The machine will start in gear if neutral-start circuitry is bypassed. This could cause machine to move suddenly and cause serious injury or death to anyone in its path.

Safe Work Practices

Skidders

Perform Maintenance Safely Cont'd.

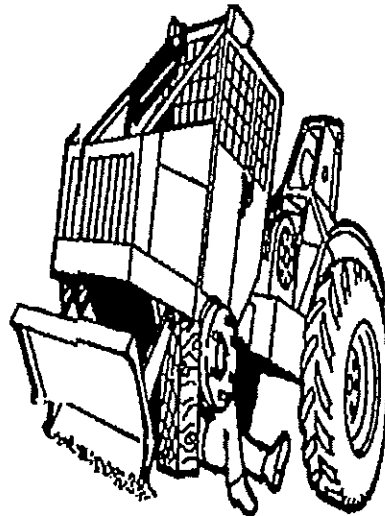
Move the machine onto a level surface. Shut off the engine. (See shutdown procedure). Securely block all raised attachments or lower them to the ground. Place controls in neutral. Release all hydraulic pressure.

Warning: Never work on machinery with the engine running unless so instructed by the manufacturer's operator's or service manuals, for specified service items. Never operate any type of engine without proper ventilation - exhaust fumes can kill.

Block the wheels. Disconnect the battery and remove the ignition key. Connect the frame locking bar. Remove only guards or covers that are necessary to provide access. Wipe away excess grease and oil. Never leave guards off or access doors open when unattended. Keep bystanders away if access doors are open.

Make certain all guards, screens or panels, and safety signs are reinstalled on the skidder as recommended by the manufacturer.

RIGHT



Use Jacks and Hoists Carefully

When working beneath raised equipment, always use blocks, jack-stands or other rigid and stable supports. Never use jacks, blade or grapple attachments to hold machine in a raised position. Follow manufacturer's recommendations when using jacks and hoists and always be sure they are adequately supported and of adequate capacity.

Make sure the hoists or jacks are in good repair. Never use jacks with cracked, bent or twisted parts. Never use frayed, twisted or pinched cables. Never use bent or distorted hooks or chains.

SAFE WORK PRACTICES

Skidders Perform Maintenance Safely Cont'd

Welding Cautions

Never weld on winch, grapple support frame, ROPS, or overhead guards without the consent of the manufacturer of your skidder. These might be made of alloys or materials which require special welding techniques or have a design which should not have welded repairs.

Before starting to weld, thoroughly clean machine, removing all accumulations of combustible debris and spilled fuel, oil, or grease. Have a charged fire extinguisher ready and know how to use it.

Roll Over Protective Structure (ROPS) Safety Precautions

Do not remove the ROPS except when necessary for service. Instal the ROPS correctly before you operate the machine again.

Do not modify ROPS in any manner. Unauthorized modifications such as welding, drilling, cutting, or adding attachments could weaken the structure and reduce your protection. Replace ROPS if subjected to rollover or damage. Do not attempt to repair the ROPS. See the manufacturer's manual(s) for this machine for complete instructions and inspection requirements.

SAFE WORK PRACTICES

Skidders Perform Maintenance Safely Cont'd

Avoid Fire and Explosion Hazards

Shut off the engine and electrical equipment while filling the fuel tank. Use extra caution when fueling a hot engine. Always ground the fuel nozzle against the filler neck to avoid sparks.

Handle all solvents and dry chemicals according to procedures identified on manufacturer's containers. Work in a well-ventilated area. Make sure you know where fire extinguishers are kept and how to use them. Use an approved solvent to clean machine parts. Never use gasoline or diesel fuel.

Warning: Never smoke while handling fuel or working on the fuel system. The fumes in an empty fuel container are explosive. Never cut or weld on fuel lines, tanks, or containers.

Avoid spilling fuel. If a spill occurs, wipe it up immediately. Inspect the machine daily for potential fire hazards and make any necessary repairs immediately. Always ensure that excess grease and oil accumulation, including spillage, is cleaned up immediately.

Safe Work Practices

Skidders

Perform Maintenance Safely Cont'd.

Avoid Battery Hazards

Warning: Lead-acid batteries contain sulfuric acid which will damage eyes or skin on contact. Always wear a face shield to avoid acid in eyes. If acid contacts eyes, flush immediately with clean water and get medical attention. Wear rubber gloves and protective clothing to keep acid off skin. If acid contacts skin, wash off immediately with clean water.



WRONG

Follow manufacturer's directions for "jump" start of engines with aid of extra battery. Operator must be in the operator's seat when jump starting engine so that skidder will be under control when engine starts. Jump starting is a two person operation.

Warning: Lead-acid batteries produce flammable and explosive gases. Keep arcs, sparks, flames and lighted tobacco away.

When using an extra battery to "jump" start an engine, make connections as recommended by manufacturer. To ensure neutral start or other electrical safety devices are not bypassed, make first connection only at the existing battery connection - never at the starter motor. Observe polarity of battery and connections. When using an extra battery, to prevent sparks, always make last connection to engine or ground (never at battery). When removing "jump" start cables, always remove connection from engine or ground first (never at battery). Never charge a frozen battery; it can explode.

Safe Work Practices

Skidders

Perform Maintenance Safely Cont'd.

Avoid Electrical System Hazards

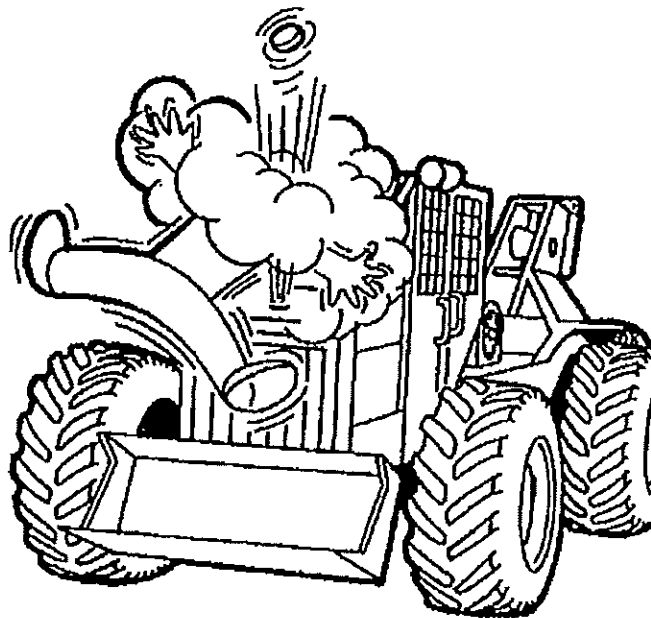
Disconnect the battery before working on the electrical system. Remove the ground terminal first. When reconnecting the battery, reconnect the ground terminal last. Never check the battery charge by placing a metal object across the posts. Serious burns or an explosion can result. Never work on the electrical system of any equipment unless you are thoroughly familiar with system details.

Be Careful With Hot Cooling Systems

Warning: Liquid cooling systems build up pressure as the engine gets hot. Before removing the radiator cap, stop the engine and let the system cool. Remove the radiator cap only after the coolant is cold.

For cooling system with an overflow tank, the coolant can usually be checked at the tank without removal of radiator cap. See manufacturer's instructions.

WRONG



SAFE WORK PRACTICES

Skidders Perform Maintenance Safely Cont'd

Be Careful with Fluids under Pressure

The hydraulic system is under pressure whenever the engine is running and may hold pressure even after shutdown.

Cycle all hydraulic steering and other controls after shutdown. When venting or filling the hydraulic system, loosen the filler cap slowly and remove it gradually. If the system is equipped with an accumulator, see the manufacturer's manual for recharge instructions.

Warning: Diesel fuel or hydraulic fluid under pressure can penetrate the skin and cause serious personal injury, blindness, or death. If any fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with treating this type of injury.

Fluid leaks under pressure may not be visible. When searching for leaks, never use your hand. Use a piece of cardboard or wood. Wear work gloves and keep your hand well away from possible source of leakage. Wear safety goggles for eye protection.

Signs and Warning Tags

Clean or replace all damaged, missing or painted-over signs, plates, and decals that cannot be read.

Safe Work Practices

Skidders Perform Maintenance Safely Cont'd.

Checking Tires

Check your tires and wheels once a day. Check tires for:

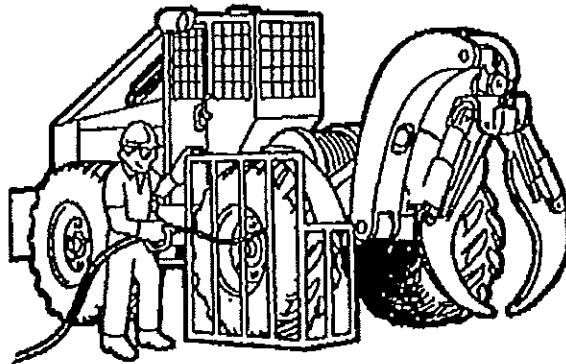
- correct pressure
- cuts or bulges
- nails or spikes
- uneven or excessive wear
- missing valve caps.

Warning: Stand behind the tread and use a self attaching air chuck when inflating tires. Use a tire cage or equivalent for protection.

RIGHT

Check wheels for:

- damaged rims
- missing or loose wheel nuts or bolts
- obvious misalignment



Have cuts or punctures repaired by authorized personnel before adding air. Refer to manufacturer's manual(s) for inflation procedures.

Tires are to be repaired only by an authorized person using the proper procedures and safety equipment.

Safe Work Practices

Skidders

Perform Maintenance Safely Cont'd.

Warning: An over-inflated tire can rupture. On multi-piece rims the lock ring could blow off and on single piece rims the bead could lift and cause a jet effect. Any of these could cause serious injury or death. An under-inflated tire can reduce machine stability.

Be sure to replace tire ballast if machine was so equipped. See manufacturer's specifications for ballast requirements.

WRONG



Safe Work Practices

Skidders

Perform Maintenance Safely Cont'd.

Checking Tracks

Check tracks once a day for:

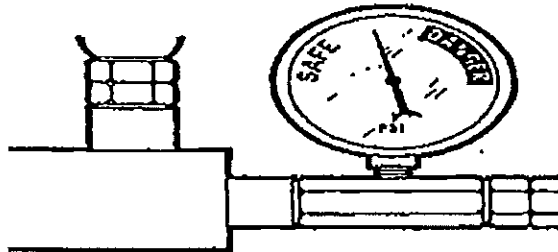
- damaged track components
- loose or missing track bolts
- proper track adjustment.

Don't Take Chances

- Use only tools, parts and fluids recommended by the manufacturer.
- Use the correct tools; make sure wrenches and drivers are properly fitted. Be careful not to damage machined and polished surfaces.

Warning: Rotating parts must be inspected during repair and replaced if cracked or damaged. Excessively worn or damaged parts can fail and cause injury or death.

RIGHT



Don't Exceed Safe Limits

Never set a relief valve to a pressure higher than that recommended by the manufacturer. Don't close off overflow or bypass lines. Use parts, lubricants and service techniques recommended by the manufacturer.

Safe Work Practices

Skidders

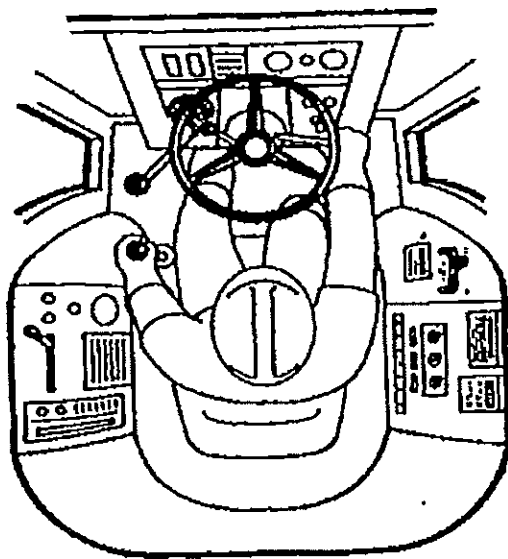
Perform Maintenance Safely Cont'd.

Complete Service and Repairs Before Machine is Released

Tighten all bolts, fittings and connections to torques specified by the manufacturer.

Reinstall all guards and covers after servicing. Replace or repair damaged ones. Refill and recharge pressure systems only with manufacturer-approved or recommended fluids.

RIGHT



Start engine and check for leaks (see hydraulic fluid warning). Operate all controls and make sure the skidder is functioning properly. Road test machine if necessary. After testing, shut down, check the work you performed and again check for any missing bolts, retainers, cotter pins, etc. Recheck fluid levels before releasing machine for operation.

Safe Work Practices

Skidders Test Your Knowledge

Now that you have read this section of the safety manual, do you understand:

- Your safety program?
- Your machine manufacturer's manuals?
- Proper clothing and personal safety equipment?
- Your machine's controls, warning signs and devices, and safety equipment?
- How to properly inspect, mount, and start your machine?
- How to check your machine for proper operation?
- Your work area and any special hazards that may exist?
- Proper operating procedures?
- Proper parking, shutdown, and dismounting procedures?
- Proper maintenance procedures?
- Proper loading and unloading procedures for transporting?
- Under what conditions you should not operate your machine?



Safe Work Practices

Crawler Tractors

General

The safety of the operator and maintenance personnel for crawler tractors/loaders is of prime concern to the management of Logan Drilling Group. This section of the safety manual is designed to present situations which exemplify some of the daily work problems encountered by the operator and other personnel.

It is your responsibility to know what specific requirements, precautions and work area hazards exist, and to discuss these with your foreman or supervisor. A common understanding should be reached by all personnel to assure safe performance in operation of the equipment.

You are the key to safe job performance and should study the following section on basic safety precautions to help prevent serious injury and damage to property.

Machines offer many built-in safety features. Yet serious injuries occur! You can help to avoid them! The safest machine still needs to be operated with care and with knowledge of its performance capabilities.

Remember – Safety is up to you!

Safe Work Practices

Crawler Tractors Your Employer Has a Safety Program

Know what it is

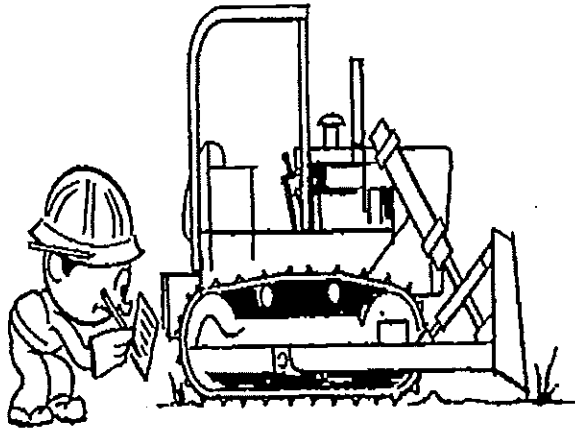
Consult your foreman for specific instructions on a job, and the safety equipment required. For instance, you may need:

- hard hat
- safety boots
- safety goggles
- heavy gloves
- reflector vest
- ear protection
- respirator

Always avoid:

- loose clothing
- flopping cuffs
- dangling neckties and scarves
- rings and wrist watches

Know what protective devices your crawler tractor is equipped with and see that each item is securely in place.



For instance:

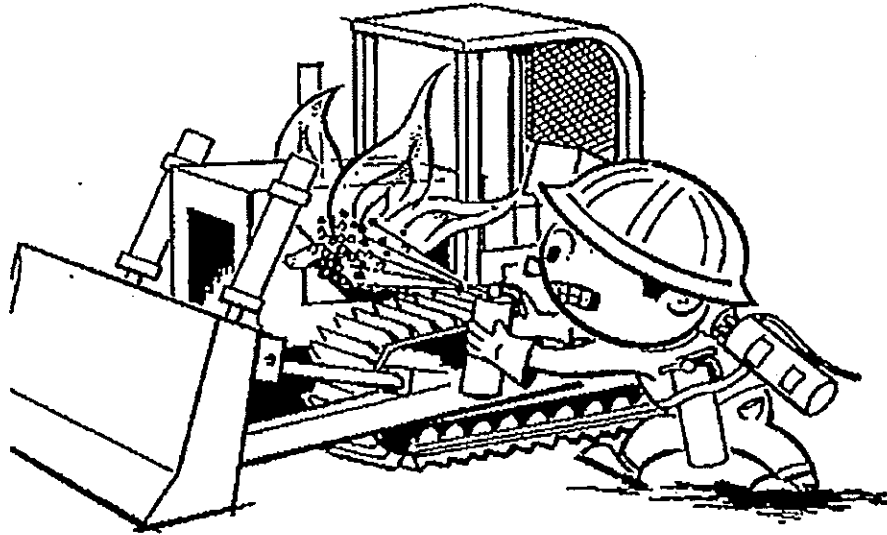
- guards
- canopies
- shields
- protective devices
- roll-over protective structures
- seat belts, etc.

RIGHT

Safe Work Practices

Crawler Tractors Your Employer Has a Safety Program

RIGHT



Be Alert

Plan ahead, work safely, avoid accidental damage and injury. If a careless moment does cause an accident or fire, react quickly with the tools and skills at hand. Know how to use a first aid kit and a fire extinguisher and where to get aid and assistance. In an emergency, split second action is the key to safety.

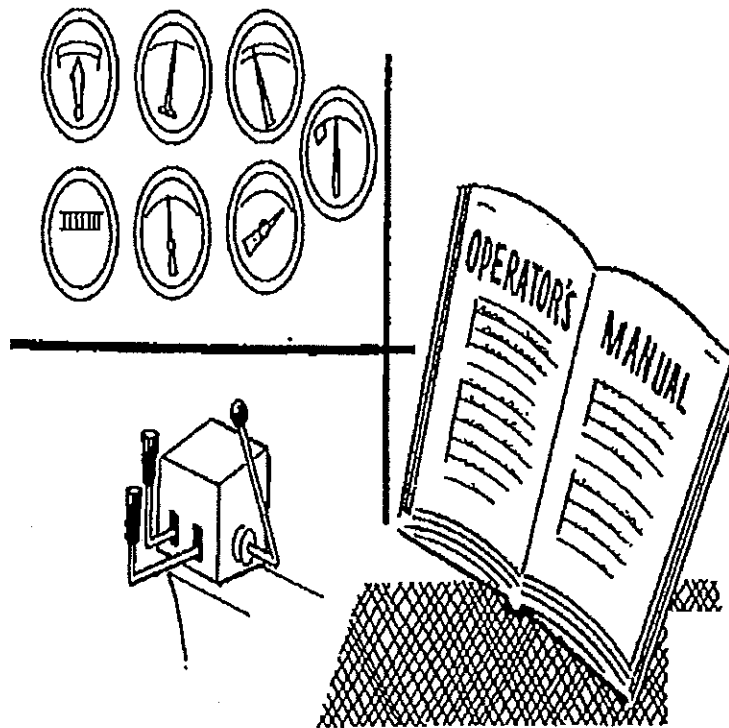
Safe Work Practices

Crawler Tractors Prepare for Safe Operation

By Understanding the Equipment:

- Become thoroughly familiar with all controls, indicators, warning lights and warning plates.
- Know the operating characteristics of the crawler tractor, and its working capacities.
- Learn - and don't forget- the limitations of the machine and equipment.
- Know the clearances required for tractor and attachments.
- Know where and how to check the tractor's liquid levels - oil, fuel, coolant and hydraulic fluid.

RIGHT



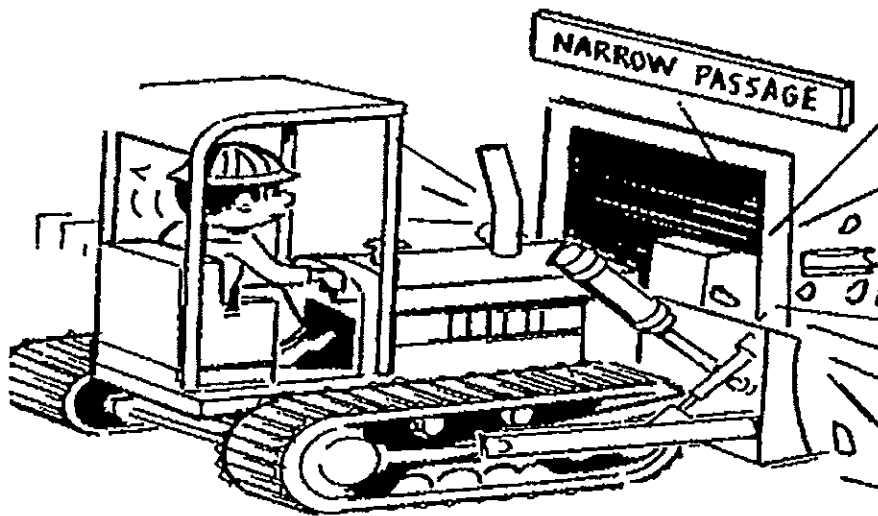
Safe Work Practices

Crawler Tractors Prepare for Safe Operation Cont'd.

By Familiarity With the Area:

- When operating tractor inside a plant, know what clearances you will encounter - overhead, doorway, aisles, etc. also, the weight limitations of floors and ramps.
- When roading the equipment, find out what conditions you will likely meet, clearances, congestion, type of surface, etc. Be aware of fog, smoke or dust elements that obscure visibility.
- Determine warning devices to be used. Know whether you will be escorted.
- Become acquainted with the terrain where you will be working, and what hazards to expect.

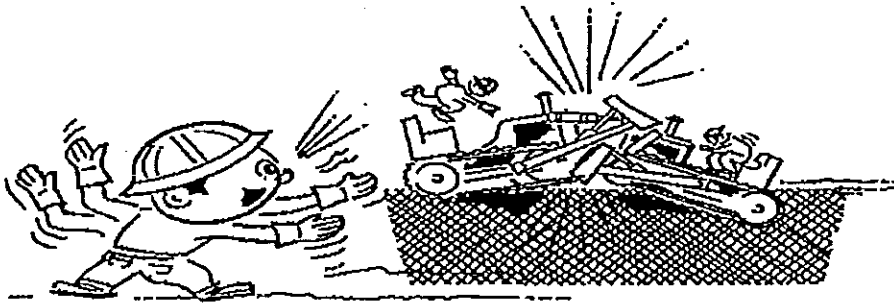
WRONG



Safe Work Practices

Crawler Tractors Prepare for Safe Operation Cont'd.

WRONG



By Knowledge of the Traffic Rules:

- Learn the hand signals to be used on a job; and who has the responsibility for signalling.
- Learn thoroughly the "Rules" that should be observed at the work site.
- Learn to tell, at a glance, the meaning of all flags, signs and markings - wherever encountered.
- Always watch for "Slow Moving Vehicle" signs, and proceed with caution.

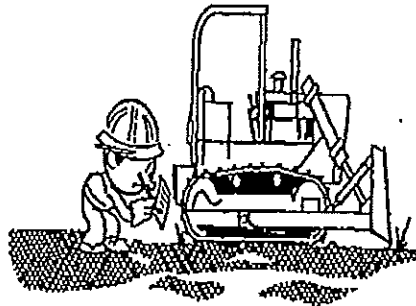
Safe Work Practices

Crawler Tractors Before Starting Your Machine

Know Equipment Is Ready

- Check guards, canopies, safety bars - all protective devices installed on the crawler tractor. Every one should be in place and secure.
- When operating Power Take-Off (PTO) driven equipment, make doubly sure the safety guards provided on the equipment are in place.
- Carefully inspect your equipment for visual defects, leaks in fuel, lubrication and hydraulic systems; loose tracks or shoes; any broken or missing part.
- Do not start or operate a defective machine. Have it repaired and then okayed by your supervisor before using it.

RIGHT



- Check levels of fuel, coolant, hydraulic fluid, and lubricating oil. When checking or adding fuel, first put out that cigarette. Check and secure all caps and filler plugs for fuel, oils, radiator, etc.
- Be sure to clean any oil, grease or mud accumulation from floor of operator's compartment, stepping points and grab rails to minimize the danger of slipping.
- In freezing weather beware of snow or ice deposits on stepping points, grab rails and floor.
- Remove loose tools, or other objects from floor of operator's compartment and secure any loose items that will be carried on the crawler tractor - chains, shovels etc.

Safe Work Practices

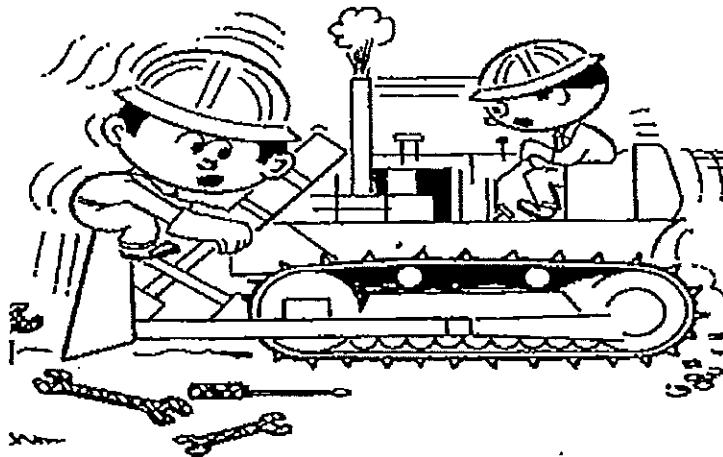
Crawler Tractors Before Starting Your Machine Cont'd.

Know Your Surrounding Area Is Safe

- Check area for any unusual conditions that could be dangerous.
- If necessary to start an engine within an enclosed area, provide adequate ventilation.

Exhaust fumes can kill

WRONG



- Warn personnel of any danger.
- Warn anyone who is servicing the machine or who is standing in its path. Make sure they are safely out of the way before you start. At all times remember the pedestrian and bystanders.

Safe Work Practices

Crawler Tractors Now, You're ready to Start

Walk around the crawler tractor once more, eyes open and alert to people and obstacles that may be in the way, then:

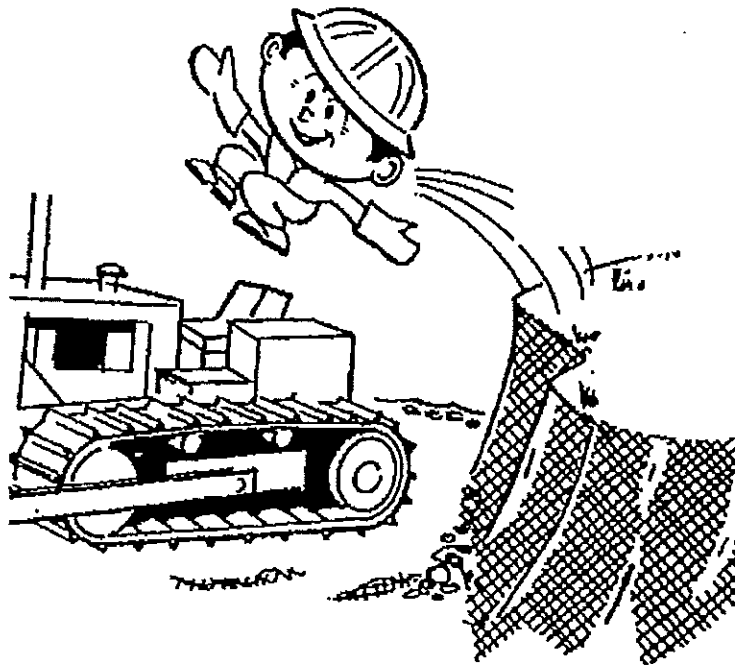
Mount Safely

Climb aboard your machine carefully

Use all the stepping points and grab rails provided.

Adjust seat for the most comfortable position and fasten seat belt if so equipped.

WRONG



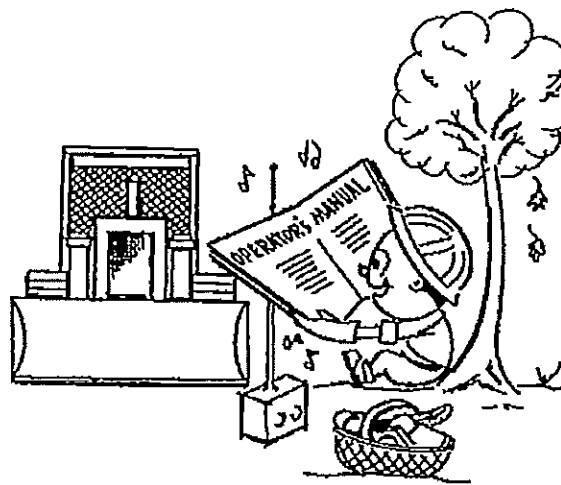
Safe Work Practices

Crawler Tractors Now, You're ready to Start

Start Correctly

Know the exact starting procedure for your crawler tractor. This varies with the type of control equipment provided. Follow the manufacturer's operation manual.

RIGHT



In general:

- All transmission controls must be in neutral.
- Transmission safety lever in locked position.
- Attachments - blade, bucket or ripper- in down position and controls in neutral position.
- Check for free movement of throttle control and set to starting position.
- Then start the engine.
- When cold weather starting fluid is required, follow manufacturer's recommendations: remember - this fluid is flammable. Do not puncture or burn container. Dispose of it following the manufacturer's recommendation on the container.

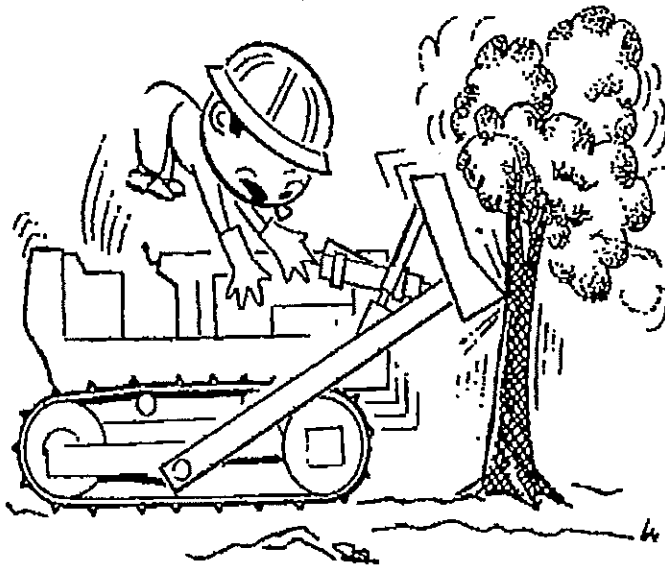
Safe Work Practices

Crawler Tractors Now, You're ready to Start

Sit securely

Do not operate the tractor from any position other than the seat provided.

WRONG



Move Carefully

Again make sure the coast is clear - that no people or objects are in your path.

Never stand up or dismount from your crawler tractor while it is in motion

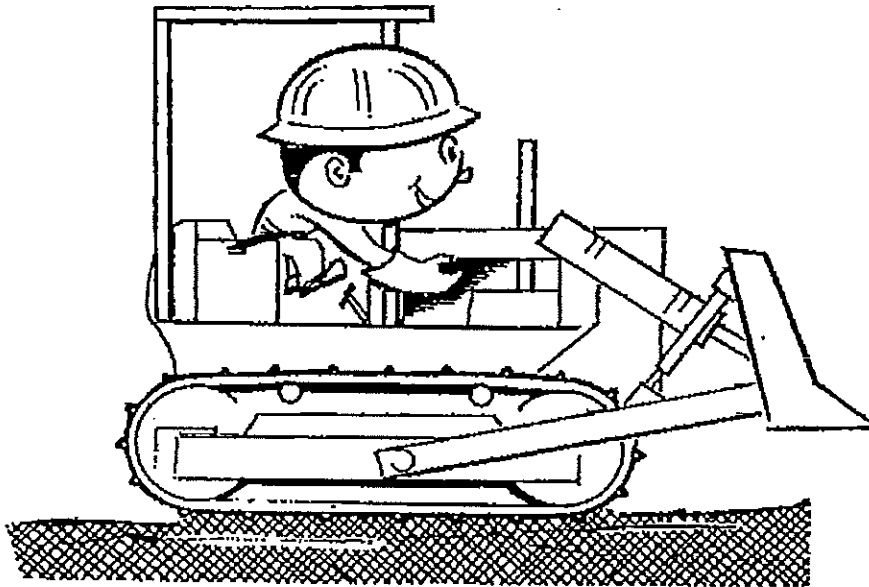
Safe Work Practices

Run an Operating Check Cont'd

Before working tractor:

Operator should make certain that any unsafe condition has been satisfactorily remedied.

RIGHT



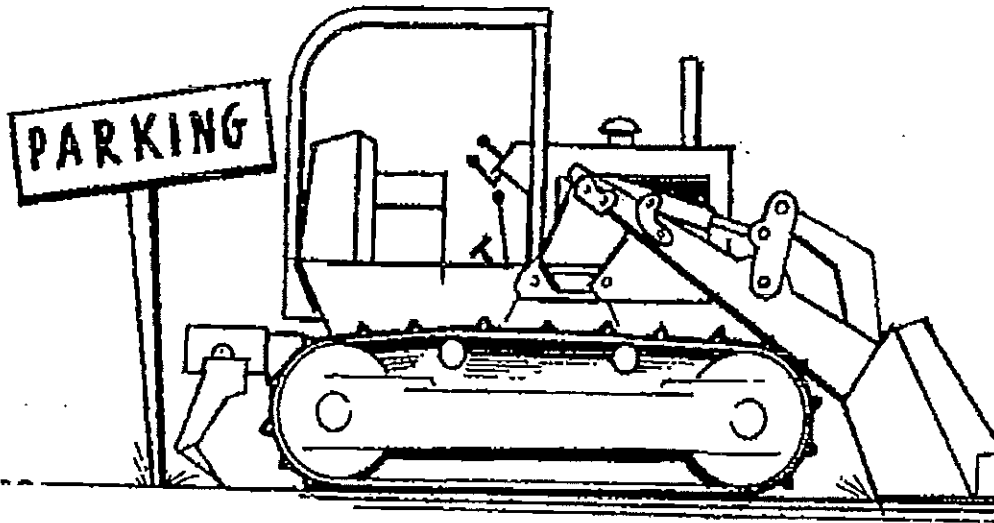
Temporary Parking:

- Always set parking brake and place transmission in neutral when parking temporarily with engine running.
- If tractor is equipped with a transmission lock, engage it.
- Lower all attachments to the ground.
- Never leave machine unattended with engine running.

Safe Work Practices

At End of Operating Period

RIGHT



Park Safely

1. Park in a non-operating area or as instructed. If necessary to park in traffic lane, use appropriate flags, barriers, flares and warning signals as required. Also provide advance warning signals in traffic lane for approaching traffic.
- Park on level ground, if possible. When this is not possible - position machine at right angles to the slope. Make sure the tracks are on a firm footing, and there is no danger of sliding.
- Lower all attachment to the ground.
- In freezing weather, park on a hard surface. Freeze down should be avoided. Drive train failure could result in trying to move a machine under its own power when frozen to the ground.

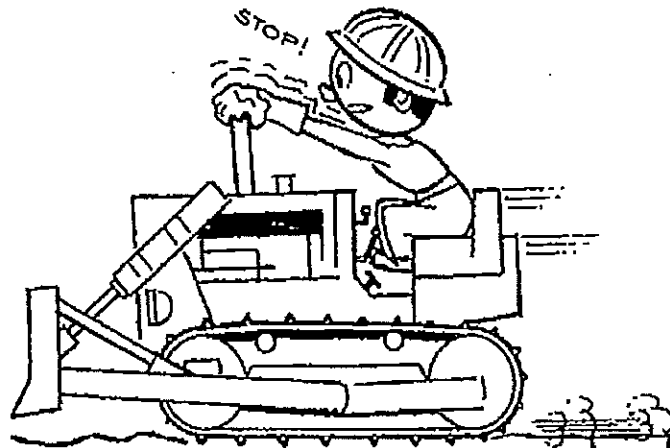
Safe Work Practices

At End of Operating Period

Shut Down Properly

Know the exact stopping procedure for your crawler tractor. As with the starting procedure, this varies with the type of equipment being used. Follow manufacturer's operation manual.

WRONG



In general:

- Lower attachments and place control levers in neutral. This helps stabilize the machine and prevent accidents.
- Place transmission controls in neutral and engage transmission control lock.
- Set parking brake.
- Allow engine to idle for gradual cooling down; then stop engine. Do not use any "emergency" stopping device to stop an engine under normal conditions.
- Disconnect the electrical system with the system master switch, if provided. Follow employer's additional shut down procedures to prevent accidental or unauthorized starting.
- Block tracks if machine is stopped on a grade or ramp.
- Position and lock any anti-vandalism devices.

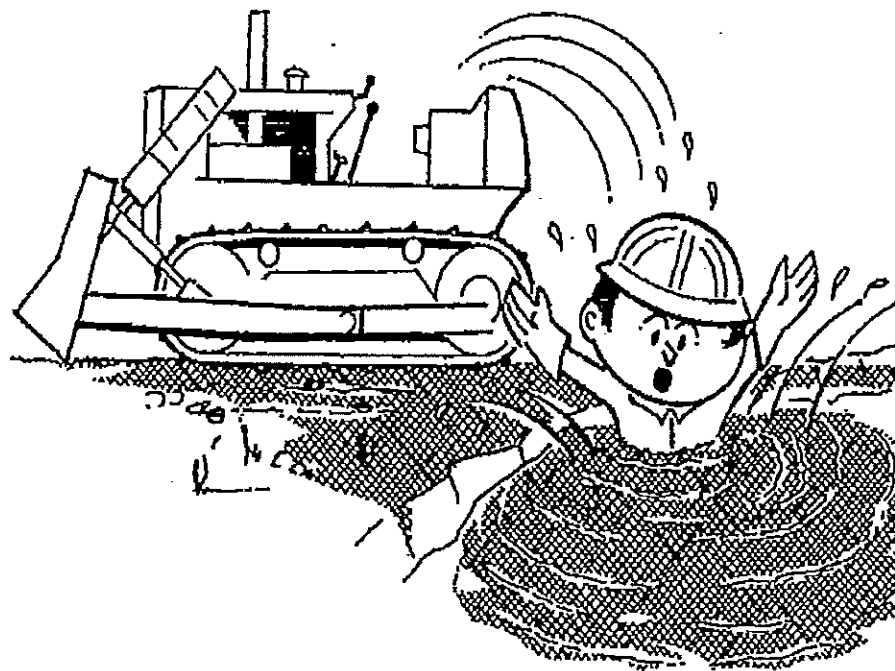
Safe Work Practices

At End of Operating Period Cont'd.

Dismount Carefully

- Don't jump off. After stopping machine, use the stepping points and grab rails to safely dismount.
- Be careful of slippery conditions on stepping points and grab rails when dismounting.

WRONG

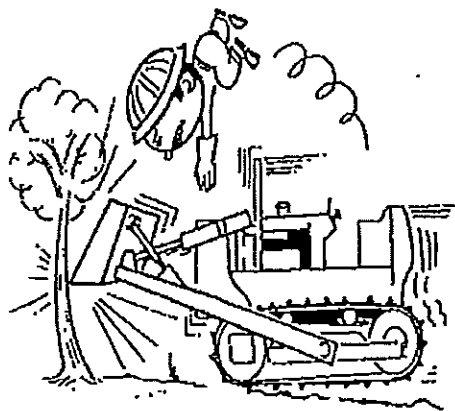


Safe Work Practices

Work Safely

Remember these Rules:

- Keep your seat. When roading or operating, stay in the proper position. Be certain of the control locations, and maintain command of your machine at all times.
- Check the entire working area continuously. If you can't see it clearly from the operator's seat - and you don't have a spotter- dismount and examine for possible hazards before you proceed.
- Don't jump - either off or on the equipment. Never mount or dismount a moving vehicle.
- Look and listen for equipment defects. Stop - when malfunctioning controls or erratic operation are detected. Correct or report trouble immediately. Should the fuel system spring a leak, be extra careful of fire.
- Prevent asphyxiation. If you must operate in a building, or if you machine is equipped with an enclosed cab, be positive there is adequate ventilation.
- Use but don't abuse your equipment. Misuse can cause an accident.
- Never speed and never coast. Keep in gear at all times. Maintain a ground speed consistent with ground conditions.
- Your safety and the safety of those around you is determined by the care and judgement you use while operating the equipment.



WRONG

You are an operator of heavy construction equipment. Act accordingly.

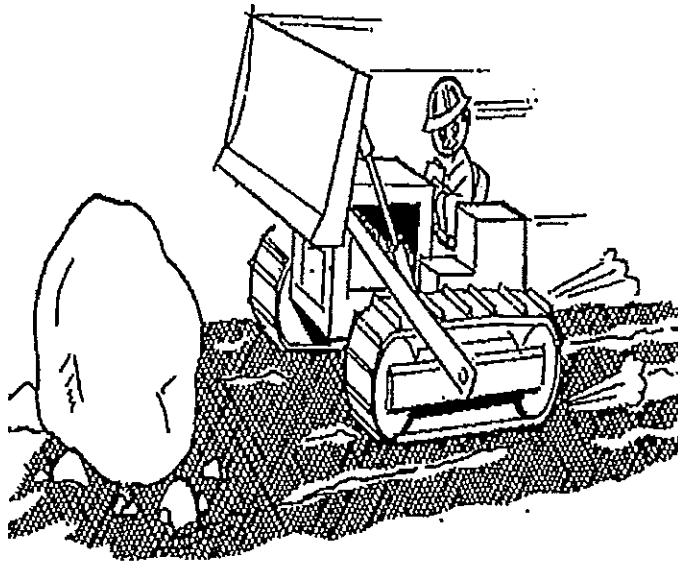
Safe Work Practices

Work Safely

Remember the Other Guy:

- Say no to riders. If you do carry an authorized passenger, don't let him ride any place but in the specified safe position as provided.
- Always look around before and while you back up - hook up- or swing an attachment.
- Never move pipe or similar items over the heads of other workman.
- Be sure that everyone is in the clear, when backing to hook up to a scraper, sheepsfoot roller or other equipment. Watch the ground man for the all-clear signal before moving tractor.

WRONG

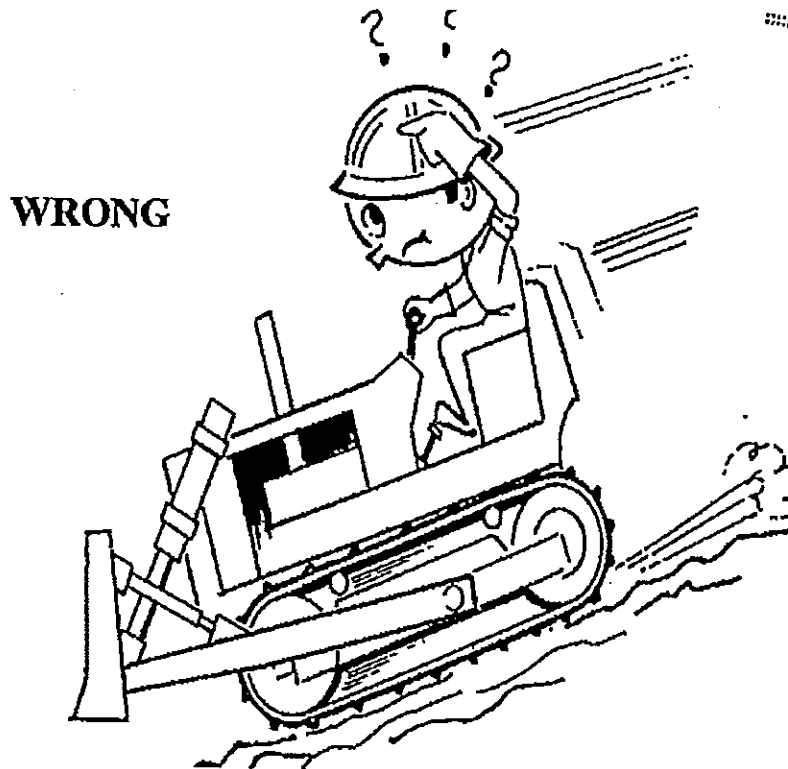


- Take it slow and easy when travelling through congested areas. Traffic courtesy pays off.
- Give right of way to loaded equipment on haul roads and in pits. Maintain a safe distance from other vehicles. Pass cautiously when necessary.
- Don't obstruct your vision when travelling or working. Carry blade low for maximum visibility while travelling.

Safe Work Practices

Work Safely Cont'd.

Unfamiliarity with your equipment and your work area can lead to mistakes. And mistakes cause accidents. Know always what you are doing, where you are working, and what the consequences of an error could be. The following precautions can help you keep safety-minded, but follow your tractor operation manual for the proper operating instructions.



Shifting:

- Never coast or free wheel downgrade in neutral.
- Always stay in gear when travelling down slopes.
- Do not brake on grades by shifting. Decelerate engine and apply the foot brake.
- With a constant mesh or sliding gear transmission, do not shift on grade. Choose proper gear speed before proceeding downgrade.

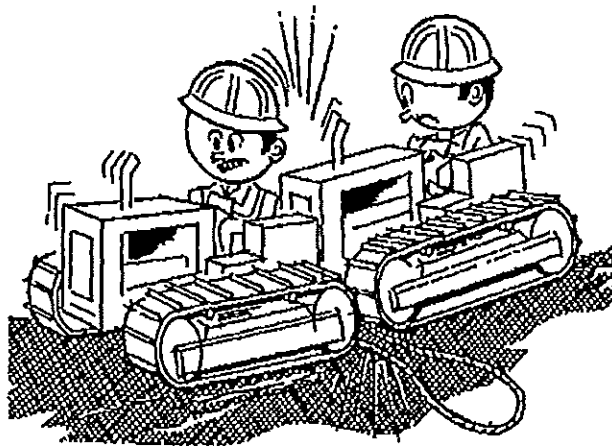
Safe Work Practices

Work Safely

Speeding:

- Drive at speeds slow enough to ensure you have complete control at all times.
- Travel slowly over rough ground and on hill sides.

WRONG



On the Road and Towing:

- When roading equipment in traffic, use proper warning devices in accordance with local laws or regulations.
- When towing a tractor to a repair area, use proper cable.
- When towing a disabled tractor, know what brakes are available. Do not try to brake a towed tractor with power brakes or steering brakes, these may be inoperative. Use the parking or emergency brake where possible.

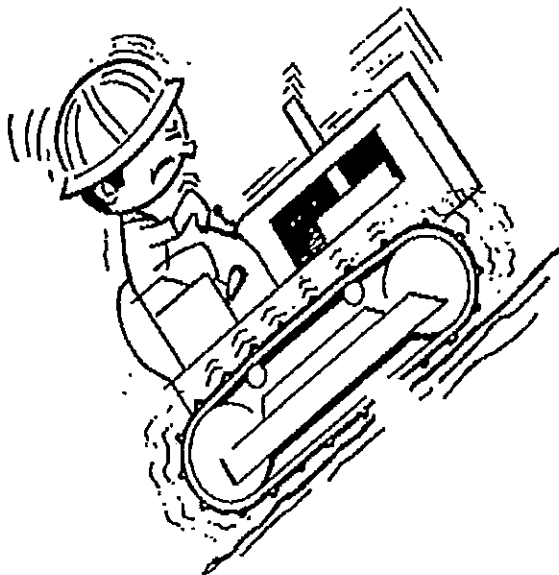
Safe Work Practices

Work Safely Cont'd.

Operating on Slopes

- Avoid side hill travel whenever possible. Drive up and down the slope. The danger of tipping is always present
- In steep downhill operation, do not allow engine to over speed. Select proper gear speed before starting tractor downgrade.
- There is no substitute for good judgement when working on slopes.
- Should the tractor start slipping sideways on a grade, during freezing weather this danger is increased, turn it immediately in the direction of the downgrade.
- The grade of the slope you should attempt will be limited by such factors as condition of the ground, load being handled, the type of tractor, etc.
- Consider all factors carefully before starting up. Keep in mind:
 - If the slope is too steep, the tractor may develop a jerky, bucking motion, which can turn quickly into a slide.
 - If the machine is being forced down grade, it may be necessary to revert to reverse or cross steering.

WRONG



Safe Work Practices

Work Safely Cont'd.

Dangerous Areas

Always check work area for dangerous features

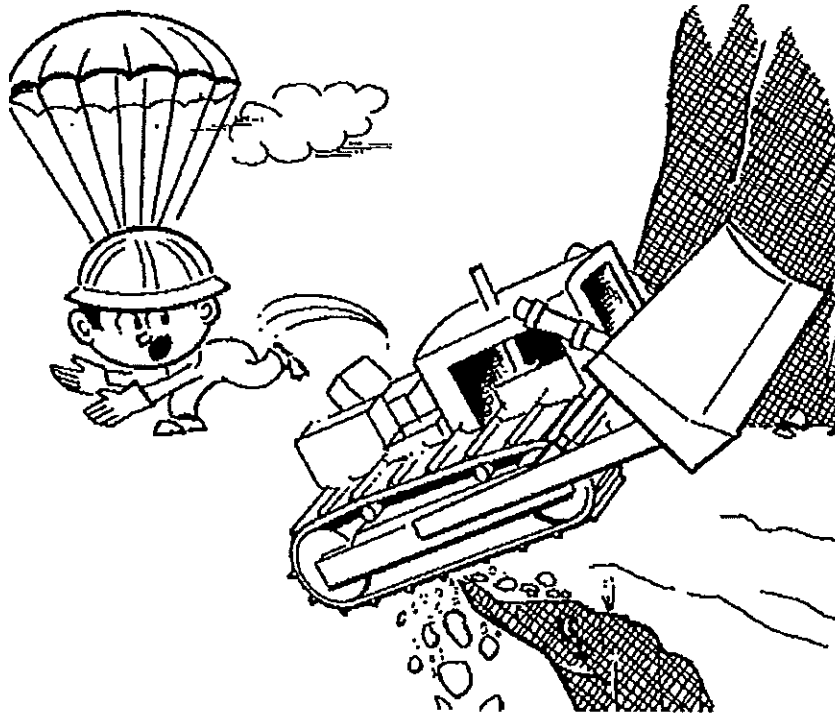
Avoid operating your equipment too close to an overhang - or to a deep ditch.

Beware of caving edges

Beware of falling rocks

Beware of slides

WRONG



Safe Work Practices

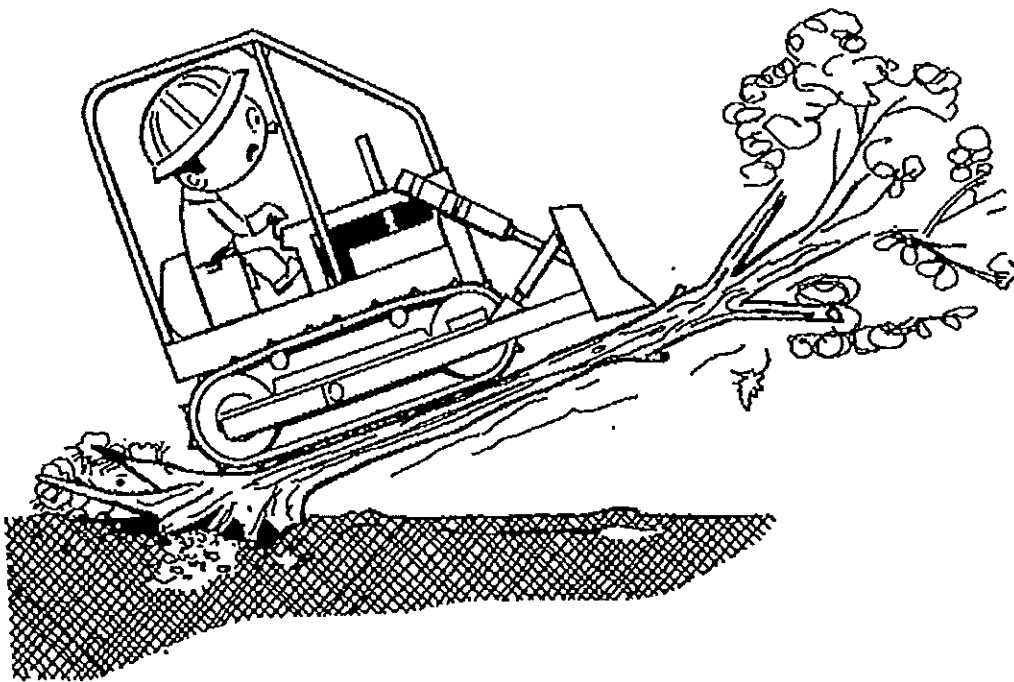
Work Safely Cont'd.

Hazardous Operations

Be extremely alert during any dangerous operation:

- When undercutting high banks, the whole mass can become unstable and cave in.
- When backfilling along a newly constructed wall - the fill material and weight of tractor may cause the wall to collapse.
- When felling trees - the tractor should be equipped with proper overhead guarding. Push smaller trees over, if possible. But never allow a tractor to climb up on the root structure while the tree is falling. Use extreme caution with a dead top.
- "Pioneering" - be sure you know how this is done. It should be done by only the most experienced operators. Danger from falling branches and up-turning roots is acute on virgin land. Follow tractor operation manual.

WRONG



Safe Work Practices

Work Safely Cont'd.

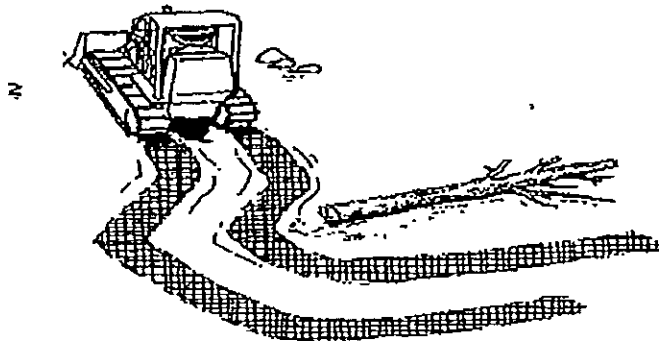
Safe Operating Habits

For everyone's safety, establish good operating and working habits:

- Keep work area as level as possible. This results in easier manoeuvring - and a minimum of operator fatigue. To maintain a smooth surface, backdrag occasionally with equipment where available.
- Avoid excessive spinning of the tracks. Spinning can convert a smooth area into ruts that tend to tip the machine.
- Avoid going over obstacles - rough terrain, rocks, logs, curbs, ditches, ridges and railway tracks, whenever possible. The size and type of obstacle that can be safely crossed will depend on many factors including good judgement. When obstructions must be crossed, do so with extreme care, at an angle if possible. Reduce speed, downshift, ease up to the "breakover" point - balance slowly on the obstruction - and ease down to minimize the jolt of contact on the other side.
- Cross a gully or deep ditch at an angle with reduced tractor speed. When starting to mire down in mud, don't spin tracks or try to seesaw machine.
- When using a long cable to hitch your tractor to a load, move forward and take up slack slowly, do not jerk, do not kink cable, keep cable taut. If the connecting cable is slack, the sudden impact of the load can snap it.
- Examine the cable to be sure it is in good condition, that it is big enough for the job, and has properly secured hooks and clamps.

If it becomes necessary to snub the machine, use adequate anchor. Danger always exists that even a large tree may be pulled over.

RIGHT



SAFE WORK PRACTICES

Maintenance – Without Accident

Specific safety procedures should always be observed, whether servicing the equipment or making the repairs. Remembering these – in time – can prevent an injury – or save your life.

Avoid Fire Hazards

- Fuel is dangerous.
- Don't smoke while refuelling.
- Don't smoke while handling highly flammable material.
- Engine should be shut off when refuelling.
- Use care in refuelling if the engine is hot.
- Don't use open pans of gasoline or diesel fuel for cleaning parts. Good commercial, nonflammable solvents are preferred.

Battery gas is highly flammable

- Leave battery box open to improve ventilation when charging batteries.
- Don't check battery charge by placing metal objects across the posts.
- Don't allow sparks or open flame near batteries.
- Don't smoke near battery.

Flame is not a Flashlight

- Never check fuel, battery electrolyte, or coolant levels with an open flame.
- Never use an open flame to look for leaks anywhere on the equipment.
- Never use an open flame as a light anywhere on or around the equipment.

Know where fire extinguishers are kept!

SAFE WORK PRACTICES

Maintenance – Without Accident Cont'd

Under all maintenance conditions:

Do not perform any work on the equipment unless authorized to do so. Then be sure you know what you're doing. Follow manufacturer's recommended procedures.

- Never service the equipment while it is being operated.
- Use caution when hand cranking an engine.
- Avoid working on equipment with the engine running. If it is necessary to make checks with the engine running, always use two men – one the operator at the controls, the other checking where the operator can see him. Also, put the transmission in neutral, set the brake, and apply any safety locks provided. Keep hands away from moving parts.
- Before servicing, adjusting, or repairing tractors which have attachments such as shovels, loaders, dozers, scrapers, rippers, etc. – lower attachments to the ground, or, if necessary, to raise them for access to certain parts, securely supported by manufacturer's safety bar, if provided, or external means. Do not rely on controls to support or position attachments for maintenance.
- Never allow anyone to walk under equipment that is raised and not properly blocked.
- Avoid working directly under raised and blocked equipment unless absolutely necessary.
- If the machine is on an incline, block it securely. Use hoisting equipment for lifting heavy parts.

Take Care

SAFE WORK PRACTICES

Maintenance – Without Accident Cont'd

Watch out for other people in the vicinity.

Use extreme caution in removing radiator caps, drain plugs, grease fittings, or hydraulic pressure caps.

- Wear safety glasses when drilling, grinding, or hammering metal.
- Make sure the maintenance area is adequately vented.
- Keep maintenance area clean and dry. Oily and wet floors are slippery, greasy rags are a fire hazard, and wet spots are dangerous when working with electrical equipment.
- When handling LP gas cylinders – do so with care. Don't drop and don't damage.

Warning: Severe freeze burns can result from spilling LP gas on your body. Store starting aids in a cool and well ventilated place, out of the reach of unauthorized personnel.

Servicing Precautions

- Stop the engine before cleaning or lubricating the equipment.
- Lower mounted equipment and tools to the ground carefully.
- Engine coolant gets hot! Don't remove the radiator cap until coolant temperature is below the boiling point. Then turn cap slightly to relieve pressure before removing.
- Exhaust gases are dangerous. Periodically check exhaust system for excessive leakage.
- Don't forget a hydraulic system may be pressurized!
- To relieve pressure, follow the manufacturer's manual. When filling or venting system, loosen the filler and level cap slowly.
- If tractor is equipped with a hydraulic accumulator, recharge by using only dry nitrogen. Again, follow manufacturer's manual for procedure.
- When checking hydraulic pressure, be sure and use the correct test gauge for the pressure in the particular system.

SAFE WORK PRACTICES

Maintenance – Without Accidents Cont'd

- Use extra caution around power take-off equipment. Before attempting to service, shut off the engine and disengage the PTO lever.
- Keep all equipment free of dirt and oil. This attention will minimize fire hazards and facilitate spotting of loose or defective parts.

When preparing engine for storage, remember that inhibitor is volatile and therefore dangerous. Seal and tape openings after adding the inhibitor. Keep container tightly closed when not in use.

Adjusting Precautions

For operating adjustments:

- Keep clutch and brake bands of cable control units properly adjusted at all times. Before making adjustments, stop engine, and be sure that the cable is slack.
- Always wear gloves when handling cable.
- Before removing any housing covers, stop engine. Take all objects from your pockets which could fall into the opened housing. Don't let adjusting wrenches fall into opened housings.

For maintenance adjustments:

- Don't attempt to check belt tension while the engine is running.
- Don't adjust the carburetor or the fuel pump while the machine is in motion.
- Before attempting to adjust hitch or PTO linkage, shut off the engine and disengage the PTO lever.

When adjusting track tension, never use makeshift jacks. Follow manufacturer's manual.

SAFE WORK PRACTICES

Maintenance – Without Accidents Cont'd

Precautions During Repair:

- Before working on the engine fuel system – with gasoline powered or diesel engines, close fuel shut off valve.
- With LP gas powered engines, close LP cylinder valve and run engine until fuel is depleted and engine dies.
- Check manufacturer's service manual before working on pressurized parts or systems.
- Before working on hydraulic system – make sure engine is not running and the system pressure is relieved by working the control levers in all directions with the engine shut off.
- Before repairing the electrical system, or performing a major overhaul, make sure the batteries are disconnected.

When working on the track:

- Handle it with extreme caution.
- Never place your fingers between the track shoes when removing track.
- Protect your eyes with safety glasses while striking metal parts.

When changing cutting edges:

- Stop the engine and securely block the bucket, blade, bowl, etc.
- Never let your bare hands come in contact with the sharp edges. Wear gloves.
- When installing, use a drift punch to align holes.

Safe Work Practices

Load and Unload Your Tractor - Safely

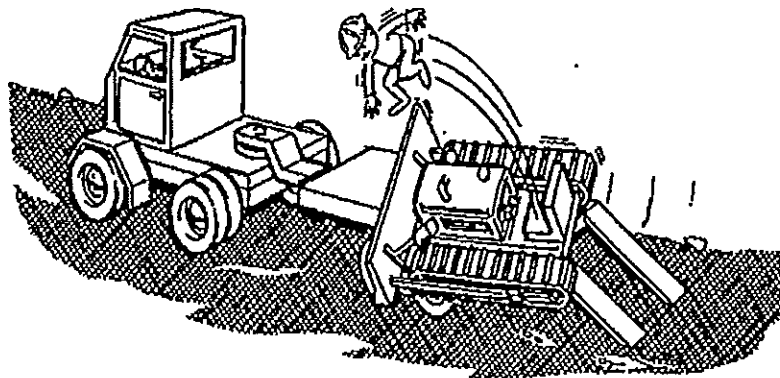
General

Operating and maintaining equipment without damage or injury is part of the safety picture. The other part is safely loading and unloading your equipment.

All tractors are not loaded the same way, and the procedures recommended by the manufacturer should always be followed. For example, it is generally advisable to back small tractors up ramps to avoid tipping.

Several precautions are applicable to all equipment, however and are mandatory for safety's sake.

- Load and unload on the level
- Block transport vehicle so it cannot move.
- Use ramps of adequate strength, low angle, and proper height.
- Keep trailer bed clean of clay, oil and all materials which can become slippery.
- Tie and block tractor securely for transport.
- Know the correct loading and unloading procedures for your type of equipment.



WRONG

Job Procedures

Prepare to Move in Shop Loading Procedures

General

1. Make sure all necessary permits have been obtained from the Ministry of Natural Resources and Ministry of Transportation and Communications.
2. Thoroughly check men and equipment. Men must be aware of work conditions expected and have proper clothing. Equipment must be in good operating condition mechanically and have all safety equipment such as guards, mufflers, etc. installed. Make sure batteries are fully charged, and that hoses, belts, etc. are in good condition.
3. Assure yourself that men are familiar with operation and maintenance of all equipment.
4. Use an inventory list while loading, checking off each item loaded.
5. When loading skidder type of equipment, all caution should be observed.
6. Observe highway regulations as to size of load. In Nova Scotia you are allowed a load 2.59 meters wide, 4.15 meters high, and 19.82 meters long.
7. If loading a mobile drill, make sure doors are securely fastened, and also that they will readily open with a light shove from inside when operating.
8. Make sure tractors have roll-over protection and canopy cover, and seat belts. If you are to travel on ice, make sure that both tractors and sloops have loops welded on front and rear for inserting a long log.
9. Make sure that fire extinguisher and first aid kits are readily accessible.
10. Secure load carefully.

Job Procedures

Transporting a Drill Rig

General

When transporting a drill rig on and off a drilling site:

- Allow only licensed individuals to operate the vehicle. Comply with all federal, provincial, and local regulations.
- Know the traveling height (overhead clearance), width, length, and weight of the drill rig with carrier and know the highway and bridge load, width, and overhead limits. Allow adequate margins and make sure that they are not exceeded.
- Never move a drill rig unless the vehicle brakes are in sound working order.
- Allow for mast overhang when cornering or approaching other vehicles or structures.
- Be aware that the canopies of service stations and motels are often too low for a drill rig mast to clear with the mast in the travel position.
- Watch for low hanging electrical lines, particularly at the entrances to drilling sites, restaurants, motels, or other commercial sites.
- Never travel on a street, road, or highway with the mast (derrick) of the drill rig in the raised or partially raised position.
- Watch for low hanging electrical lines, particularly sites or restaurants, motels or other entrances to drilling sites.
- Remove all ignition keys when a drill rig is left unattended.

Job Procedures

Loading And Unloading

General

When loading or unloading a drill rig on a trailer or a truck:

- Use ramps of adequate design that are solid and substantial enough to bear the weight of the drill rig with carrier - including tooling.
- Load and unload on level ground.
- Use the assistance of someone on the ground as a guide.
- Check the brakes on the drill rig carrier before approaching loading ramps.
- Distribute the weight of the drill rig, carrier and tools on the trailer so that the center of weight is approximately on the center line of the trailer and so that some of the trailer load is transferred to the hitch of the pulling vehicle. Refer to the trailer manufacturer's weight distribution recommendations.
- Secure the drill rig and tools to the hauling vehicle with ties, chains, and/or load binders of adequate capacity.

Job Procedures

Off Road Movement

General

Follow these procedures during off-road movement:

- Before moving a drill rig, first walk the route of travel, inspecting for depressions, stumps, gullies, ruts, and similar obstacles.
- Always check the brakes of a drill rig carrier before traveling, particularly on rough, uneven, or hilly ground.
- Check the complete drive train of a carrier at least weekly for loose or damaged bolts nuts, studs, shafts, and mountings.
- Discharge all passengers before moving a drill rig on rough or hilly terrain.
- Engage the front axle (4 x 4, 6 x 6, etc. vehicles or carriers) when traveling off highway on hilly terrain.
- Use caution when traveling side-hill. Conservatively evaluate side-hill capability of drill rigs because the arbitrary addition of drilling tools may raise the center of mass. When possible, travel directly uphill or downhill. Increase tire pressures before traveling in hilly terrain (do not exceed rated tire pressure).
- Attempt to cross obstacles such as small logs and small emission channels or ditches squarely rather than at an angle.
- Use the assistance of someone on the ground as a guide when lateral or overhead clearance is close.
- Set all brakes and/or locks after the drill has been moved to a new drilling site. When grades are present, block the wheels.
- Never travel off-road with the mast (derrick) of the drill rig in the raised or partially raised position.

Job Procedures

Tires, Batteries and Fuel

General

Tires on the drill rig must be checked daily for safety and during extended travel for loss of air and they must be maintained and/or repaired in a safe manner. If tires are deflated to reduce ground pressure for movement on soft ground, the tires should be re-inflated to normal pressures before movement on firm or hilly ground or on streets, roads and highways. Under inflated tires are not as stable on firm ground as properly inflated tires. Air pressures should be maintained for travel on streets, roads and highways according to the manufacturer's recommendations.

During air pressure checks, inspect for:

- Missing or loose wheel lugs.
- Objects wedged between duals or embedded in the tire casing.
- Damaged or poorly fitting rims or rim flanges.
- Abnormal or uneven wear and cuts, breaks or tears in the casing. The repair of truck and off-highway tires should only be made with required special tools and following the recommendations of a tire manufacturers repair manual.

Batteries

Batteries contain strong acid. Use extreme caution when servicing batteries:

- Batteries should only be serviced in a ventilated area while wearing safety glasses.
- When a battery is removed from a vehicle or service unit, disconnect the battery ground clamp first.
- When installing a battery, connect the battery ground clamp last.
- When charging a battery with a battery charger, turn off the power source to the battery before either connecting or disconnecting charger leads to the battery posts. Cell caps should be loosened prior to charging to permit the escape of gas.
- Spilled battery acid can burn your skin and damage your eyes. Spilled battery acid should be immediately flushed off your skin with lots of water. Should battery acid get into someone's eyes, flush immediately with large amounts of water and see a medical physician at once.

Job Procedures

Tires, Batteries, and Fuel Cont'd.

- To avoid battery explosions, keep the cells filled with electrolyte, use a flashlight (not an open flame) to check electrolyte levels and avoid creating sparks around the battery by shorting across a battery terminal. Keep lighted smoking materials and flames away from batteries.

Fuel

Special precautions must be taken for handling fuel and refueling the drill rig or carrier:

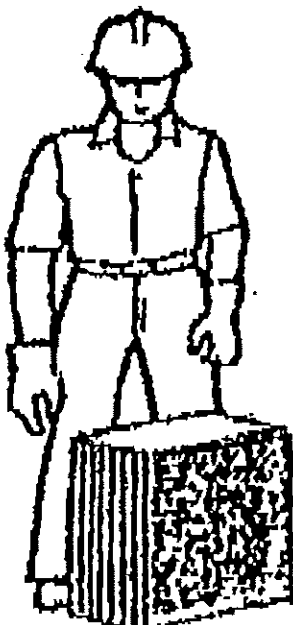
- Only use the type and quality of fuel recommended by the engine manufacturer.
- Refuel in a well-ventilated area.
- Do not fill fuel tanks while the engine is running. Turn off all electrical switches.
- Do not spill fuel on hot surfaces. Clean any spills before starting an engine.
- Wipe up spilled fuel with cotton rags or cloths; do not use wool or metallic cloth.
- Keep open lights, lighted smoking materials, flames, or sparking equipment well away from the fueling area.
- Turn off heaters in carrier cabs when refueling the carrier or the drill rig.
- Do not fill portable fuel containers completely full to allow expansion of the fuel during temperature changes.
- Keep the fuel nozzle in contact with the tank being filled to prevent static sparks from igniting the fuel.
- Do not transport portable fuel containers in the vehicle or carrier cab with personnel.
- During travel store fuel containers and hoses so they are in contact with a metal surface. This should prevent the buildup of static charge.

Job Procedures

Off-loading Trucks

General

1. Make sure you are at the proper off-loading point.
2. The load off area must be level and cleared of obstructions.
3. Loosen only the appropriate chains at the proper time.
4. Ensure that mechanical apparatus for off-loading is inspected and discard worn chains.
5. Stay clear of suspended loads.
6. The minimum crew for off-loading should be two people.
7. Only properly designated slides should be used in loading and off-loading equipment.
8. Rods and casing must be placed on sills.
9. Equipment must be placed in an orderly manner.
10. Cover supplies and equipment which could be damaged by moisture.
11. Never drop fuel containers (propane tanks must be capped, stored and secured in an upright position).
12. Smoking is prohibited when handling fuels.

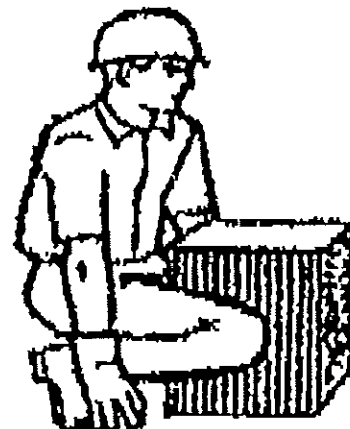


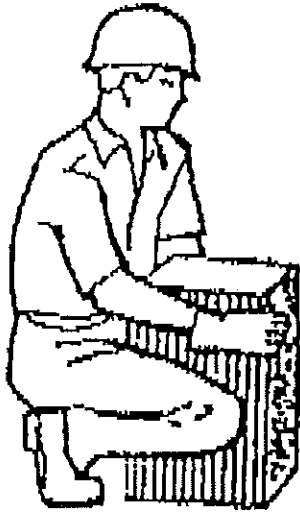
LIFTING THE RIGHT WAY

BEND KNEES-KEEP BACK AS STRAIGHT
AS POSSIBLE

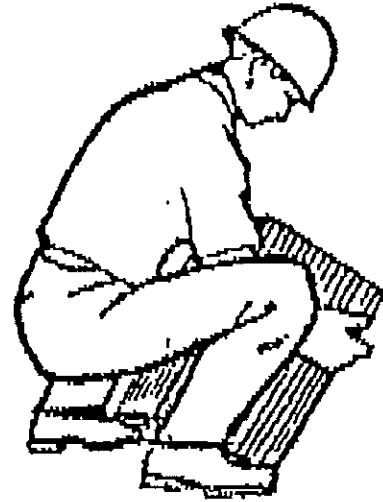
SIZE UP LOAD,
GOOD BALANCE

3.141

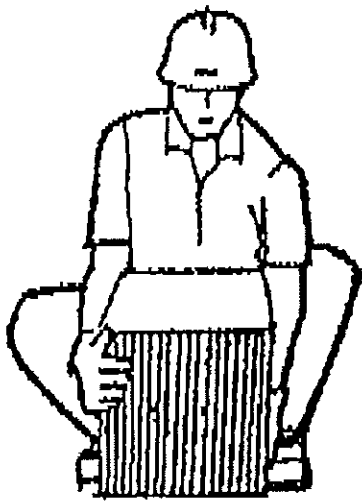




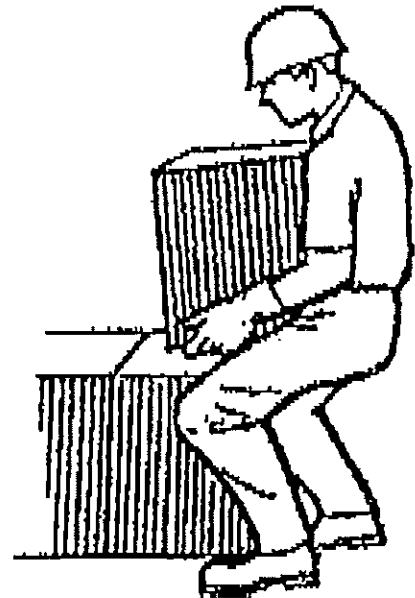
GRIP LOAD WITH PALMS OF
HANDS AND FINGERS



USE BODY WEIGHT TO START LOAD
MOVING - THEN LIFT BY PUSHING UP
WITH LEGS



KEEP ARMS AND ELBOWS CLOSE TO
BODY



WHEN LOWERING LOAD- BEND KNEES,
DO NOT STOOP

Job Procedures

Road Cutting And Construction

General

1. Make sure all tools are in good condition (IE. Axes sharp, properly hung and guarded).
2. New workers must be instructed in the proper use of tools.
3. Foreman select best routes identifying potential hazards.
4. Dear limbs and hang-ups must be identified with instructions to crews on safe removal.
5. Roads must be wide enough to enable equipment to travel freely.
6. Travel ways must be free of all obstructions.
7. Corduroy must be extended two feet on each side of equipment.
8. Bridge structures must safely support equipment with level approaches.
9. When road is complete it must be inspected by the foreman for the following:
 - a) Ground and overhead obstructions, such as dead branches and leaning trees
 - b) Road width
 - c) Proper installation of corduroy
 - d) Construction of bridges to handle loads required
10. Ensure that all applicable permits and environmental controls are strictly adhered to.

Job Procedures

Moving

General

1. Ensure that employees know that standing on sloop or wagon is not allowed. Either sit on sloop or wagon or walk behind, never walk beside tractor or sloop.
2. Gloves must be worn to protect hands from cuts, splinters, etc.
3. In fire season, crew should be warned against smoking while moving. (If you smoke, sit down, have your smoke and make sure the butt is extinguished).
4. Make sure the load is secure before moving equipment.

Job Procedures

Building Camps

Recommendations:

Provide drilling crews with proper living conditions. Optimum selection of camp site and type of camps to be used.

When evaluating the type of camps to be used the following factors must be considered:

- a) Length of contract
 - b) Time of year (season)
 - c) Number of men employed
 - d) Method of transportation (air, water, road)
 - e) Provincial and Rural regulations (fire and travel)
1. If at all possible, the camp site should be established near the shoreline of a lake or river, but not closer than 50 meters (150 ft.) from the edge of the water line.
 2. Camp site should be on a high or well drained site.
 3. Camp site clearance subject to environmental controls.
 4. Make sure the foundations are built solid in order to avoid twisting or sagging.
 5. In order to prevent dampness make sure floor is well ventilated.
 6. Camps must be built at least 15 meters (50 feet) apart.
 7. Each camp site provided must be dry.
 8. Each camp must be provided with an alternative fire exit.
 9. Camp stoves must be placed on a suitable sized sheet of metal.
 10. Fuel oil used for heating must be installed on proper stands outside of the camp.
 11. All stoves must have spark arrester at the chimney top. Stove pipes must have jacks and clearance when passing through walls.
 12. Each camp and cookery must be provided with a fire extinguisher installed for fast accessibility.
 13. Each camp area must have sufficient fire fighting equipment as required by regulations.

Job Procedures

Building Camps Cont'd.

14. Outside toilet must be built not closer than 50 meters (150 feet) from the camp. The contents of the toilet pit must be disinfected periodically.
15. The cesspool for the cookery sinks must be treated daily with lime.
16. An adequate garbage pit must be dug in an area as required by provincial regulations. Camp and cookery garbage must be disposed of daily as per provincial regulations.
17. A sturdy level platform must be supplied for propane tanks while in use for cookery. Propane cylinders must be stored upright.
18. Health regulations relating to food and water must be adhered to at all times.
19. Kitchen must be separate from sleeping quarters.
20. No pets will be allowed in any camp.
21. Weekly inspection of camp and cookery must be carried out to maintain a clean comfortable living environment.
22. When the camps are being serviced by air, a good solid dock must be provided for loading and unloading supplies. This dock must be within each access of the camp area.
23. First Aid supplies must be in place.
24. Ensure that emergency plan and procedures are visibly posted.
25. Ensure that communication links are established with the outside.

Job Procedures

Transporting Equipment Safely Over Water

1. Dock

The loading and unloading area should be equipped with a dock for safe handling of the equipment.

2. Boats

The boat should be large enough to do the job. Barges should be equipped with guard rails to prevent falling over the sides. Barges should be equipped with safety boat in tow. This boat must be connected with a secure hitch to prevent losing the boat, and also some means of a quick release in case of the barge sinking. Walking areas on the barge must have non-slip surfaces.

3. Loading

The boat must be made secure before loading or unloading begins. The load should be evenly distributed so that the boat is level. Check the loaded boat for leaks before starting out from the dock.

4. Crews

All personnel must wear life jackets while on the water or docks. The crew should remain seated while traveling.

5. Power Units

All boats should be adequately powered.

6. Weather Conditions

Water and wind conditions should be such to allow safe passage.

7. Refueling

Remove portable fuel tanks to shore when refueling. Wipe up all spilt fuel. When filling stationary tanks use a funnel with a strainer. Shut off all electrical switches and stop all motors. Make the boat secure to the dock before refueling.

Job Procedures

Transporting Equipment Safely Over Water Cont'd.

8. Safety Equipment

Proper Tools

Bucket, paddles and whistle

Spare shear pins

Fire extinguisher

First aid kit

Emergency light

Compass

Matches

**Be Extra Safety Conscious When Working on Water
Because the Extra Hazard of Drowning Is Always Present**

Follow All Environmental Regulations

Job Procedures

Mobile Equipment

1. Only authorized operators shall operate a machine.
2. The Operator is responsible for the safety of any person who may be near the machine, or near any cable, chain or other hitch attached to the machine.
3. The Operator should report mechanical troubles immediately.
4. The Operator must:
 - a) Do a pre-op check out of equipment
 - b) Keep all protective guards in place
 - c) Keep operator's position free of any obstruction or slipping hazard
 - d) Wear suitable clothing free from loose cuffs or other snagging hazards
 - e) Wear protective mitts or gloves when handling cable
 - f) Look up and watch for overhead hazards
 - g) Ensure a seat belt is buckled while operating
3. Do not run engine in a closed garage or shed.
4. No smoking while in refuelling area.
5. When servicing a machine all hydraulic or cable operated attachments should be lowered or secured.
6. Never attempt to clean, service or adjust a machine or engine while it is in motion.
7. When a machine is standing with engine running, transmission should be in neutral.
8. When starting engine, make sure the brakes are on and dogged.
9. Operator will take extra care when winding or letting out his winch cable. He will not allow anyone to hold cable closer than 1.2 meters (4 feet) from drum when winding on.

Job Procedures

Mobile Equipment Cont'd.

10. The operator alone will ride on the machine.

Mobile Equipment Pre-Op Checklist

Before starting:

- a) check all hydraulic hoses, visually
- b) check fuel levels
- c) clean oil, grease, trash from steps and operators
- d) oil levels
- e) check fluid levels
- f) check tires, brakes and rigging
- g) check fire extinguisher

Job Procedures

Regulations for Traveling Over Ice

General

For any person working or moving over ice covered surfaces, the principal danger is breaking through the ice and falling into the water. Exposure to cold water could result in hypothermia and/or death. It is important to know that determining the ice cover over a lake and a stream or river is generally very different. When traveling over a fast flowing stream extreme caution must be taken to ensure that the ice thickness is uniform over the area of proposed travel with equipment. Due to the current and flow of water under the ice, the ice cover will vary, even over a few meters.

1. Thickness of ice required to carry the following loads:

Load	Weight in Lbs.	Ice Thickness in Inches
One Man on Skis	220	2
One Man on foot	220	2-3/4
One loaded sled	353	3 1/2
Ski-doo	1100	5
One horse	1700	8
One small tractor on wheels	2400	9
Snow Personnel Carrier	5500	11
Automobile	4000	12
Muskeg	5000	12
Farm Tractor	6000	12
Skidder	10000	15
D-6	24000	23
D-7	30000	25
D-8	35000	27
20 Ton Truck	44000	30
35 Ton Truck	77000	39
50 Ton Truck	110000	47

2. The distance of a sloop from the tractor should never be less than 9.14 meters (30 feet).
3. Always attach to both the tractor and sloop the longest timbers that are available 7.63 meters (25 feet) to each vehicle back and front.
4. As part of equipment, a length of cable should be attached to the tractor in order to assist in the recovery should the tractor go through the ice.

Job Procedures

Use of Saws

CHAIN SAWS:

General:

1. Inspect daily and repair when necessary.
2. When not in use, store in a safe, conspicuous place.
3. Only personnel authorized by foreman will be allowed to use chain saws.

Felling and Bucking:

1. Before starting work, see that tools are in good working order.
2. Before felling clear away brush and limbs and deep snow, so as to allow yourself room to work right around the tree. Make sure of a fast line of retreat. Even a skilled logger cannot guide the direction of a falling tree during high winds. Avoid felling timber when the wind is strong enough to sway the trees.
3. Before starting your saw, look for "widow makers". Look around you for persons, horses and other obstacles. If necessary to fell timber across a road, post men on the road for adequate warning. Remember you cannot hear anyone approaching once your chain saw starts.
4. Make your notches deep, one-third the diameter of the tree. The felling cut should be 5.0 cm. (2"0 above the bottom of the notch). Large, leaning trees should be "cornered" to prevent "barber chairs". Use wedges in large timber. Do not cut right through to the notch; a tree must have something to hinge on or it will kick back.
5. Just before the tree is about to fall, shout "TIMBER" and when the tree begins to topple, remove your saw and place it at the base of the stump directly behind the line of fall of the tree. You are now free to move rapidly away from objects that may be knocked down by the falling tree.

Job Procedures

Use of Saws Cont'd.

Safe use of Chain Saws:

1. Do not use the tip of your saw for cutting.
2. Do not limb or cut brush with your chain saw.
3. Make sure that spurs are on your chain saw.
4. Maintain correct chain tension.
5. Adjust the idling screw so that the chain saw stops when the motor is idling.
6. Do not smoke while filling the gasoline tank.
7. A chain saw must not be used to strip bark.
8. Follow the manufacturer's instructions for the maintenance of your saw.
9. Use only saws with an anti-kick device.
10. Always set a chain saw onto non-flammable material to refill the gas tank.
11. Never refill the gas tank of a chain saw when the machine is hot.
12. If gas is spilled while filling, clean off before restarting the machine.
13. Never start up a chain saw within 3.04 meters (10 feet) of place where the refilling took place.
14. Make sure that there is no gas left on the muffler of the machine.
15. Always carry and use if necessary the small bags of "Chemical Powder" that is supplied to put out any fire.
16. Do not walk with the power saw running. Walk with the saw stopped and pointing to the rear.
17. Start the saw on the ground or on a stump - not on your knee.

Job Procedures

Use of Saws Cont'd.

Part 1: Felling

Objectives

1. The importance of proper felling.
2. The importance of proper notching.
3. The hazards of improper felling and how to correct them.
4. The importance of proper back cutting.

Proper felling techniques result in better quality, higher production and fewer injuries.

How does proper felling help reduce injuries?

1. It decreases the pushing of trees.
2. It reduces injuries from pushing and cutting at the same time.
3. It reduces the possibility of a tree splitting into a "Barber Chair" and striking the cutter.
4. It reduces the number of tree butts kicking back off the stump.
5. It reduces the possibility of trees being cut almost completely off and not falling.
6. It helps ensure that the tree falls in the intended direction.

Job Procedures

Use of Saws Cont'd.

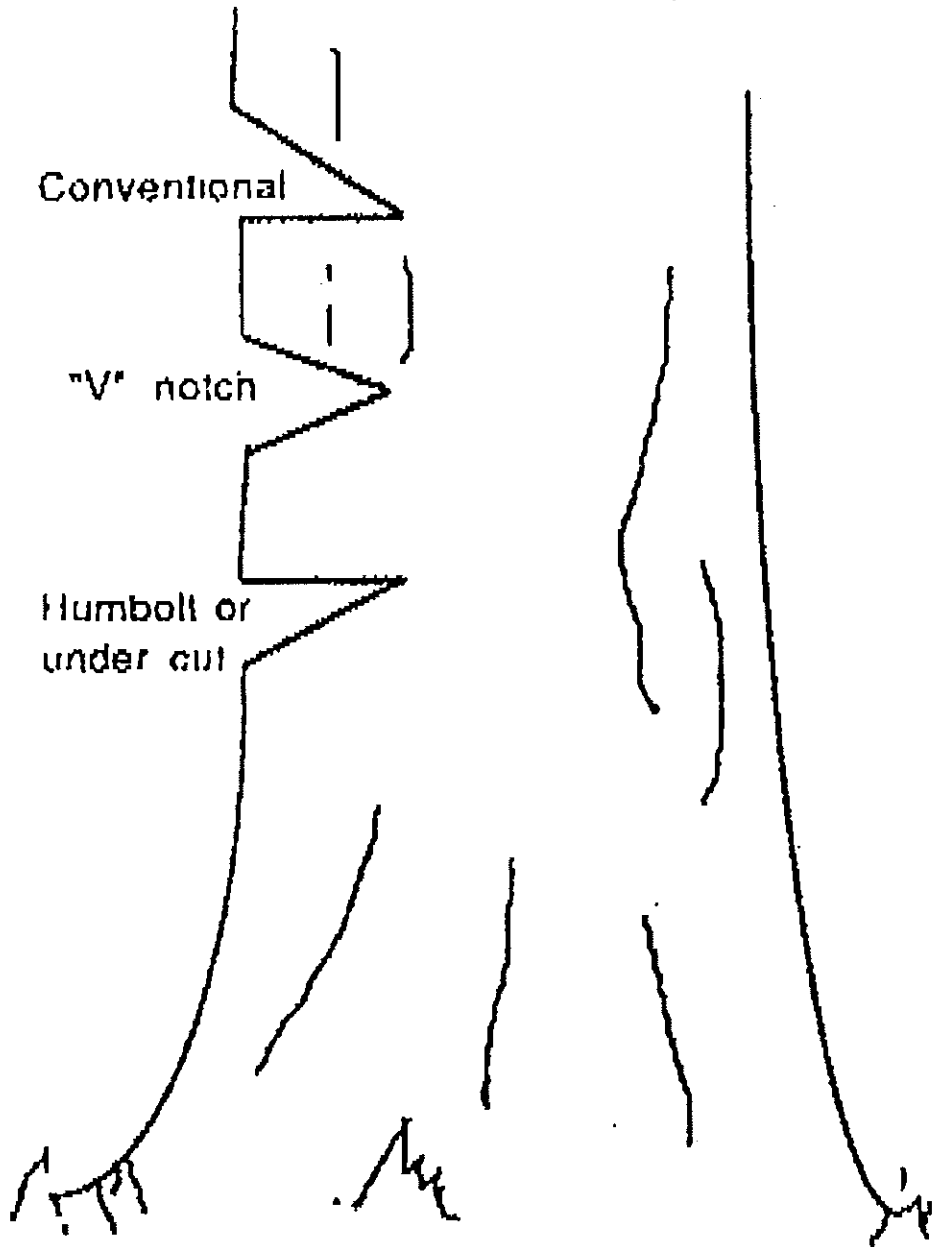
Proper felling improves quality by reducing:

1. Damage through improved control of the direction of fall
2. Splitting and "Barber Chairs"
3. Pulled fibers and side scars
4. Cutting long section of the butts

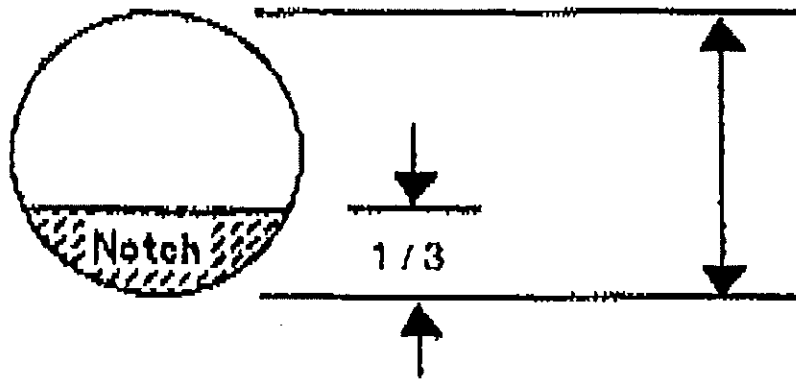
Proper Felling Improves Production by Reducing:

1. Time spent choking by improved felling
2. Time spent pushing and pulling trees down
3. Time lost when a chain saw binds in a cut
4. Problems for the cutter and unnecessary cutting of butts

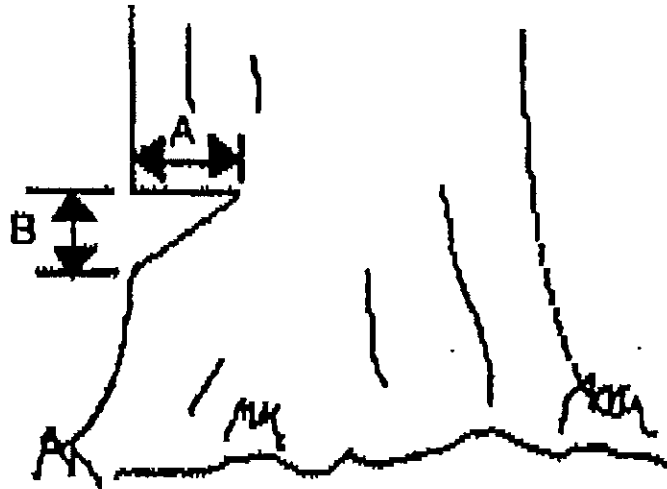
Proper Notches



Proper Dimensions of Notches



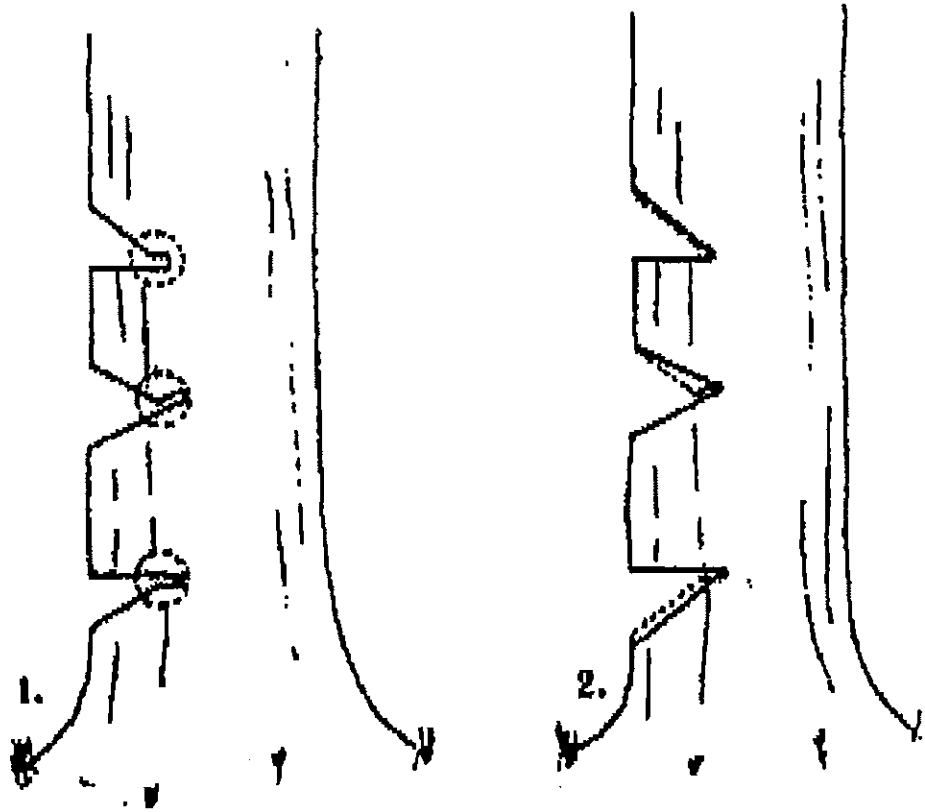
Depth of notch should be $\frac{1}{3}$ of the tree diameter.



The face of the opening of a proper notch "A", should be equal to the depth of "B".

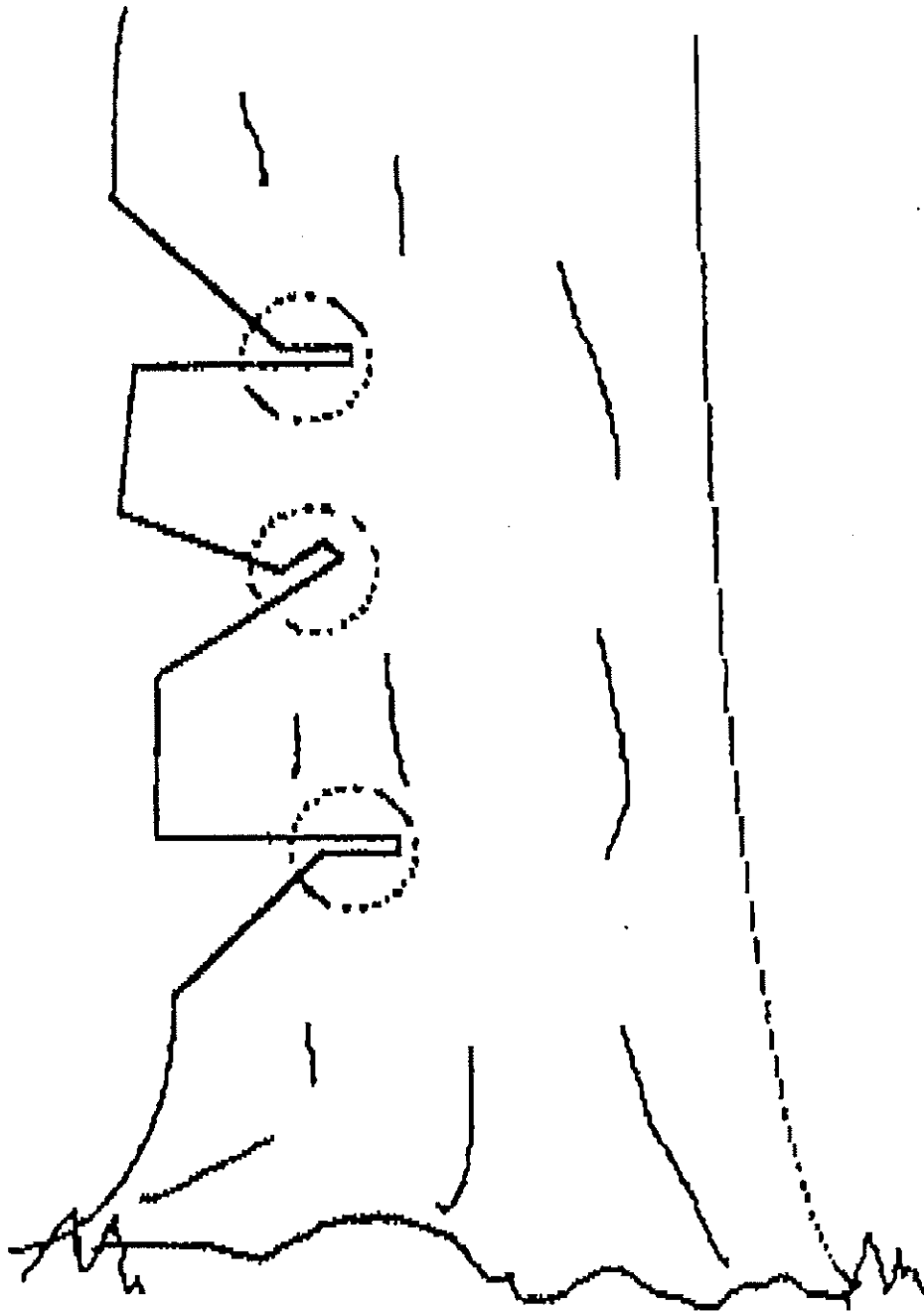
The ratio of A to B can be reduced in larger trees.

Correcting Dutchman Notches



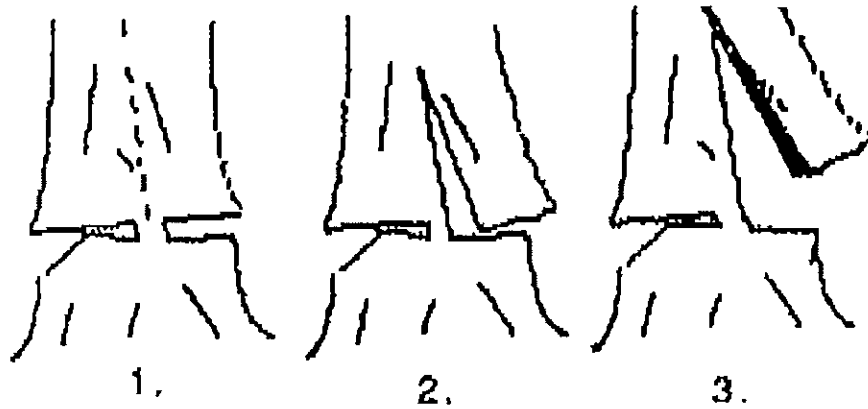
1. Dutchman notches.
2. Portion of notch that must be removed to correct the Dutchman notch.

Three Typical Dutchman Notches



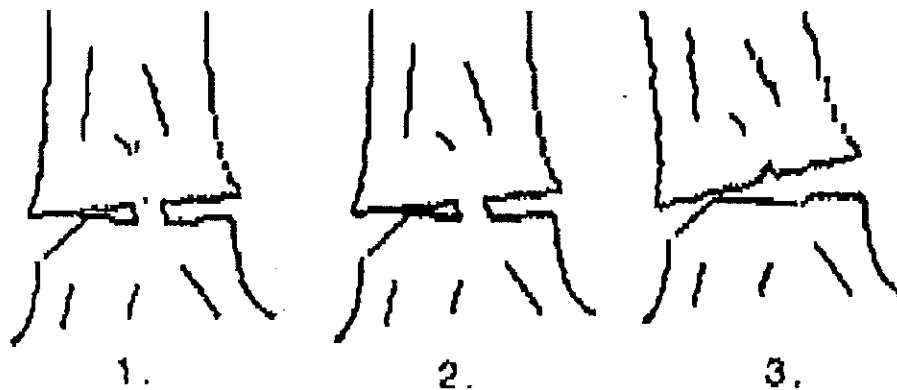
Proper Dimensions of Notches

A. BARBER CHAIR



1. The tree starts to fall and stops when Dutchman notch closes, resulting in strain along the dotted line.
2. Because of the strain, the fibres separate and the tree begins to split.
3. The tree continues to split until it break off, leaving a Barber Chair.

B. The Tree Falls to Fall Completely



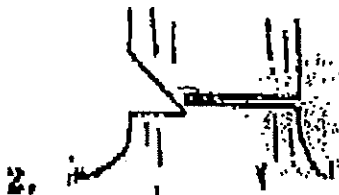
1. The tree starts to fall but stops when the Dutchman closes.
2. The cutter must leave the tree to be pushed down by a skidder or...

Results of Improper Back Cutting

A. Back cut at the same level as the notch



B. Back cut too deep



1. Highly increases the possibility of the tree butt kicking back off the stump and decreases elasticity of the hinge.
2. Hinge will break almost immediately resulting in inaccurate felling, and damage to the saw.

C. Back cut too high above the notch



D. Back cut below the notch



3. Highly increases the necessity of pushing or pulling the tree to make it fall; produces low quality butt and also decreases effectiveness of the notch.
4. Highly increases the possibility of tree sitting back on the stump; produces low quality butt and may also require some pushing.

Job Procedures

Use of Saws Cont'd.

Part 2: Felling Problem Trees

1. Some trees present special problems in felling:
 - a) Trees that side scar easily
 - b) Larger trees - light leaners or heavy tops (Technique 1,2,3)
 - c) Heavy leaners. (the boring technique) {
 - d) Trees leaning the wrong way
 - e) Felling trees against the natural lean
2. Hung up trees.
3. Chicots.
4. The escape route.

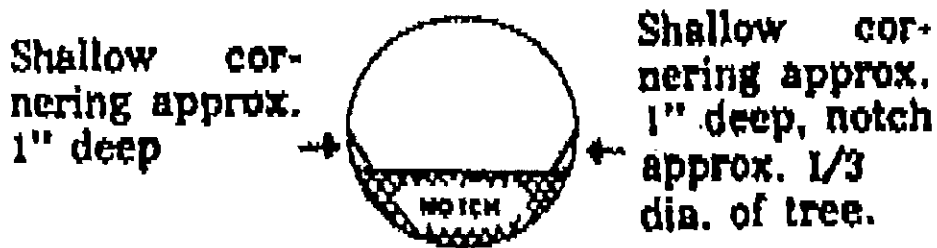
Job Procedures

Use of Saws Cont'd.

A) Trees That Side Scar Easily



1. In standard felling, the sides of the hinge between the notch and back cut are not sawn when the tree starts to fall. st
2. As the tree falls, there is strain on the sides of the tree along with dotted lines. (Circled area).
3. Instead of breaking with the hinge, strips along the side of the tree rip off the stump, resulting in side scars.

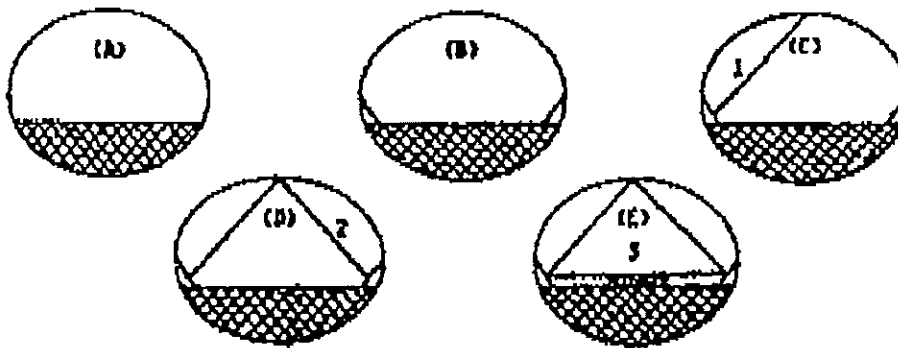


To prevent side scarring, corner to a depth of one inch before making the back cut.

Job Procedures

Use of Saws Cont'd.

B) Larger Trees, Light Leaners or Trees with Heavy Tops



(TECHNIQUE 1-2-3)

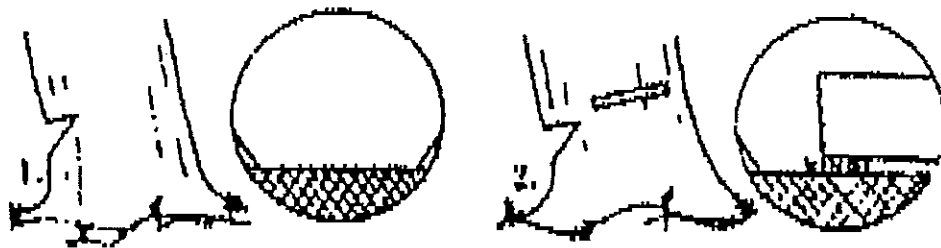
Felling a Light Leaner

- a) the notch is made in the normal manner ($1/3$ diameter of tree)
- b) make corner cuts
- c) the number one cut is made as per the diagram at the same height above the notch as a standard back cut
- d) the number two cut is made as per the diagram, at the same plane as cut number one
- e) the number three cut is made at the same plane as the former cuts, leaving the standard thickness of hinge

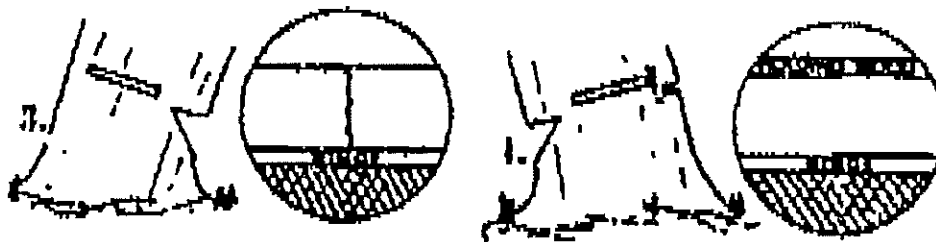
Job Procedures

Use of Saws Cont'd.

C) Heavy Leaners (The Boring Technique)



1. Begin by making a shallow notch (1/4 diameter of tree)
2. Next, holding the saw bar horizontal to the plane of the notch and at a slightly higher plane, the tree is bored out cutting back from the notch, leaving a good hinge and sufficient holding wood.



3. The same boring procedure is then performed on the other side of the tree, ensuring that the two boring cuts meet properly.
4. Then a back cut is made horizontal to the boring cut, a minimum of two inches below the boring cut; the holding wood at the back severs and the tree falls, guided by the hinge.

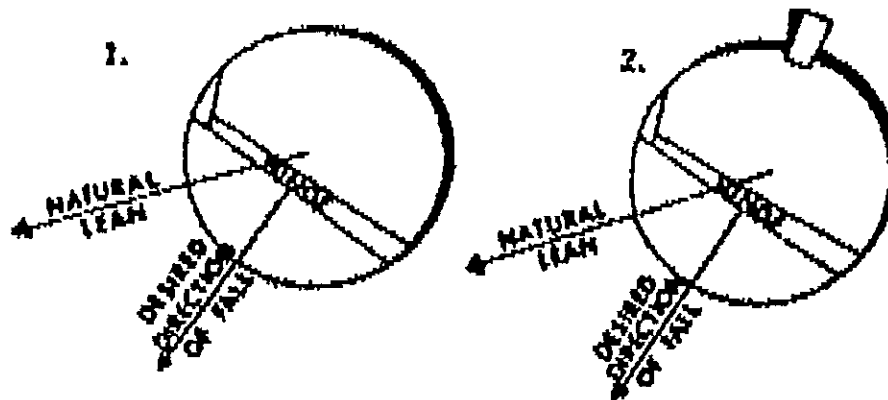
Job Procedures

Use of Saws Cont'd.

D) Trees That Lean the Wrong Way

Most trees will fall on the branch heavy side or in the direction of their lean; some trees can be encouraged to fall to the right or left of their lean, the extent varying with every tree.

Two techniques can be used to control the direction of fall; they can be used individually or together.



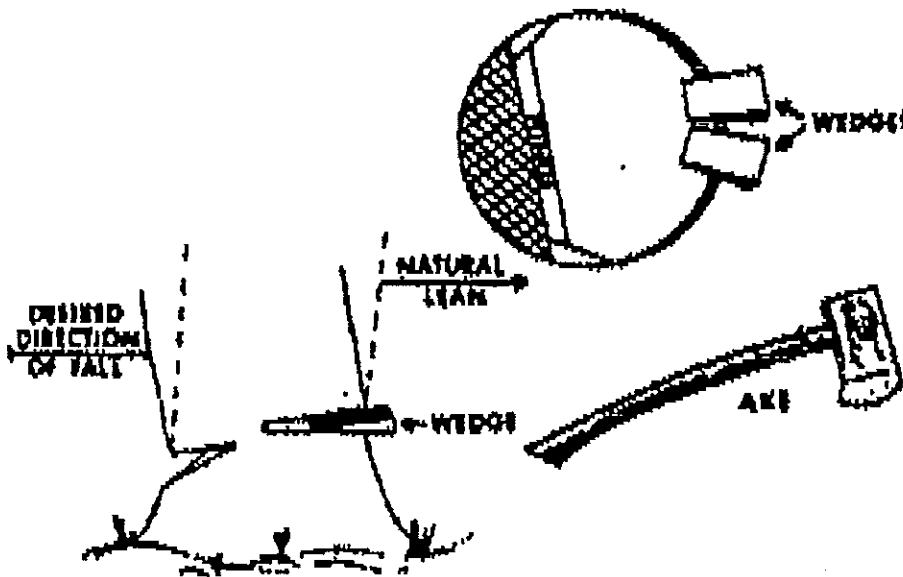
1. The notch must be made in the desired direction of fall; by varying the thickness of the hinge on one side and cornering the lighter side, you change the direction of fall.
2. The notch is made in the desired direction of fall, a hinge is left and a corner cut (No. 1); a wedge is hammered into the back cut or a felling bar is used, forcing the tree to fall in the desired location.

Job Procedures

Use of Saws Cont'd.

E) Felling Trees Against the Natural Lean

A large tree may be felled against its natural lean by inserting one or more wedges in the back cut and as the back cut is sawn, drive them in with an axe.



This may be necessary to:

- a) avoid falling into other trees
- b) place the tree in desired direction
- c) prevent a hang-up
- d) avoid breakage
- e) avoid fouling up the felling pattern

Job Procedures

Use of Saws Cont'd.

STOP



Don't work in the presence of hung-up trees.

Have these death-traps pushed or pulled down by machine.

Job Procedures

Use of Saws Cont'd.

LOOK

CHICOTS

(Widowmakers)

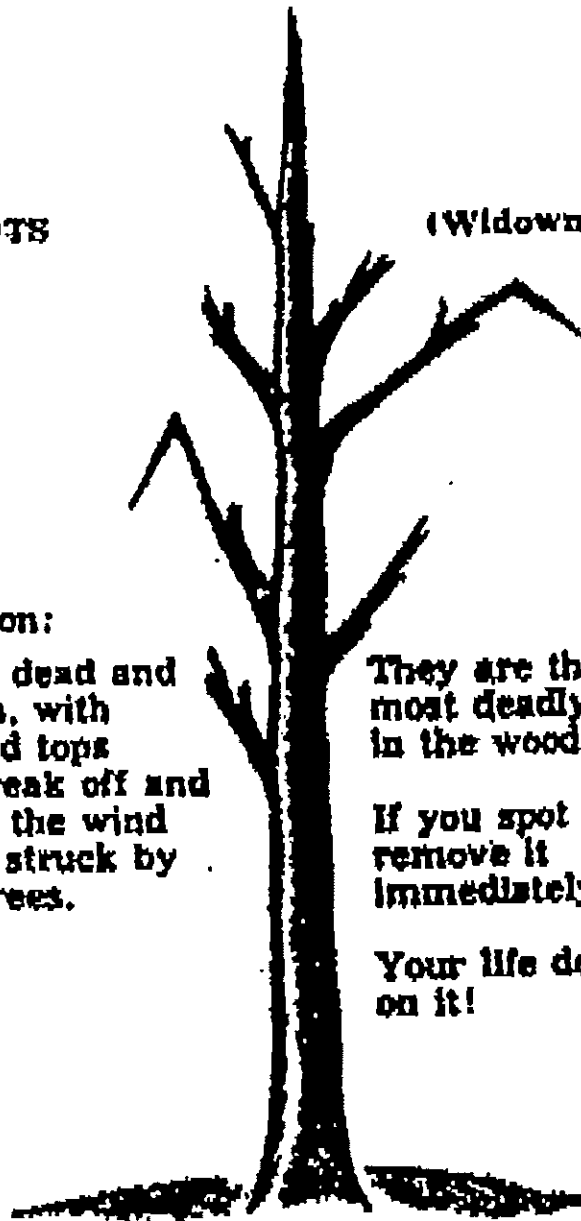
Description:

Standing dead and dry trees, with limbs and tops which break off and fall with the wind or when struck by falling trees.

They are the most deadly hazard in the woods.

If you spot a chicot, remove it immediately.

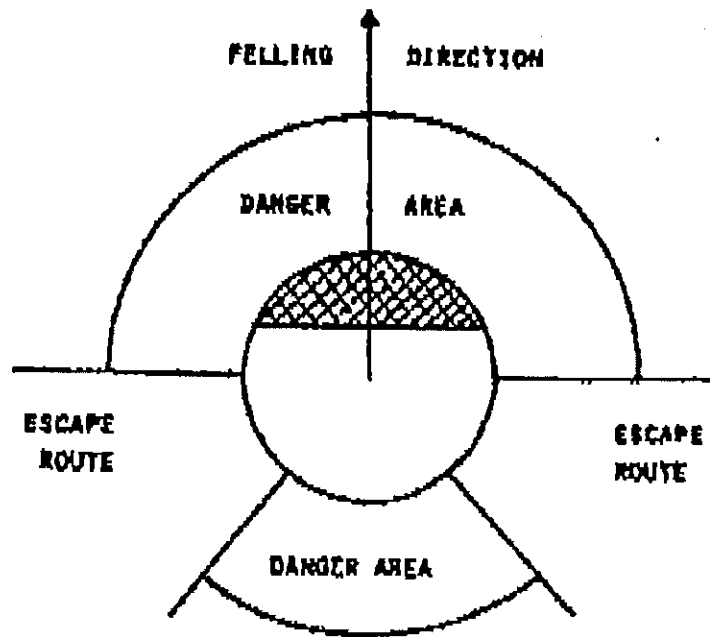
Your life depends on it!



Job Procedures

Use of Saws Cont'd.

ESCAPE ROUTE



**Learn to anticipate in your felling techniques;
when the tree starts to move, get moving yourself!**

Job Procedures

Preventing Axe Cuts

1. Axes must be properly hung, sharpened, fitted with good handles and maintained in good condition.
2. Axe must be carried by the side with the handle gripped close to the axe head and the cutting edge turned away from the body.
3. Clear the work place of all interfering branches and brush.
4. Keep your axe strokes under control. Axe strokes must be aimed clear of the body.
5. Axes must never be used to pull on logs or push over standing trees.
6. Axes must be sheathed, when stored and during transportation.

Job Procedures

Drill Tower Erection Safety

Drill Towers:

1. Safety belts must be worn at all times when working around towers (Refer to Section 13 of the Occupational Health and Safety Act.)
2. Tower must be secured by guy lines.
3. Signaling device a must on all towers.
4. Tower lighting is a must.

Drill Tower Erection Safety:

1. Fall arrest system must be used.
2. During tower erection proper working platforms must be used
3. All tools used in tower construction must be secured.
4. A gin pole of sufficient strength to pull any required load safely must be attached to the tower leg.
5. All material being raised on the tower must be tied securely so that there is no danger of ropes becoming undone or objects falling. All materials should be laid out in an orderly manner to provide for an efficient and safe operation.

Job Procedures

Cementing

Cementing Diamond-Drill Holes:

Diamond drill-hole cementing is regarded by the trade as a necessary evil. The operation is time consuming and the results often unpredictable.

In as much as rock temperatures vary from one area to another, and also from one depth to another, it is well to remember that temperatures are a definite factor in cement hardening time. In all cements tested, the hardening time lengthened considerably as the temperature decreased. A slurry consisting of five gallons of water to one sack of aluminous cement sets in ten hours at 50° F but would require twenty-eight hours to set at a temperature of 33° F.

There is also a relation between setting time and the amount of water used in mixing the cement slurry. A mix of two gallons of water to one sack of cement requires twenty hours to harden at 35° F, while a mix of five gallons per sack requires twenty-eight hours at the same temperature.

Cement Placements:

Having determined that the aluminous type of cement was best suited to our requirements, the next step was to ascertain how to place the cement to do the best job with the least possible shutdown time and chance of failure.

Generally speaking, cement has been placed in diamond-drill holes by one of three different methods.

One is to mix the required amount of cement slurry and to pour it through the drill rods to the area in the hole that is causing trouble. The rods are then slowly raised through and to a point above the zone that has been cemented, washed out and removed from the hole. With care, fair results can be obtained by using this method. Never leave rods in the hole after cementing.

Two is to place cement by using a cementing cylinder. The slurry is placed in a steel cylinder of the desired dimensions, one end of which is sealed with an easily ruptured piece of light brass sheeting. The other end is attached to the drill rod and the assembly is lowered down the hole. When the cementing cylinder is in proper position, sufficient hydraulic pressure is applied to rupture the brass cover and force the cement into the hole. This procedure works quite well in deep holes in as much as a very thick cement mix may be placed with very little dilution at the point required, but it has several disadvantages; first, if the hole is caving badly, the dump bailer cannot be washed or chopped through the trouble zone which necessitates releasing the cement on the top of the cave depending on the weight of the cement to work its way down through;

Job Procedures

Cementing Cont'd.

secondly, considerable time is consumed for the amount of cement placed due to having to lower and pull the entire string of rods for each bailer full of cement placed.

A third method is to pump the cement slurry into the hole through the drill rods, when the mix reaches the zone to be cemented, the pump is stopped and the rods pulled. In order that the cement may be placed accurately and not pumped past the zone to be cemented, or left in the drill rods, the operator must either pump a measured volume of water behind the cement or estimate the pumping time required. To place cement accurately in this manner requires very careful planning and considerable skill. Poorly or inaccurately placed cement can be the cause of a great deal of trouble.

The major fault pertaining to the placing of cement by the pumping method is lack of control. There are seldom any tables showing the volumetric capacities of drill rods and mixing barrels available at the drill site when they are required. Capacities of thick and thin wall drill rods vary considerably. Even with the necessary information covering the above factors, there is still no means of definitely knowing when the cement has reached the desired destination.

Pumping Method Most Suitable:

From past experience, the pumping method of placing cement appears to be the most suitable for normal diamond-drilling requirements, consequently, we concentrated our investigations on this method. Having determined the main causes of failure, it was our purpose to try to find ways and means of correcting them.

Plugs placed ahead of and behind a column of cement appeared to be the logical way to prevent dilution. Plugs have been developed that fill the entire diameter of the drill rod and expand to fill the hole. After trying a number of ideas it was found that balls made from foam rubber and specially treated would serve the purpose very well. By placing one ahead of and one behind the column of cement, dilution while passing through the drill rods could be almost entirely eliminated.

When the plug reaches the desired depth, it causes the line pressure to rise and the relief valve at the pump to discharge. By isolating the relief valve, the pumping pressure is increased until the plug has been forced through the rods. The relief valve is again brought into service by opening the shutoff valve and the cement pumped through into the trouble zone. When pumping cement the rods should be raised slowly, and clear water should be pumped through the rods to displace the cement.

Job Procedures

Cementing Cont'd.

In some diamond-drill holes there are conditions where a heavy flow of water makes cementing difficult. This water may be the cause of caving material or running sand. To combat such a condition the cement should be placed under pressure which must be maintained until it has set.

A second plug should be placed above the cement to prevent dilution. The pressure on the cement may be maintained as required by continuing to pump water.

It cannot be emphasized too greatly that cementing of diamond-drill holes, regardless of depth or conditions, requires care and skill and can never be bound by hard and fast rules.

Never pump cement through a core barrel and on standard X Series Rods also remove ferrule.

Job Procedures

Safe Operation of Snow Mobiles

Normal Operations:

First check to make sure the throttle is free before starting motor.

1. Agitate the fuel tank before starting, as oil will settle
2. After starting motor, check to make sure track is free before mounting machine
3. Shatter proof goggles and helmet must be worn
4. All motor toboggans must be licensed and insured

Fuel Mixing Procedures:

1. To mix the gasoline and oil always use a separate clean container. Never mix in your snow machine tank.
2. Pour the full amount of oil required for the total mixture into the container, add approximately half the amount of gasoline to be mixed and shake thoroughly.
3. Add the remainder of the gasoline and again thoroughly agitate the container.
4. Using a funnel with a fine mesh screen to prevent the entry of water and foreign particles, transfer the fuel from container to tank.

Steering:

Operate vehicle in a safe manner.

Lubrication and Maintenance:

Check operator's manual

Job Procedures

Safe Operation of Snow Mobiles Cont'd.

Supplies:

Always carry the following emergency equipment:

- a) First aid kit
- b) Spark plug wrench
- c) Tools
- d) Snow Shoes
- e) Spark Plugs
- f) Drive Belt
- g) Axe
- h) Drive chain and spare links

For long trips add survival equipment, food and fuel:

DO'S

1. Make sure proper maintenance has been carried out on machine.
2. Always follow used trails if possible, as they are proven safe routes. If possible travel in pairs.
3. Always let some responsible person know where you are going, what route you are taking and your estimated time or return.
4. Check the weather before starting out, especially for long trips.
5. Carry extra mixed gasoline.
6. Wear proper clothing.
7. Wear extra warm and waterproof boots.
8. Use a rigid trailer hitch while pulling toboggans or sleds.
9. Observe highway regulations.
10. Snow machine must be registered and licensed the same as a car. Driver must have a driver's or chauffeur's license.

Job Procedures

Safe Operation of Snow Mobiles Cont'd.

11. Stop before railway tracks or roads.
12. Check gas in tank, turn back when half is used up. Leave a safety margin.
13. If storing machine check owner's manual for storage procedure.

DONT'S:

1. Don't cross in front of another vehicle in motion.
2. Don't go over rocks or stumps or ride in railway tracks or right of ways.
3. Don't smoke while refueling.
4. Don't cross a river or lake before checking thickness of ice.
5. Don't show off and do acrobatics.
6. Don't overload the machine. Haul load on sled instead.
7. Don't use machine for pleasure. It is a company vehicle and is to be used only as such.

Job Procedures

Auger Drilling

Clearing The Work Area

Prior to drilling, adequately clear and level the site to accommodate the drill rig and supplies and provide a safe working area. Drilling should not be commenced when tree limbs, unstable ground or site obstructions cause unsafe tool handling conditions.

Start up

- All drill rig personnel and visitors should be instructed to "stand clear" of the drill rig immediately prior to and during starting of an engine.
- Make sure all gear boxes are in neutral, all hoist levers are disengaged, all hydraulic levers are in the correct positions and the cathead rope is not on the cathead before starting a drill rig engine.
- Start oil engines according to the manufacturer's manual.

Drilling Operations

Safety requires the attention and cooperation of every worker and site visitor.

- Do not drive the drill rig from hole to hole with the mast (derrick) in the raised position.
- Before raising the mast (derrick) look up to check for overhead obstructions. (Refer to Section on Overhead and Buried Utilities.)
- Before raising the mast (derrick), all drill rig personnel (with exception of the operator) and visitors should be cleared from the areas immediately to the rear and the sides of the mast. All drill rig personnel and visitors should be informed that the mast is being raised prior to raising it.
- Before the mast (derrick) of a drill rig is raised and drilling is commenced, the drill rig must be first leveled and stabilized with leveling jacks and/or solid cribbing. The drill rig should be releveled if it settles after initial set up. Lower the mast (derrick) only when the leveling jacks are down and do not raise the leveling jack pads until the mast (derrick) is lowered completely. Before starting drilling operations, secure and/or lock the mast (derrick) if required according to the drill manufacturer's recommendations.

Job Procedures

Auger Drilling Cont'd.

- Do not stand on the elevated deck of a truck-mounted or all terrain-mounted drill rig while the drill rig is in operation unless necessary for special tasks and the operator has been notified.
- The operator of a drill rig should only operate a drill rig from the position of the controls. If the operator of the drill rig must leave the area of the controls, the operator should shift the transmission controlling the rotary drive into neutral and place the feed lever in neutral. Before leaving the vicinity of the drill, shut down the drill engine.
- Throwing or dropping tools must not be permitted. Carefully pass tools by hand between personnel or use a hoist line.
- Do not consume alcoholic beverages, other depressants, or chemical stimulants prior to starting work on a drill rig or while on the job.
- If it is necessary to drill within an enclosed area, make certain that exhaust fumes are conducted out of the area. Exhaust fumes are toxic and some cannot be detected by smell.
- Clean mud and grease from boots before stepping on a drill platform and use hand holds and railings. Watch for slippery ground when stepping down from the platform.
- During freezing weather, do not touch any metal parts of the drill rig with exposed flesh. Freezing of moist skin to metal can occur almost instantaneously.
- Drain all air and water lines and pumps when not in use if freezing weather is expected.
- Adequately cover or protect all unattended boreholes to prevent drill rig personnel, site visitors, or animals from stepping or falling into the hole. Cover, protect or backfill all open boreholes according to local or provincial regulations on completion of the drilling project.
- Never allow "horsing around" within the vicinity of the drill rig and tool and supply storage areas - even when the drill rig is shut down.

Job Procedures

Auger Drilling Cont'd.

- When using a ladder on a drill rig, face the ladder and grasp either the side rails or the rungs with both hands while ascending or descending. Do not attempt to use one or both hands to carry a tool while on a ladder. Use a hoist line and a tool "bucket" or a safety hook to raise or lower hand tools.
- Terminate drilling operations during an electrical storm and move the complete crew away from the drill rig.

An elevated derrick platform should be used with the following precautions:

- When working on a derrick platform, use a safety belt and a lifeline. The safety belt must be at least 4 inches wide and should fit snugly but comfortably. The lifeline, when attached to the derrick, must be less than 6 feet long. The safety belt and lifeline must be strong enough to withstand the dynamic force of a 250 lb. weight (contained within the belt) falling 6 ft.
- When climbing to a derrick platform that is higher than 20 ft. (6 m+), a safety climbing device should be used.
- When a rig worker is on a derrick platform, the lifeline should be fastened to the derrick just above the derrick platform and to a structural member that is not attached to the platform or to other lines or cables supporting the platform.
- When a rig worker first arrives at a derrick platform, the platform should immediately be inspected for broken members, loose connections and loose tools or other loose materials.
- Tools should be securely attached to the platform with safety lines. Do not attach a tool to a line attached to your wrist or any other part of your body.
- When you are working on a derrick platform, do not guide drill rods or pipe into racks or other supports by taking hold of a moving hoist line or a traveling block.
- Loose tools and similar items should not be left on the derrick platform or on structural members of the derrick.
- A derrick platform over 4 ft, (1.2 m) above ground surface should have toe boards and safety railings that are in good condition.
- Workers on the ground or the drilling floor should avoid being under rig workers on elevated platforms, whenever possible.

Job Procedures

Auger Drilling Cont'd.

Be careful when lifting heavy objects:

- Before lifting any object without using a hoist, make sure that the load is within your personal lifting capacity. If it is too heavy, ask for assistance.
- Before lifting a relatively heavy object, approach the object by bending at the knees, keeping your back vertical and unarched while obtaining a firm footing. Grasp the object firmly with both hands and stand slowly and squarely while keeping your back vertical and unarched. In other words, perform the lifting with the muscles in your legs, not with the muscles in your lower back.
- If a heavy object must be moved some distance without the aid of machinery, keep your back straight and unarched. Change directions by moving your feet, not by twisting your body.
- Move heavy objects with the aid of hand carts whenever possible. Drilling operations should be terminated during an electrical storm and the complete crew should move away from the drill rig.

Job Procedures

The Lowering and Hoisting of Drill Rods **Surface**

Step 1 - Preparation

- A. Check the Core Barrel. Check the core tube and core barrel head for **CLEANLINESS**.
1. Attach the bit and shell firmly.
 2. Attach the core barrel to the drill rods and tighten. Remove hole cover.
 3. Lower core barrel and first section of drill rods into hole.
 4. Hold with hoist brakes.
 5. Apply rod grease when necessary.

Step 2 - Install Lowering Tool

- A. Check the condition of the jaws.
1. Check for cleanliness.
 2. Attach to rods.
 3. Test to see that the lowering iron handle has enough clearance.
 4. Operator to position himself properly.

Step 3 - Lower Rods

- A. Lowering Iron
1. Hold lowering rod handle firmly.
 2. Helper detach hoisting plug from rods.
 3. Brake and stop rods with a smooth motion.
 4. Allow time for the helper to attach next rod properly.
- B.
1. Holding rods with the foot clamp, detach the hoist plug. Ensure that brakes are properly adjusted.
 2. Attache the rod while hoisting the free plug.
 3. Allow time for the helper to attach the hoisting plug to drill rod.
 4. On signal from helper place your foot on the foot clamp pedal.
 5. Hoist the rods enough to free the foot clamp jaws holding with the hoist brake keeping the clamp open with pressure from foot.
 6. Lower rods with the hoisting brake.
 7. Lower rods in appropriate sections.
 8. When the rods reach the desired depth, leave rods in foot clamp.

Job Procedures

The Lowering and Hoisting of Drill Rods Surface Cont'd.

Step 4 - Prepare to Drill

1. Close the drill head and secure.
2. Attach cable to the hoisting swivel and rod.
3. Hoist rod to a position above the closed drill head.
4. Lower rod carefully through the drill head.
5. If the rod does not go through the chuck jaws, spread the jaws with a wrench handle or screwdriver. **DO NOT USE YOUR FINGERS.**
6. Attach the rod to the string of rods that are in the hole.
7. Chuck the drill rods.
8. Pump water through the rods until a good return is observed.
9. Lower the rods with the cable to the desired depth position.
10. Chuck rods firmly.
11. Remove holding devices.
12. Commence drilling.

Job Procedures

The Lowering and Hoisting of Drill Rods **Surface**

Standard:

Step 1 - Stop Pump

Open the release valve and close discharge valve.
Be sure that the place of work is free of obstacles.

Step 2 - Position Feed Screw

To release the chuck

- A)
1. Assure condition of the wrench. When using hydraulic break-out tools ensure that jaws and hydraulic hoses are in good condition.
 2. Always pull on wrench.
 3. Assure proper footing.
 4. Never use an extension on the handle.
 5. Maintain good housekeeping.

In order to back up the feed screw (mechanical)

- B)
1. Stay clear of moving parts.
 2. Place hand firmly on jacking back wheel or grasp lever properly.
 3. Avoid jamming chuck against housing.

Step 3 - Attach the Water Swivel Bail

- A)
1. Check the hoist cable for correct spooling.
 2. Check the marker on the hoist cable.
 3. Check and adjust, if necessary, the hoist clutch and brakes.
 4. Measure the rods for exact depth (be sure to mark the rods).
 5. Attach the holding dog or rod clamp.
 6. Check for proper anchorage and line condition of the holding dog or foot clamp.

Job Procedures

The Lowering and Hoisting of Drill Rods **Surface Cont'd.**

Step 4 - Hoist the First Rod Segment to where a joint appears between the chuck and the casing, or above the feed screw

- A)
 - 1. Hoist Carefully
 - 2. Make sure that the bit is not stuck on the bottom, mudded or sanded.
 - 3. Hoist the rods.

- B)
 - 1. Apply the hoist brake firmly.
 - 2. Make sure that the brakes will hold the weight of the rods.
 - 3. Ease the rods into the holding clamp.

Step 5 - Breaking the First Rod

- A)
 - 1. Loosen rod joint with two pipe wrenches and detach completely.
 - 2. Check the condition of the pipe wrenches. Pay strict attention to the condition of the jaws.
 - 3. Position yourself properly with good footing.
 - 4. Detach the rod completely to prevent the raising of the full string of rods.

- B)
 - 1. Hoist the rod out of the drill head and remove.
 - 2. Keep clear of moving parts.
 - 3. Lower the rods to the floor.
 - 4. Remove the cable from swivel.
 - 5. Attach cable to the hoisting plug.
 - 6. Open the drill head and swing out of the way, securing it at the same time.

Step 6 - Hoisting the Rods

- A)
 - 1. Attach the hoist plug to the rods.
 - 2. Check the hoisting plug for condition.
 - 3. Check the cable device, bolt and nut, or other locking device.
 - 4. Check the hoist drum for proper cable spooling.
 - 5. Check the cable marker.

Job Procedures

The Lowering and Hoisting of Drill Rods **Surface Cont'd.**

General Safety Check

1. Check the ladders for rung spacing 30.48 cm, (12") condition, ladder secured, and extends 3 feet above platform.
2. Check the slide for line and general condition.
3. Check the guard rail.
4. Check sheave wheel and safety cable.
5. Check tripod chains for condition and security.

Hoisting First Full Rod

1. Do not allow the helper on the scaffold until the first rod has been pulled.
2. Hoist the first rod slowly.
3. Allow the helper time to position himself on the scaffold before starting to hoist the rods.
4. Attach the plug firmly.
5. Release rod weight tension by releasing hoist brake, then re-apply to permit removal of the hoist plug, helper must remain clear of cables and moving parts until the tension has been released.
6. Keep the hoist cable tight.
7. Count the number of rods to assure location of core barrel.
8. When the last rod segment arrives, tighten the hoist plug with pipe wrench.
9. On final rod segment, stop rods with the brakes.
10. Remove foot clamp and continue hoisting.
11. When the core barrel appears, stop rods with the hoist brakes.
12. Loosen joints between rods and core barrel.
13. Hoist slowly until the core barrel is out of the hold.
14. Make sure that the hoist brakes are firm and cover hole.
15. Detach the core barrel.
16. See section on "Q" Series.

Job Procedures

Refueling and Lubrication

Pumps And Drills:

Refueling

1. Never smoke while refueling. Wipe off excess fuel before starting motor.
2. Strain fuel, cover all containers, store outside, repair any leaks.
3. Radiator coolant level must be checked.

Oil Changing

1. Drain old oil into a good container and check for metal cuttings.
2. Oil must be changed once a week.
3. Report to supervisor any oil irregularity or quality.
4. Make sure that drain plugs are tight.
5. Check daily for water in drill transmissions, pump power ends. Change oil once a week.

Oil Filters

1. Change oil filter weekly.

Storage of Drums

1. Store all drums in upright position away from building.
2. Use the prescribed tool to open fuel bungs.
3. Under no conditions may gas lanterns be used to give off light for the person transferring or carrying fuel - THIS IS A MUST

ADHERE TO CDA ENVIRONMENTAL POLICY, COMPLY WITH WHIMS AND THE TRANSPORTATION OF DANGEROUS GOODS ACT.

Job Procedures

Petroleum Products

General

Whether it occurs in a city or out in the country, a petroleum leak may create serious problems. The contamination of a watercourse, and the environmental damage caused by a leak and the risk that it represents for public safety may be extensive and all the necessary precautions must be taken.

1. Check with your province for any new regulations governing the use and transportation of petroleum products.
2. Ensure that all users are made aware of the importance of making equipment safe.
3. Check for compulsory registration of equipment used.
4. Ensure that registration cards and certificates are attached to equipment.
5. Ensure that the equipment used in the storage and transportation of petroleum products is in good condition and properly installed in accordance with the regulations.
6. Above ground tanks, pipes and distribution equipment should meet provincial building standards and must be adequately protected against corrosion. They must:
 - a) be installed on a solid fire-resistant foundation
 - b) be equipped with a shut-off valve
 - c) be protected from vehicle impact
 - d) be located according to regulations from all buildings
 - e) be surrounded by a dyke forming a retaining basin if the capacity of the tank or group of tanks is equal to or greater than 5000 liters, for a non-commercial user.
7. Respect the standards for implementing and installing petroleum equipment.
8. Replace tanks deemed unsafe.
9. Obtain authorization prior to any work carried out on petroleum equipment (installation, alteration, maintenance, demolition).
10. Collect used petroleum products in tanks or covered metal containers and dispose of them in compliance with the Ministry of the Environment's regulations.

Job Procedures

Propane Equipment

Using Propane Equipment:

1. Propane is compressed into a liquid and will remain a liquid under pressure when stored in special cylinders. Pressures in propane cylinders will vary with the "liquid temperature" as follows:

Temp.	Pressure	Temp	Pressure
130 F	285 LBS.	54 C	1794 KPA
110 F	230 LBS.	43 C	1358 KPA
100 F	195 LBS.	38 C	1186 KPA
90 F	175 LBS.	-32 C	1027 KPA
80 F	150 LBS.	-27 C	883 KPA
60 F	110 LBS.	-16 C	637 KPA
30 F	65 LBS.	-1 C	356 KPA
-45 F	0 LBS.	-43 C	0 KPA

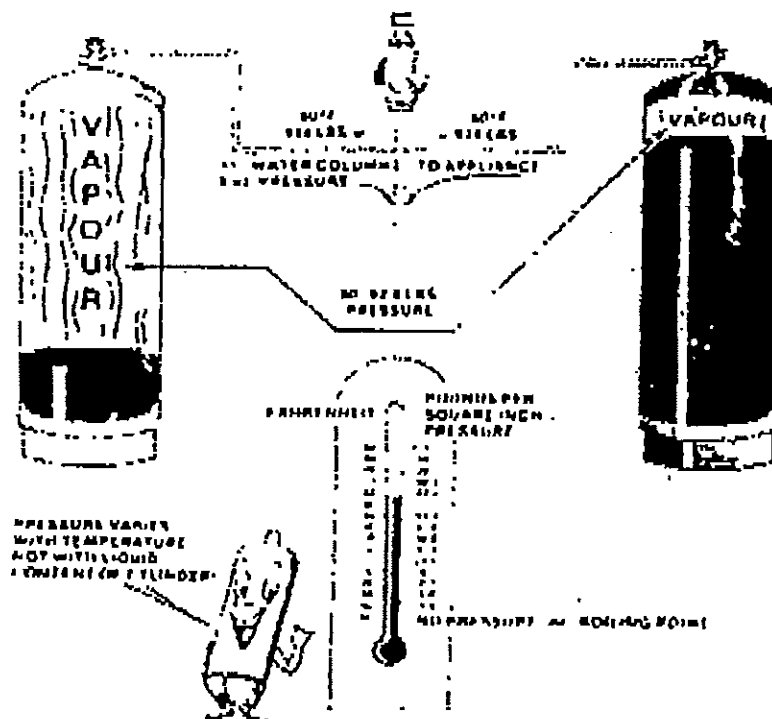
2. Cylinders must be used, stored and transported in any upright position.
3. Make sure cylinders are always placed on solid footing and secured.
4. Full and empty cylinders should be stored separately outdoors.
5. Cylinders must be protected with the protecting collars in place.
6. Protect hoses from traffic or excessive heat.
7. Use only hoses and regulating equipment used for gas propane services.
8. All propane equipment must have proper regulators.
9. Propane being heavier than air, escaping gases seek low placed. Ensure proper ventilation around propane burning devices.
10. Do not force the cylinder valve open beyond its normal stop (this is about 1 ½ to 2 turns).

Job Procedures

Propane Equipment Cont'd.

11. It is also necessary to shield cylinders from radiated or blower heat.
12. Ensure that the safety shut-off valve is operational.
13. Ensure accordance with WHMIS and Transportation of Dangerous Goods Act.
14. Ensure that at no time are propane tanks to be positioned inside a core shack.

Propane Gas in Operation



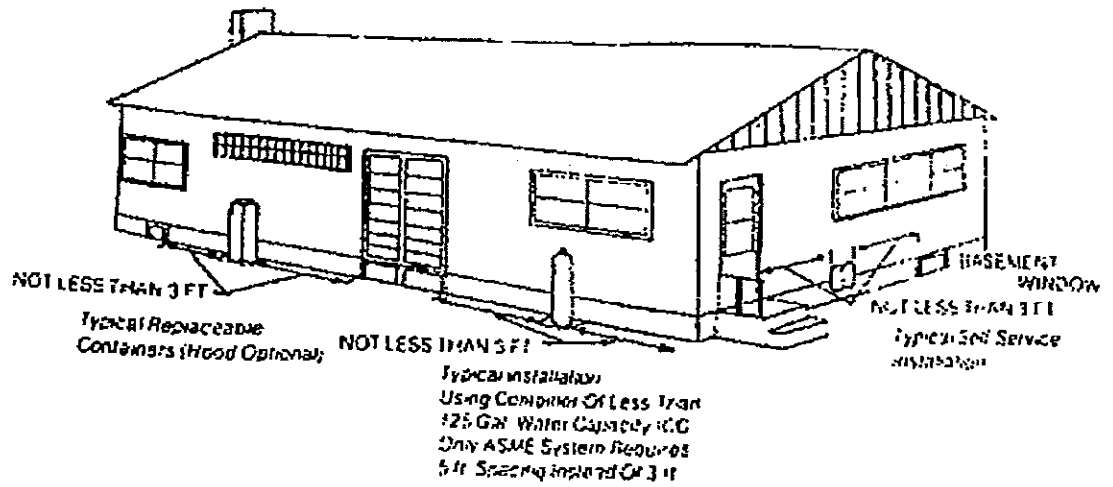
NOTE:

IT MUST ALWAYS BE REMEMBERED THAT PROPANE NEEDS AIR FOR COMBUSTION. ALWAYS CHECK FOR LEAKS WITH A MIXTURE OF SOAP AND WATER - NEVER A LIGHT. PROPANE IS A VERY VALUABLE PART OF A DRILLER'S EQUIPMENT IN THE FIELD, FOLLOW THE RULES SO THAT IT CAN SERVE YOUR MANY NEEDS SAFELY.

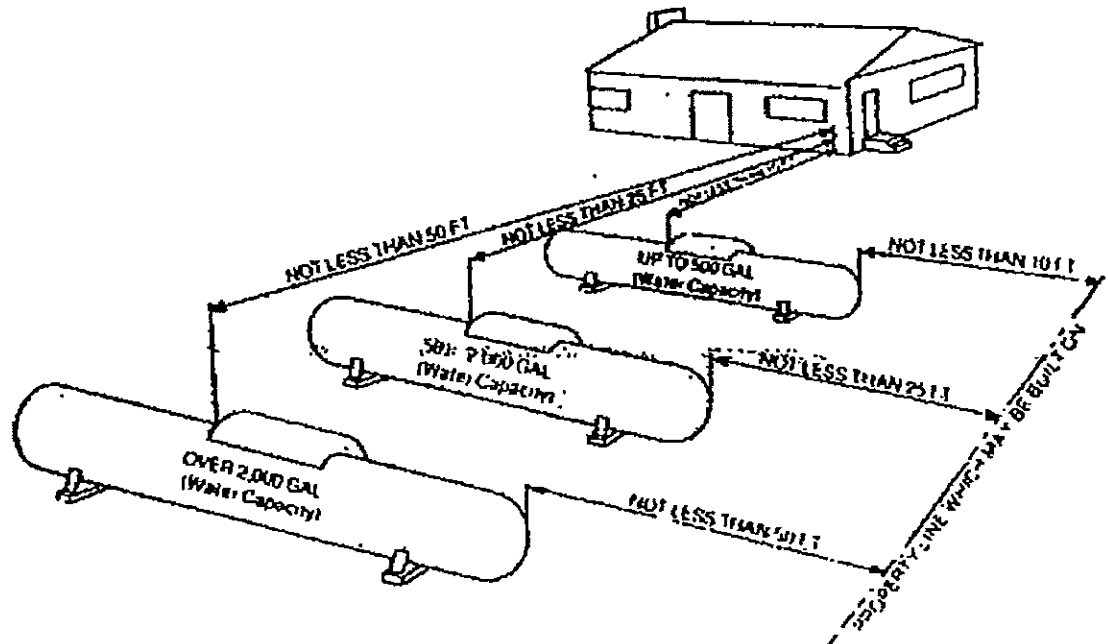
Job Procedures

Propane Equipment Cont'd.

CONTAINER SPACING 1



CONTAINER SPACING 2



Job Procedures

Lighting - Lamps - Oil Stoves - Waterline Heaters

Lamps: (Coleman type)

1. Wipe off any excess fuel spilled when refueling.
2. Pump fuel tank to recommended pressure.
3. Hold the flame under the burner.
4. Let mantle and burner tube heat up gradually.
5. Open the fuel valve gradually until mantle lights, before opening valve wide.
6. If the lamp runs dry, let it cool off before opening.
7. Lamps must be kept away from fuel drums, cans or tanks that contain or have contained inflammable liquids.

Oil Stoves:

1. When lighting from a cold stove, let a small amount of oil run into the firepot.
2. Light by tossing a small piece of lighted paper into the firepot.
3. If the stove is HOT, turn off oil. Do not relight until the firepot cools off.
4. Oil seeping into a hot firepot will cause evaporation which can easily cause an explosion.
5. Clean out the firepot every two weeks or each time you move.

Job Procedures

Lighting - Lamps - Oil Stoves - Waterline Heaters Cont'd.

Waterline Heaters:

1. Fire box must be set up away from motor end of pump.
2. At least four stove pipes should be used for smoke stack.
3. Burner end of coil should be approximately 2.5 cm. (1") higher than back end.
4. Before lighting burner, start pump. Get water circulating through pump but not through coil.
5. Heat up firepot on coil with either propane torch or a small amount of fuel in burner. When firepot is hot, open fuel valve, making sure there is enough fire in burner to ignite. This is usually done by making a torch with oil soaked rags on a stick, or heavy wire and inserting this into the burner. Then connect exhaust and start water going through coil. Wait until fire is going good and water coming out warm before connecting waterline.
6. If pump stops, shut down fire as quickly as possible to avoid overheating the copper coil.
7. When shutting down coil, make sure that fire is nearly out before shutting down pump. If coil is dirty, it may burn for a considerable time after oil is shut off.
8. Adjust the amount of oil going into the burner so that there is no smoke coming out of smoke stack. If it is smoking, you are dirtying the coil. This will insulate the coil and keep it from absorbing the heat. Also, if you overfeed, the unburnt fuel may leak out of the heater, thus creating a fire hazard.

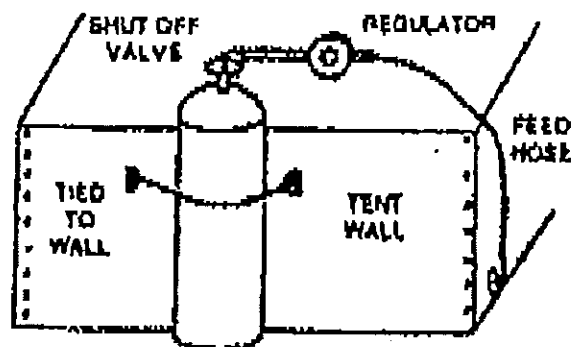
Job Procedures

Lighting - Lamps - Oil Stoves - Waterline Heaters Cont'd.

Propane Heaters/Stoves

1. Secure cylinders upright against building or tent wall.
2. Connect hose to regulator at outlet and to stove.
3. Open shut-off valve on propane cylinder.
4. Check for leaks at joints with soapy water.
5. Light pilot on heater or stove.

Figure 1
Propane Cylinder



Job Procedures

Lighting - Lamps - Oil Stoves - Waterline Heaters Cont'd.

Propane Tiger Torches

1. Secure cylinder upright outside the drill shack.
2. Connect hose from torch to regulator of cylinder.
3. Open shut-off valve on propane cylinder
4. Check for leaks at joints and fittings.
5. Open valve a quarter turn and light torch.

Figure 2

Propane

Torch



Propane Block Heaters

1. Secure cylinder upright beside mobile unit.
2. Connect hose from heater to regulator.
3. Connect water hoses from heater to quick couplers on mobile unit.
4. Open shut-off valve a quarter turn on cylinder and light heater.
5. Be aware of air locks. Disconnect top hose, pushing down on valve in quick coupler to remove air.
6. Feel hoses periodically for circulation and temperature. Open cylinder valve as required.
7. Never circulate cold water through a hot heater.
8. One half hour to one hour should be sufficient for heating the block.

Job Procedures

Lighting - Lamps - Oil Stoves - Waterline Heaters Cont'd.

Propane Refrigerators

1. Always transport refrigerators in upright position.
2. Install refrigerator, level and prevent from rocking.
3. Never operate propane or refrigerator without a proper regulator at outlet of propane cylinder
4. Check feed line joints with soapy water for leaks before lighting pilot.
5. Threads at shut-off valve and/or regulator are left handed.
6. When not in use, remove all contents from refrigerator, wash thoroughly and leave door open.
7. Shut off propane at

Important: A propane refrigerator which runs inefficiently due to dirty exhaust may produce dangerous carbon monoxide gas. Clean regularly.

Wood Stoves

1. Never pour flammable liquid into any stove or into a fire area that is still warm --- the immediate fuming of the liquid will result in an explosive vapor.
2. When starting a wood stove, a small piece of burning paper placed directly under the stove pipe will create a column of heated air in the pipe so that, when the tinder and kindling are lighted, there will already be a favorable draft.
3. Ensure stoves are a safe distance from drill shack wall. Ensure wall is shielded properly.
4. All wood stoves require spark arresters.

Job Procedures

Fire Protection Equipment And Fire Extinguishers

Fire Equipment

Provincial regulations will govern the type of equipment used.

Note: As the regulations will be found to be different in each Province, inquire at the local Ministry of Natural Resources office.

Fire Extinguishers

All fire extinguishers must be the dry chemical type with cylinder loading.

1. Ensure all personnel are instructed in the handling, use and limitations of extinguishers.
2. Ensure extinguisher is located according to company and regulatory policy.

Fire Extinguisher Procedure

When fighting small fires with a portable fire extinguisher stand six to eight feet away from the fire and follow the four-step PASS procedure. If the fire does not begin to go out immediately, leave the area at once. Always be sure the fire department inspects the fire site.

Pull the pin: allows you to discharge the extinguisher

Aim low: point at base of fire

Squeeze the lever below the handle: will discharge the extinguishing agent.

Sweep from side to side: Move toward fire, keep aiming at the fire's base and sweep back and forth until the fire is extinguished.

CLASS A FIRES Ordinary combustible materials such as wood, cloth, paper, rubber etc.

CLASS B FIRES Vapor-air mixture over the surface of flammable liquids, IE. Gasoline, oil, grease, paints and thinners.

CLASS C FIRES In or near energized electrical equipment.

CLASS D FIRES Combustible metals such as magnesium, titanium, zirconium, lithium, potassium, and sodium.

Job Procedures

Five Point Safety System

1. **Are entrances and throughways to work area in good order?**
 - a) Are steps from camp and cookery safe?
 - b) Is travel to road as obstacle-free as possible?
 - c) Is entrance to drill shack as safe as possible?

2. **Are working areas and equipment in good working order?**
 - a) Stumps cut low - especially under tripod.
 - b) Scaffold chains safe.
 - c) Safety cable on sheave wheel.
 - d) Safety rope around scaffold.
 - e) Hook good on sheave wheel.
 - f) Enough plank on scaffold.
 - g) Tripod legs safe and sound - braced and capped.
 - h) No trees ready to blow down on set-up.
 - i) Ladder strong and secured at top.
 - j) All rods and casing up on timbers. Spares covered with canvas.
 - k) All axes and saws stacked away - cannot be stepped on.
 - l) No spikes around in poles or planks to be stepped on.
 - m) Spare pumps and hoses drained.
 - n) No fuel valves leaking.
 - o) Fuel cache stored safe distance away.
 - p) Pump set up away from coil stove.
 - q) Smoke stack supported - cannot blow down.
 - r) Pump and coil stove checked every four hours.
 - s) No passengers riding on tractor with driver.
 - t) Lights, seat and winch on tractor in good shape.
 - u) Guard on pump chain.

3. **Are the men working properly?**
 - a) All men with hard-toed boots and hard hats - no loose clothing.
 - b) Floor clean with no nails or holes.
 - c) Sheet of tin behind stove in shack.
 - d) Exhaust not leaking and protected from burning shack.
 - e) No gasoline stored in shack.
 - f) Wireline joist well anchored down.
 - g) No gasoline lantern hanging from ceiling during daylight.

Job Procedures

Five Point Safety System Cont'd.

- h) Tools clean and in place.
- i) Drill well anchored - not lifting or sliding.
- j) Rod slide well lined up - cannot fall.
- k) Machine controls clean and working well.
- l) Drill shack roof supported - cannot collapse.
- m) Fire extinguisher hung up - handy by door.
- n) Garbage container in shack being used.
- o) Hoisting plug in good condition, properly connected to cable.
- p) Rod, clamp and base - big enough, properly used.
- q) Are rods being handled at least one foot above couplings to avoid slivers?
- r) Do not spin rods without water swivel and hose attached.

4. Do an Act of Safety

Pick one unsafe habit or condition that you have noticed on the job and correct this with one half of the crew at least once a week. Check to see that unsafe habits or conditions are not continued.

5. Can and will men continue to work properly?

Are all equipment and tools in good working order? If so, with continued supervision, crew should work safely.

Job Procedures

Wedging Equipment and Preparation

Equipment Required for Wedging:

- (1) One 39,48 cm (12") wood plug approximately 3/16" less than gauge of hole
- (2) One drive wedge
- (3) One deflecting wedge
- (4) One pilot wedge
- (5) One wedge clinometer
- (6) One dropper
- (7) Brass washers to adjust pilot wedge
- (8) Copper rivets
- (9) One file
- (10) One machinist's protractor
- (11) One goniometer
- (12) Four per cent hydrofluoric acid and test tubes
- (13) One reaming shell
- (14) Wedge reamer bit
- (15) One adapter (A) rods to shell
- (16) 5/16" punch
- (17) Hammer
- (18) Hacksaw
- (19) Chisel

The wedge clinometer is riveted by two copper rivets to the drive wedge, the center line of the wedge clinometer is indicated by a chisel mark on the top end of the clinometer. Using a file, a straight line is scribed on the test tube parallel to the long axis of the tube. The test tube is then inserted in the clinometer and snugly fitted using thin paper as a shim so the scribed line on the test tube coincides with the chisel mark on the top end of the clinometer. The pilot wedge threads into the base of the deflecting wedge. The coring shell that is being used to drill the present hole is threaded into the wedge reamer, the adaptor from (A) rods to reaming shell is threaded into the coring shell, 1.52 meters (5') (A) rod is threaded into adaptor, from there to top of hole 3.04 meters (10') (A) rods are used.

Take the wooden plug and flatten four sides to allow water to pass, then point one end to prevent it from catching on wall of hole.

Job Procedures

Wedging Equipment and Preparation Cont'd.

Wedging Operations:

Never set a wedge in broken ground or a hole that has cave in it. Ground that is siliceous or cherty is too hard to expect full correction on a wedge, as the rock is harder than the wedge. The wedge will drill out instead of the rock, so that very little correction is gained. The full correction from the wedge is $1 \frac{1}{2}$ degrees.

The first step of the wedging operation is to push the wooden plug down the hole, pointed end first. With rods, make sure the wooden plug is securely placed. The clinometer with drive wedge attached is checked to make certain that the scribed line on the test tube coincides with the chisel mark on the top of the clinometer. The test tube is then filled about half full of four percent acid, corked and the clinometer sealed.

The drive wedge and the clinometer are then lowered down the hole with a minimum of delay. When bottom of the hole is reached, put rods through head and shear by putting pressure on rods. After shearing the clinometer is left in place for the required time to allow the acid to etch the test tube (one hour).

An accurate record is kept of the depth of the hole and depth of test.

Pull rods slowly for the first twenty feet. When the clinometer is pulled the drive wedge remains at the bottom of the hole. At surface the clinometer is carefully opened and the position of the scribed line on the test tube is checked to make sure that the tube has not moved with respect to the chisel mark on the back of the clinometer. The test tube is then removed from the clinometer, cleaned, dried, the low point of the etched ring is found, its position projected to the open end of the tube with a file and marked (Low Point). The test tube is then put back in the clinometer in its wedge test position with the scribed line on the test tube coincident with the chisel mark on the clinometer.

The wedge clinometer with the test tube in its original wedge test position is placed on the drill platform with the low point on the tube up. The deflecting wedge is placed on the drill platform alongside the wedge clinometer with the deflecting wedge and oriented so that the flat face on the pilot wedge is at the same relative angle as the flat face of the wedge clinometer. This angle may be accurately set by using a machinist's protector with a spirit level attached. A chisel mark is made on the deflecting wedge and the pilot wedge to indicate this setting. The pilot wedge is fixed and tightened in this position by wrenches, using the brass washers of varying thickness as shims. The wedge is now correctly set to deflect the hole towards vertical. Drill $\frac{3}{16}$ " hole $\frac{1}{2}$ deep where pilot wedge threads into deflecting wedge as a safety measure.

Job Procedures

Wedging Equipment and Preparation Cont'd.

Following this same procedure a wedge may be set to flatten a hole or deflect to the right or left. In every case the clinometer with the test tube in its original wedge test position is placed on the floor with the low point up. If the hole is to be steepened the deflecting wedge is put on the floor with groove down, for flattening, the groove faces up. To deflect to the right the groove is turned to face the right., to deflect to the left the groove is turned to face the left.

Attach the wedge dropper to the deflecting wedge with the necessary rivets and take the necessary measurements. Lower the assembly to a point 1.52 meters (5') from the bottom of the hole, having the last rod go through the head. By holding the rods lightly as they are being slowly lowered it is possible to tell instantly, when the pilot wedge either comes point to point with the drive wedge, or goes into place. In either case the rods should be marked at the point of contact, raised and lowered very slowly and at the same time turned in a clockwise direction until you are sure the wedge is in place. One in place, tighten up the chuck and shear the rivets with pressure on the head. After the rivets are sheared never let the wedge dropper continue into wedge as there is a possibility of getting stuck in the deflecting wedge.

Pull rods slowly for the first twenty feet and at the normal rate after this. Remove wedge dropper, attach the wedge reamer to current reaming shell, adapter add 1.52 meters (5') rod, lower this assembly to top of deflecting wedge. Start drilling slowly with a slow feed for 15.2 cm (6") then ream back 15.2 cm (6") to the top of the wedge. This will taper off the top part of the wedge. Drilling then may be continued at the best cutting feed and speed but it is best to put as much pressure as possible on the bit. Drill 4.57 meters (15') with wedge reamer, then pull.

Remove the wedge drilling assembly and replace with coring bit, current coring shell and 3.04 meter (10') core barrel. Lower to within 15.2 cm (6") of bottom and start to drill. The reason for drilling 4.57 meters (15') below the top of the wedge with the wedge reamer and assembly is to obtain maximum deflection and also to overcome running a core barrel in the wedge.

The following items should be carefully observed:

1. Lower core barrel through wedges slowly.
2. Coring bit should never be run in or around a wedge
3. If trouble happens around a wedge always drill through the wedge with a wedge reamer.
4. Never lower bell taps through a wedge
5. Always test the hole twenty feet below a wedge to see if the proper correction took place.
6. Good drilling practice requires that a complete record be kept of all conditions that might affect the drilling of a hole such as hole gauge, presence of cave, cementing operations, and loss of water.

Job Procedures

Wedging Equipment and Preparations Cont'd.

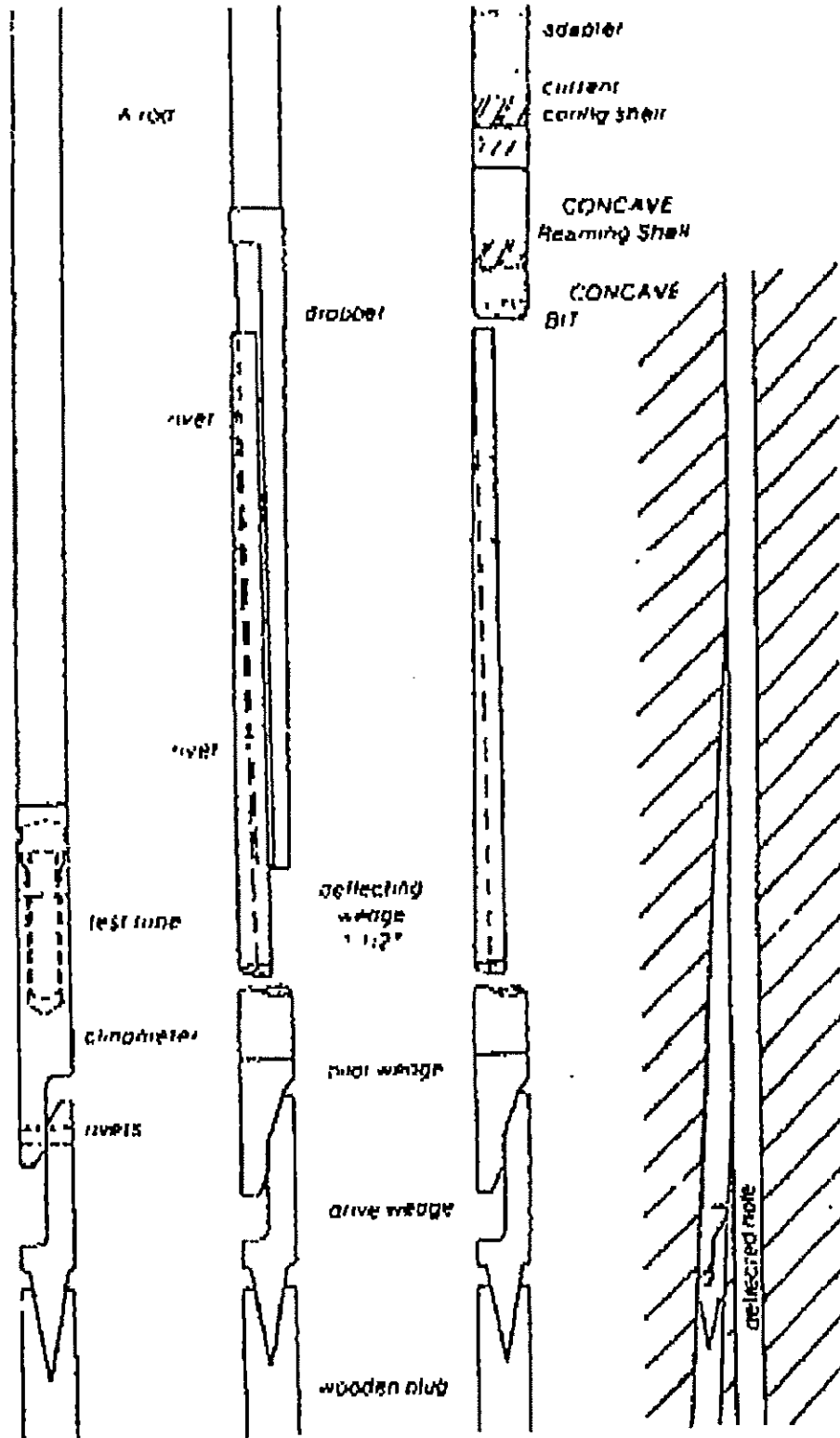
7. Due to the increased O.D. of wireline rods, it may be found that you do not get full correction out of a wedge.
8. It is not necessary to cement a wedge after it has been installed.

A four percent solution of hydrofluoric acid produces the clearest etched line of a test tube. For best results testing should proceed as follows:
etching time will be a minimum of one hour.

If a tube has been in the hole four hours there is no danger of etching another line thereafter. It does no harm to leave a tube in a hole over the weekend or any length of time.

A four percent hydrofluoric acid solution will produce a clear cut etch line regardless of the area in which the drilling is being done.

Four percent acid is dangerous and corrosive and will burn the skin or eyes. Protective glasses must be worn when handling acid. If any spills on skin, wash it off immediately with clear water. If any splashes into eye, wash out with clear water and see a doctor as quickly as possible.



Flatten and
deflect to left



Flatten and
deflect to right



Steepen and
deflect to left



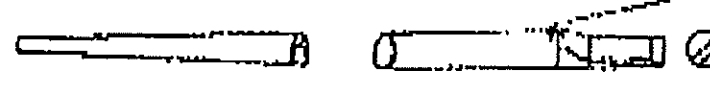
Steepen and
deflect to right



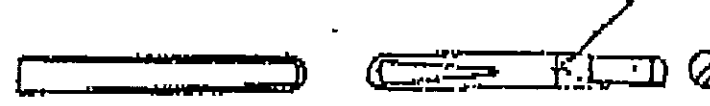
Deflect to left



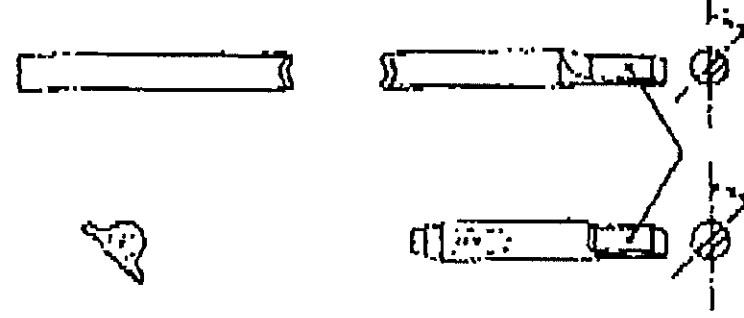
Deflect to right



Flatten



Steepen



Machinist's
protractor with
spirit level is
convenient
tool for setting
the angle.

Job Procedures

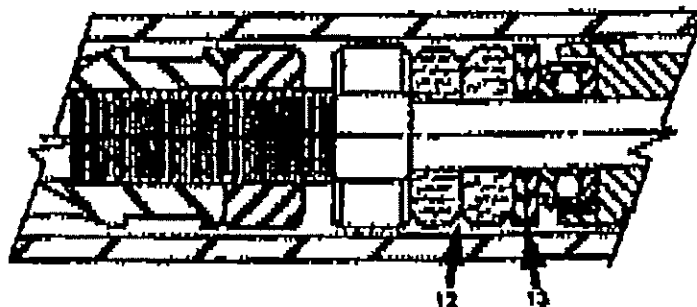
Operating Instructions Series "Q" Wireline Core Barrels

Core Barrel:

1. Study the series "Q" parts list and core barrel illustrations which are included at the end of this section.
2. Remove the inner tube assembly (Items 1 through 33) from the outer tube assembly by grasping the spearhead (1) with an overshot, then pulling out until the latches release. Pull out the inner tube assembly and place it alongside the outer tube assembly.
3. Note the two rubber shut-off valves (12) and two steel washers (13). When a core block occurs, the blocked core resists the downward drilling force and in turn, exerts a force up through the inner tube assembly expanding the rubber shut-off valves. When the rubber valve diameter expands into the annulus between the inner tube and the outer tube, the downward flow of water is restricted and a rise in water pump pressure results. This signal warns the operator that a core block has occurred.
4. These rubber valves can be set for two ranges of operation for each size core barrel.

Position 1: The two rubber shut-off valves are in contact with each other. Use this arrangement when coring soft or friable rock. The table below shows the approximate core block forces necessary to actuate the shut off valve in the position shown.

AQ	320 lbs.	NQ	1140 lbs.
BQ	700 lbs.	HQ	1900 lbs.

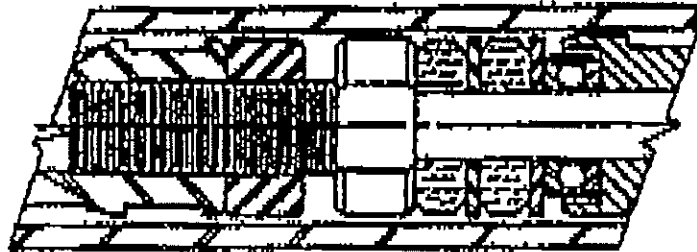


Job Procedures

Operating Instructions Series "Q" Wireline Core Barrels Cont'd.

Position 2: Two rubber shut-off valves are separated by a steel washer. Use this arrangement when coring harder formations. The table below shows the approximate core block forces necessary to actuate the shut-off valve in the position shown.

AQ	550 lbs.	NQ	1750 lbs.
BQ	950 lbs.	HQ	2900 lbs.



5. Within the inner tube is a heavy duty compression spring (16.) The purpose of this spring is to allow the inner tube to set on the bit during the core breaking operation. This feature transfers the load from the inner tube to the bit, protecting the hanger bearing and inner tube assembly from damaging stress.
6. Both ends of the inner tube have pin threads. All Series "Q" inner tubes are reversible so the operating life is almost doubled as compared to conventional inner tubes.
7. Examine the core lifter case (31) and the stop ring (32) above the core lifter (33). The stop ring provides a hardened surface for the core lifter to bear against during coring. Before a worn core lifter can be extracted, the stop ring must be removed. To remove the stop ring, insert a screwdriver blade under the split in the ring and pry loose. Rotate the stop ring so that the ring hoop is at 90 degrees with the diameter of the core lifter case and pull it out. Replace the core lifter. To install: slide in the stop ring in the 90 degree position, then rotate the hoop and snap it into the recess. Visually inspect the inside of the core lifter case to be sure the stop ring is properly positioned.
8. Reassemble the core lifter case to the inner tube and reassemble the inner tube to the head assembly.

Job Procedures

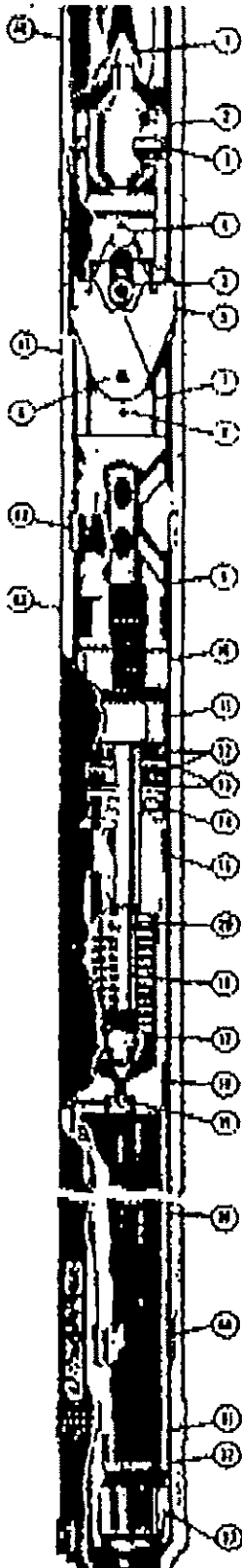
Operating Instructions Series "Q" Wireline Core Barrels Cont'd.

9. Examine the outer tube. Note that the outer tube assembly consists of the following items: locking coupling (40), adapter coupling (41), ring landing (42), outer tube (43), and inner tube stabilizing ring (44). A thread protector is attached to the outer tube. Within the thread protector counter-bore is the inner tube stabilizer ring (44). The thread protector provided for shipment of the core barrel is not shown on the cross sectional drawing.

Servicing Core Barrel for Use:

1. Remove the inner tube stabilizing ring (44) from the thread protector and install it into the deep counter bore of a new reaming shell. This stabilizing ring centralizes the inner tube and is a particularly important aid in coring because it holds the core lifter and the core lifter case in the proper position to receive core.
2. Assemble both the reaming shell and the diamond bit (51) to the outer tube.
3. Wipe the inner tube assembly clean and lightly oil the outside surface. Install the inner tube assembly into the outer tube so the landing shoulder is firmly seated on the landing ring.
4. Check the tap or distance between the beveled shoulder inside of the bit and the lower end of the core lifter case. The gap should measure $1/16$ of an inch (1.6 mm.), plus or minus $1/32$ of an inch. If the gap setting is not within the limits specified above, extract the inner tube assembly, loosen lock nut (10) and adjust the spindle assembly so the proper gap, $1/16$ " (1.6 mm.) is made. After the adjustment is made, tighten lock nut (10). Insert the inner tube and again check the gap as indicated above.
5. Whenever a new bit or reaming shell is first installed or if the inner tube or a core lifter case is replaced, the gap between the core lifter case and the bit should be checked to assure full core recovery.
6. Whenever more than one inner tube assembly is used interchangeably with the same outer tube assembly, each companion inner tube assembly must be gap adjusted to the same length from the landing shoulder to the core lifter case.

Q Wireline



ITEM	NAME OF PART
1-45	CORE BARREL ASSEMBLY, 5' COMPLETE
1-45	CORE BARREL ASSEMBLY, 10' COMPLETE
1-33	INNER TUBE ASSEMBLY, 5'
1-33	INNER TUBE ASSEMBLY, 10'
1	Spearhead
2	Case, Latch Retracting
3	Pin, Spring 5/16" Diameter X 1 1/4" Long
4	Spring, Latch
5	Latch
6	Pin, Spring, 5/16" Diameter X 3/4" Long
7	Support, Latch
8	Pin, Spring, 1/4" Diameter X 3/4" Long
9	Body, Latch
10	Nut, Lock
11	Spindle Assembly
12	Valve, Shut-off
13	Washer, Valve Adjusting,
14	Bearing, Ball Thrust
15	Bearing, Spindle
16	Spring, Compression
17	Nut, Self Locking
18	Cap, Inner Tube
19	Grease Fitting, Hydraulic
20	Bearing, Hanger
30	Tube, Inner, 10 Foot
30	Tube, Inner, 5 Foot
31	Case, Core Lifter
32	Ring, Stop
33	Lifter, Core
40	Coupling, Locking
41	Coupling, Adaptor
42	Ring, Landing
43	Tube, Outer, 5 Foot
43	Tube, Outer, 10 Foot
44	Stabilizer, Inner Tube
45	Protector, Thread (Not Shown)

Job Procedures

Operating Instructions Series "Q" **Wireline Core Barrels Cont'd.**

A Final Check for Proper Gap Setting:

Before the core barrel assembly is used, suspend the entire assembly sufficiently so that a gap inspection can be made in the vertically suspended position. The correct gap 1/16" (1.6 mm) must be evident, otherwise core recovery may be adversely affected.

Adding New Tool Joints to The Drill String:

Experience shows that the first few trips in the hole are the most hazardous in the life of rod tool joints. For this reason, extra care must be taken during the break-in period. On newly machined surfaces, galling is most likely to occur. Resistance to galling can be built by using a high quality thread lubricant and by properly torquing each rod joint. After some service the metal surfaces undergo changes which make them less susceptible to galling.

The following are the recommended steps for handling new tool joints:

1. It is important to keep the threads on the water swivel and the hoisting plug in good condition as they mate with every box.
2. Pin and box threads and shoulders must be thoroughly cleaned.
3. When rod joints are run in the hole, both the pin and the box threads and shoulders should be liberally coated with a good grade of lubricant. Field experience shows a very satisfactory lubricant is one which contains a minimum of 40% by weight of finely powdered, metallic zinc. Use "TEXACO THREAD-TEX" or equivalent thread lubricant.
4. In making each trip, the box threads and shoulders should be coated with the lubricant again.
5. Avoid forced make-up of improperly engaged threads. In stabbing, the flat crests on new threads sometimes wedge against each other. A slight amount of back up will free them.

Job Procedures

Operating Instructions Series "O" Wireline Core Barrels Cont'd.

Starting The Coring Operations:

1. After the last rod is connected and the drill string is still held by the foot clamp, disconnect the hoisting plug.
2. Connect the water swivel to the rod and connect the hoist to water swivel ball.
3. Raise the rod string high enough to remove the foot clamp.
4. Lower the drill string to within a few inches of the bottom of the hole.
5. Tighten the chuck on the drill head to the drill string.
6. Start the water pump and the drill, but do not advance the drill string into the hole until the water pressure rise is indicated on the pressure gauge or until water is returning from the hole. Water must be circulating around the diamond bit before cutting begins.
7. Water pressure of 50 to 100 psi is sufficient water pressure to start advancing the rotating drill head into the hole and to start coring. As the hole deepens, the water pressure will gradually rise to higher operating pressures.

Retracting The Inner Tube:

1. Paint a 5 foot section of the wireline cable about 30 feet above the overshot. The painted section will help to signal the approach of the overshot when it is being retrieved from the hole.
2. Insert the overshot into the drill string and lower it into the rods without over-running the cable.
3. As the overshot approaches the inner tube, slow its speed until the overshot is latched onto the inner tube spearhead assembly.
4. When the overshot assembly has contacted the inner tube spearhead, tie a string marker to the wireline cable a few feet above the point of contact. This string marker will help warn the drill operator when the overshot approaches the inner tube spearhead on future runs. Move this marker upward after each core run.

Job Procedures

Operating Instructions Series "O" **Wireline Core Barrels Cont'd.**

5. Slow the overshot when the string marker appears - then ease the overshot over the inner tube spearhead.
6. To check if the overshot has properly latched over the inner tube assembly spearhead, take up the cable slack so the cable is tight and then by pulling the taut cable by hand, it will be noted that the combined weight of the core filled inner tube and the overshot is greater than the weight of the overshot alone.
7. Hoist the overshot and the inner tube assembly from the hole. As the overshot assembly approaches the surface, the paint marker will appear. Reduce the speed of the hoist.
8. Lift the inner tube assembly until it is out of the hole. Then carefully lower the core laden inner tube assembly so the overshot can be removed.
9. Disengage the overshot from the inner tube. Place the inner tube on a pair of wooden work horses or a bench.
10. Unscrew the inner tube from the inner tube head assembly using an open end wrench on the head assembly and an inner tube wrench on the inner tube.
11. Before coring runs, inspect the inner tube assembly for wear. Set the head assembly aside for servicing between core runs. See servicing instructions. Move the core laden inner tube to the core removal area.

Removing Core From Inner Tube:

1. Empty core from the top end of the inner tube.
2. Before removing core, slip the steel "protective sleeve" over the inner tube. Then, using a ball pien hammer, jar the core loose from the inner tube. The protective sleeve will absorb the shock of the tapping.
3. Check the inner tube to be sure all the core has been removed.

Job Procedures

Operating Instructions Series "QU" Wireline Core Barrels

Familiarization:

The Series "QU" Core Barrel has been carefully assembled and inspected at the factory. It is not necessary to disassemble any part of the core barrel except to make minor field adjustments.

Core Barrel:

1. Study the parts list and core barrel illustration attached to these instructions.
2. Remove inner tube assembly (Items 1 through 38) from the outer tube assembly (Items 40-45). Use the overshot to grasp and pull out the spearhead (1) until the latches release. Pull out the inner tube assembly completely, and place it along side the outer tube assembly.
3. Note the two rubber shut off valves (23) and two steel washers (24). When a core block occurs, the blocked core resists the downward force and in turn exerts a force up through the inner tube assembly expanding the rubber shut off valves. When the rubber valve diameter expands into the annulus between the inner tube and the outer tube, the downward flow of water is restricted and a rise in water pump pressure results. This signal warns the operator that a core block has occurred.
4. This pair of rubber valves can be set for two ranges of operation for each size core barrel.

Position 1: The two rubber shut off valves are in contact with each other. Use this arrangement when coring soft or friable rock. The table below shows the approximate core block forces necessary to actuate the shut off valve.

AQU	320 Lbs.
BQU	700 Lbs.
NQU	1150 Lbs.

Position 2: Two rubber shut off valves are separated by a steel washer. Use this arrangement when coring harder formations. The table below shows the approximate core block forces necessary to actuate the shut-off valve.

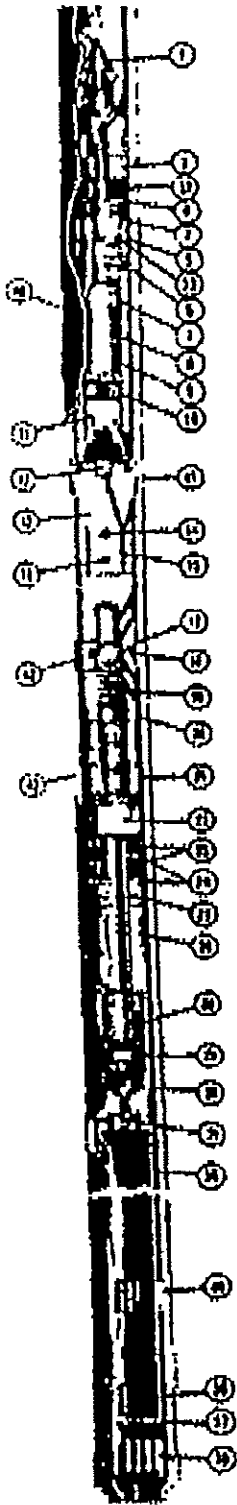
AQU	550 Lbs.
BQU	950 Lbs.
NQU	1750 Lbs.

Job Procedures

Operating Instructions Series "OU" Wireline Core Barrels Cont'd.

5. Within the inner tube head assembly is a heavy duty compression spring (28). The purpose of this spring is to allow the inner tube to set on the bit during the core breaking operation. This feature transfers the load from the inner tube to the bit, protecting the hanger bearing and the inner tube assembly from damaging stress.
6. Within the centrebore of latch body (20) is a stainless steel ball (17), and opposite the ball on the outside of the latch body is an "O" ring (18). Both the ball check and the "O" ring act as seals preventing the passage of fluids through or past the latch body. The combination fluid seal described above prevents hydraulic pressure from prematurely unlatching the inner tube assembly due to up hole hydraulic pressure.
7. The inner tube assembly is pumped into rod string by the piston effect of the piston packing (32) this replaceable piston packing is clamped in place by lock nut (21). When the inner tube assembly is prepared for the pump-in cycle, the latch retraction case (5) is pulled, cocking the latches (13) inward. Then by retaining the latches inward, release the latch retraction case. Notice that the top of the latch retraction case closes off the water ports below the piston packing. In this position, the inner tube is pumped to its coring position. The inside diameter of the rods holds these latches inward until the inner tube assembly is pumped to its coring position against the landing shoulder.
8. With the inner tube assembly properly adjusted for coring, cock the latch retracting case and slip the latch retaining ring over the latches.
9. Install the rod adapter to the drill rod.
10. Install the water swivel over the spearhead. Pick up the inner tube assembly and insert it into the drill rod.

Q-U WIRE LINE



ITEM	NAME OF PART
1-45	CORE BARREL ASSEMBLY,,5 FOOT COMPLETE
1-45	CORE BARREL ASSEMBLY 10 FOOT COMPLETE
1-38	INNER TUBE ASSEMBLY, 5 FOOT
1-38	INNER TUBE ASSEMBLY, 10 FOOT
1-33	Head Assembly
1	Spearhead
2	Body Spearhead
3	Nut, Clamping
4	Washer, Steel
5	Case, Latch Retraction
6	Pin, Spring, 5/16 diameter x 1 1/4 long
7	Washer
8	Guide, Spring
9	Spring, Compression
10	Bolt, Hex Head 5/16" UNC x 2 1/2 Long
11	Spring, Latch
12	Pin, Square
13	Latch
14	Pin, Spring, 5/16" diameter x 3/4" long
15	Support Latch
16	Pin, Spring 1/4" diameter x 3/4 long
17	Ball, Stainless Steel
18	"O" Ring
19	Spring, Ball click
20	Body, Latch
21	Nut, Lock
22	Spindle Assembly
23	Valve, Shut-Off
24	Washer, Valve-Adjusting
25	Bearing, Ball Thrust
26	Bearing, Spindle
27	Bearing, Hanger
28	Spring, Compression
29	Nut, Self-Locking, 1/2 UNC
30	Cap, Inner Tube
31	Grease Fitting, Hydraulic
32	Packing, Piston
33	"O" Ring
35	Tube, Inner, 5 foot
35	Tube, Inner, 10 foot
36	Case, Core Lifter
37	Ring, Snap
38	Lifter, Core
40	Coupling, Locking
41	Coupling, Drive
42	Ring, Landing
43	Tube, Outer, 5 foot
43	Tube, Outer, 10 foot
44	Stabilizer, Inner Tube

Job Procedures

Instructions **"QU" Series Wireline Cont'd.**

Familiarization

Overshot Pumping:

1. The attached plano graph shows the underground overshot assembly. Its purpose is to retrieve the inner tube after each core run. When it is hydraulically propelled by the circulating fluid, it pulls the wireline cable through the drill string until the overshot lifting dogs latch to the spearhead of the inner tube assembly.
2. The diameter of the piston packing is adjusted to slide through the rods as a piston by tightening the lock nut (packing sleeve).
3. For the BQU and NQU overshot, the assembly is cocked for pumping in by pulling the valve sleeve to close the fluid ports on the valve stem and at the same time allowing the lifting dogs to snap out, thus holding the valve sleeve in the up or cocked position. When the lifting dogs hit the inner tube spearhead, they attach themselves to the spearhead and at the same time, release the valve sleeve to slide downward opening the fluid ports.
4. As the overshot is pulled out of the hole, the fluid in the drill hole is allowed to bypass through ports in the overshot assembly.

Servicing The Core Barrel For Use:

1. Remove the inner tube stabilizing ring (44) from the thread protector and install it into the deep counterbore of the new reaming shell. This stabilizing ring centralizes the inner tube and is a particularly important aid in coring because it guides the core lifter and the core lifter case to receive core.
2. Assemble both the reaming shell and the diamond bit to the outer tube.
3. Wipe the inner tube assembly clean and lightly oil the outside surface. Install the inner tube assembly into the outer tube so the landing shoulder is seated firmly on the landing ring.

Job Procedures

Instructions "QU" Series Wireline Cont'd.

4. Check the gap or distance between the beveled shoulder inside of the bit and lower end of the core lifter case. The gap should measure 1/8 of an inch (3.2 mm), plus or minus 1/32 of an inch. If the gap setting is not within the limits specified above, extract the inner tube assembly, loosen lock nut (231) and adjust the spindle assembly so the proper gap 1/8" (3.2 mm) is made. Insert the inner tube and again check the gap as indicated above.
5. Whenever a new bit or reaming shell is first installed or if the inner tube or a core lifter case is replaced the gap between the core lifter case and the bit should be checked to assure full core recovery.
6. Whenever more than one inner tube assembly is used interchangeably with the same outer tube assembly, each companion inner tube assembly must be gap adjusted to the same length from the landing shoulder to the core lifter case.
7. Push the inner tube forward, until threads are engaged. Tighten by hand to prevent leaking. The latch retaining ring will slide into a recess provided in the water swivel and remain there during the drilling cycle.
8. Attach drilling fluid line using a quick disconnect coupling. Start the water pump and pump the inner tube down the drill string with pump pressures adequate for the hole being drilled.
9. The inner tube should travel from 100 to 150 feet per minute. The "Latch In" should be audible in drill holes up to 1000 feet of depth. The sound of the landing shoulder striking the landing ring can be detected by placing a chuck wrench against the rod string and listening for the "Latch In" sound.
10. An hydraulic signal will also be noted when the inner tube is in the coring position. A sudden rise in water pressure above normal and a sudden return to normal is indicated on the water pressure gauge.

Job Procedures

Instructions **"OU" Series Wireline Cont'd.**

New Feed Stroke:

1. Before beginning a new core run, be sure water is returning from the hole or that the water pressure gauge shows a reading of at least 50 to 100 psi.
2. Continue coring until a core block occurs or the inner tube becomes full of core. A core block should be evident on the water pressure gauge.

Water Pressure And Core Blocks:

1. Whenever the water pressure gauge rises rapidly above normal operating pressure, or if the pressure relief valve opens, stop drilling and prepare to retrieve the inner tube assembly.
2. Occasionally, during the drilling operation, the bit will "mud", which causes a sharp rise in fluid pressure. When this happens, reverse the drill head so the bit is pulled back 1/2" to 1" and allow the bit to clear itself and allow the fluid pressure to return to normal pressure. Commence drilling, but if the high fluid pressure recurs, it is an indication that a possible core block has occurred.
3. In most cases, the above normal water pressure reading denotes the core barrel may be full of core, or a core block has occurred in the bit or inner tube. For either reason, the inner tube must be removed from the hole and inspected to avoid unnecessary damage to the bit or barrel.
4. The rod string should pull back far enough to break or separate the core. Wash the hole for several minutes before retrieving the inner tube.

Retrieving The Inner Tube:

1. Paint a five-foot section of the wireline cable about 30 feet above the overshot. The painted section will help signal the approach of the overshot when it is being retrieved from the hole.
2. Disconnect water hose and remove water swivel. Install the overshot into the drill rod.

Job Procedures

Instructions "OU" Series Wireline Cont'd.

3. Install the wireline stuffing box into the rod adapter. Install with water line open. Fluid leaking around the cable can be corrected by tightening the packing adjusting nut (2) on the loading chamber assembly.
4. Attach the water pressure line and start the water pump. Pump in the overshot, unreeling the wireline cable. When the overshot contacts the inner tube spearhead, tie a string marker to the wireline cable a few feet above the point of contact. On successive runs, this string marker will help warn the drill operator when the overshot approaches the inner tube spearhead. Move this marker upward after each core run.
5. After the overshot has been pumped in and latched to the inner tube, maintain a pressure on the pump and pull or hoist the cable out of the hole. Slowly release the pressure with the valve on the loading chamber to allow the hoist to pull out the inner tube. Put the hoist to full throttle and release the fluid valve so the inner tube assembly is easily pulled, but control the speed of the cable and the water pressure so the inner tube does not come out faster than the cable. Back water pressure in the hole could cause the inner tube to overrun the cable, casing kinks and knots in the cable.
6. When the paint marker comes into view, throttle down the wireline hoist and open the water release valve all the way. Then unscrew the stuffing box. As the inner tube comes out, stop the hoist and grasp and hold the inner tube. Then disengage the overshot. Extract inner tube from the drill rod. This operation should be done quickly, otherwise the flow from the hole will build up behind the inner tube and force the tube out. Never stand in front of the inner tube spearhead when it is coming from the hole.

Overshot Trouble in The Hole:

1. If a driller fails to heed the water shut off signal, the resulting core block pushes the inner tube assembly upward, tightening the latches against the locking coupling. This jamming effect sometimes creates a condition where the latches are held sufficiently so they will not release with the first effort of the overshot.

Job Procedures

Instructions "OU" Series Wireline Cont'd.

When Inner Tube Fails to Release:

1. Pull the cable taut and increase the fluid pressure to the overshot and the inner tube downward to release the latching mechanism.
2. Pull the cable with the wireline hoist until the shear pin (1) in the overshot assembly fails.
 - (a) reel up the wireline cable
 - (b) remove the core barrel from the hole by removing all the rods from the hole
 - (c) before disassembling the inner tube assembly from the core barrel, try to determine why the inner tube assembly failed to release
 - (d) remove the core from the inner tube
 - (e) service and repair both the inner tube assembly and the outer tube assembly
 - (f) replace the shear pin in the overshot.

Removing Core From The Inner Tube:

1. Unscrew the inner tube from the inner tube head assembly, using an open end wrench on the head assembly and a "Longyear" tube wrench on the inner tube.

When two inner tubes are used, one can be inspected and serviced between core runs, while the other one is inserted into the drill string and pumped into position.

2. Empty core from the top of the inner tube. Before removing core, slip an inner tube protector over the inner tube. Jar the core loose from the inner tube by tapping the protector with a ball pen hammer.
3. Between each core run, check the inside of the inner tube to be sure all the core has been removed. Flush out the inner tube with clear water to remove all chips and grit.

Adding New Tool Joints to the Drill String:

Experience shows that the first few trips in the hole are the most hazardous in the life of rod tool joints. For this reason, extra care must be taken during the break-in period. On newly machined surfaces, galling is most likely to occur. Resistance to galling can be built up by using a high quality thread lubricant and by properly torturing each rod joint. After some service, the metal surfaces undergo changes which make them less susceptible to galling.

Job Procedures

Instructions **"OU" Series Wireline Cont'd.**

The following steps are recommended for handling new tool joints.

1. It is important to keep the threads on the water swivel and the hoisting plug in good condition.
2. Pin and box threads and shoulders must be thoroughly cleaned. When rod joints are run in the hole, both the pin and the box threads and shoulders should be liberally coated with a good grade lubricant. Field experience shows a very satisfactory lubricant is one which contains a minimum of 49% by weight of finely powdered, metallic zinc.
3. In making each trip, the box threads and shoulders should be coated with the lubricant again.

BRAKES AND WARNINGS

BRAKES AND BRAKING

HEAT-ENERGY- TRACTION-FRICTION

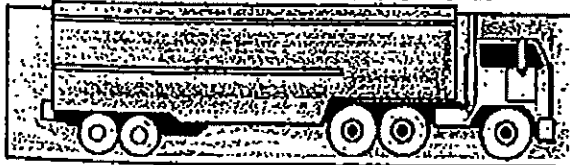
For a vehicle to move along the highway, an internal combustion engine must convert its **HEAT ENERGY** into mechanical **ENERGY**. This mechanical **ENERGY** goes from the engine to the driving wheel tires by means of a system of connecting rods, shafts and gears. The final factor that moves the vehicle is the amount of **TRACTION** its tires have on the road surface. **TRACTION** is the ability of a tire to grip the road surface on which it rolls. The vehicle's acceleration rate depends on the power the engine develops and the amount of **TRACTION** the tires have on the road surface.

FRICTION is the force which resists movement between two surfaces in contact with each other. To stop a vehicle, the brake shoe linings are forced against the machined surfaces of the brake drums, creating **FRICTION**. This **FRICTION** produces **HEAT**.

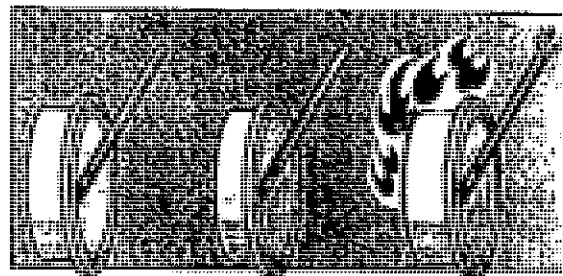
The engine converts the **ENERGY** of **HEAT** into the **ENERGY** of motion; the brakes must convert this **ENERGY** of motion back into the **ENERGY** of **HEAT**. The **FRICTION** between brake drums and linings generates **HEAT** while reducing the mechanical energy of the revolving brake drums and wheels. The heat produced is absorbed by the metal brake drums, which dissipate the heat by passing it off into the atmosphere. The amount of heat the brake drums can absorb depends on the thickness of the metal of which they are made. When enough **FRICTION** is created between the brake linings and the drums, the wheels stop turning; but the final factor that stops the vehicle is not the brakes, but the **TRACTION** between the tires and the road surface.

If an engine of 200 horsepower accelerates a vehicle to 100 km/h in one minute, imagine the power needed to stop this same vehicle. Not only that, but the vehicle might have to be stopped in an emergency, in as little as six seconds (just $\frac{1}{10}$ of the time it took to reach 100 km/h).

100 Km/h →



To stop the vehicle in $\frac{1}{10}$ of the time it took to accelerate would require a stopping power of ten times the acceleration power — the equivalent of approximately 2,000 horsepower. If the vehicle had six wheels, each wheel would have to provide $\frac{1}{6}$ of the braking power. If one or two of the wheels had brakes that were not *properly adjusted*, the other wheels would have to do more than their share of the braking, and that might be more than their brakes were constructed to stand. Excessive use of the brakes would then result in a buildup of heat greater than the brake drums could absorb and dissipate. Too much heat would result in brake damage and possible failure.



250° C
NORMAL

425° C
MAXIMUM

1100° C
PANIC!

Most brake linings operate best at around 250° C and should not exceed 425° C. It's important to understand that the power needed to stop generates heat which could ruin the brakes.

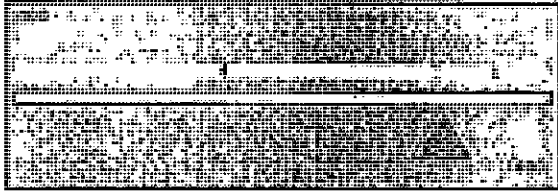
SPEED-WEIGHT- DISTANCE

The distance required to stop a vehicle depends on its speed and weight, in addition to the factors of energy, heat and friction. The brake power required to stop a vehicle varies directly with its weight and the "square" of its speed. For example, if the weight is doubled, the stopping power must be doubled to be able to stop in the same distance. If the speed is doubled, the stopping power must be increased four times to be able to stop in the same distance. And, when weight and speed are both doubled, the stopping power must be increased eight times to be able to stop in the same distance.

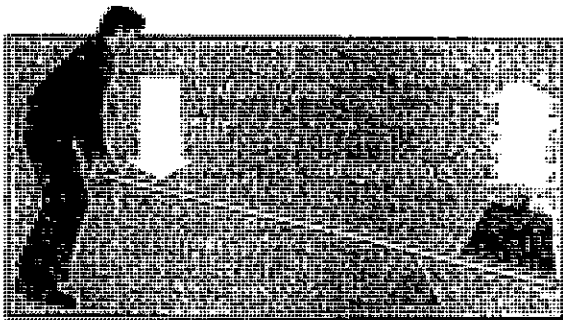
For example, a vehicle carrying a load of 14000 kgs down a steep grade at 16 km/h is brought to a stop in a distance of 30 meters by normal application of the brakes. If this same vehicle carried 28000 kgs down the same grade at 32 km/h, it would require eight times the braking power to stop the vehicle in 30 meters. This would be more braking power than the brakes could provide. No vehicle has enough braking power when it exceeds its limitations.

HOW WE OBTAIN POWER

A. MECHANICALLY

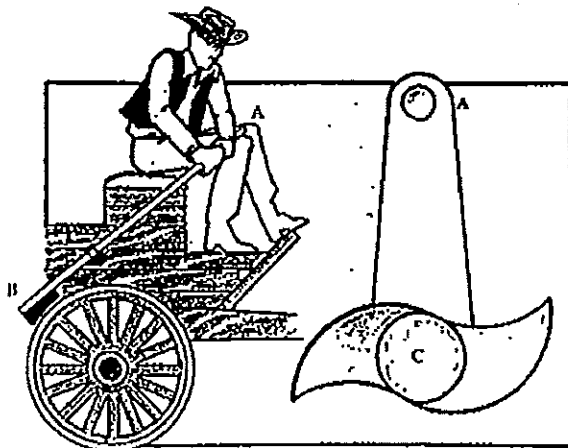


Braking systems use devices to gain a mechanical advantage. The most common device for this purpose is leverage. Look at this simple lever system:



A lever is placed on a pivot called the fulcrum. As the distance from A to C is four feet, and from C to B is one foot, the ratio is four to one (4:1). Power has been multiplied by the leverage principle. If a 100 lb. downward force is applied at point A, then the upward force at point B is 400 lbs.

This is the result of the mechanical advantage of leverage.

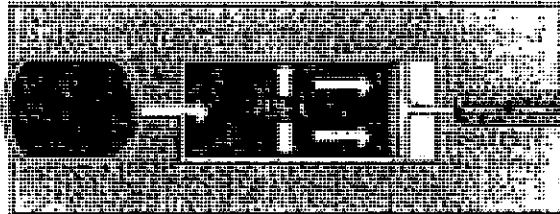


Compare the Points A, C, B to the previous lever diagram

B. USE OF AIR

Force can also be multiplied by the use of air to gain a further mechanical advantage. Everyone has felt the power of air on a windy day. Air can be compressed (squeezed) into a much smaller space than that amount of air normally would occupy. For instance, air is compressed in tires to support the weight of a vehicle. The smaller the space into which air is squeezed, the greater the air's resistance will be to being squeezed. This resistance creates pressure, which is used to gain mechanical advantage.

If a constant supply of compressed air were directed through a pipe that was one inch square, and if a one inch square plug were placed in the pipe, the compressed air would push against the plug. Holding a scale against the plug would register how many pounds of force were being exerted by the air against the plug.

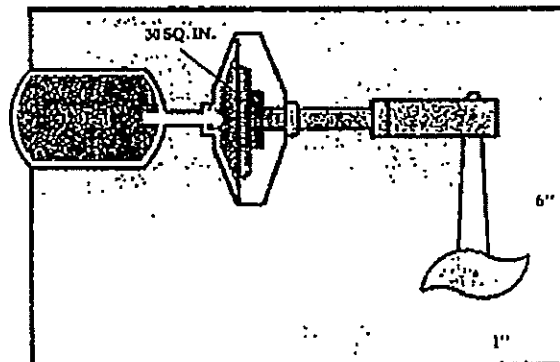


If the scale registered ten pounds, for example, then it could be said the force was ten pounds on the one square inch surface of the plug. This would be ten pounds per square inch (P.S.I.).

The more the air in the supply tank has been compressed, the greater the force that would be exerted on the face of the plug.

C. LEVERAGE & AIR PRESSURE

In actual operation, pipes are round and plugs are diaphragms of flexible material acting against push rods. If compressed air of 120 P.S.I. acts on a diaphragm of 30 square inches, 3,600 lbs. of force is produced (120×30). Apply this force to a push rod to move a 6-inch slack adjuster operating a cam and the total force equals 21,600 inch pounds torque ($3,600 \times 6$), or 1,800 foot pounds torque ($21,600 \div 12$). It requires 25 - 30 foot pounds of torque to tighten the wheel on a car. This comparison illustrates the power obtained from using mechanical leverage and air pressure combined.



THE COMPONENTS OF AN AIR BRAKE SYSTEM

A basic air brake system capable of stopping a vehicle has five main components:

1. A **COMPRESSOR**, to pump air
2. A **RESERVOIR OR TANK**, to store the compressed air
3. A **FOOT VALVE**, to regulate the flow of compressed air from the reservoir when it is needed for braking
4. **BRAKE CHAMBERS & SLACK ADJUSTERS**, the means of transferring the force exerted by the compressed air to mechanical linkages
5. **BRAKE LININGS AND DRUMS OR ROTORS**, to create the friction required to stop the vehicle

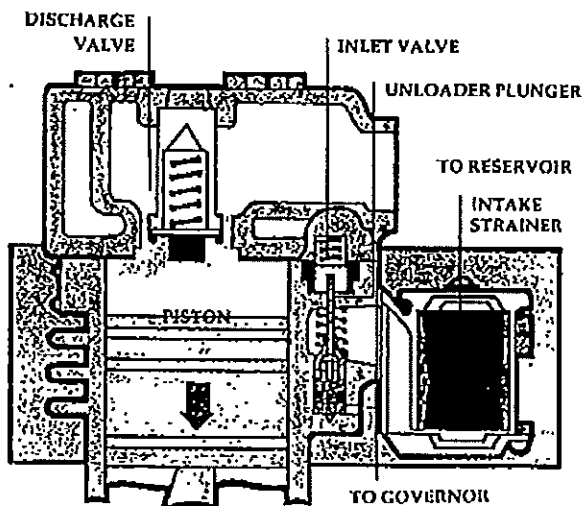
It is necessary to understand how each of these components works before studying their functions in the air brake system.

THE COMPRESSOR

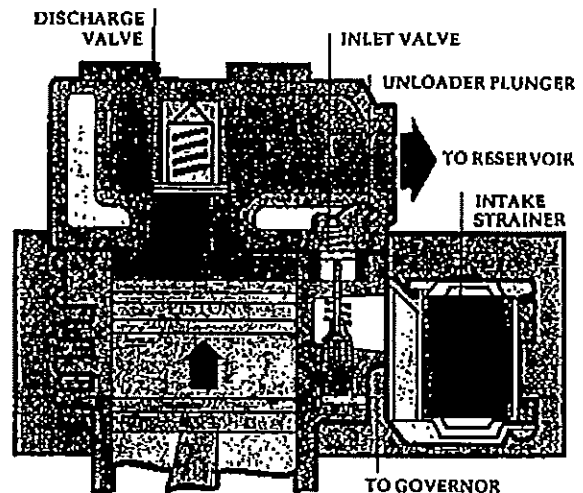
Compressed air is the means of transmitting force to an air brake system. The source of the compressed air is the compressor. A compressor is designed to pump air. Air pumped into a tank will result in pressurizing the air, as was explained previously in this manual.

A piston type compressor operates on a similar principle to that of the intake and compression strokes of an engine.

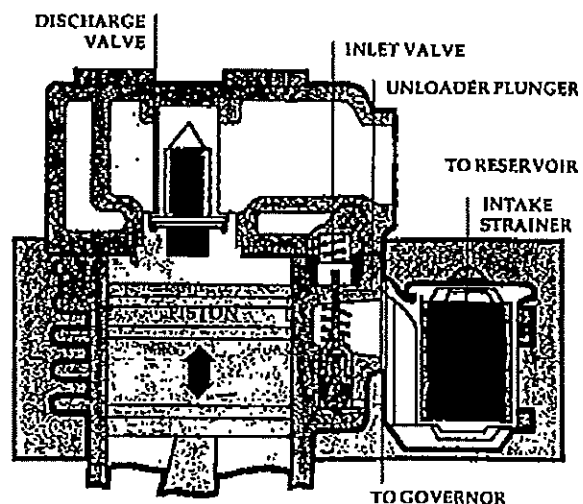
INTAKE STROKE: The downward stroke of the piston creates a lower pressure within the cylinder than the atmospheric pressure outside the compressor. This causes air to flow past the inlet valve (which the atmospheric pressure has opened) into the cylinder.



COMPRESSION STROKE: The upward travel of the piston compresses the air in the cylinder. The rising pressure cannot escape past the inlet valve (which the compressed air has closed) and as the piston nears the top of the stroke, the pressurized air is forced past the discharge valve and into the discharge line leading to the reservoir.



UNLOADING: When sufficient pressure has been built up, the compressor goes into an "unloading" stage. The unloader plunger holds the inlet valves off their seats until pressure drops to the pre-set cut in pressure which is regulated by the governor.



The compressor is driven by the vehicle's engine, by either belts and pulleys or shafts and gears. In vehicles which the compressor is driven by belts, the belts should be checked regularly for cracks and tension. Belt adjustment is usually checked by pressing with a finger midway between the pulleys. A greater distance between the pulleys will affect the amount of permissible slack. If the belts become

SECTION II

too slack, they could slip, and the compressor will not achieve its maximum efficiency. While checking the drive belts also check the compressor for broken mounting brackets or loose mounting bolts.

The compressor is in constant drive with the engine. Whenever the engine is running, so is the compressor. It is usually lubricated from the engine lubrication system. Some compressors are self-lubricating and require regular checks of lubricant levels.

There are periods of time when it is not necessary for the compressor to pump air. A common pressure in an air brake system is from a low of 85 P.S.I. to a high of 105 P.S.I. Some systems operate between 105 P.S.I. and 125 P.S.I. Minimum pressure is approximately 20 P.S.I. below maximum pressure.

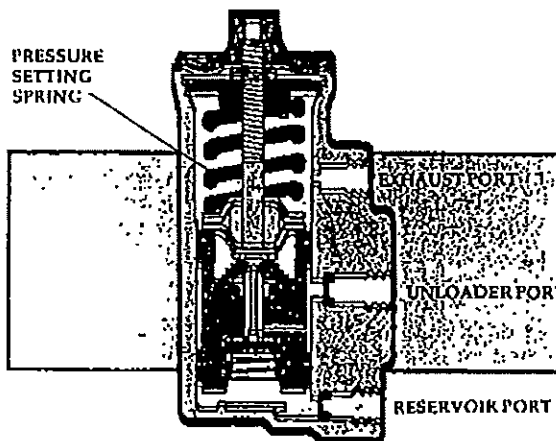
When the pressure has reached the system's maximum, the compressor goes into an "unloading" stage.

Most compressors have two cylinders. In the unloading stage, the inlet valves are held open, allowing the air to be pumped back and forth between the two cylinders, instead of compressing it. During the "unloaded" stage, the compressor is able to cool.

It is most important that the air in the air brake system be kept as clean as possible. Dirt in the system can cause trouble.

The air from the atmosphere that enters the compressor must first pass through a filter to remove any dust particles from the air. The air filter must be cleaned regularly. A dirty filter will restrict the flow of air into the compressor, reducing its efficiency. Some vehicles have the inlet port of the compressor connected to the air cleaner of the vehicle's engine.

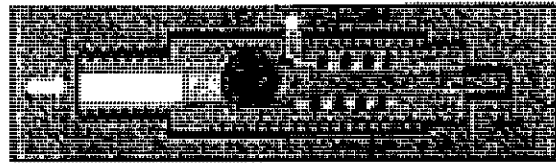
A governor controls the minimum and maximum air pressure in the system. As the compressor is in constant drive with the engine, the governor's job is to "unload" the compressor when the desired pressure is reached. The governor does this by directing air pressure to the inlet valves of the compressor, holding them open when pressure in the system reaches its maximum. When the pressure in the system drops by approximately 20 P.S.I., the governor allows the inlet valves to close, returning the compressor to its pumping stage.



THE RESERVOIRS

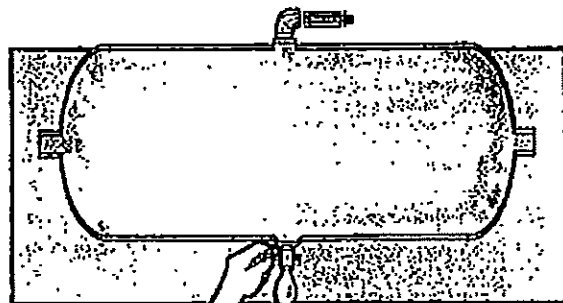
Reservoirs or tanks hold a supply of compressed air. A safety valve protects them from being over pressurized and bursting. The safety valve protects the air brake system from an excessive buildup of air pressure. The valve consists of a spring loaded ball which will allow air to exhaust the reservoir pressure into the atmosphere. The valve's pressure setting is determined by the force of the spring. A safety valve is normally set at 150 P.S.I. If the pressure in the system rises to approximately 150 P.S.I., the pressure would force the ball off its seat, allowing the pressure to exhaust through the exhaust port in the spring cage. When reservoir pressure is sufficiently reduced (to approximately 135 P.S.I.), the spring will force the ball back onto its seat, sealing off the reservoir pressure. Not all safety valves have a manual release feature as shown in the diagram below.

If the safety valve has to relieve the pressure, it indicates that the governor or compressor requires service or repair. This should be done by a qualified mechanic.



IMPORTANT! SAFETY VALVE ADJUSTMENTS MUST NOT BE TAMPERED WITH. ONLY QUALIFIED MECHANICS SHOULD SERVICE SAFETY VALVES.

Reservoirs or tanks are also equipped with drain cocks to drain off any moisture. When air is compressed, it becomes heated. The heated air cools in the reservoir, forming condensation. Oil leaking past the piston rings of the compressor mixes with this moisture to form a sludge in the bottom of the reservoir. If allowed to accumulate, this sludge (water and oil) would enter the braking system. An excess of water in the system causes trouble with valves and other parts. In winter, water in the system may freeze, causing malfunction of valves or brake chambers.



To minimize the amount of water collection, all tanks must be drained daily. Under extreme conditions, tanks may have to be drained more than once a day. Park the vehicle on a level surface, set the parking brake, block the vehicle's wheels, open drain cocks fully. Allow all air pressure to escape, which will then permit the moisture, collected in the tank, to drain. Some tanks have more than one compartment and each compartment has its own drain cock. Briefly opening the valve just to allow some of the air to escape DOES NOT drain the moisture!

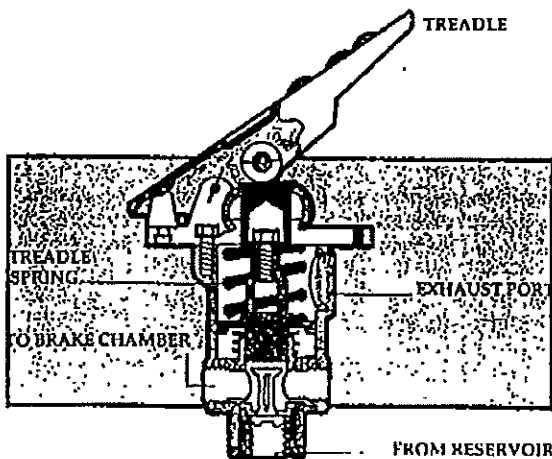
Some reservoirs are equipped with automatic reservoir drain valves (spitter valves). These may be drained manually by pushing up on a rod on the underside of the valve.

Most vehicles are equipped with more than one reservoir. This gives the system a larger volume of main reservoir air. As the first tank collects more of the moisture and oil from the compressor, it is called the "wet tank". The second tank is usually further from the compressor and so collects drier or cleaner air. This tank is called the "dry tank".

Reservoirs vary in size. The size of the tanks to be installed on a vehicle depends on the number and size of the brake chambers. Brake chambers with a 30 square inch diaphragm will obviously require a larger volume of reservoir air than those equipped with 20 square inch diaphragms.

THE FOOT VALVE

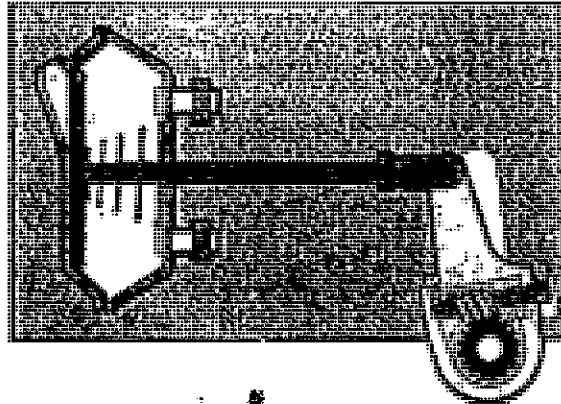
The foot-operated valve is the means of applying air to operate the brakes. The amount of distance the treadle of the foot valve is depressed by the driver determines the amount of air pressure that will be applied, but the MAXIMUM APPLICATION WILL NOT EXCEED THE PRESSURE IN THE RESERVOIR. Releasing the foot valve treadle releases the brakes.



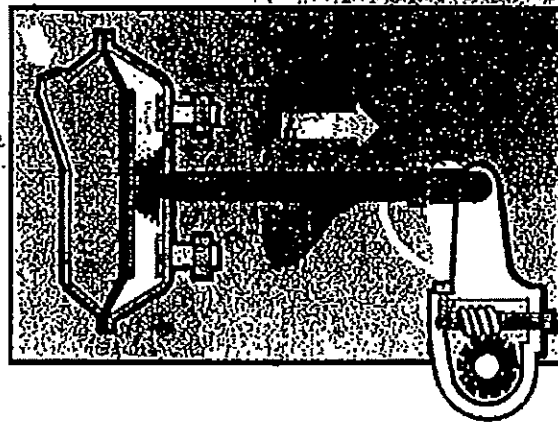
When the driver applies the brakes, depressing the treadle part way, the foot valve will automatically maintain the application air pressure, without the driver having to adjust the pressure of his foot on the treadle.

Releasing the treadle allows the application air to be exhausted through the exhaust ports to the atmosphere. Air treadles are spring loaded, producing a different "feel" from hydraulic brake application.

THE BRAKE CHAMBERS AND SLACK ADJUSTERS



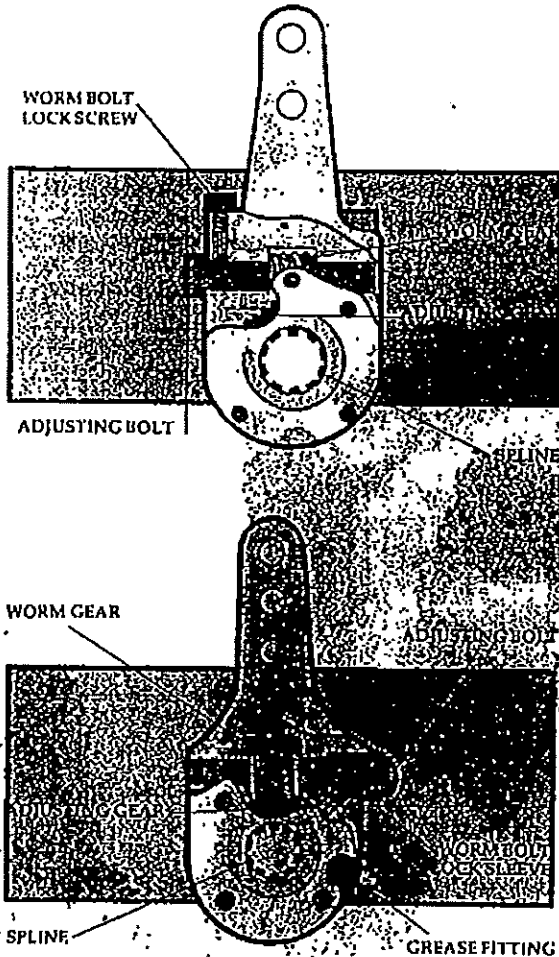
A brake chamber is a circular container divided in the middle by a flexible diaphragm. Air pressure pushing against the diaphragm causes it to move away from the pressure, forcing the push rod outward against the slack adjuster. The force exerted by this motion depends on air pressure and diaphragm size. If a leak occurs in the diaphragm, air is allowed to escape, reducing the effectiveness of the brake chamber. If the diaphragm is completely ruptured, brakes become ineffective.



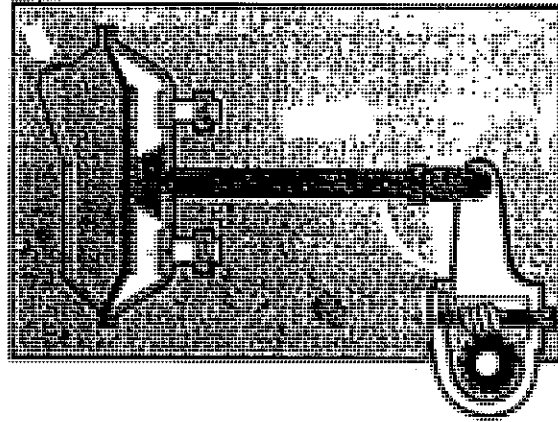
Front brake chambers are usually smaller than rear brake chambers because the front axles carry less weight than the rear axles. A brake chamber is usually mounted on the axle, near the wheel that is to be equipped for braking. Air pressure is fed through an inlet port. The air pushes against the diaphragm and the push rod. The push rod is connected by a clevis and pin to a crank arm type lever called a "slack adjuster". This converts the pushing motion of the push rod from the brake chamber to a twisting motion of the brake camshaft and "S" cams. When the air is exhausted, the spring in the brake chamber returns the diaphragm and push rod to the released position.

SECTION II

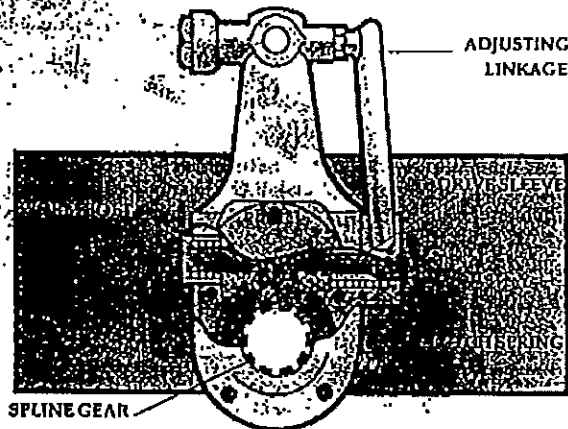
As indicated by its name, the slack adjuster is also the means of adjusting the "slack" or free play in the linkage between the push rod and the brake shoes. This slack occurs as the brake linings wear. If the slack adjusters are not adjusted within the limitations, effective braking is reduced and brake lag time is increased. If too much slack develops, the diaphragm will eventually "bottom" in the brake chamber. If this condition is allowed to occur, the brakes will not be effective at all.



The diagram illustrates a common type of slack adjuster, showing the worm adjusting gear. When the brakes are fully applied, the angle between the push rod and the arm of the slack adjuster should be no more than 90 degrees (a right angle). On this type of slack adjuster, the adjusting worm bolt is turned until the brake linings touch the drums and then backed off, normally $\frac{1}{4}$ to $\frac{1}{2}$ a turn. A locking device, which may be a spring loaded collar over the head of the adjusting bolt, must be depressed when the wrench is slipped over the bolt head. Some slack adjusters use a spring loaded internal check ball to lock the adjustment. The more often the driver checks the "slack", the less the probability of brake failure. Vehicles rarely "lose" their brakes because of loss of air; it is usually a loss of adjustment.

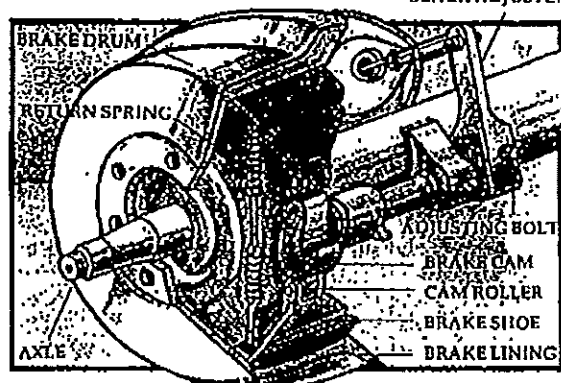


Some systems have automatic slack adjusters which adjust automatically to compensate for brake lining wear, thus maintaining the correct clearance between the brake lining and drum. Automatic slack adjusters must be checked regularly to ensure that correct adjustment is being maintained.



NOTE: Detailed brake adjustment procedures are outlined in Section VI.

The diagram below illustrates a common type of brake assembly used on truck rear axles and trailer axles. A front axle assembly has the brake chamber and slack adjuster mounted on the backing-plate because of the steering action.



Brake lining material is attached to the shoes. The material used depends on the braking requirements of the vehicle. Brake lining must give uniform output of brake effort with minimum fade at high temperature.

Fading or a reduction in braking effort occurs when the heated drums expand away from the brake linings. The brake linings also lose their effectiveness with overheating.

The twisting action of the brake cam shaft and "S" cam forces the brake shoes and linings against the drums. The brake linings generate heat from friction with the brake drum surface.

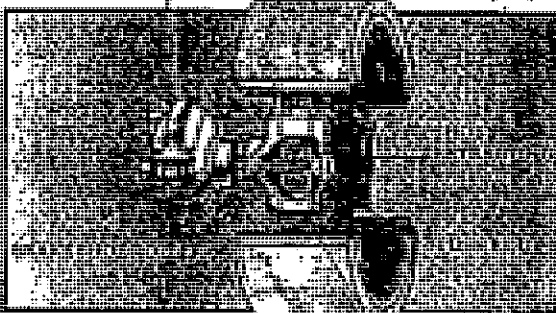
The thickness of the drums determines the amount of heat they are able to absorb and dissipate to the atmosphere. Drums worn thin will build up heat too quickly. Dangerously undependable brake performance will result from distorted drums, weak return springs, improper lining, poor adjustment, or grease or dirt on the lining.

Drums must never be turned or worn beyond the manufacturer's specification.

WEDGE TYPE BRAKE

Here is another example of a type of brake assembly used on some air brake equipped vehicles. The action of the brake chamber push rod forces a wedge shaped push rod between the brake shoe rollers. This forces the brake shoe lining against the brake drum.

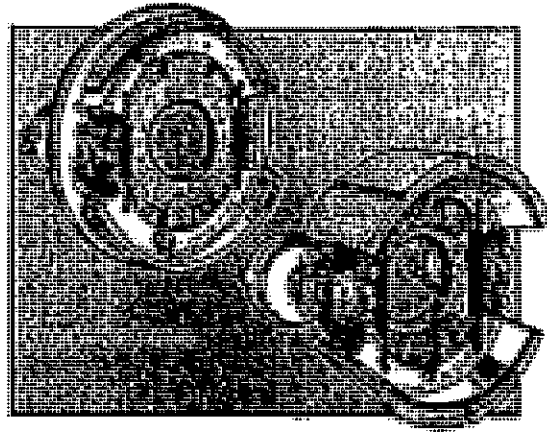
BRAKE CHAMBER



ADJUSTING WHEEL

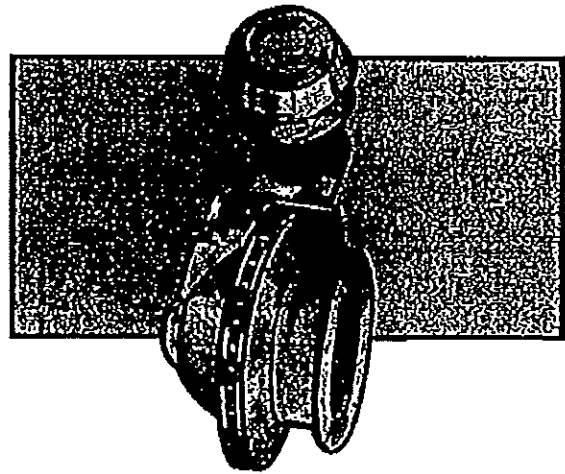
The vehicle may be equipped with a single chamber or two chambers on each wheel, depending on the vehicle's size and style.

These brakes may be equipped with a self-adjusting mechanism or with a manual "star wheel" adjuster. The "star wheel" adjustment is made with the vehicle jacked up, to ensure that the brake linings do not drag. Manual adjustment of wedge type brakes is usually a job for a mechanic.



Spring brakes added to these units are of the piggy-back type.

DISC BRAKES



The air activated heavy truck disc brake is similar in principle to the disc brake used on passenger vehicles. Air pressure acts on a brake chamber and slack adjuster, activating the brakes. For light truck and passenger car braking systems, hydraulic pressure is used. Instead of the cam or wedge used in conventional heavy truck drum brakes, a power screw is used. A "power screw" works like a C-clamp, so that the lining pads exert equal force to both sides of the disc or rotor. Some types of disc brakes have a built-in automatic adjuster. Disc brakes that require manual adjustment have adjustment specifications different from conventional "S" cam braking systems. ALWAYS CHECK MANUFACTURER'S SPECIFICATIONS BEFORE ADJUSTING.

HOW THE BASIC SYSTEM WORKS

A SIMPLE AIR BRAKE SYSTEM

NOTE: ALL PIPING DIAGRAMS ARE USED TO ILLUSTRATE BASIC BRAKING PRINCIPLES ONLY AND DO NOT ILLUSTRATE ACTUAL AIR BRAKE SYSTEMS.

BASIC OPERATION PRINCIPLE

Air is pumped by the compressor (1) to the reservoir (2), which is protected from over pressurization by a safety valve (3). The governor (5) controls the pressure in the reservoir by governing the compressor. Air is available from the reservoir to the bottom of the foot valve (6). The driver pushes down the foot valve treadle and air pressure flows to the front and rear brake chambers (7, 8). The brake chamber push rods move the slack adjusters. The slack adjusters rotate the "S" cams, forcing the brake shoes against the drums. This causes friction which stops the vehicle. The driver releases the foot valve treadle, and the air in the brake chambers is allowed to exhaust through the foot valve, releasing the brakes.

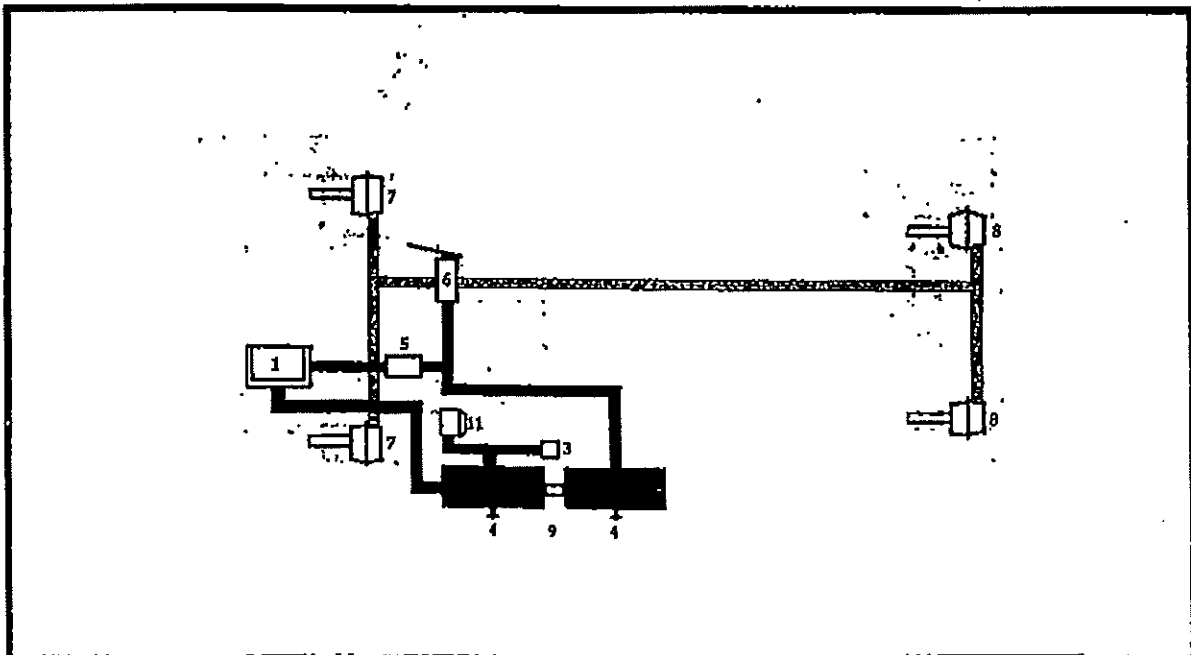
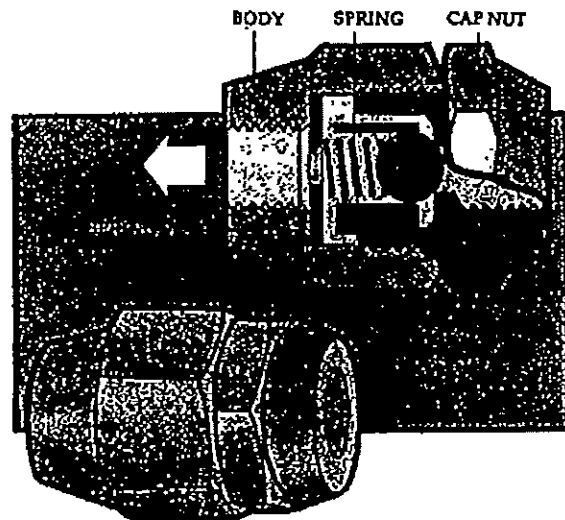
Other valves are necessary to ensure smooth and efficient operation.

ONE WAY CHECK VALVE

In the diagram below, two reservoirs are shown. This gives the system a larger volume of main reservoir air. The

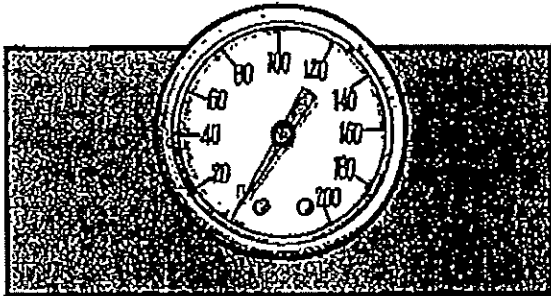
first tank in the system collects most of the moisture, and is referred to as the wet tank. The second tank is referred to as the dry tank. Reservoirs vary in size. The size of the tank or tanks installed on a vehicle depends on the number and size of brake chambers.

To prevent air from flowing back from the reservoirs to the compressor, a ONE WAY CHECK VALVE (9) is installed. This valve allows the air to flow in one direction only. The valve is spring loaded. Pressure at the inlet side overcomes the spring pressure and lifts the check valve ball, or disc, off its seat. Air passes through the valve to the outlet. When pressure at the outlet becomes greater than at the inlet, together with the spring pressure, the check device seats, preventing air from flowing back through the valve.



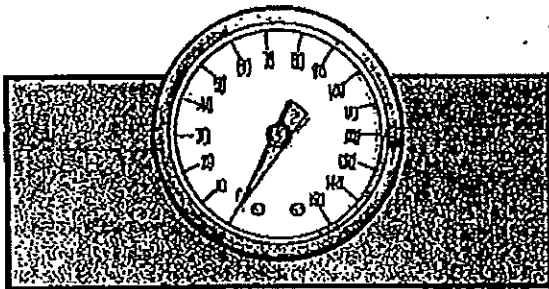
GAUGES

All vehicles are equipped with a pressure gauge (10) to indicate the amount of air pressure in the main reservoir system. This gauge is mounted in the cab, usually on the dashboard. Common operating pressures are 85 P.S.I. to 105 P.S.I. and 105 P.S.I. to 125 P.S.I., depending on the system. Monitoring the gauge will alert the driver to any unusual changes in pressure.



BRAKE APPLICATION GAUGE

An additional gauge can be installed on the dash to indicate the application pressure when the brakes are applied. This gauge can be piped to indicate the pressure of either a foot application or of a hand application. (Hand application will be explained later in the manual.)



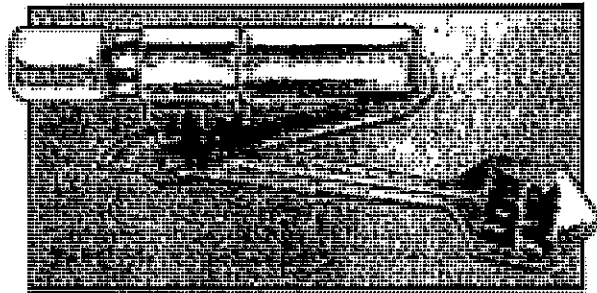
LOW PRESSURE WARNING

All vehicles equipped with air brakes must have a device to warn the driver if the air pressure in the system drops to a dangerous level.

Should the air pressure drop below approximately 60 P.S.I. due to overuse or leaks, the low pressure indicator switch (11) will turn on a red warning light on the dash, or cause a buzzer to sound. Some vehicles are equipped with both a light and a buzzer to warn the driver of a low air pressure condition.

WIG-WAGS

There are two common types of "wig-wag" low pressure warning devices that may be used. Both types will drop into the driver's view when the pressure in the system drops below approximately 60 P.S.I. The automatic warning device will rise out of the driver's view when the pressure in the system rises above 60 P.S.I. The manual reset type must be placed in the "out of view" position manually and will not stay in place until the pressure in the system goes above 60 P.S.I.



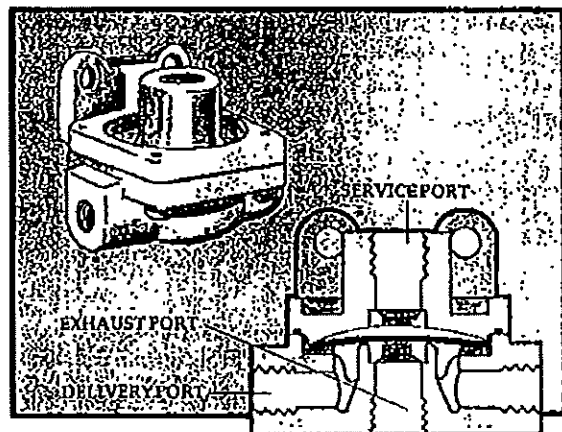
Whichever warning system is used, buzzer, lights or wig-wag, the driver **MUST STOP** his vehicle and find the cause of the air loss. The air pressure remaining in the system (approximately 60 P.S.I.) is enough for brake application if the driver acts promptly.

STOP LIGHT SWITCH

Any driver following must be warned that speed is being reduced or the vehicle is being stopped. The **STOP LIGHT SWITCH (12)** is an air operated electric switch which turns on the brake lights on the rear of the vehicle when a brake application is being made.

QUICK RELEASE VALVE

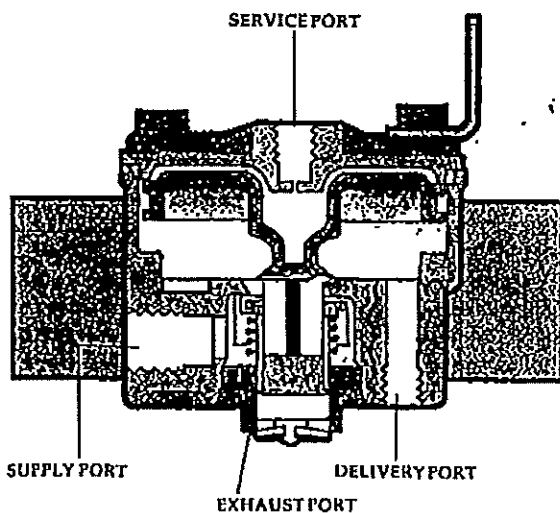
The application of the brakes in the simple system was described earlier. In such a basic system, when the driver releases the foot valve, it would be necessary for the air



under pressure in the brake chambers to return back to the foot valve to release the brakes. This releasing action would be slowed in long wheel base vehicles, due to longer lines between the foot valve and the rear brake chambers. To allow the brakes to release quickly and fully, by discharging the application air near the brake chambers, a quick release valve (13) may be installed.

RELAY VALVE

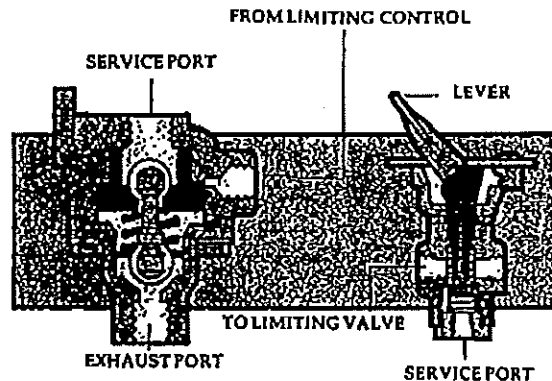
The foot valve is usually located closer to the front wheels than to the rear wheels. The longer the distance from the foot valve to the rear chambers, the more time it will take (known as brake lag) before the rear brakes apply. To correct this condition on a long wheel base vehicle, a RELAY VALVE (14) is installed near the rear brake chambers. A larger diameter pipe is connected between the main reservoir and the relay valve. The air line from the foot valve to the relay valve now becomes a "control line". (The air in the control line "dead ends" at the relay valve.) When the foot valve is depressed, the air pressure in the control line acts on the top section of the relay valve, causing the relay valve to "relay" reservoir air directly to the rear brake chambers through the larger diameter pipe. The pressure of the reservoir air delivered in this way will be the same as the control pressure delivered by the foot valve. Releasing the foot valve exhausts the control air to the relay valve, allowing it to cut off the flow of reservoir air to the rear chambers, in turn exhausting the air in the brake chambers by the quick release feature of the relay valve.



FRONT WHEEL LIMITING VALVE

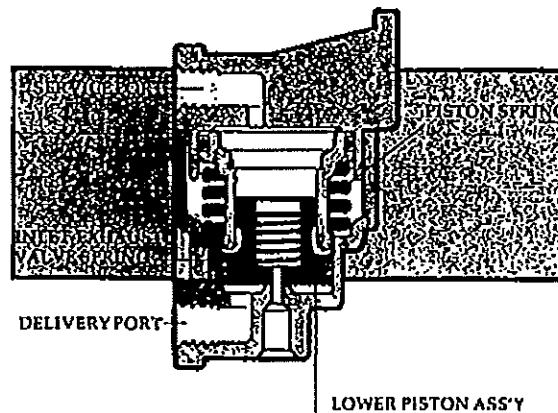
For better steering control on a slippery road surface, it can be an advantage to reduce the braking effect to the front wheels. This can be accomplished by installing a control valve (15) in the cab, and a FRONT WHEEL LIMITING VALVE (16) on the front axle.

The driver places the control valve in the "normal" position for dry road surfaces and the front braking application pressure is normal. On a slippery road surface, the driver may flip the control valve to the "slippery road" position. In this position, the control valve will cause the LIMITING VALVE to operate. Application air pressure to the front wheels is then reduced to 50 percent of the application air pressure being delivered to the rear brake chambers.

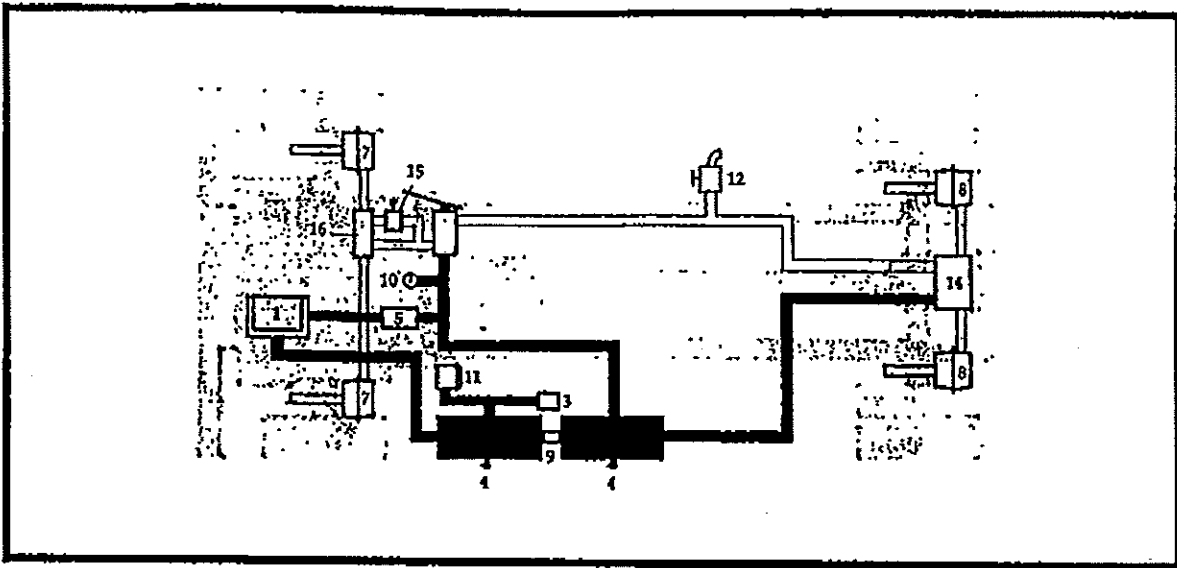


* DELIVERY PORTS NOT SHOWN

Some systems are equipped with an AUTOMATIC LIMITING VALVE (17)



This valve will hold off brake application to the front wheels from 0 to 10 P.S.I., depending on how it has been preset. Between the preset pressure and 40 P.S.I. of brake application, the reduction is approximately 50 percent. Brake applications between 40 P.S.I. and 60 P.S.I. are reduced by less than 50 percent. Brake applications over 60 P.S.I. are not reduced, full application is directed to the front wheels.



CHECK YOUR UNDERSTANDING

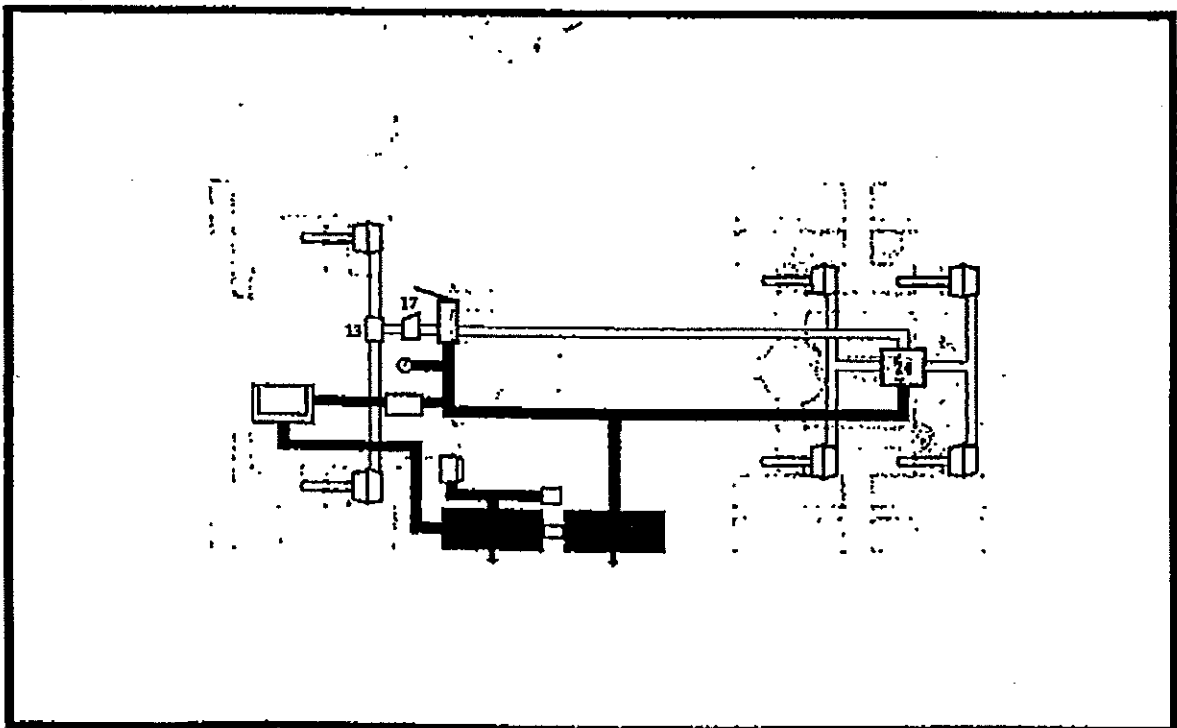
From the above diagram name each numbered component and briefly describe its function in the system. Write your answers on a separate sheet of paper.

TANDEM REAR AXLES

The air brake system discussed previously is that of a vehicle equipped with a single rear axle. The diagram illus-

trates an air brake system of a vehicle equipped with an automatic front wheel limiting valve (17), a quick release valve (13) and a tandem set of rear axles. Both axles of the tandem set are equipped with brakes.

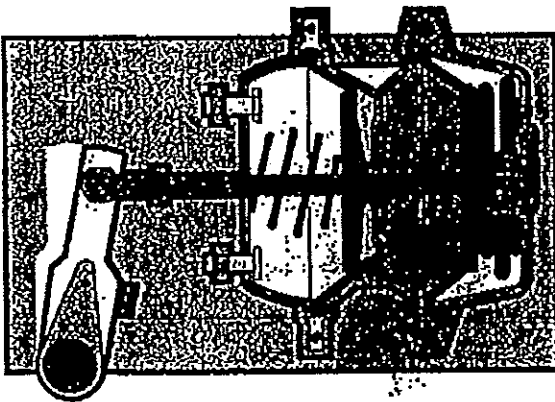
A relay valve (14) is used to provide quicker application pressure to the tandem rear axles.



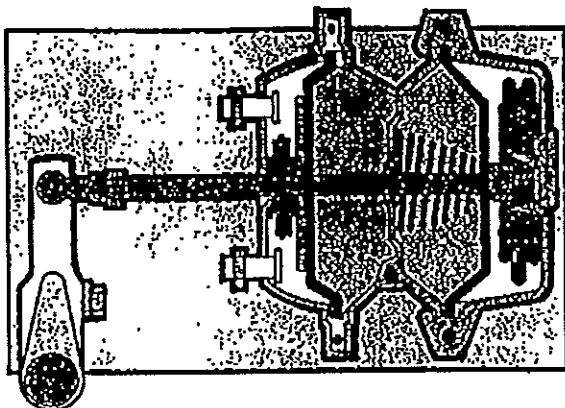
PARKING BRAKES (SPRING BRAKES)

Spring type parking brakes may be installed on an air brake equipped vehicle to ensure a reliable parking brake system. In the service brake system, the brakes are held retracted by springs, and applied by air pressure. Spring type parking brakes are applied and remain applied **WITHOUT AIR PRESSURE**. The parking brake chambers are attached to the service brake chambers and operate the brakes through the same linkage. Therefore, the effectiveness of the parking brake depends on the service brake adjustment. A control valve (usually a square, yellow button) in the cab allows the driver to exhaust air out of the parking brake circuit to apply the brakes, or to repressure the circuit to release them. The system can also act as an emergency brake. Loss of air from the main system may automatically apply the brakes, depending on how the system is piped.

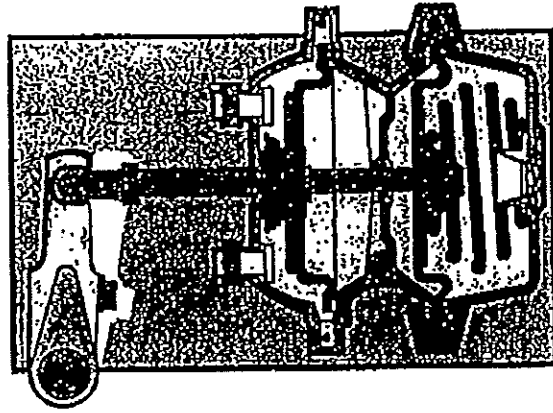
During normal driving, air pressure cages the spring, holding it ready for parking or emergency braking.



During normal service brake operation, the spring brake does not apply. Air pressure keeps the spring caged.



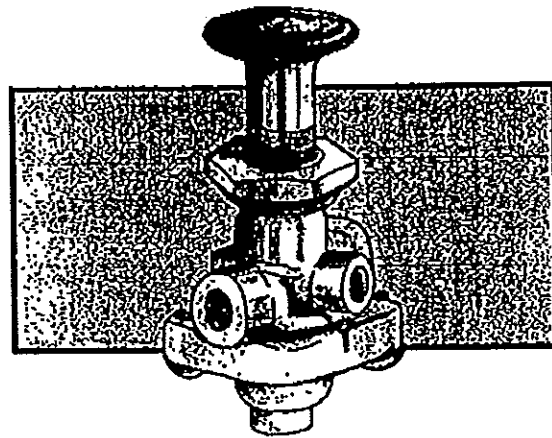
Application of the dash control valve exhausts air from the spring brake chamber, causing spring force to activate the spring brake.



PARKING BRAKE SYSTEMS

The installation of parking brakes and their piping arrangements into a vehicle air brake system will vary depending on the vehicle make.

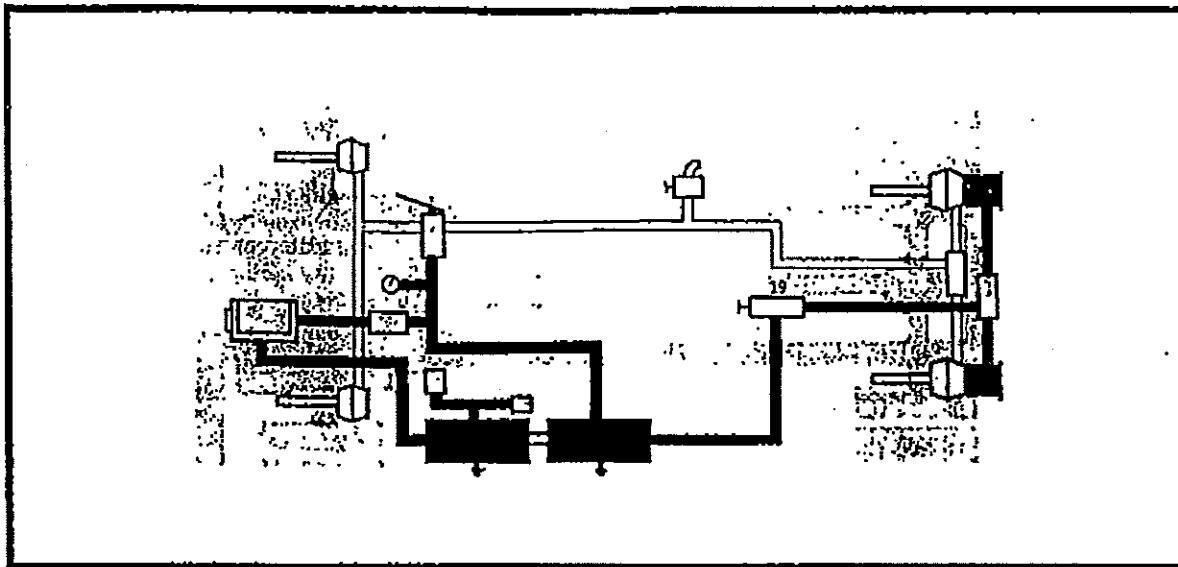
Control valves will vary, depending on the manufacturer and type of piping arrangements.



This type of spring loaded valve requires that the driver push the button to release the parking brakes. This valve cannot be left in the released position below approximately 35 P.S.I. pressure in the main reservoir system. Any time the main reservoir pressure drops to approximately 35 P.S.I., this valve will exhaust automatically, placing the parking brakes into full application. Similar types of spring loaded valves require that the driver pull the button out to release the parking brakes.

There is a single type of push-pull control valve in use that does not have an automatic release feature. To apply the parking brakes, the valve must be operated manually, even though the main reservoir pressure has been emptied.

SECTION III



USING THE PARKING BRAKES

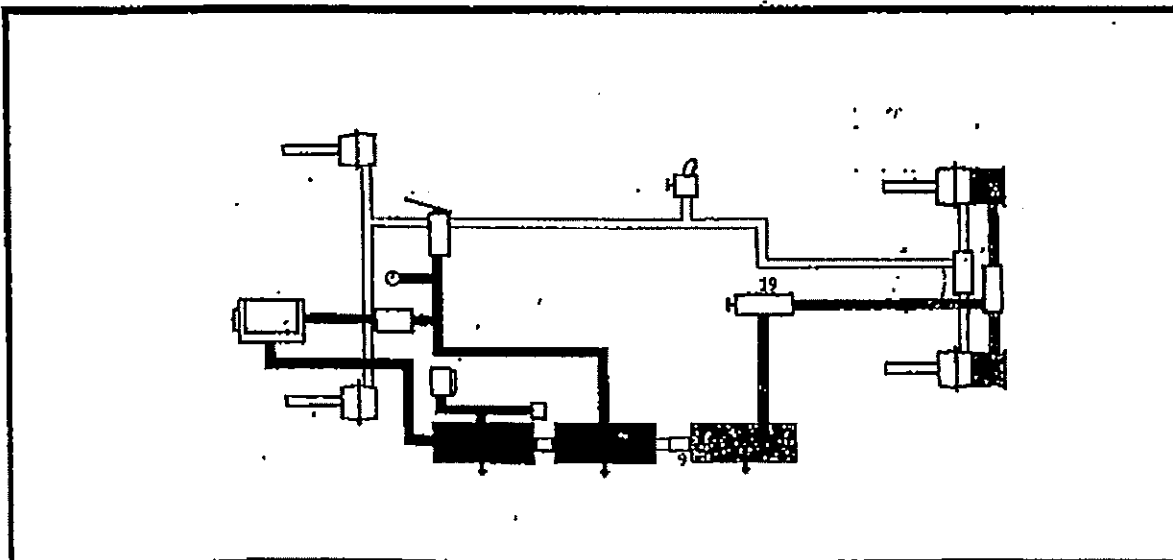
The above diagram illustrates spring parking brakes (18) added to the brake chambers of the rear axle on the single unit vehicle. A control valve (19) is mounted in the cab. A supply line of reservoir air is piped from the dry tank to the control valve. Opening the control valve admits main reservoir air pressure to the parking brake units, releasing them.

Closing the control valve shuts off the supply of reservoir air pressure and exhausts the existing pressure in the parking brake units, thus applying the brakes.

SINGLE CONTROL PARKING BRAKE SYSTEM

The diagram below illustrates the use of a third tank with a single control, used on the rear axle of a single unit.

A control valve (19) is mounted in the cab. A supply line of reservoir air is piped from the dry tank through a one-way check valve (9) into a third tank. Closing the control valve shuts off the supply of reservoir air pressure and exhausts the existing pressure in the parking brake units, allowing them to apply the brakes. If the main reservoir air in the system should be emptied, the parking brakes will not apply, because the one-way check valve will isolate the pressure in the third tank. If the spring (parking) brakes are to be used to stop the vehicle, the driver will have to set the parking brakes manually with the cab control valve.

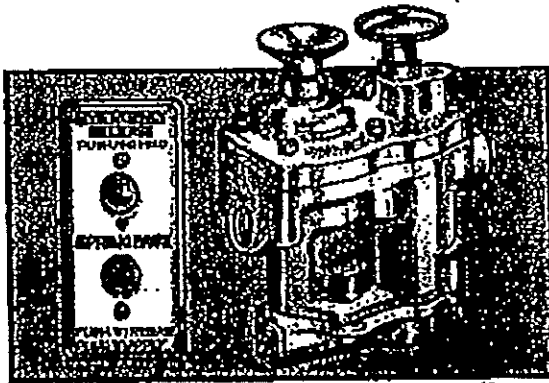


DUAL CONTROL VALVE AND RESERVOIR SYSTEM

Some vehicles, such as buses, may also be equipped with an EMERGENCY RELEASE TANK (2).

In this system, if main reservoir pressure is lost, the spring brakes will automatically apply.

If the parking brakes have applied because of a loss of main reservoir air, the driver can draw reserve air from the emergency release tank to release the parking brakes. A dual parking brake control (19) is used together with the emergency release tank. The driver must press on the emergency release button. Releasing the emergency release button will automatically allow the parking brakes to re-apply.



The emergency release would only be used to move the vehicle from an undesirable location, if the parking brakes had been applied due to a low main reservoir air condition.

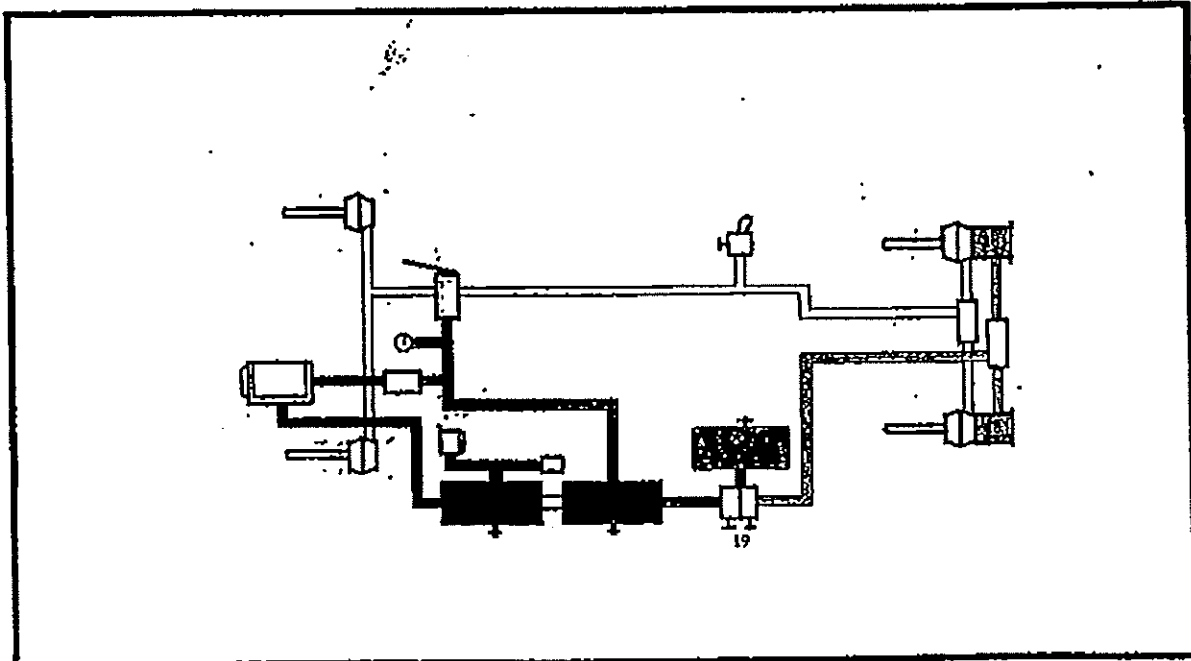
CAUTION: Parking brakes should be in the released position before making a service brake application. A full brake application, made when the parking brakes are applied, can compound the force exerted on the slack adjusters and linkage which could result in damage or brake failure. Compounding is the combination of two forces; the force applied by the spring brakes and the force applied by the service brake.

NOTE: Spring type brakes are primarily a parking brake, but in the event of loss of main reservoir air, they can assist in stopping the vehicle. How quickly they will stop the vehicle depends on such factors as:

- The weight and speed of the vehicle;
- The steepness of the grade;
- The spring force of the spring brakes which have been installed; and,
- The adjustment of the service brakes.

MECHANICAL RELEASE

Some types of parking brakes can be released mechanically by "winding them off" or "caging" them. A bolt, which runs through the centre of the chamber body, is turned to compress the spring. It may be necessary to first remove a lock plate and stud, to gain access to the head of



TRAILER SYSTEMS

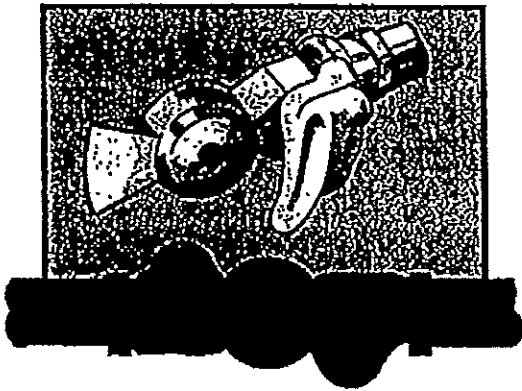
It can be assumed that the system illustrated up to this point is the air brake system of a truck unit. If a trailer was coupled to this unit, the brakes of the trailer would have to be operated from the tractor.

The following diagram shows the piping of a unit, similar to the tandem axles of the truck unit. The trailer has a single axle equipped with brake chambers

A "TEE" has been installed in the application line between the foot valve and the truck axle system. A line has been connected from this tee to the trailer by a set of couplers called "GLAD HANDS" (20).

GLAD HANDS

This term refers to the coupling device used to connect the service and supply lines of the trailer to the truck or tractor.



tor. These couplers have a snap-lock position, and a rubber seal prevents air from escaping.

Before connection is made, couplers should be clean and free of dirt and grit. When connecting the glad hands, start with the two seals together and the couplers at a 90 degree angle to each other. A quicksnap downwards will join and lock the couplers. Vehicles equipped with "dead-end" couplers should have these protection plates in use whenever the vehicle is used without a trailer. This will prevent water and dirt from entering the coupler and lines.

If the unit is not equipped with dead-end couplers, the glad hands of the service line can be locked to the glad hand of the supply line to keep water and dirt from entering the unused lines. The cleaner the air supply is kept, the less chance of brake problems!

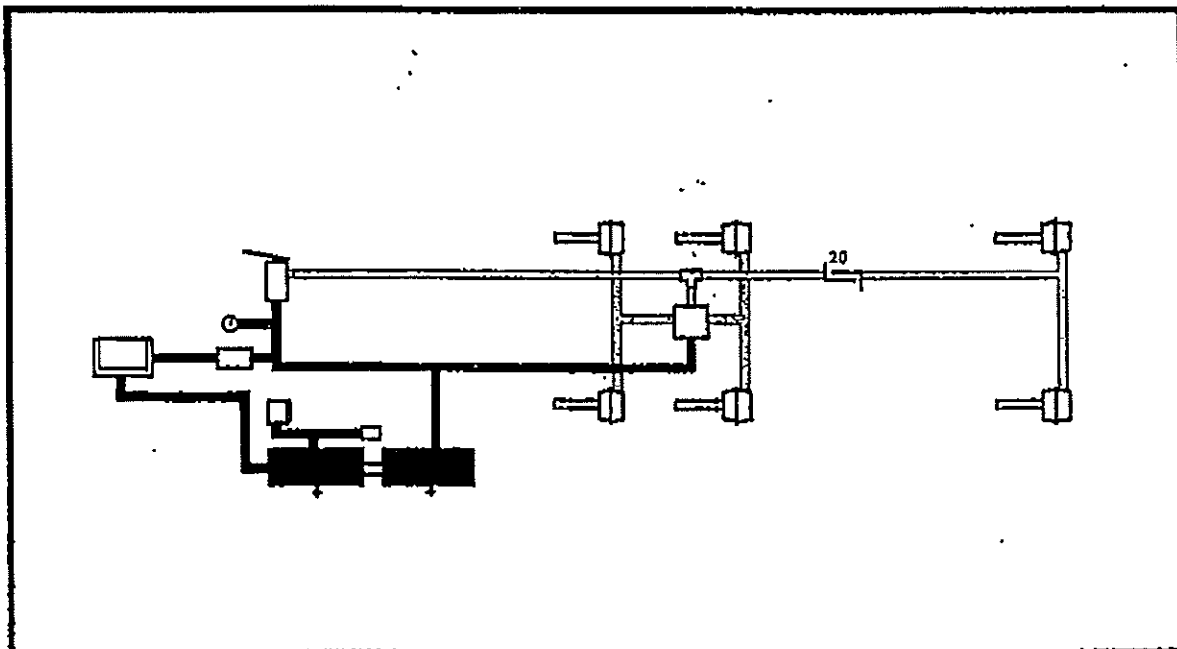
Glad hands and lines should also be secured to prevent the line from bouncing off the vehicle. This could seriously damage the couplers.

THE APPLICATION LINE

The application line is referred to as a SERVICE LINE. In this simple system used for an example, the driver depresses the foot valve treadle, and application air will be delivered to the tractor brake chambers and to the trailer brake chambers. When the driver releases the foot valve treadle, the application air to the trailer brake chambers must return to the foot valve to be exhausted to the atmosphere.

In this example system, there would be disadvantages:

If the trailer broke away from the tractor, the trailer would have no brakes.



SECTION IV

If the service line parted or ruptured, the trailer brakes could not be applied, and the application air would be lost from the tractor if a brake application were made.

If the air in the main reservoirs were lost, there would be no way to apply the brakes of the tractor or the trailer.

The trailer brakes cannot be applied independently from the tractor, and there is no way to set the trailer brakes when coupling to the tractor.

The application and release of the trailer brakes would be slower than those of the tractor.

These disadvantages are overcome by the addition of the lines and valves discussed in the following pages.

HAND VALVE AND TWO-WAY CHECK VALVE

To provide a brake application to the trailer unit only, a **HAND VALVE (21)** and a **TWO-WAY CHECK VALVE (22)** are piped into the system.

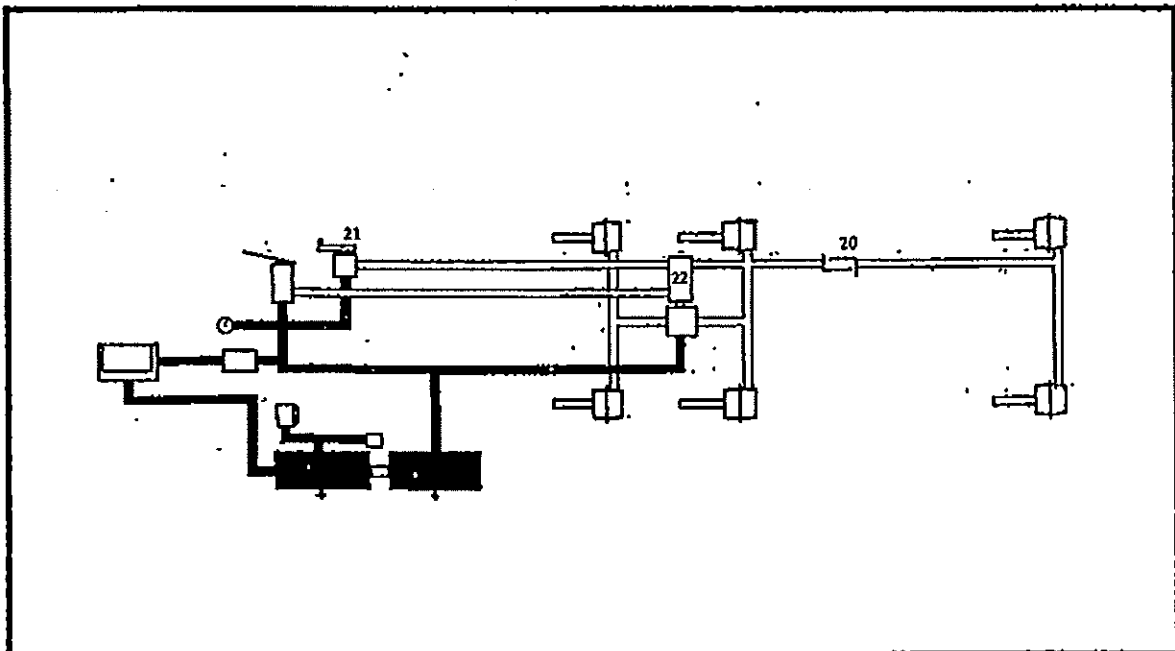
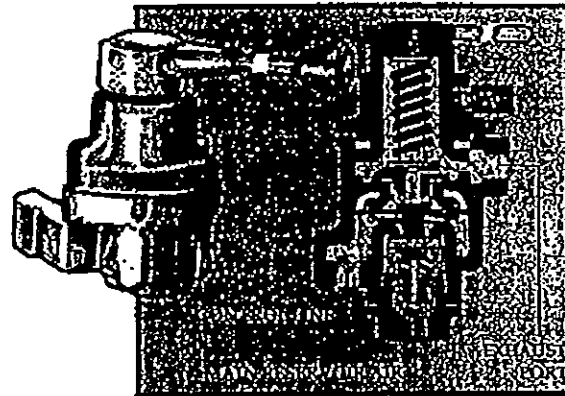
The purpose of the hand valve is to allow the driver to control independently the amount of application air to be directed to the trailer brakes when a trailer brake application is being made. It also provides a method of applying the trailer brakes when coupling the trailer to the tractor.

The purpose of a two-way check valve is to allow control of the trailer brake by use of the hand or foot valve. This valve will permit air to flow from the source which is supplying the higher application pressures.

HAND OPERATED VALVES

For trucks that are intended to pull trailers, the hand operated valve is added to the air brake system to operate the trailer brakes. This valve allows the driver to apply the trailer brakes independently of the tractor. The amount of application air pressure delivered depends on the amount the valve is opened by the driver. Some valves must be closed by the driver; others will close automatically from any open position. Valves may be of a type that will remain in the full open position only, or they may be equipped with a locking device that will hold them in the desired position.

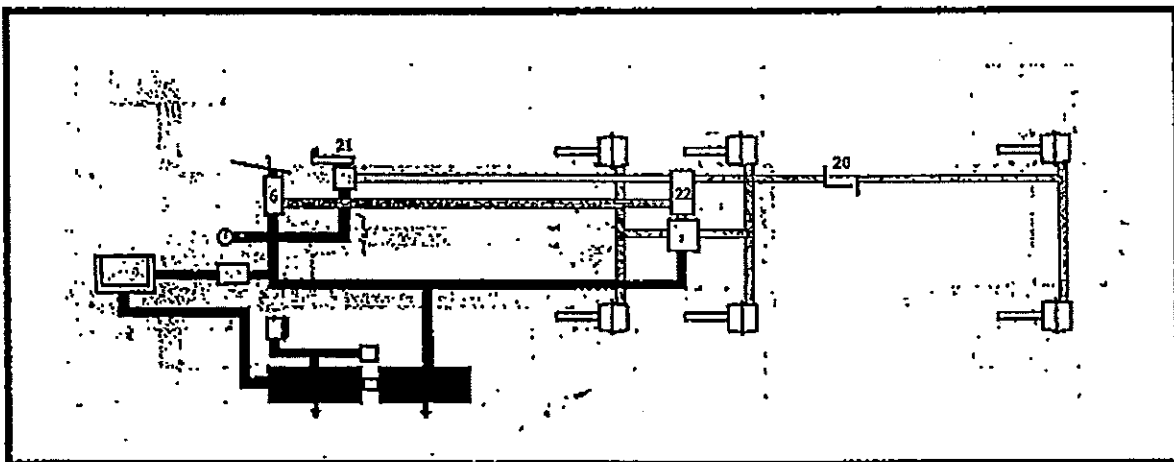
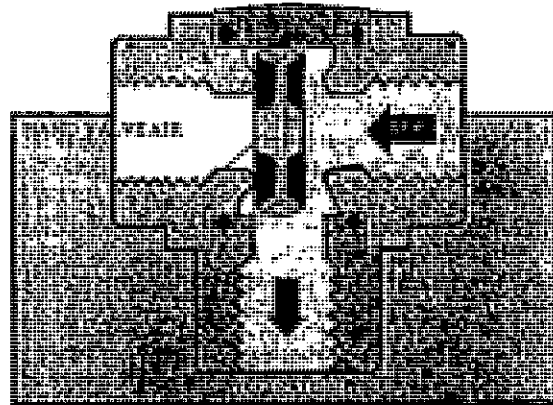
NOTE: The hand valve is **NOT** to be used for parking, as air may bleed off if the engine is stopped or the hand valve moves to the released position.



A TWO-WAY CHECK VALVE

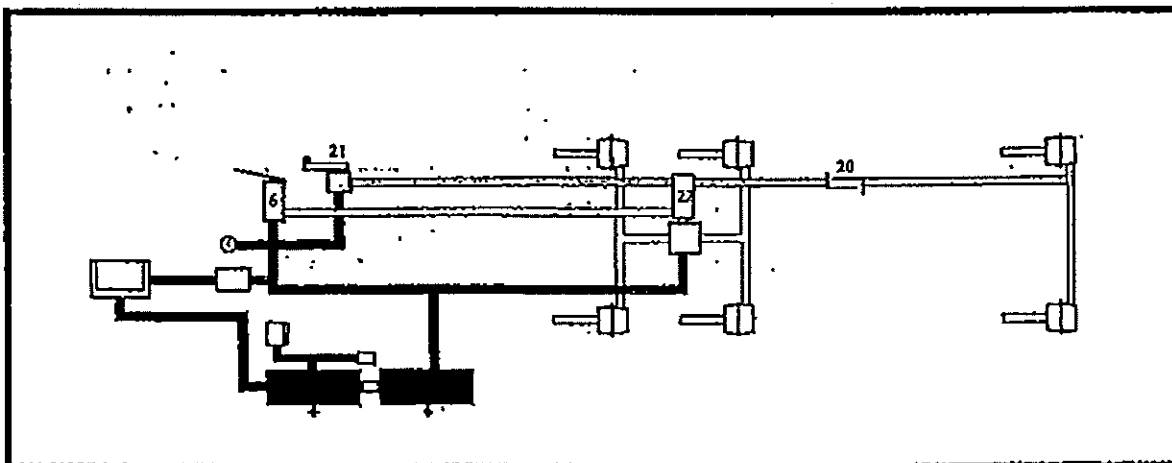
This valve allows air to be directed to one delivery pipe from either of two sources. A two-way check valve allows the source applying the higher pressure to shift the shuttle so that the higher pressure will be directed to the delivery or "service line." This valve is used between the foot operated valve and the hand operated valve, for the purpose of independently controlling the trailer brakes.

The driver has applied the brakes by using the foot valve. Application air is directed to the brake chambers of the tractor AND to the trailer brakes through a two-way check valve (22). The shuttle has shifted to the low pressure side, closing off any air flow toward the hand valve side. The hand valve (21) is in the closed position and equal pressure is being applied to the brake chambers of the tractor and the brake chambers of the trailer.



In this diagram, with the foot valve released, and the hand valve (21) opened, application air is directed from the hand valve through the two-way check valve (22), to the

brake chambers. The two-way check valve in this application has shifted to the low pressure side, closing off any air flow toward the foot valve side.



SECTION IV

The amount of application pressure through the hand valve depends on the amount that the valve is opened by the driver. (But it cannot exceed main reservoir pressure!)

Any time a trailer brake application is made by use of the hand valve, the driver may depress the foot valve treadle. If the foot valve application is of a higher pressure than that of the hand valve, the two-way check valve will shift to the lower pressure side, allowing the higher pressure to be directed to the tractor and trailer brakes.

If, during a foot valve application, the driver makes a higher pressure hand valve application, the two-way check valve will allow the higher hand valve application to be directed to the trailer brakes.

Regardless of whether the trailer brakes are applied independently by means of the hand valve, or together with the tractor brakes by the use of the foot valve, the maximum application pressure can only be the same as, or slightly less than, MAIN RESERVOIR PRESSURE.

TRACTOR PROTECTION

A tractor protection system is added to prevent total loss of air from the tractor if the trailer breaks away, or if the connecting air lines between tractor and trailer become separated or ruptured. The tractor protection system consists of two valves added to the tractor system: the TRACTOR PROTECTION VALVE (23), and the TRAILER SUPPLY VALVE (24). Other names for the trailer supply valve are "trailer parking control" and "emergency valve."

There are two types of trailer supply valves in use. The most common is a spring loaded valve that, after being opened manually, is held open by air system pressure. This device is called an automatic trailer supply valve.

Some tractors have a manual trailer supply valve. These may be a toggle type switch or a push/pull type.

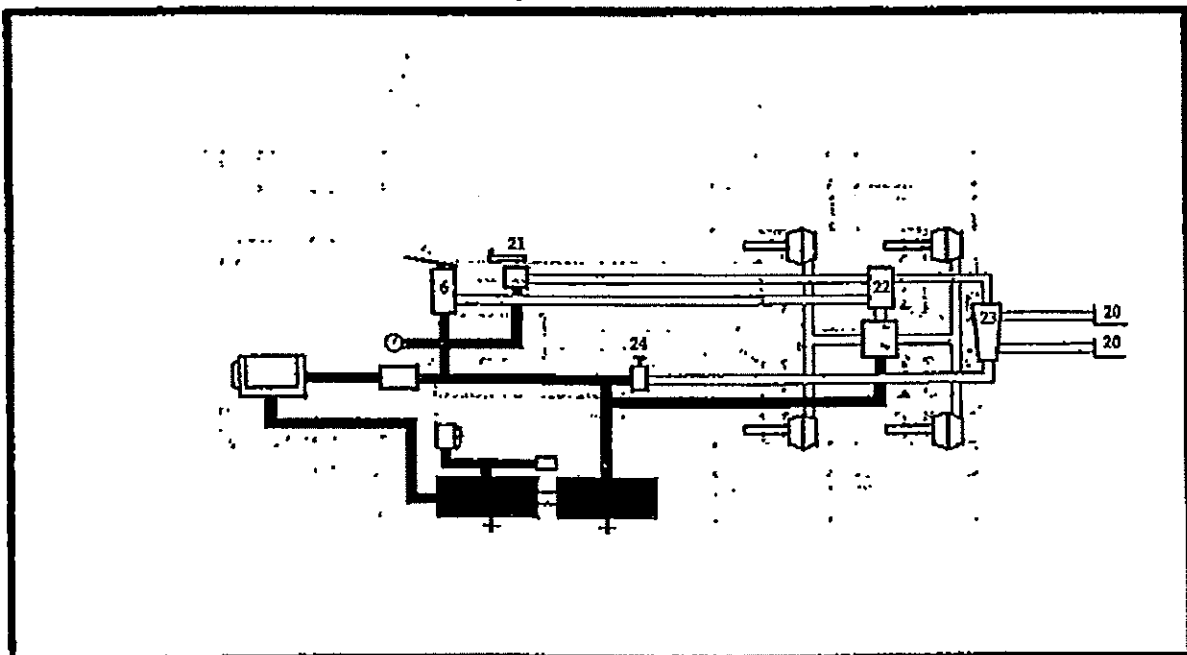
The tractor protection valves vary in outward appearance, depending on make and model, but all perform the same function: protecting the tractor air supply.

AUTOMATIC TRAILER SUPPLY VALVE SYSTEM

The diagram below illustrates that the main reservoir air is piped from the main reservoir lines to the trailer supply valve (24). The tractor protection valve (23) is fed by two lines, one from the trailer supply valve (24) and one from the two-way check valve (22). Leading off from the tractor protection valve are two lines, each with a glad hand coupler. These two lines are referred to as the SERVICE LINE and the SUPPLY LINE.

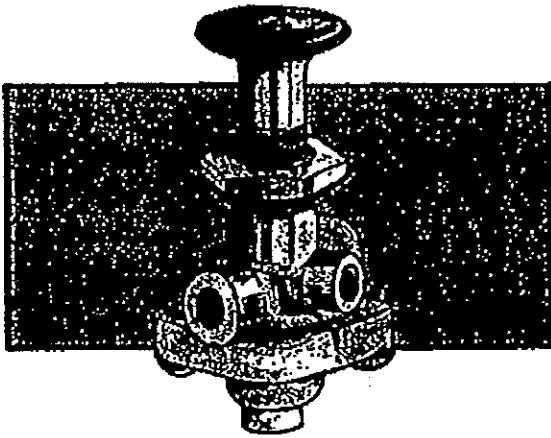
In the diagram, the upper line is the service line and the lower line is the supply line.

To understand the function of the trailer supply valve and the tractor protection valve in the system, it is important to understand how they operate.



TRAILER SUPPLY VALVE

This valve (usually a red octagonal button) is mounted in the cab of the vehicle, easily accessible to the driver. The driver opens the valve by pushing or pulling the button, depending on the type used.

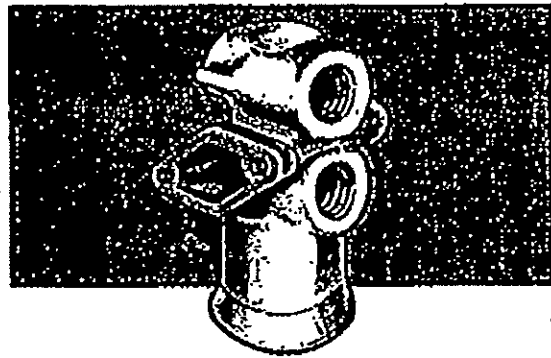


Opening the valve permits main reservoir pressure to flow through the valve. This pressure is piped to the tractor protection valve and the supply line glad hand. The valve is spring loaded, and will be held in the open position when sufficient pressure is reached. If the pressure drops to a range of between 45 - 20 P.S.I., the valve will

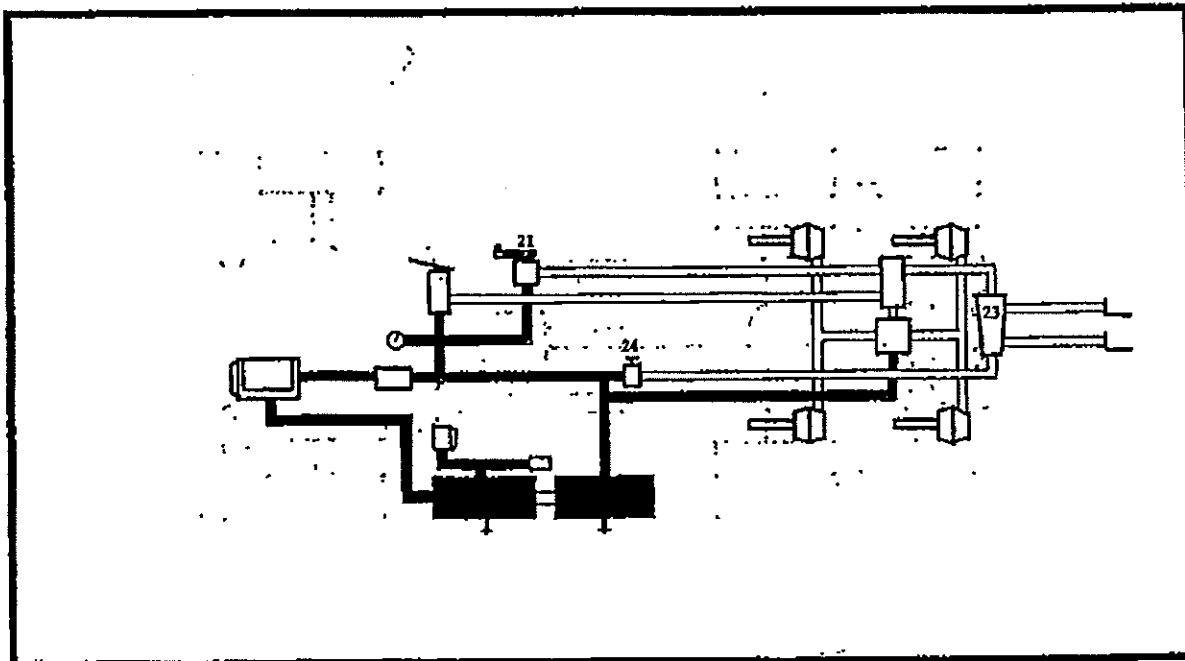
shut automatically, by spring pressure, opening the exhaust port. The driver can close the valve manually, to uncover the exhaust port.

TRACTOR PROTECTION VALVE

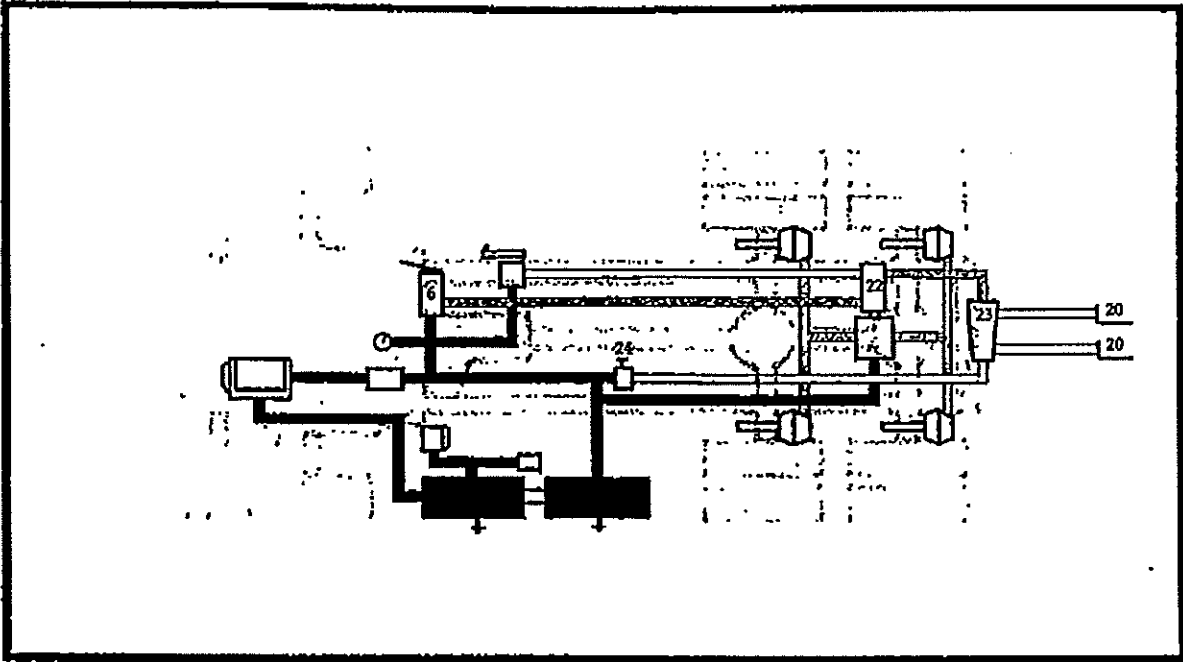
This is an example of a tractor protection valve, which is usually mounted on the cab or chassis of the tractor.



The diagram below illustrates a tractor unit equipped with a trailer supply valve (24) and a tractor protection valve (23). The trailer is not coupled and the tractor is being operated as a single unit. The driver has not opened the trailer supply valve (24) and the hand valve (21) is closed.



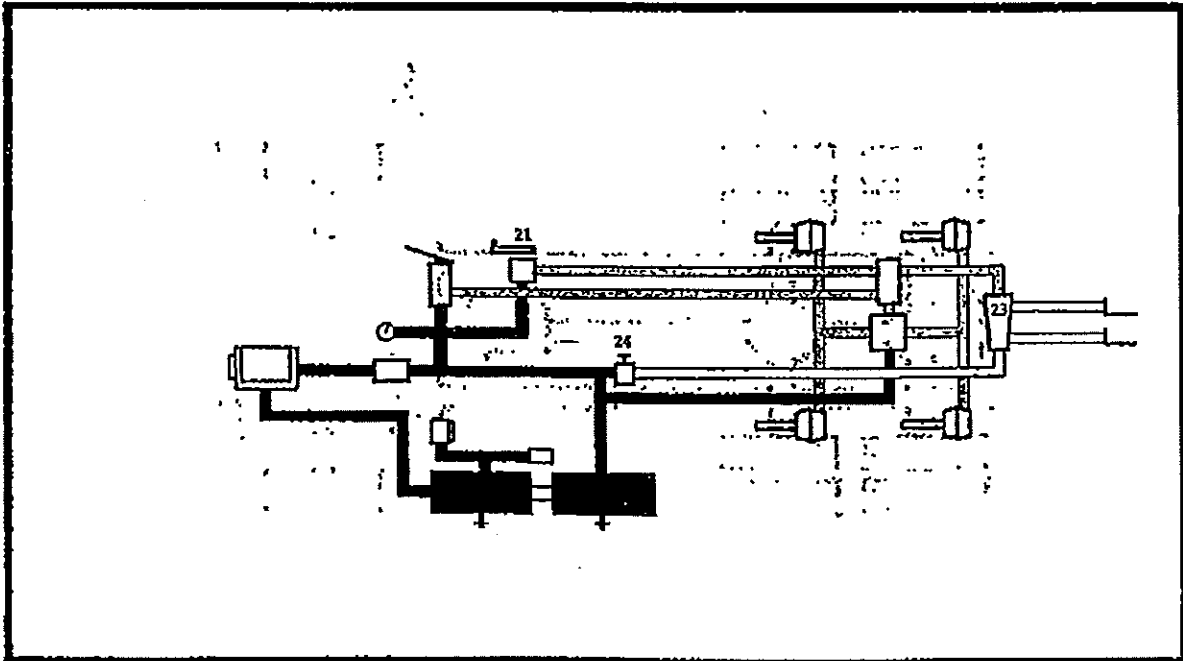
SECTION IV

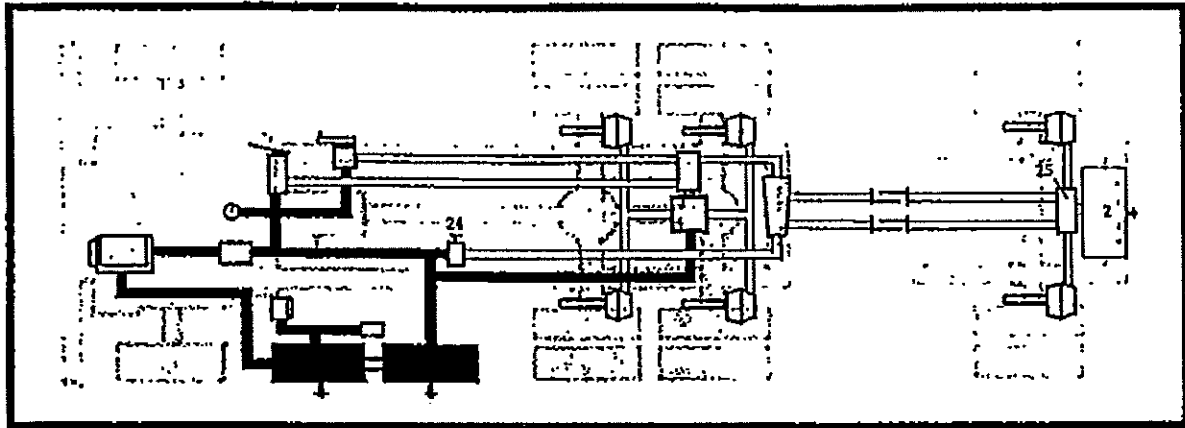


In the diagram above, the driver has made a brake application with the foot valve (6), and application air is being delivered to the tractor brake chambers. The two-way check valve (22) has shifted to the low pressure side, allowing application air in the control line to reach the tractor protection valve (23).

There is no air loss from the tractor through the disconnected glad hands (20).

If the driver, by mistake, applied the hand valve (21), with the trailer disconnected, the application air directed to the tractor protection valve would also be dead-ended. Again, no air loss would occur, if the trailer supply valve (24) is in the closed position.





TRACTOR AND TRAILER UNIT COUPLED

In the diagram above, the trailer has been coupled to the tractor, and the service and supply lines of the units have been coupled by using glad hands.

The trailer unit has a reservoir (2) installed. This tank will provide a volume of air near the trailer chambers for normal or emergency braking. The tank is equipped with a draincock.

A RELAY EMERGENCY VALVE (25) is mounted on the trailer reservoir. (This valve can also be mounted directly on the trailer frame near the brake chambers.) The relay emergency valve serves three main functions in the system:

1. The RELAY part of the valve relays air from the trailer reservoir to the trailer brake chambers during a brake application. This part of the valve operates like the relay valve previously discussed. It also provides a quick release of the trailer brakes.
2. The EMERGENCY part of the valve directs trailer reservoir pressure to the trailer brakes, causing an emergency application ("dynamiting"). This action

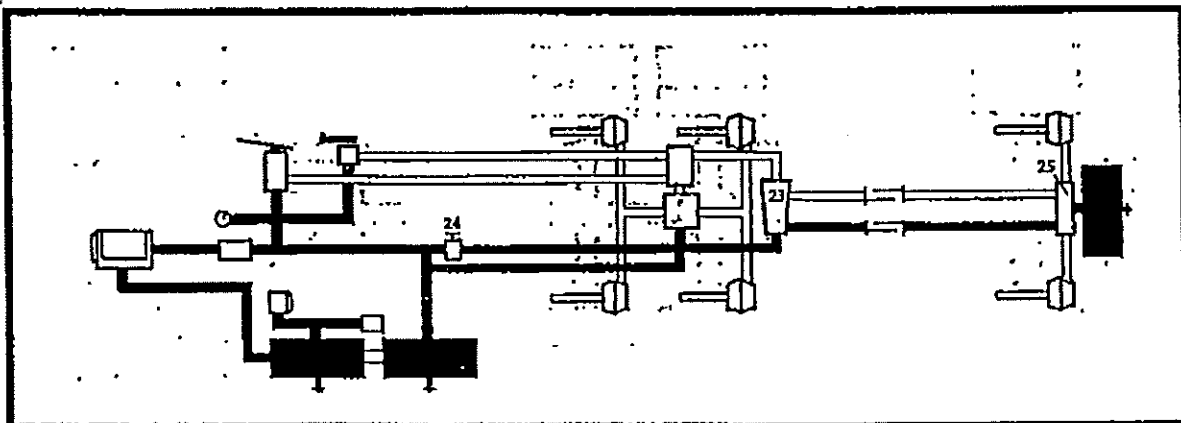
will occur automatically in the event of ruptured or parted air lines between tractor and trailer, or loss of air from the main reservoir system. The driver may operate the cab-mounted trailer supply valve (24) to cause an emergency application of the trailer brakes.

3. The relay emergency valve has a one-way check valve which stops air in the reservoir from going back to the source of the supply.

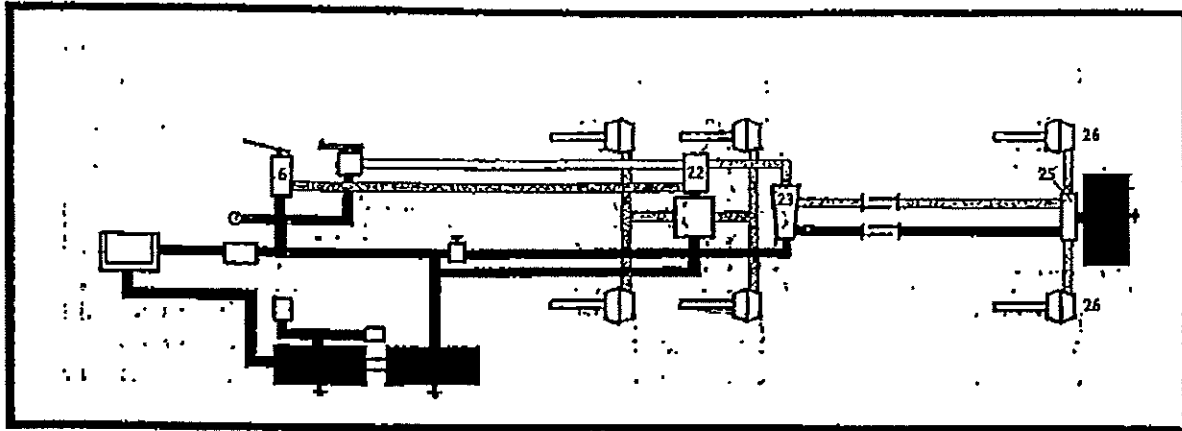
CHARGING THE TRAILER SYSTEM

In the previous diagram, the compressor has raised the main reservoir pressure to maximum.

In the next diagram, the driver has opened the trailer supply valve (24) to allow the main reservoir air pressure to be directed through the tractor protection valve (23) to the trailer. The air pressure passes through the relay emergency valve (25) to the reservoir on the trailer. Pressure will build up in the trailer reservoir to the same pressure as the main reservoirs on the tractor. This is known as "charging" the trailer system. The trailer supply valve will remain in the open position when the pressure has built up to between 20 and 45 P.S.I., depending on the make.



SECTION IV



BRAKE APPLICATION - FOOT VALVE

The diagram above illustrates the air flow action during a brake application being made with the foot valve (6). The application air has applied the tractor brakes and the trailer brakes together. As previously explained, the two-way check valve (22) has shifted, and application air is being directed through the tractor protection valve (23) to the service line.

This control pressure moves through the service line to act on the relay emergency valve (25). This control pressure will cause the relay emergency valve to direct reservoir air from the trailer tank to the trailer brake chambers (26). This will be of the same P.S.I. as the control pressure, which was the P.S.I. of the application air by the foot valve. In such a system, brake lag time has been minimized.

Release of the foot valve treadle stops the flow of application air. The relay portions of the valves return to their original positions, stopping the flow of air pressure. The exhausting ports of the valves exhaust the air pressure from the brake chambers, releasing the brakes.

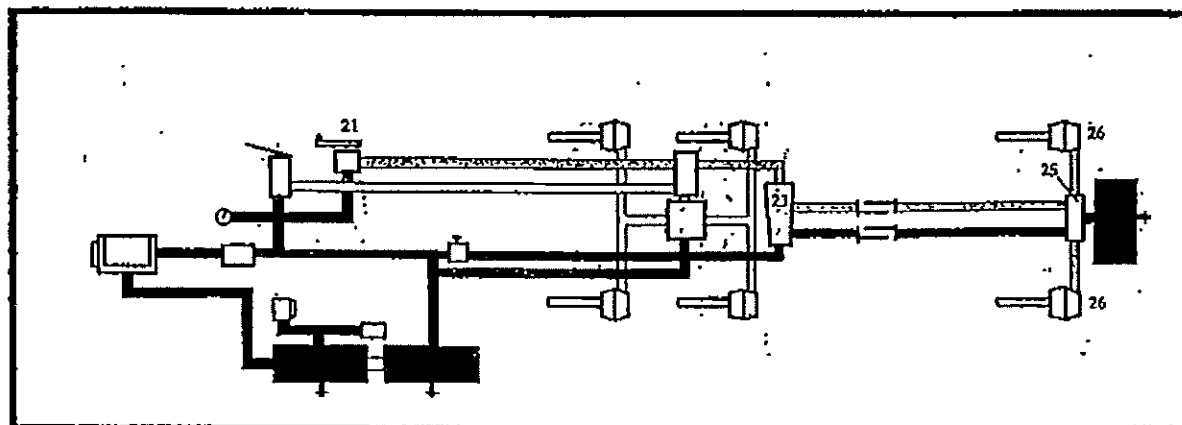
In this system, the brakes of both units can be released quickly.

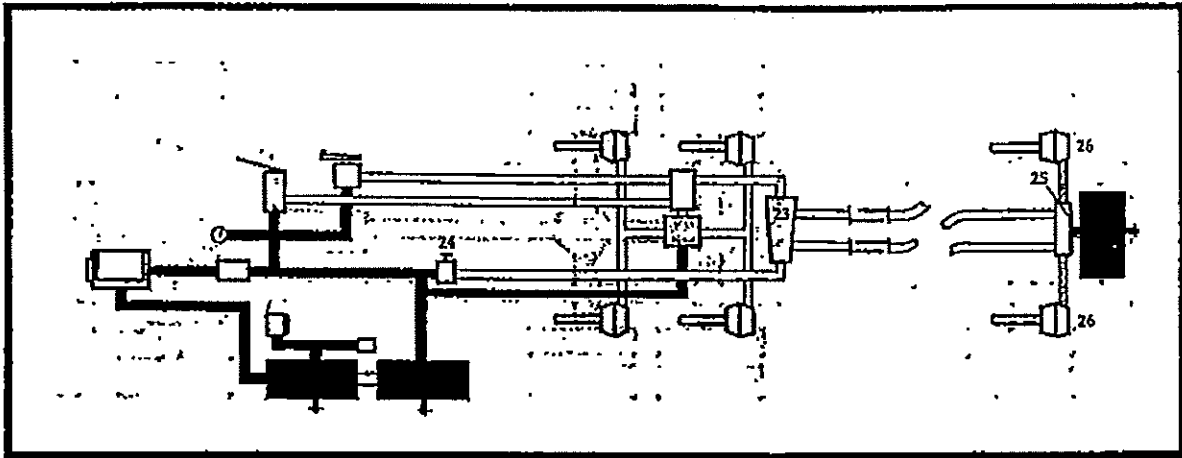
BRAKE APPLICATION - HAND VALVE

The driver can use the hand valve (21) to apply the trailer brakes. The air flow is illustrated in the next diagram. The tractor protection valve (23) and relay emergency valve (25) are operated by the application air, as was explained in the foot valve application.

Closing the hand valve will release the brakes by closing off application air. The air pressure in the chambers and lines will exhaust, also as explained in the previous foot valve application.

CAUTION: TRAILER BRAKES MUST NOT BE USED TO HOLD A PARKED VEHICLE THAT IS LEFT UNATTENDED. LOSS OF PRESSURE WILL RESULT IN LOSS OF BRAKES! ALWAYS SET THE PARKING BRAKE.





EMERGENCY APPLICATIONS

A TRAILER BREAKAWAY would result in a separation of the service line and the supply line. The sudden loss of air pressure in the supply line will trigger the relay emergency valve (25) which causes the trailer reservoir (2) to dump its air directly to the trailer brake chambers (26). This places the trailer brakes into emergency application.

The loss of pressure in the supply line also causes the trailer supply valve (24) to automatically shift to the close position.

The tractor brakes are operable, without air loss, because the tractor protection system has isolated the tractor.

The trailer brakes will remain applied until either the pressure in the trailer reservoir and lines is drained off, or the supply line is repaired and the system is recharged.

SERVICE LINE RUPTURE

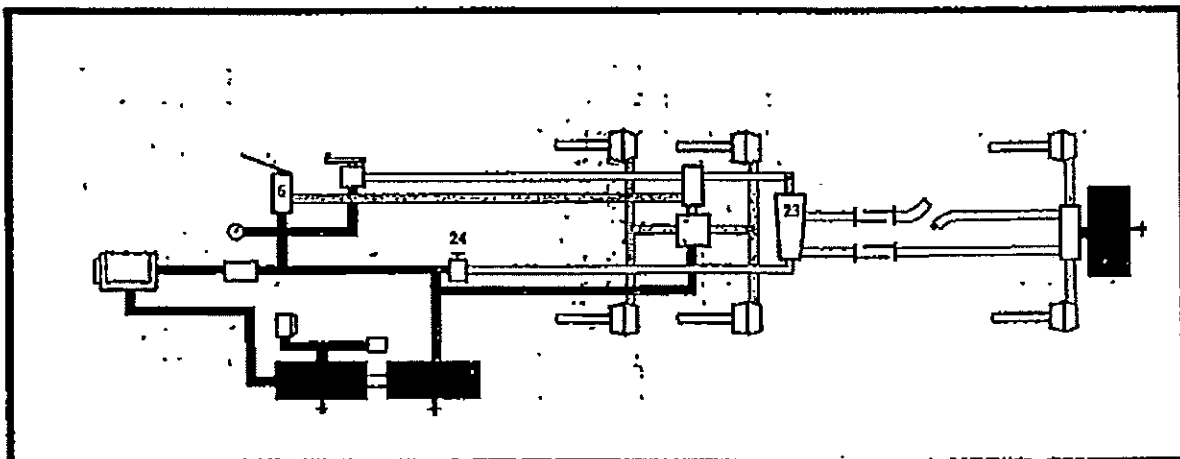
If the service line is ruptured or disconnected, no action will take place until a brake application is made.

In this diagram, the service line has ruptured, and the driver has made a brake application with the foot valve (6).

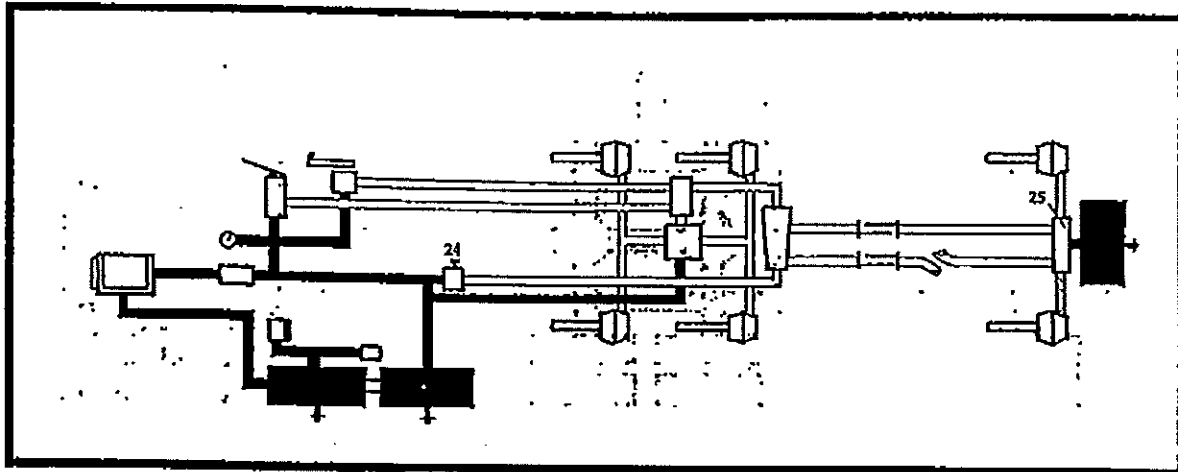
The application air is directed to the control line through the tractor protection valve (23). Rupture of the service line will result in the escape of air pressure, causing a loss of pressure in the tractor system. This pressure drop will cause the tractor protection system to close off, exhausting the supply line to the trailer. This will cause the trailer brakes to go into an emergency application.

The trailer brakes may be released by opening the trailer supply valve (24) to recharge the trailer system. A further application of the foot valve or hand valve would again trigger an emergency application.

NOTE: Depending on the type of tractor protection system used, the air loss from the tractor will stop immediately, or it will blow down to between 45 and 20 P.S.I. and then shut off.



SECTION IV



SUPPLY LINE RUPTURE

A rupture of the supply line (or an uncoupling of the supply line glad hands) will result in a drop of pressure in the supply line between the trailer supply valve (24) and the relay emergency valve (25). This will trigger the emergency action of the relay emergency valve, placing the brakes into emergency application. As in the previous examples, the trailer supply valve (24) will shift to the closed position.

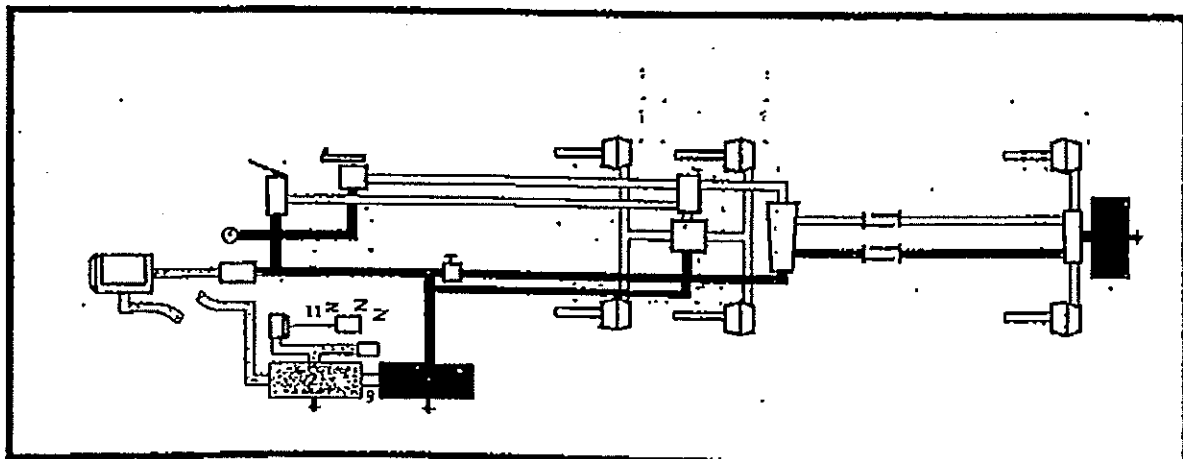
The operation of the tractor brakes will not be affected, if the tractor protection system is in working condition.

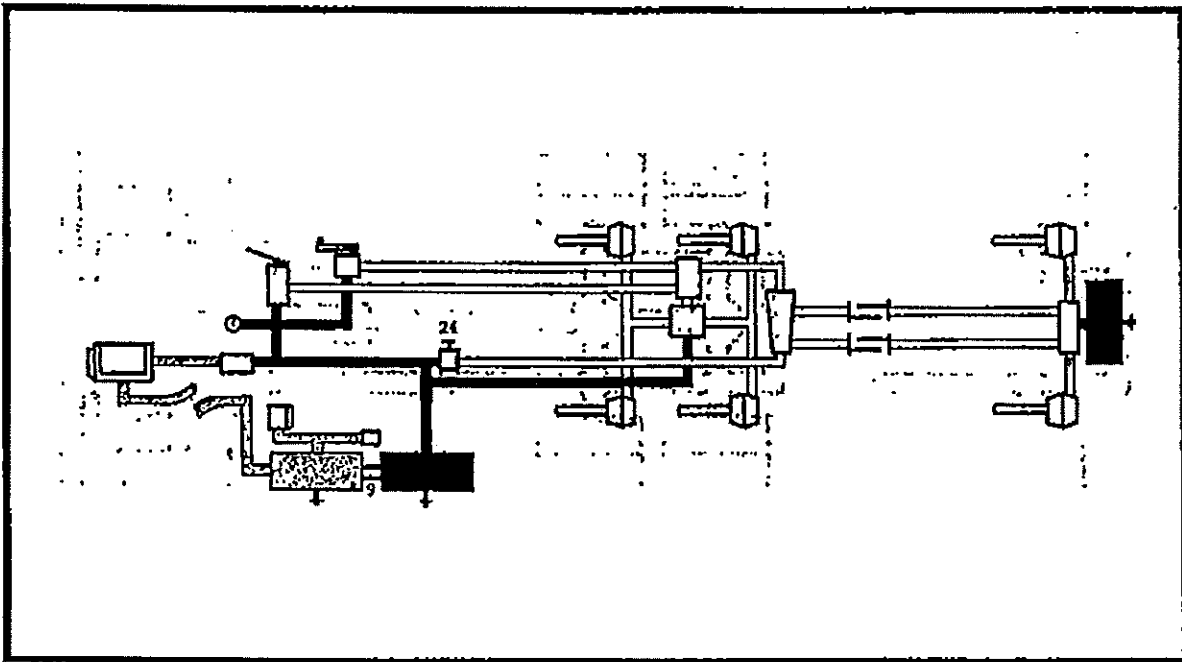
The relay emergency valve (25) must be the no bleed-back type, so no air is lost from the trailer.

LOSS OF MAIN RESERVOIR AIR

Rupture of the compressor discharge line would result in loss of pressure from the wet tank. When the pressure in the wet tank (2) of the tractor unit falls below the warning level, due to a compressor failure or excessive leakage on the tractor, the warning devices (11) will start to operate. In the diagram, the one-one check valve (9) has prevented the main reservoir air in the dry tank from escaping back to the wet tank and the ruptured line.

There is sufficient reservoir air pressure in the dry tank for a limited number of brake applications to stop the vehicle before the parking brakes are activated. (This will depend on how the parking brakes are piped.)





If this pressure is lowered to approximately 45-20 P.S.I. the tractor protection system will close automatically, placing the trailer brakes into an emergency position.

The tractor protection system described in this manual is an example of a vehicle equipped with a type of cab-mounted trailer supply valve (24) which will close automatically when the pressure in the supply line drops below 45-20 P.S.I. The valve may also be closed manually.

MANUALLY OPERATED TRAILER SUPPLY VALVES

Some vehicles are equipped with a different type of cab-mounted trailer supply valve, which must be operated manually by the driver. It has two positions: **NORMAL** and **EMERGENCY**.

The tractor will be equipped with a tractor protection valve, and the trailer unit with a relay emergency valve, as in the previous system.

The functions of the trailer supply valve, tractor protection valve, and the relay emergency valve will be similar to those illustrated. An important difference is that the trailer supply valve must be shifted to the **EMERGENCY** position manually.

CHARGING THE TRAILER SYSTEM:

The driver places the trailer supply valve in the **NORMAL** position and main reservoir air will be directed to the trailer reservoir.

TRAILER BREAKAWAY:

The loss of emergency air in the supply line will cause the trailer brakes to dynamite. To prevent air loss from the

tractor, the driver must shift the trailer supply valve to the **EMERGENCY** position. Otherwise the tractor air pressure will bleed down and hold at 45-20 P.S.I.

RUPTURED SERVICE LINE:

As in the example, no action will occur until a brake application is made. Application of the brakes with a ruptured service line will result in a loss of pressure in the system. When the main reservoir pressure drops to between 45-20 P.S.I., the trailer brakes will dynamite.

RUPTURED SUPPLY LINE:

As in the example, the loss of supply pressure will cause the trailer brakes to dynamite. To prevent air loss from the tractor, the driver must shift the cab-mounted trailer supply valve to **EMERGENCY**. Otherwise the tractor air pressure will bleed down and hold at 45-20 P.S.I.

If a slow loss of main reservoir air occurs, when the supply line pressure drops to between 45-20 P.S.I., the relay emergency valve will cause the trailer brakes to dynamite.

MANUAL DYNAMITING OF TRAILER:

Any time the driver shifts the cab-mounted trailer supply valve to the emergency position, and the trailer system is charged, the trailer supply valve will exhaust the supply line, dynamiting the trailer brakes.

The trailer brakes will remain applied only as long as air pressure remains within the trailer system. How long the air in the system will hold the brakes applied depends on how airtight the system is. As a safety precaution, parked trailers should always be blocked to prevent a possible runaway.

To move a trailer that has been parked with the brakes in an emergency application, it is necessary to charge the system to release the trailer brakes.

DUAL AIR SYSTEMS

More and more heavy duty vehicles on the road today are using a Dual Circuit Air System. The system has been developed to shorten stopping distances and reduce brake failures. At first glance, the dual system might seem complicated, but if you understand the basic air system described so far, and if the dual system is separated into its basic functions, it becomes quite simple.

As its name suggests, the dual system is two systems or circuits in one. There are different ways of separating the two parts of the system. On a two-axle vehicle, one circuit operates the rear axle and the other circuit operates the front axle. If one system has a failure, the other system is isolated and will continue to operate.

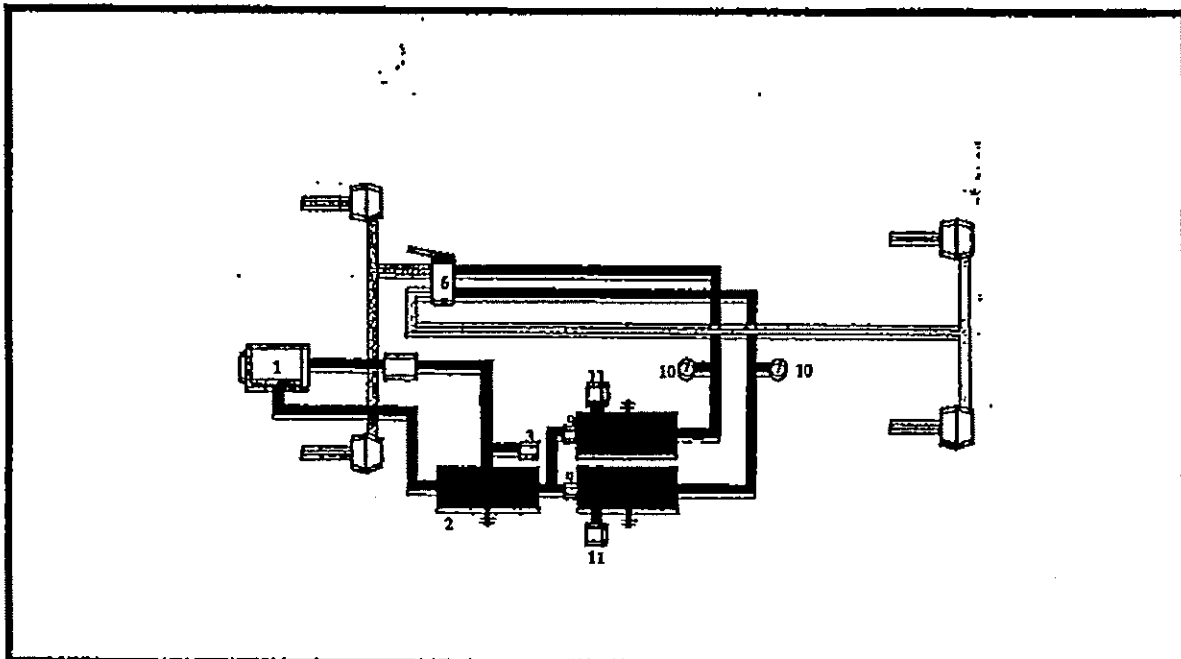
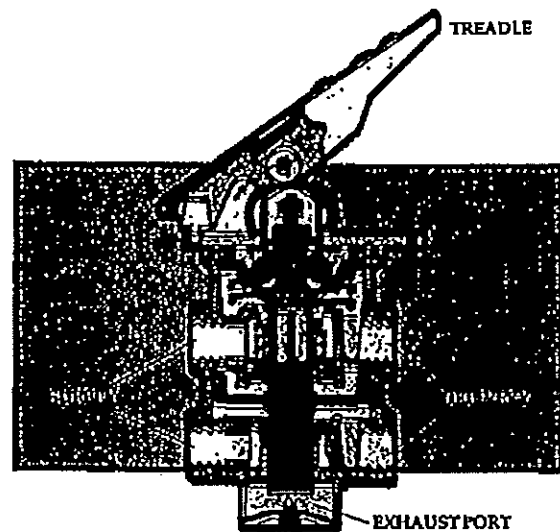
A SIMPLE DUAL CIRCUIT AIR SYSTEM

NOTE: ALL PIPING DIAGRAMS ARE USED TO ILLUSTRATE BASIC DUAL CIRCUIT PRINCIPLES ONLY AND ARE NOT TO BE INTERPRETED AS REGULATIONS FOR, OR SPECIFICATIONS OF, DUAL AIR BRAKE SYSTEMS.

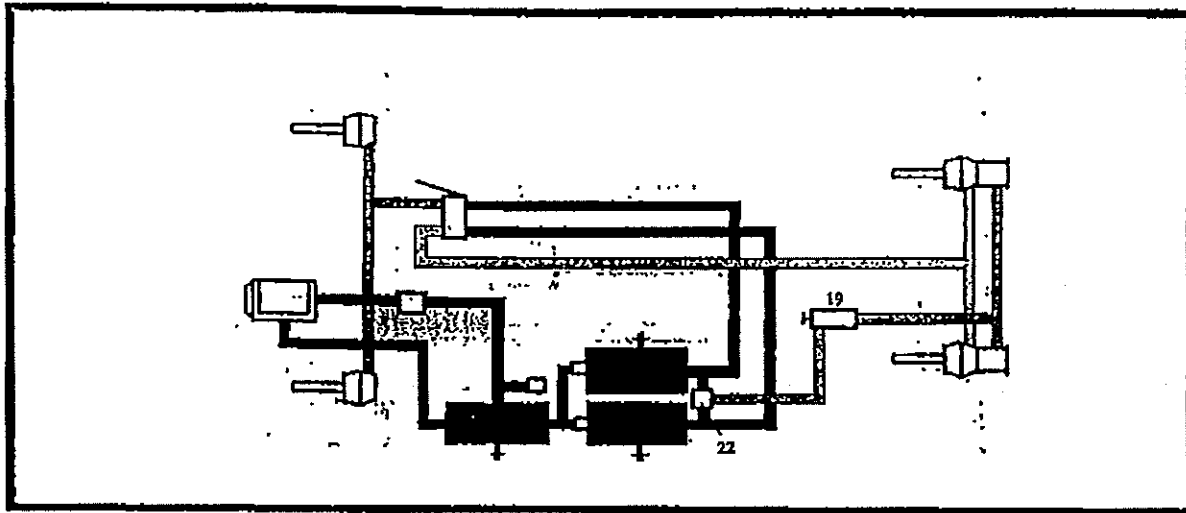
In the illustration below, air is pumped by the compressor (1) to the supply reservoir (2) which is protected from over pressurization by a safety valve (3). Pressurized air moves from the "wet" supply tank to the primary tank (green) and the secondary tank (red) through one-way check valves (9). At this point, the dual circuits start. Air from the primary tank is directed to the foot valve (6). Air is also directed from the secondary tank to the foot valve. The foot valve is similar to the one described earlier in the Single-Circuit System, but has been divided into two sec-

tions (two foot valves in one). One section of this dual foot valve controls the primary circuit and the other section controls the secondary circuit. When a brake application is made, air is drawn from the primary tank (green) through the foot valve and is passed on to the rear brake chambers. At the same time, air is also drawn from the secondary tank (red), passes through the foot valve and is passed on to the front brake chambers. If there is an air loss in either circuit, the other circuit will continue to operate independently. Unless air is lost in both circuits, the vehicle will continue to have braking ability. The primary and secondary circuits are equipped with low pressure warning devices (11) and pressure gauges (10).

DUAL CIRCUIT FOOT VALVE



SECTION V



SIMPLE DUAL CIRCUIT SYSTEM WITH SPRING PARKING BRAKES

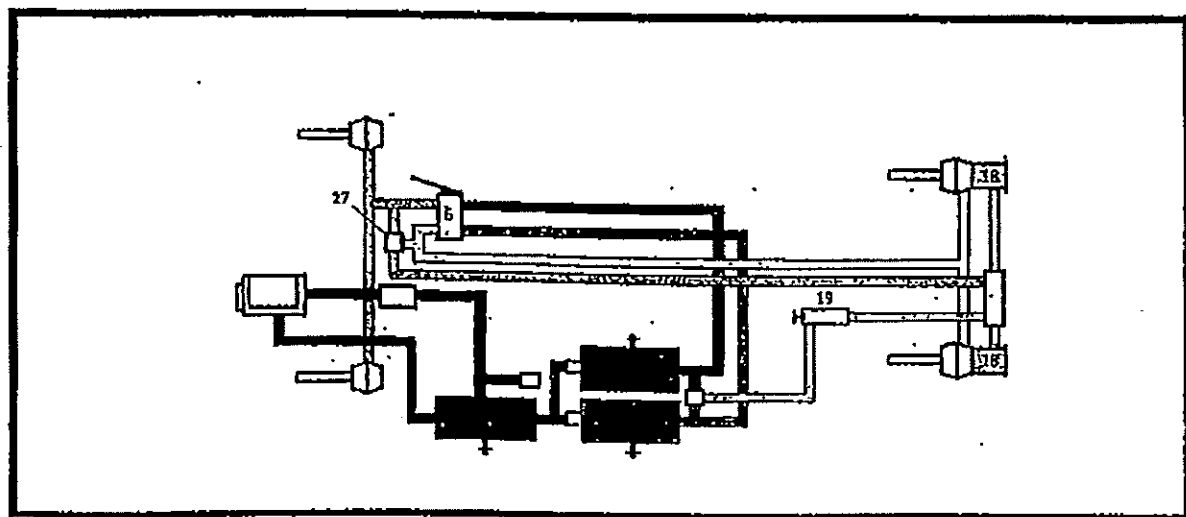
When spring brakes are added to a dual circuit system the same type of dash control valve discussed previously is used. Blended air is used to supply the control valve (19). Blended air is air taken from the primary and secondary circuits through a two way check valve (22). With this piping arrangement the vehicle can have a failure in either circuit without the spring brakes applying automatically. Unless air is lost in both circuits the spring brakes will not apply.

SPRING BRAKES WITH MODULATOR VALVE

Spring type brakes in this system serve two purposes: first, as a parking brake, and second as an emergency system. If a failure occurs in the primary circuit (green), and a brake application is made, control air from the foot valve is directed to a spring brake modulator. As there is no supply

air to maintain balance in the modulator valve, due to the primary circuit failure, the modulator valve then exhausts air pressure from the spring brake circuit. The amount of air released is equal to the amount of air applied by the foot valve. The release of air in the spring brake circuit causes the drive axle to brake using spring brake pressure (18). When the brake is released, supply air from the secondary circuit (red) returns the spring brakes to an off position. Brake applications can be repeated until all the air from the secondary circuit is lost, but, as the air pressure drops below 85 P.S.I., the spring brakes won't return to the full off position, in fact they will start to drag. At approximately 35 P.S.I., the spring brake control valve (19) on the dash exhausts the remaining air in the secondary circuit, and the spring brakes are fully applied. The only way the vehicle can be moved after all air is lost is to repair the damaged circuit and recharge the system, or cage the spring brake system.

Tandem tractors without steering axle brakes will have the primary and secondary systems split between the drive axles.



COMBINATION TRUCK AND TRAILER WITH SPRING BRAKES

The trailer system is supplied by blended tractor air taken from the primary and secondary circuit through a two way check valve as previously described.

The system is charged by opening the trailer supply valve (24), allowing air from the tractor to pass through the tractor protection valve (23), and the trailer spring brake valve (30) directly into the spring brake chambers (18). When air enters, the pressure protection part of the trailer spring brake valve opens, allowing the air to fill the trailer tanks.

When a brake application is made, blended control air acts on the relay valve (14) which releases air from the trailer tank to the brake chambers.

If the tractor breaks away from the trailer, the service and supply lines will be pulled apart. The sudden loss of air in the supply line will cause the tractor protection valve to close, preventing air from escaping out of either broken connection. The air supply in the tractor is sealed off and is available to control the tractor brakes. At the same instant, the sudden loss of air in the supply line causes the trailer

spring brake valve to exhaust the air from the trailer spring brake chambers applying the trailer brakes. The trailer brakes cannot be released under these conditions unless the lines are recoupled and the trailer tanks recharged.

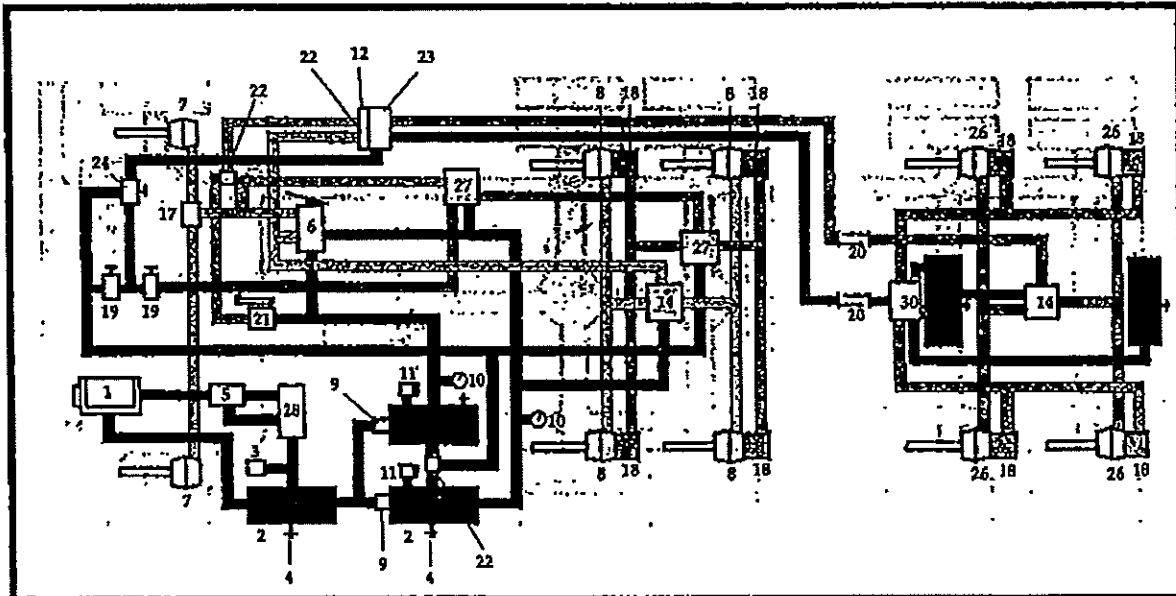
If only the supply line breaks between tractor and trailer, the same sequence of events will occur.

A break or rupture in the service line will not affect the trailer until a brake application is made. A loss of pressure in the tractor system will then result, causing the same emergency brake application described above. However, the driver will be able to release the parking brakes by releasing the foot valve, rebuilding air pressure and opening the trailer supply valve.

To apply the parking brakes, the control valve (19) is closed, causing a loss of pressure in the line which applies the spring brakes as described above.

The old and new tractor and trailer system are fully interchangeable, whether they are dual system or single circuit, and whether they are systems with spring brakes or without.

NOTE: An air dryer (28) has been added to reduce the amount of moisture in the system.



- | | |
|-----------------------------------|----------------------------------|
| 1. Compressor | 17. Automatic Limiting Valve |
| 2. Reservoir | 18. Parking Brake (Spring) |
| 3. Safety Valve | 19. Parking Brake Control Valve |
| 4. Drain Cock | 20. Glad Hand Connector |
| 5. Governor | 21. Hand Valve |
| 6. Foot Valve | 22. Two Way Check Valve |
| 7. Front Brake Chamber | 23. Tractor Protection Valve |
| 8. Rear Brake Chamber | 24. Trailer Supply Valve |
| 9. One Way Check Valve | 26. Trailer Brake Chamber |
| 10. Reservoir Pressure Gauge | 27. Spring Brake Modulator Valve |
| 11. Low Pressure Indicator Switch | 28. Air Dryer |
| 12. Stop Light Switch | 30. Spring Brake Valve |
| 14. Relay Valve | |

SECTION V

T-75 OFF HIGHWAY SYSTEMS, SINGLE UNIT

Air from the compressor is pumped into the supply tank (blue). Pressurized air moves from the supply tank to the primary tank (green), the secondary tank (red) and the front axle tank (brown) through one way check valves (9). When the air pressure reaches the governor cut-out setting (maximum 125 P.S.I.), the compressor cuts out and is in its cooling or "unloaded" stage. When the air pressure drops approximately 20 P.S.I., the governor (5) returns the compressor to its pumping or "loading" stage.

When a brake application is made by pushing down the dual foot valve treadle (6), air from the front axle circuit flows to the front axle relay valve and air from the primary and secondary circuits flows to the relay valves (14) at the rear axles. This control pressure on the relay valves causes the relay portion of the valves to open, relaying air pressure to the brake chambers. When the foot valve treadle is released, air pressure in the control lines between the foot valve and relay valves is released through the exhaust ports in the foot valve. Air pressure in the brake chambers is released through large exhaust ports in the relay valves.

Should either the primary or secondary SUPPLY circuit fail, the remaining circuit is isolated and continues to have braking ability.

When either of the primary or secondary SUPPLY circuit fails, braking on the front axle and one rear axle will not be affected due to the two way check valve (22) installed between the two service circuits.

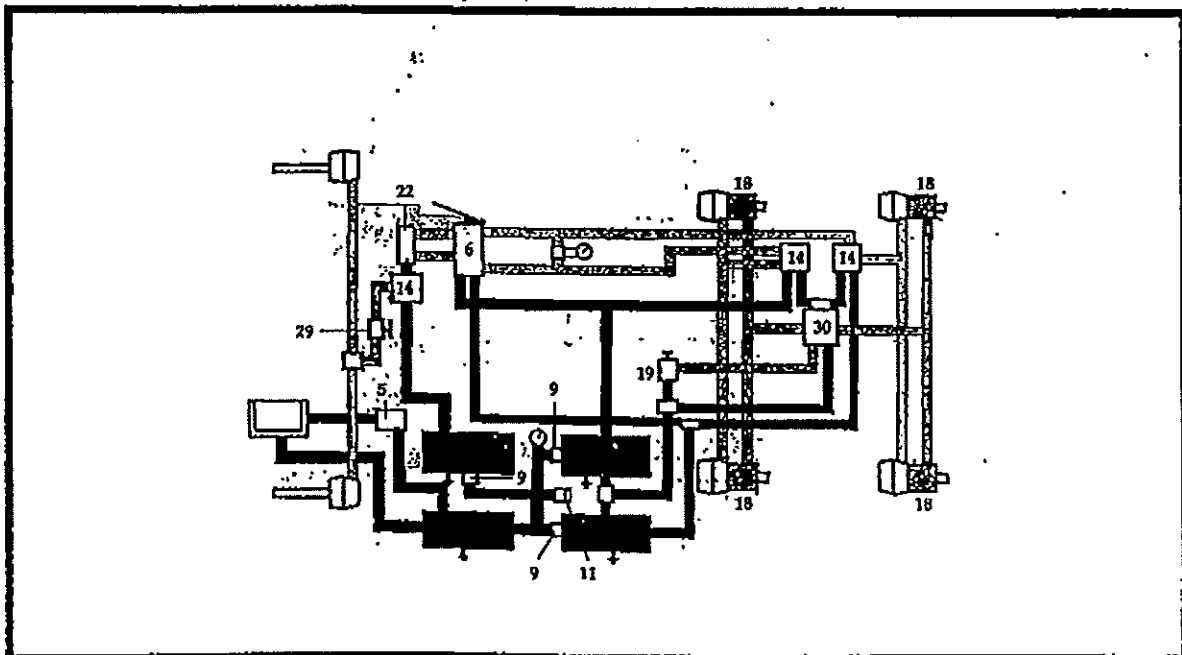
Should a failure occur in the front axle circuit, the primary or secondary circuit will not be affected.

NOTE: A failure in any of the circuits will activate the low air warning system (11) and the driver **MUST** stop the vehicle to determine the cause. Should the air in the supply system drop to approximately 35 P.S.I., the spring brakes will apply.

In this diagram the vehicle is equipped with a variable front wheel limiting valve (29). The application pressure delivered to the front axle is determined by the setting made by the driver.

To apply the spring parking brakes (18), the driver must move the control valve (19) to the "park" position. This exhausts the control pressure from the spring brake relay valve (30) which then releases the air from the spring brakes, allowing them to apply.

To release the spring parking brakes, the driver must move the control valve to the "release" position. This directs air to the spring brake relay valve, which supplies air pressure to the spring brakes, which compresses or "cages" the springs and releases the brakes.



L-75 OFF HIGHWAY SYSTEM, COMBINATION WITH SCHEDULE X TRAILER

The L-75 tractor brakes are piped similar to the T-75 system. A low pressure governor (31), a dump valve (32), a hand valve (21), a two-way check valve (22) and a relay type tractor protection valve (33), have been added. In this system, when air pressure rises to approximately 60 P.S.I., the low pressure governor opens, allowing air pressure to close the emergency dump valve. When maximum air pressure is reached, the governor unloads the compressor.

To fill the trailer tanks, the driver must open the trailer supply valve (24) until the trailer supply line gauge (34) shows over 50 P.S.I. The trailer supply valve will then remain open on its own, keeping the trailer tanks at the same pressure as the tractor tanks.

When a brake application is made with the foot valve, air flows through a two-way check valve (22) to the control port on the tractor protection relay valve (33), which relays air pressure from the supply line to the service line. The service pressure line relays air from the trailer tanks through the relay emergency valves (25) to the trailer brake chambers.

When the brakes are released, air pressure in the service line is exhausted through the exhaust port in the tractor protection relay valve. Air pressure in the trailer brake chambers is exhausted through a large exhaust port in the relay emergency valves. This action, both in application and release, is simultaneous on tractor and trailer.

To apply the trailer brakes only, or for a higher brake application on the trailer than on the tractor, the driver applies hand valve (21), air from the tanks flows through the hand valve into a double-check valve (22), to the tractor protection relay valve (33). Brakes on the trailer are then applied and released as described above.

If necessary, the trailer brakes can be "dynamited" by closing the trailer supply valve. This shuts off the air supply from the tanks and simultaneously exhausts the supply line into the atmosphere. Loss of air pressure in the supply line causes the trailer's relay emergency valves to dump full reservoir pressure into the brake chambers.

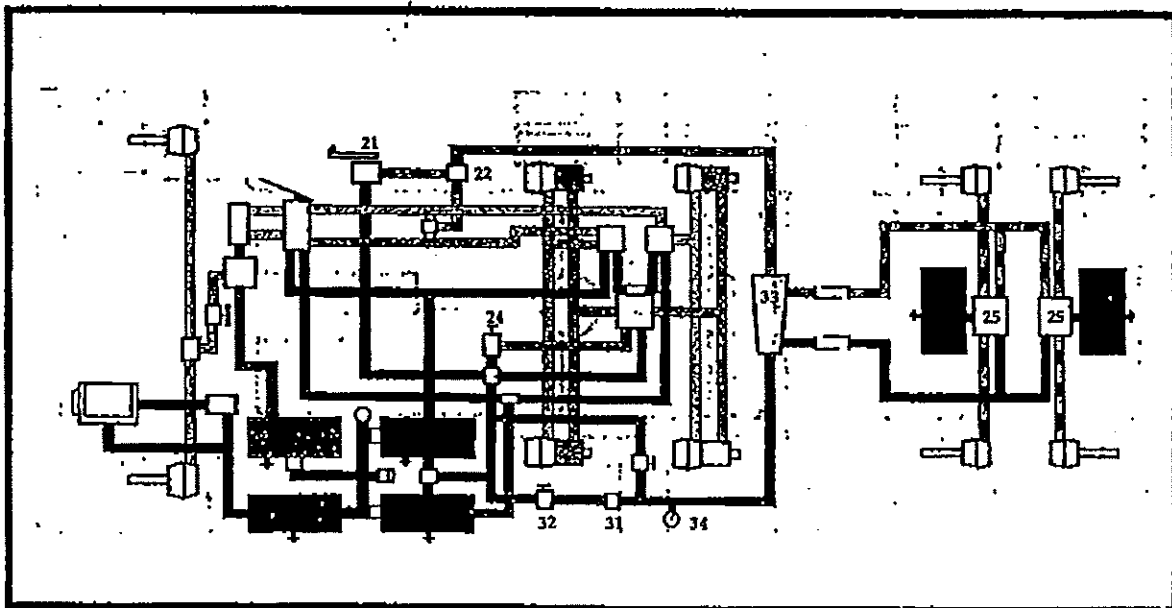
The trailer system will provide a rapid application and release of the trailer brakes as each axle has its own air tank and relay emergency valve.

If a brake chamber or air line ruptures on one axle, the other axle continues to have braking ability for emergency stops.

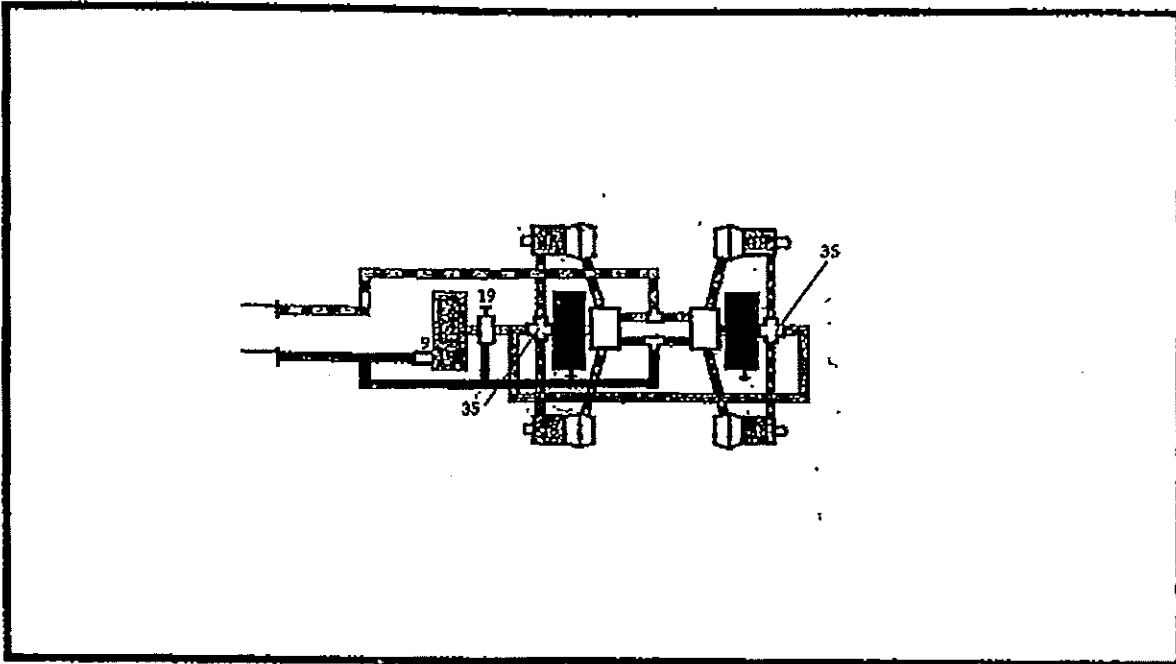
The L-75 tractor system has the same air loss safety features as the T-75.

SCHEDULE SX OFF HIGHWAY TRAILER WITH SPRING BRAKES

The SX trailer brake system is piped similar to the Schedule X system. Both systems provide air loss safety features. A one-way check valve (9), a third tank (2), a spring brake control valve (19), two four-line two-way check valves (35) and four spring brakes (18) have been added.



SECTION V



The addition of spring brakes serves two functions. It provides a method of securing the trailer when parked and acts as an emergency brake for the trailer axle that has lost its supply reservoir pressure. (The trailer spring brakes are held off or caged by trailer supply reservoir pressure.)

If the trailer has lost all supply reservoir pressure and must be moved, the spring brakes may be released by opening the spring brake control valve (19) located at the rear of the trailer. This directs air from the isolated third tank to release the spring brakes. The spring brakes may be reset by closing the spring brake control valve. Care should be taken when moving the trailer as the service brakes will not apply.

NOTE: Regulation piping diagrams for off highway air brake systems are listed in Appendix I pursuant to the Highway (Industrial) Act.

7. If the trailer breaks away from the tractor on a dual circuit highway system, what applies the brakes on the trailer?
 - (a) the trailer reservoir pressure
 - (b) the spring brakes
8. What is blended air?
9. Can a single circuit trailer be towed with dual circuit tractor?
10. Name the components found on an L-75 system that are not on a dual circuit "highway" system.
11. If the trailer breaks away from the tractor on an L-75 system, what applies the trailer brakes?
 - (a) the trailer reservoir pressure
 - (b) the spring brakes if equipped

NOTES

SECTION SUMMARY

1. What is the basic principle of the dual circuit system?
2. What valve is used to protect the primary circuit from the secondary circuit?
3. In a simple dual circuit system, will the vehicle continue to have braking ability if one circuit fails?
4. Is there a difference between the foot valve used in a single circuit system and the foot valve used in the dual circuit system?
5. Name two functions of the spring brakes in a dual circuit system.
6. Describe the functions of the spring brake modulator valve.

BLOW OUT PREVENTION

SHUT-IN PROCEDURES

DRILLING: (No Gas to Surface)

- Call Alert
- Stop Rotary
- Shut pump off
- Open HCR to open choke to flare pit
- Close Annular Preventer
- Slowly Close Choke -- Do not exceed Maximum Allowable Casing Pressure
- Ensure well is shut-in
- Read and record Shut-in Casing Pressure and Shut-in Drill Pipe, while pressures stabilize

WHILE TRIPPING: (Have Safety Hold Down on Foot Clamp)

- Call Alert
- Position upper tool joint above Foot Clamp
- Close Foot Clamp
- Install stabbing valve in open position and close valve after installation
- Open HCR to open choke to flare pit
- Close Annular Preventer
- Slowly close choke, DO NOT exceed MACP
- Ensure well is Shut-in
- Put water swivel on
- Open stabbing valve
- Read and Record Shut-in Casing Pressure and Shut-in Drill Pipe Pressure, while pressures stabilize

OUT OF HOLE:

- Call Alert
- Open HCR through open choke to flare pit
- Close Blind Rams
- Slowly Close Choke, DO NOT exceed MACP, Record SICP

DRILLING: Gas Monitor Shut Down Engine (Gas to Surface)

- Shut drill engine off with motor kill
- Evacuate Floor – Call Alert
- Initiate Well Control/Shut in Procedures

"IF GAS TO FLARE PIT IGNITE WITH FLARE GUN"

PULLING CORE TUBE:

- Stop hoisting core tube
- Close Wireline B.O.P.
- Open HCR to Open Choke to Flare Pit
- Close Annular Preventer
- Install Circulating Line
- Open Circulating Valve
- Slowly Close Choke, not exceeding MACP

"If well can be shut-in Read & Record SCP & SIDPP."

"IF GAS TO FLARE PIT IGNITE WITH FLARE GUN"

ON BOTTOM SHUT - IN PROCEDURES

1. Call Alert.
2. Stop Rotation and raise closest joint to the top of the head.
3. Shut off pumps.
4. Close the annular BOP and adjust the closing pressure.
5. Open choke line failsafe valves to the closed choke.
6. Read and record SIDPP and SICP every minute until pressure stabilizes (three consecutive identical readings).
7. Record the pit again.
8. Proceed to well control operations as directed.

TRIPPING WARNING SIGNALS

1. Hole fails to take the correct amount of fluid on fill-up.
2. Pipe will not pull dry.
3. Trip tank increase or decrease.
4. Well flows by itself.

WARNING SIGNS OF A KICK WHILE DRILLING

1. Change in well flow rate
2. Well flows with pump off.
3. Change in mud pit volume.
4. Rock formation void ie. loss of head pressure.
5. Variation in pump pressure or speed.
6. Gas, oil or salt water contaminated in the mud.
7. Erratic rod torque.
8. Loss of circulation.
9. Variation in string forces when the string is picked up off bottom.
10. Change in core size, shape, and type.
11. Change in return mud temperature.
12. Increase in background gas.

Drilling crews must be on constant alert for these signs, either individually or in sequence. It is critical to detect a kick as soon as possible, to keep the volume of the invading fluid as small as possible.

As soon as one or several of the warning signs occurs, the well should be flow checked immediately, and if necessary proceed with shut-in procedures.

WELL CONTROL

DRILLERS METHOD STEP 1

1. Check alignment of manifold
2. Crack open choke to initiate flow.
3. Start pump, bring to reduced speed holding casing pressure at shut-in reading plus over kill until pressures stabilize. Record drill pipe pressure.
4. Do not exceed MACP.
5. Hold drill pipe pressure constant until invading fluid is circulated out or bottoms up has expired whichever is longer.
6. Stop the pump. Close choke trapping over kill.
7. Confirm the original shut-in drill pipe pressure reading.
8. Read and record SIDPP and SICP.

WELL CONTROL

LOW CHOKE

1. Record kick data.
2. Do not exceed MACP.
3. Start pump at or near drilling rate.
4. Hold casing pressure at MACP by choke adjustments.
5. Mix Calcium Carbonate (CaCO_3) as fast as possible for one circulation.
6. Continue to circulate for one more circulation to condition mud.
7. Stop the pump, close the choke. Attempt to shut-in well, without exceeding MACP.
8. If well cannot be shut-in repeat.
9. If well can be shut-in, consider another method of well control.

WELL CONTROL

PIPE OUT OF HOLE

1. Record pressure and tank volume initially and throughout the operation.
2. The capability to accurately measure fluid return volumes is essential when applying this method of well control.
3. Calculate the pressure equivalent exerted by 1 m³ of drilling fluid in the hole or annulus, whichever is the case.
4. Allow the CP to increase 700 – 1400 kPa above the initial SICP as the overkill pressure.
5. As CP increases, bleed off the pressure equivalent of 1 m³ of drilling fluid in the hole (calculated in step 3). Initially, the Cp will increase slowly, but as the gas influx nears surface, pressures will rise more quickly.
6. Continue to bleed off fluid in increments until gas to surface.
7. When gas reaches surface, Top Kill operations should commence.

DRILLER'S SPECIFIC RESPONSIBILITIES

1. Continuously surveying the mud tank levels both while drilling and during trips.
2. All mud "losses" or "gains" are recorded, including the depths at which they start and stop, the rate of loss.
3. Unusual change in rate and total volumes lost or gained, between such depths.
4. Keeping in close communication with the Helper so that he knows what is going on at the mud tanks.
5. Ensure that the mud weight is checked and recorded every 3 meter drilling interval.
6. Keeping the hole full on all trips.
7. Check for swabbing on tripping out.
8. Ensure the hole is filled with mud after every 10 stands are pulled.
9. Accumulator Cleanliness - Keep the entire unit including valves, frame, piping, pumps and regulators clean.
10. Check the accumulator and regulated manifold pressures and reservoir fluid level each tour.
11. Check the accumulator valve's position each tour.
12. Check the choke manifold and BOP valve positions each tour.

The Driller is the key man in the whole operation. It is he who must put into motion the well control operations and take the appropriate action that will ensure a safe working environment. In order to succeed the driller must have the assistance of a well trained crew.

At all times the crew will have the assistance of the on site Foreman who will be available to answer any questions or assist in any one of the 12 items above.

LOGAN DRILLING GROUP

POTASSIUM TEST

Procedure:

- 1. Fill bottle with 50 ml of distilled water**
- 2. Add 1 ml mud then agitate**
- 3. Dip indicator stick in bottle then shake off excess mud on stick**
- 4. Dip stick in indicator fluid for approximately 1 minute**
- 5. Remove stick and compare color on stick to chart on tube**

Comments: Potassium content should be between 700 to 1000 to give adequate inhibition of rock. Indicator solution is .05% nitric acid.

LOGAN DRILLING GROUP

CALCIUM (HARDNESS) TEST

Procedure:

1. Filtrate 1 cc of drilling fluid
2. Add 50 cc of distilled water
3. Add 1 squirt of strong buffer
4. Add 2 to 6 drops of hardness indicator (sample will turn red wine color)
5. Titrate with EDTA solution (standard versatate) from red to blue color)
6. Calculate amount of titrating solution used and plug numbers into formula

Formula: $\frac{400 \times \text{cc of standard Versatate}}{\text{cc volume of sample}} = \text{calcium content in PPM}$

Comments: To get cuttings to efficiently floc out of mud a calcium content greater than 600 PPM is necessary. The higher the calcium content the lower the yield of polymers.

GENERATOR

JOB PROCEDURE – GENERATOR INITIAL START-UPS

1. Consult operator/maintenance manual.
2. Visual inspection of Genset room or building for good housekeeping.
3. Inspect exhaust system, piping, hangers, rain cap, muffler, etc.
4. Inspect fuel lines, battery cables, all fluid levels, anchor bolts and containment tray (drip pan).
5. Inspect and tighten electrical connections after disconnecting power source.
6. Manually operate transfer switch controls.
7. All personnel involved must use hearing protection.
8. Start and test run power unit (engine) only.
9. Check phase rotation of building and generator.
10. Receive proper authorization to transfer power to emergency load after advising all personnel involved.
11. Check and record all readings.
12. Record if unit left in auto or off.

JOB PROCEDURE:

Generator Testing/Repair

1. Check all fluid levels.
2. Check that all guards are in place.
3. If unit has breaker installed, inspect internal for any loose/bare wiring.
4. If running indoors, connect exhaust pipe to outdoors and turn on ventilation fans.
5. Ground unit to existing breaker or ground rod.
6. Hearing protection to be worn by all personnel in immediate area.
7. Check and record all readings required.
8. If required to do repairs with unit stopped, disconnect battery.
9. Record problems and repairs performed and test run.
10. Tag unit with date, repairs and name of person doing repairs.

JOB PROCEDURE:

Standby Generator Service

1. Check General Condition – a) housekeeping
b) maintenance record
2. Do not start or lock out unit, must be done with consent of customer representative.
3. If unit can be run to check and test operation, all panels, guards, etc. must be closed, in place, etc.
4. If repairs are to be performed put unit in off position and remove battery cables (also charger fuse).
5. If unit cannot be repaired, tag unit with name and phone number.
6. If repairs are completed, advise customer you require test run on unit.
7. Record all readings, "Record Left In Auto" problem, repair, and parts and have signed by customer or representative.
8. Copy of it left with customer.

Job Procedures

Rod Handlers

Title of Job/Operations: Lowering Rods with Rod Handler
Person(s) performing job: John Graham
Dept: Surface Coring
Dept. Supervisor: Mark Blomme
PPE Required: Regular Surface PPE

JSA Created On: October 23, 2012
Employee(s) Observed: John Graham
Analysis Done by: Rob MacInnis, John Graham, Mark Blomme
Analysis approve by: Mark Blomme
Risk Level: 4

Sequence of Basic Job Steps	Potential Hazards, Unsafe Acts or Conditions	Recommended Safe Job Procedure
1. Picking up the rod	(SB) Stay clear of the rod that is being picked up, it may kick back if the gripper was not perfectly parallel.	1. Place hand of the rod handler parallel to the rod in the comb. 2. Advance with caution towards the rod. 3. Close the hand on the rod. NOTE: Use the elbow of the rod handler to adjust the rod handler only as needed.
2. Remove the rod from comb	(SB, CW) Stay clear of the rods that are being moved with the rod handler.	4. Raise the rod approximately 1 foot (30cm) off the ground. 5. Remove the rod from the comb by moving arm rearward, until it clears the comb. 6. Move the rod sideways towards the feed frame.
3. Align the rod with the drill string.	(SB, CW) Stay clear of the rods that are being moved with the rod handler.	7. Tilt the rod parallel to the drill string using wrist. 8. Raise the rod so that it clears the head using rollers. 9. Lower the rod with caution, so the pin thread is in-line with the box thread.
4. Remove the rod holder.		10. Release the hand from the rod. 11. Retract rod handler from the rod. 12. Reposition the rod handler lined up with the next rod to be picked up during pulling operations. NOTE: The rod handler is always stored above the rod handlers controls in drilling operations.

- | | | |
|------------------------|---------------------------|-----------------------|
| 1. Struck By (SB) | 5. Caught On (CO) | 9. Fall to Below (FB) |
| 2. Struck Against (SA) | 6. Caught In (CI) | 10. Overexertion (OE) |
| 3. Contact By (CB) | 7. Caught Between (CB) | 11. Exposure (E) |
| 4. Contact With (CW) | 8. Fall - Same Level (FS) | |

Job Procedures

Rod Handlers

Title of Job/Operations: Pulling Rods with Rod Handler
 Person(s) performing job: John Graham
 Dept: Rob MacInnis, John Graham, Mark Blomme
 Dept. Supervisor: Mark Blomme
 PPE Required: Regular Surface PPE
 JSA Created On: October 23, 2012
 Employee(s) Observed: John Graham
 Analysis Done by: Rob MacInnis, John Graham, Mark Blomme
 Analysis approve by: Mark Blomme
 Risk Level: 4

Sequence of Basic Job Steps	Potential Hazards, Unsafe Acts or Conditions	Recommended Safe Job Procedure
1. Picking up the rod		1. Place head parallel to the rod above the head. 2. Advance with caution towards the rod using the arm. 3. Wait for the driller to unscrew the rod with the chuck. 4. Close the hand on the rod. 5. Wait for the driller to lower the head to clear the joint. NOTE: Use the elbow to adjust the rod handler only as needed.
2. Remove the rod from above the head.	(SB, CW) Stay clear of the rods that are being moved with the rod handler.	6. Raise the rod with the rollers so that it clears the head. 7. Move the rod away from the feed frame. 8. Move the rod (sideways) to beside the comb. 9. Lower the rod so that it is approximately 1 foot (30cm) off the ground. 10. Adjust the tilt of the rod.
3. Return the rod to the comb.	(SB, CW) Stay clear of the rods that are being moved with the rod handler.	11. Move the rod rearward with the arm so that it clears the comb. 12. Move the rod in line with the appropriate gap between the teeth. 13. Advance the rod. 14. Lower the rod with the rollers so that it touches the floor.
4. Remove the rod holder.		15. Release the hand from the rod. 16. Retract rod handler from the rod. 17. Reposition the rod handler in line with the next rod to be picked up during pulling operations. NOTE: The rod handler is always stored above the rod handlers controls in drilling operations.

- | | | |
|------------------------|---------------------------|-----------------------|
| 1. Struck By (SB) | 5. Caught On (CO) | 9. Fall to Below (FB) |
| 2. Struck Against (SA) | 6. Caught In (CI) | 10. Overexertion (OE) |
| 3. Contact By (CB) | 7. Caught Between (CB) | 11. Exposure (E) |
| 4. Contact With (CW) | 8. Fall - Same Level (FS) | |

Job Procedures

Rod Handlers

Title of Job/Operations: Picking up rods from the shack floor with a rod handler
 Person(s) performing job: John Graham
 Dept: Rob MacInnis, John Graham, Mark Blomme
 Dept Supervisor: Mark Blomme
 PPE Required: Regular Surface PPE

JSA Created On: October 23, 2012

Employee(s) Observed: John Graham
 Analysis Done by: Rob MacInnis, John Graham, Mark Blomme
 Analysis approve by: Mark Blomme
 Risk Level: 4

Sequence of Basic Job Steps	Potential Hazards, Unsafe Acts or Conditions	Recommended Safe Job Procedure
1. Picking up the rod	Inspect rollers, thumb, pins, cylinder and multi function levers.	<ol style="list-style-type: none"> 1. Line up the rod handler horizontally with the rod to be picked up. 2. Rotate arm using the elbow joint to vertical position. 3. Advance with caution towards the rod. 4. Adjust the wrist to position the hand parallel to the rod. 5. Close the hand on the rod. 6. Lift the rod up off the floor. 7. Engage the elbow, bringing the rod handler to a horizontal position 8. Adjust the position of the rod with the roller when necessary, ensure adequate clearance at all times. 9. Consult "Lowering Rods with Rod Handler" for placing the rod in the head or "Pulling Rods with Rod Handler" for placing the rod in the comb.
2. Return the rod to vertical	(SB, CW) Stay clear of the rods that are being moved with the rod handler.	

- | | | |
|------------------------|---------------------------|-----------------------|
| 1. Struck By (SB) | 5. Caught On (CO) | 9. Fall to Below (FB) |
| 2. Struck Against (SA) | 6. Caught In (CI) | 10. Overexertion (OE) |
| 3. Contact By (CB) | 7. Caught Between (CB) | 11. Exposure (E) |
| 4. Contact With (CW) | 8. Fall - Same Level (FS) | |

Job Procedures

Rod Handlers

Title of Job/Operations: Lowering rods to the shack floor with a rod handler
 Person(s) performing job: John Graham
 Dept: Rob MacInnis, John Graham, Mark Blomme
 Dept. Supervisor: Mark Blomme
 PPE Required: Regular Surface PPE

JSA Created On: October 23, 2012

Employee(s) Observed: John Graham
 Analysis Done by: Rob MacInnis, John Graham, Mark Blomme
 Analysis approve by: Mark Blomme
 Risk Level: 4

Sequence of Basic Job Steps	Potential Hazards, Unsafe Acts or Conditions	Recommended Safe Job Procedure
1. Bring the rod to a horizontal position		1. Consult "Pulling Rods with Rod Handler" for pulling rods with rod handler. 2. Position the rod between the feed frame and the comb. 3. Engage the elbow joint, until the rod is parallel with the shack floor. 4. Adjust the position of the rod with the rollers when required for adequate clearance. 5. Lower the rod until it is in contact with the floor. 6. Release the hand from the rod.
2. Release the rod		7. Retract rod handler from the rod. 8. Engage the elbow to return the rod handler to the horizontal position. 9. Reposition the rod handler as per requirements. NOTE: The rod handler is always stored above the rod handlers controls in drilling operations.

- | | | |
|------------------------|---------------------------|-----------------------|
| 1. Struck By (SB) | 5. Caught On (CO) | 9. Fall to Below (FB) |
| 2. Struck Against (SA) | 6. Caught In (CI) | 10. Overexertion (OE) |
| 3. Contact By (CB) | 7. Caught Between (CB) | 11. Exposure (E) |
| 4. Contact With (CW) | 8. Fall - Same Level (FS) | |

Job Procedures

Rod Handlers

Title of Job/Operations: Adding a rod with a rod handler
Person(s) performing job: John Graham
Dept: Surface Coring
Dept. Supervisor: Mark Blomme
PPE Required: Regular Surface PPE

JSA Created On: October 23, 2012
Employee(s) Observed: John Graham
Analysis Done by: Rob MacInnis, John Graham, Mark Blomme
Analysis approve by: Mark Blomme
Risk Level: 4

Sequence of Basic Job Steps	Potential Hazards, Unsafe Acts or Conditions	Recommended Safe Job Procedure
1. Complete drill run.	(E) If water pressure is not released helper and driller could be in the line of fire from water burst. (E) Rods could be dropped if the clamp is not engaged. (CBRT, SB) If hydraulic chuck is not positioned properly above rod joint, foot clamp could bind.	1. Raise head until the joint is visible. The joint should be centered between the head and the foot clamp. 2. Engage the foot clamp in the closed position. 3. Engage reverse rotation of the head to break the rod joint. 4. Lower the head past the broken joint to the rod already anchored in the foot clamp. 5. Use the rod handler to pick up the rod above the head, and then position the rod to allow another rod to be added.
2. Prepare new rod and add to drill string.	(OE) Back injury if proper lifting techniques not used. (SB) Drop rod when handling	1. Grease the threads of the rod in the rod handler. 2. Bring the rod to be added into the drill shack.
3. Tighten Rod	(SB) Drop rod when handling	1. Align the threads, tighten by hand until snug. 2. Utilize the rod handler to return the rod to the drill string.

- | | | |
|------------------------|---------------------------|-----------------------|
| 1. Struck By (SB) | 5. Caught On (CO) | 9. Fall to Below (FB) |
| 2. Struck Against (SA) | 6. Caught In (CI) | 10. Overexertion (OE) |
| 3. Contact By (CB) | 7. Caught Between (CB) | 11. Exposure (E) |
| 4. Contact With (CW) | 8. Fall - Same Level (FS) | |



LOGAN DRILLING GROUP

MACHINERY LOCK OUT PROGRAM AND PROCEDURE

Purpose:

The purpose and procedure establishes the minimum requirements for Logan Drilling Machinery Lock Out Program. It governs lock out procedures to be used to verify that equipment or machines are isolated from all potentially hazardous energy. Machinery is to be Locked out before employees perform any servicing or maintenance activities where the unexpected energizing, start up or release of stored energy could cause injury.

Policy:

Procedures described apply to all electrical equipment and machinery connected to an energy source by either hard wire or other permanent connection (hydraulic lines, electrical, etc.) that is repaired, serviced, or maintained by Logan Drilling personnel. The Machinery Lock Out Program applies to all equipment or machinery operated by mechanical, hydraulic, pneumatic, chemical, thermal, or other energy resources where the unexpected energizing could cause injury to employees or customers.

Circuit breakers disconnect switches, and other energy isolating devices used to control the flow of energy to the machine/equipment must be operated in such a manner as to shut off or "isolate" all energy to the machine.

Definitions:

Energy source - Any source of electrical, mechanical, hydraulic, chemical, thermal, or any other energy source.

Energized - Connected to an energy source or containing residual or stored energy.

Energy Isolating Device - A mechanical device that physically prevents the transmission or release of energy (for example, circuit breaker, disconnect switch, slide gate, line valve, etc.)

Lock out - Placing a lock on an energy isolating device indicating that the equipment shall not be operated until the Lock sign is removed.

Lock out device -- A prominent warning device or sign that can be attached to the energy isolating device. Locks will state the following:

DANGER -- DO NOT OPERATE

Initial training:

Employees involved in the use of this Machinery Lock Out Program must receive training in the requirements of this program upon initial assignment. The Health and Safety Manager is responsible for verifying that training is complete as required by this program.

Authorized employees will be trained in the recognition of hazardous energy sources present at the location they work, the type and magnitude of the energy available in the workplace, and the methods/means needed for energy isolation and control.

Employees must be trained to recognize when the Machinery Lock Out Program is being implemented and understand the purpose of the procedure and the importance of not attempting to start up or use machinery or equipment that has been locked out.



LOGAN DRILLING GROUP

LOCK OUT PROCEDURE

ALL EQUIPMENT

- Step 1** Inform foreman which piece of equipment is going to be locked out
- Step 2** Ensure equipment is not in use.
- Step 3** Turn off equipment's main electrical breaker.
- Step 4** Each individual install their locks on the lock device. If more than one individual is on site a safety lock out hasp has to be used.
- Step 5** Push start button to verify no power to equipment
- Step 6** Repair equipment as required
- Step 7** When work has been completed advise supervisor
- Step 8** Have supervisor check repairs and open lock out box and issue keys to individuals on site.
- Step 9** Remove all locks and start equipment
- Step 10** Dispose of lock out tags

Job Procedure

Using Leveling Jacks

1. Make sure the drill site is cleared off and free of all obstructions.
2. With the drill locked out, place a piece of 6"x 6" Blocking under each Jack Leg
3. Start the drill and pull up on the leveler to extend the Jack until it comes in contact with the blocking. A spotter should be used to alert the operator when the Jack Leg hits the blocking
4. Now that all Jacks are down and in contact with the blocking, with the 3' Level on the skid of the drill, determine which Jack has to be raised or extended to level the drill. **(Caution must be observed to jack the drill up evenly)**
5. Once the drill is level, blocking must be put in place. The levers for the Jack Legs must be locked out while blocking is being put in place
6. Now that blocking is in place the leveling jacks can then be retracted and stowed in a safe place. Levers will be then locked out, and the pressure valve to the jacks turned off and locked in the OFF position.

COMPANY RULES POLICY

LOGAN DRILLING LIMITED AND LOGAN GEOTECH INC

January 3, 2012

Re: Company Rules (Discipline)

**If Company Rules are broken, the Company will take the following actions:
(except where noted).**

- First Offence – Warning, letter to file
- Second Offence – Warning, letter to file – 5 day suspension without pay
- Third Offence – Immediate dismissal

Safety and PPE Infraction:

- First Offence – Warning and Letter to Personnel file
- Second Offence – Warning, letter to file – 5 day suspension without pay
- Third Offence - Immediate dismissal

Substance Abuse (Drugs or Alcohol)

- Immediate Dismissal



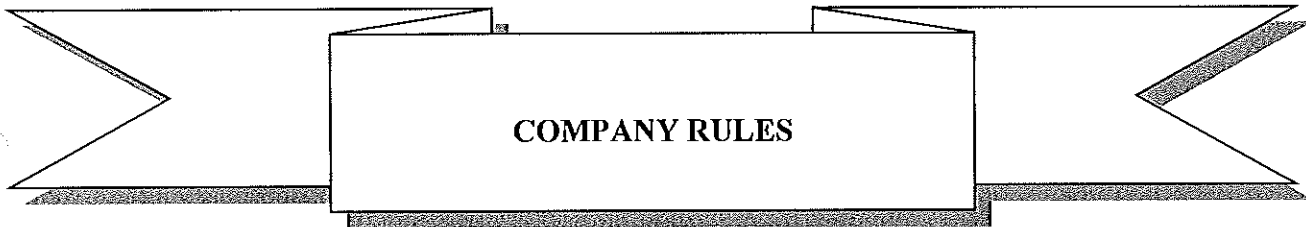
Steven Mundle

Jan. 31, 2012
Date



COMPANY RULES

- 1) Accidents, injuries, or "Near Misses", regardless of their nature, shall be promptly reported to supervisors.
- 2) Approved hard hats shall be worn on the job by all personnel.
- 3) Clothing shall be appropriate to duties being performed. Long pants, a shirt, and sturdy work shoes are the minimum requirements. No tank tops or tennis shoes.
- 4) Smoking is permitted only in designated areas. "Strike anywhere" matches are prohibited.
- 5) Running is not permitted anywhere, except in the case of extreme emergency.
- 6) Safety glasses, goggles, or face shields shall be worn when concrete breaking, metal chipping, welding, grinding, and for other operations where eye protection is required.
- 7) Hand tools shall not be used for any purpose other than that intended. All damaged or worn parts shall be promptly repaired or replaced.
- 8) Power tools shall be operated only by authorized personnel, with guards furnished by the manufacturer "in place".
- 9) All electrical hand tools shall be grounded or double insulated.
- 10) Explosive/power actuated tools shall be used only by persons who have been instructed and trained in their safe use.
- 11) Compressed gas cylinders shall be secured in an upright position.
- 12) Possession or use on the job of intoxicating beverages or unauthorized drugs is strictly prohibited and constitutes grounds for dismissal.
- 13) Riding on equipment is prohibited. No person shall ride any hook, hoist, or other material handling equipment which is used strictly for handling material and not specifically designed to carry riders.
- 14) Welding and burning operations shall be carried out only by authorized personnel with appropriate individual protective equipment.
- 15) Horseplay, fighting, gambling, and possession of firearms are strictly forbidden on the job and constitute grounds for dismissal.



Environmental Guidelines

Introduction

It is the Logan Drilling Group's responsibility to ascertain and familiarize itself with all Federal, Provincial, Municipal, and Client Rules and Regulations regarding the environment. Logan Drilling Group shall establish a contingency plan for each drill job.

This contingency plan should provide for the following:

- 1) Permits
- 2) Regulations
- 3) Site Access
- 4) Site Preparation
- 5) Spill and Leak Procedures
- 6) Emergency Preparedness
- 7) Waste Management and Transportation
- 8) Site Abandonment and Reclamation

Permits

Ensure that all necessary permits have been obtained, such as:

- 1) Work Permit
- 2) Environment Permit
- 3) Septic System Approval
- 4) Waste Disposal Authorization
- 5) Reclamation Permits
- 6) Water Course Alteration
- 7) Water Taking Permit

Regulations

Logan Drilling Group's responsibilities under Federal, Provincial, Municipal, and Client's Rules and Regulations regarding environmental concerns which pertain directly to the project will be identified.

Site Access

- Comply with all local regulations
- Where practical, following existing roads
- When creating new access road, minimize environmental impact.



COMPANY RULES

Environmental Guidelines Cont'd

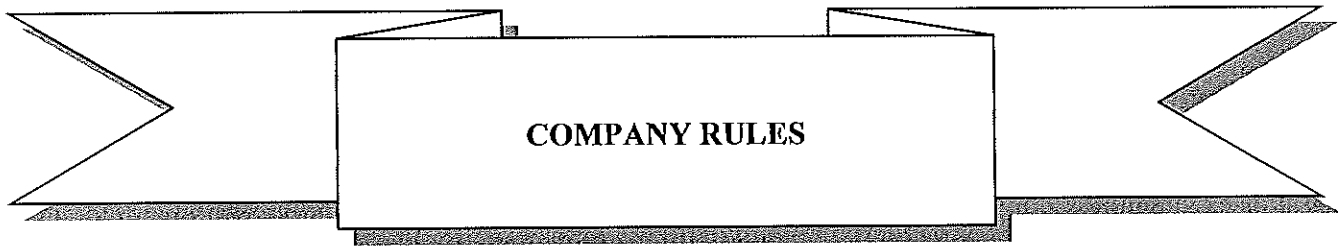
- Pre-plan access to avoid swamps, rivers, streams, and lakes, unless they can be crossed to standards.
- Refrain from over-cutting, pushing, or dumping debris material into water courses.
- Remove all foreign debris below the high water mark and use proper bridging techniques.
- Where practical, avoid recreational and historical sites, plantations, fish, wildlife, and their habitats.

Site Preparation

- Refrain from unnecessary stripping or grubbing of vegetation.
- When necessary, neatly stockpile disturbed overburden for reclamation purposes.
- Maintain proper distance from all water bodies and courses.
- Sewage must be handled in an approved septic or sewage system. The method containment and location must be documented and records kept for the period specified by local regulations.
- Ensure that the campsite design conforms to regulations and safety practices with respect to structure, spacing, noise abatement, fire control, etc.

Spill and Leak Procedures

- All petroleum products must be contained in suitable closed containers. Extreme caution must be exercised in their handling to prevent escape to the environment.
- Particular care should be taken when traveling and working over ice and open water.
- Fuel oils must be transported, transferred, and stored in closed systems. Transfer hoses must be drained into containers.
- Ensure proper spill handling and control equipment is in place. Drip pans should be of sufficient capacity to hold advertent leaks or spills.
- All chemicals and mud additives must be stored and handled with every precaution to prevent loss.
- Return water may not be discharged to surface waters unless it has been treated for solids removal.
- Ensure that sumps for process are adequate size and capacity.
- In the event of leaks or spills, the operation must be immediately halted. The spill must be contained and absorbed along with any contaminated soil, and processed according to Logan Drilling Group's spill handling procedures.
- In the event of a reportable leak or spill (as defined in the company's spill handling procedures), the Provincial Environmental Spills Action Center must be notified.
- Control all emissions and noises at all times. Extra precaution must be taken when working in proximity of commercial, industrial, and residential areas.



Environmental Guidelines Cont'd

Emergency Preparedness

In the specific context of these guidelines, the emergency plan for the site must outline the necessary actions to be taken to mitigate the effects of environmental accidents such as fire, spill, burst dam, etc.

Waste Management & Transportation

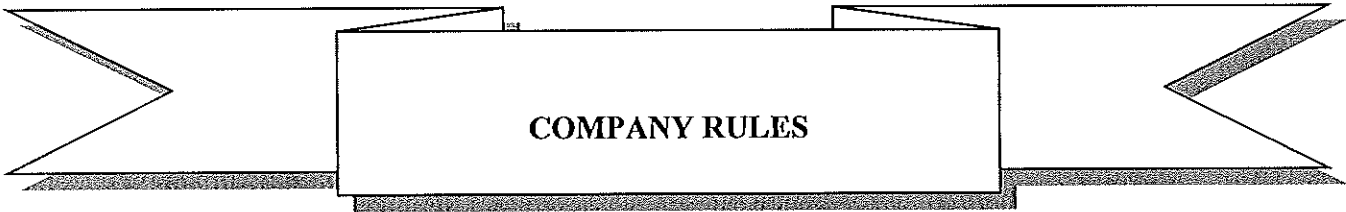
- Minimize the generation of waste
- All process water must be collected and/or processed following approved and recognized methods and procedures.
- All chemical and hydrocarbon waste must be disposed of according to Federal, Provincial, and Municipal Regulations such as the Transportation of Dangerous Goods Act.

Site Abandonment & Reclamation

- All artesian wells, produced by the contractor, must be stopped or capped according to acceptable practices.
- Groundwater courses intersected must be controlled to minimize erosion.
- Sumps must be restored to original ground condition as soon as the equipment has been removed from each individual drill site.

Conclusion

The above guidelines have been prepared to assist the contractor in preparing a personal detailed environmental contingency plan. However, specific regulations may vary from province to province. All employees should receive basic training on the principles of environmental protection.



COMPANY RULES

Bonus Schedule – Runners and Helpers

- 1) Work shall be performed on two 12 hour shifts per day, seven days per week basis.
- 2) Drill personnel are required to work all scheduled shifts for the duration of the job or until transferred elsewhere by the Company. Failure to abide by this requirement will result in loss of bonus earnings.
- 3) Travel expenses to the job and return upon completion shall be paid to those employees who complete their contract or are transferred to another contract.
- 4) Bonus will be calculated and paid upon completion of the hole, 75% of which will be paid the following month with the regular pay. The other 25% will be withheld until completion of contract following equipment check, inventory check, and drill site inspection.
- 5) Bonus is paid on all footage drilled per shift over the required amount at each depth range. All bonus' earned for each shift drilled will be accumulated and shared between both shifts.

<u>Hole Depth Range</u>	<u>Bonus Paid Over</u>	<u>Driller</u>	<u>Helper</u>
0 to 1000 feet			
1000 to 2000 feet			
2000 to 3000 feet			
3000 to 4000 feet			
4000 to 5000 feet			
5000 to over			

PLEASE NOTE

- 6) Bonus will not be paid under the following conditions:
 - a. Dismissal for unsatisfactory performance or other just reasons
 - b. Quitting
 - c. Abusing equipment
 - d. Site not cleaned upon completion of contract

Bonus will be paid on the first scheduled pay day immediately following the first month bonus calculation.



COMPANY RULES

Bonus Schedule – Runners and Helpers Cont'd

- 7) All diamond set articles burned or abused will be deducted from the Runner's bonus.
- 8) Safety boots and hard hats must be worn at all times on the job and safe working conditions must be observed.
- 9) Bonus will only be paid for footage/meterage approved by the Client's Representative. Therefore, it is important to exercise caution when drilling, or bonus earnings will be jeopardized. If a hole is lost or abandoned as a result of an employee error, no bonus will be paid to any employees for that hole.
- 10) Both drillers and helpers are required to assist in taking sludge samples in a manner which is satisfactory to the Client's Representative.
- 11) Bonus will be paid only to those crews who leave their drill sites, and other work sites related to the drilling, in a clean and orderly condition, free from accumulation of waste material and rubbish.
- 12) Reasonable equipment care and maintenance are expected in order to qualify for the maximum bonus.
- 13) NO ALCOHOLIC BEVERAGE OR DRUGS WILL BE ALLOWED ON SITE. FAILURE TO COMPLY WITH THIS REGULATION WILL RESULT IN IMMEDIATE DISMISSAL.
- 14) No personal charges of any nature will be permitted on either company credit cards or field purchase orders unless previous authorization in writing has been obtained. This includes fuel and gasoline purchases for employee vehicles.
- 15) Room and board shall be charged at the rate of \$3.00 per day per man, with the exception of the Runner Foreman or Full Foreman.



COMPANY RULES

A Guide to Chemical Spill Reporting and Clean-Up

What is a Spill?

Any release or discharge into the environment may be considered to be a spill, except where that release is permitted by law through a special approval, control order, or some other statutory provision. A spill may be either a sudden accidental incident (involving a ruptured tanker, for instance), or a slow leak from an underground storage tank. Prohibitions against the discharge of contaminants into the air and water (and their subsequent clean-up) are covered by general pollution prevention provisions in the environmental statutes of every province. Most have also promulgated specific spill regulation that set out, for example, reporting requirements. In addition, each province has enacted legislation for the transport of dangerous goods that addresses any spills that may occur during the off-site shipment of chemicals. Finally, most jurisdictions have passed regulations that deal with the storage of gasoline products, including the action that must be taken in the event of a spill.

New Brunswick

The province has promulgated no specific statutes to cover chemical spills or spill reporting, except those under the Transportation of Dangerous Goods Act. General pollution control provisions under the Clean Environment Act and Clean Water Act may apply.

Nova Scotia

Under Section 8 of the Province's Dangerous Goods and Hazardous Wastes Management Act, the person responsible for the spilled material must immediately notify the Minister of the Environment of any "unlawful or accidental discharge, emission, escape, or spill", and take measures (as directed by the Department of the Environment) to "repair, remedy, and confine the effects of and remove" the spilled material so as to protect human life, health, and the environment.

Prince Edward Island

Under Section 20-21 of P.E.I.'s Environmental Protection Act, every person who, without permission, discharges a contaminant into the environment (or who owns or has control of said contaminant) "shall forthwith notify the Department (of the Environment) and take such remedial measures as the Minister may direct."



COMPANY RULES

A Guide to Chemical Spill Reporting & Clean-Up Cont'd

Newfoundland

For all environmental emergencies in Newfoundland and Labrador, they must report them to the Canadian Coast Guard spill line at 772-2083 or toll free at 1-800-563-9089. They will call the appropriate federal and provincial on call members.

National

The Federal Transportation of Dangerous Goods Act and its regulations provide for the mandatory reporting of hazardous good spills using the Dangerous Occurrence Report (DOR), which must be submitted within 30 days of an incident to the Transport Dangerous Good Directorate at 1-613-992-1624.

For Emergency Assistance

Local police, fire departments, and provincial police or RCMP detachments can provide immediate assistance in the event of a spill and should be notified as a matter of course. Other governmental and industry sponsored organizations may be able to offer specialized containment and clean up assistance. (Note: many of the 24 hour hotlines are for emergency use only. For general information, call the sponsoring government agency or industry association.)

HOTLINES INCLUDE:

CANUTEC

(Transport Canada Information and Emergency Center)

1-613-996-6666

TEAP

(Transport Emergency Assistance Plan)

1-613-237-6215

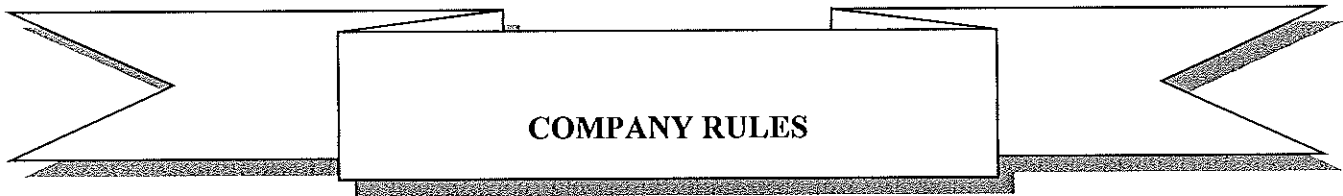
CHLOREP

(Chlorine Emergency Plan)

1-613-966-6666

Environment Canada's Environmental Emergency Co-ordinators

Atlantic Region: 1-902-426-6200



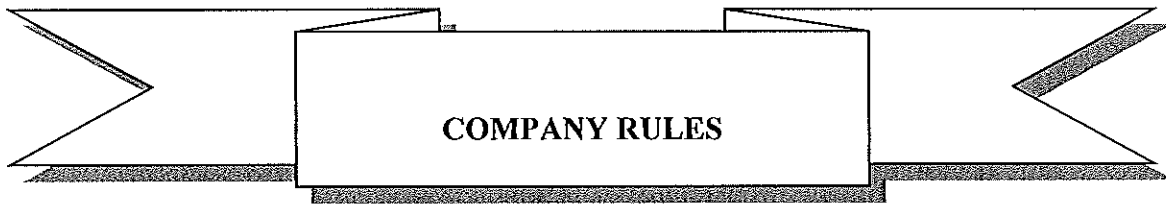
Diamond Drill Code

- 1) The safety requirements for diamond drilling are covered by the Occupational Health and Safety Act (OHSA) and the Regulations for Mine and Mining Plants. The OHSA places responsibilities of certain people, as follows:
 - a. The Employer Sections 14 & 15
 - b. The Supervisor Section 16
 - c. The Worker Section 17

The Regulation for Mines and Mining Plants are grouped into nine parts. Those parts that apply specifically to diamond drilling are:

Part III	Safe Access to the Workplace	Sections 44-52
Part IV	Protection of Workers	Sections 53-89
Part VII	Electrical Requirements	Sections 148-173
Part VIII	Mechanical Requirements	Sections 174-193

- 2) All diamond drills, both on surface and underground, shall be:
 - Equipped with a guard or guards to protect the entire length of the rotating parts of the chuck in accordance with Section 178 of the Regulations.
 - Equipped with an electrical switch or valve by which power to the drives for the chuck can be quickly and safely turned off.
- 3) 1) A worker assigned by a supervisor to work alone in an underground mine shall:
 - A competent person
 - Be subject to subsection (2) be visited at his particular work place by a supervisor or competent person at least three times during the work shift.
- 2) Clause 1(b) does not apply where:
 - The work conditions are standard
 - The means of communication with the worker is provided and the worker reports to a supervisor or a worker designated by a supervisor not less than once every two hours.
 - A record of the reports of the worker is kept.
 - The worker assigned by a supervisor to work alone in the underground mine is visited at his particular place by a supervisor at least once during the work shift. (See Section 15 of the Regulation for Mines and Mining Plants.)

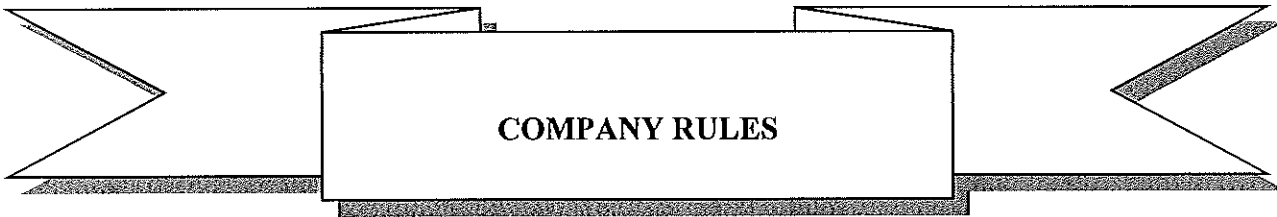


Diamond Drill Code Cont'd

- 4) All underground diamond drills shall:
 - Be operated only in locations where the minimum dimensions conform to those recommended in Table 1 for the particular size of drill in use.
 - Be equipped with a stabilizing device for collaring holes.
 - Where there is a raise in the diamond drill station, have the raise ventilated prior to and during the period when persons are in the raise.

- 5) Where the diamond drill is electrically powered:
 - Refer to Section 148 – 173 of the Regulations
 - Underground, the diamond drill stations shall be positively ventilated by a ventilation fan. This fan shall be in operation at all times that there is power to the drill, so as to dilute any methane to a safe level.

- 6) - Where drilling is to take place, either underground or in an enclosed building on surface, in an area where methane or other hazardous gas is known to occur, there shall be installed a ventilation system as required by Sections 242 (1) and 243 (1) of the Regulations.
 - Where methane is known to be present, Section 242 (1) (a) (b) and 243 (1) (a) (b) of the Regulations apply, and
 - Regular tests for methane shall be made and recorded.
 - The ventilating fan shall be electrically interlocked with the drill so that power cannot be supplied to the drill unless the fan is operating and has been operating for a period of time to ensure at least two air changes in the diamond drill station (approximately fifteen minutes), and
 - All electrical equipment within the drill station shall comply with C.S.A Class 1, Division 2, Group D rating. (This requirement is not required if the electrical panel and switches can be located away from the drill so that the concentration of methane is below explosive level.)



Diamond Drill Code Cont'd

- Where a flow of flammable gas is encountered in a drill hole underground or in an enclosed building housing a diamond drill hole on surface:
 - The affected area shall be evacuated.
 - Precautions shall be taken to prevent inadvertent entry of a person into the area.
 - A supervisor shall be notified.
 - The air in the area shall be tested by a competent person.
 - Measures shall be taken which protect persons who enter the area from toxic gases or flammable concentration, and
 - The area shall be designated a fire hazard area.

 - In mines where flammable gas is known to occur, workers underground or Diamond Drillers on surface should be advised of:
 - The probability of encountering a flow of such gas, and
 - The measures and procedures to follow.
- 7) All positive displacement water pumps shall be protected by a pressure relief valve as stated in Section 82 (3) of the Regulations.

Methane Drainage – Surface

The casing of a bore hole shall have an approved stuffing box attached. The stuffing box is to maintain a seal around the drill rod while drilling. The return flushing water and gas, if present, is removed by a side outlet from the stuffing box. To the outlet shall be attached a minimum of fifteen meters (50 feet) length of hose, the size of which shall not be less than 60 cm, (1½ inch) in diameter. This hose is to exhaust into the atmosphere outside of the diamond drill station or building.

Electric Drills

- 1) Electrically powered drills shall be properly grounded before they are energized and put into use.
- 2) A ten pound dry chemical fire extinguisher shall be located within easy reach of the drill operator and another ten pound dry chemical fire extinguisher shall be located at the entrance to the drill station.
- 3) When auxiliary ventilation is required, it shall be activated before power is turned on to any electric drill, pump, or lighting.
- 4) The ventilation must be kept on as long as the power is on for the drill, pump, or lights.

5) A compressed air line, which connects to the main air supply line, must be installed to all locations using electric drills. This air line must be slightly opened at all times in case of a stench gas warning.

Date issued: _____



COMPANY RULES

Safety– Surface

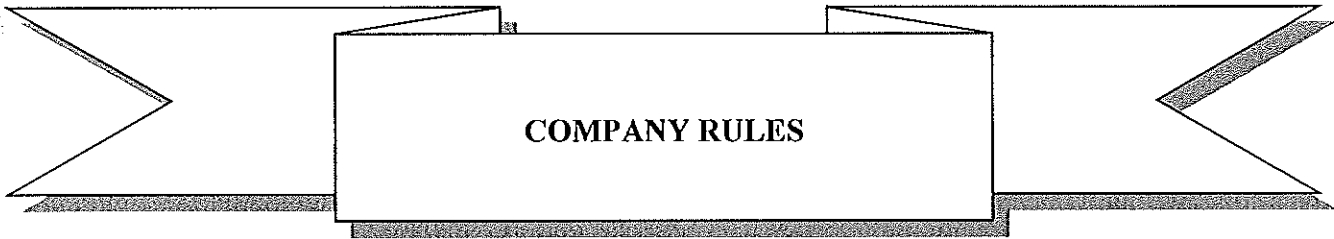
- 1) All injuries must be reported to First Aid and your Supervisor.
- 2) All rod foot clamps must be fitted with a safety spring.
- 3) Check the condition of all cables before using them.
- 4) Make sure that the cables are wound evenly on the drum of the hoist.
- 5) When straightening cables on to the drum, the runner must be at the controls. Both men must wear gloves.
- 6) When lowering rods, the runner must wait for a signal to do so.
- 7) Always maintain adequate lighting at or near the working area.
- 8) Good lighting is required when servicing machine (never an open light).
- 9) When handling equipment, wear gloves.
- 10) When using cement, protect your hands by wearing rubber gloves. When using grease, always protect your eyes by wearing “eye” protection.
- 11) When lifting rods, use proper hand protection.
- 12) Keep the floor of the drill shack well washed down and free from obstruction.
- 13) Keep your working area clean and free from garbage. Place this material into containers for disposal.
- 14) When drilling, secure the water swivel hose. Do not use the machine to remove the water swivel. Use your hands.
- 15) Before drilling, ensure that all wrenches have been removed from the rods.
- 16) Stand rods and core barrels in safe place away from drill.
- 17) When you line up the chuck jaws, use a screwdriver, not your fingers.
- 18) Use caution while loosening stuck rods.
- 19) All personnel are responsible for the safe operation of the equipment.



COMPANY RULES

Safety – Surface Cont'd

- 20) Never use a spike or wire on the cable clevis – use a cotter pin.
- 21) Good communication required between helper and runner during rod hoisting operation.
- 22) Both runner and helper must stand clear when lowering or raising hoisting plug. The plug must be inserted fully into the rods before hoisting or lowering and secured to the last rod by means of wrenches.
- 23) Stand squarely on both feet and well clear of the crank when cranking the engine. Do not take a round hand grip, but have the thumb and fingers on the same side.
- 24) All moving parts of machinery must be properly guarded at all times.
- 25) All drill enclosures must have two exits.



Safety in Hydraulics

The use of high pressure hydraulics for diamond drilling machinery is quite common. Accidents due to hydraulic failure are usually serious, sometimes fatal, and always preventable.

Injuries occur when:

- 1) The hydraulically held load falls and then strikes the victim.
- 2) The failure produces projectiles such as whipping hose ends, metal shrapnel from explosions, or oil striking the victim.
- 3) A leak may produce a very fine flammable spray. Should this spray hit an open flame, a flash fire may result.
- 4) Oil may inject into exposed flesh (like a sliver) from a pin hole leak. This type of injury may cause gangrene, amputation, and death.

Safety Rules:

- 1) Ensure that no pressure is set in excess of the manufacturer's recommendations.
- 2) Replace worn or failed hoses with properly pressure rated hoses.
- 3) Ensure hose replacements are compatible with hose fittings being used.
- 4) Ensure that component replacement is pressure rated correctly.
- 5) Always install hoses in a manner that prevents sharp bends, stretching of hose (hose too short), or rubbing against object or other hose.
- 6) Ensure applicable safety guards are properly installed and used.
- 7) Visually inspect all components prior to start-up, look for leaks, wear marks on hose, worn or damaged cylinder rods, loose hose connections, improper mounting of components, etc.
- 8) Do not begin operating equipment if extremely cold. Warm up components and hydraulic reservoir prior to start-up.
- 9) At start-up, follow procedures as recommended in operating manuals or as directed by authorized personnel.
- 10) Endeavor to operate machinery smoothly. This will prevent pressure spikes which can cause premature failure.



COMPANY RULES

Safety in Hydraulics Cont'd

- 11) Ensure maximum oil operating temperatures are not exceeded.
- 12) Follow all maintenance manual guidelines, particularly care of oil to prevent premature failures.
- 13) Stop operations when unusual noise is heard. Find the source of the noise and repair prior to continuing operations.
- 14) When equipment will be shut down for extended periods, always set load down prior to turning off machine. This will relieve pressure from cylinders, components, and hoses.
- 15) Do not leave tightly capped oil filled cylinders exposed to heat. The rising temperature will expand the oil, causing the pressure to increase uncontrolled.
- 16) Never expose bare flesh to a hydraulic leak. Should there be a pin hole leak, it could pierce the skin (like a sliver). This results in a serious injury, possibly death.
- 17) Ensure fall arrest system is engaged.
- 18) Keep fingers away from the bit when handling the core barrel.



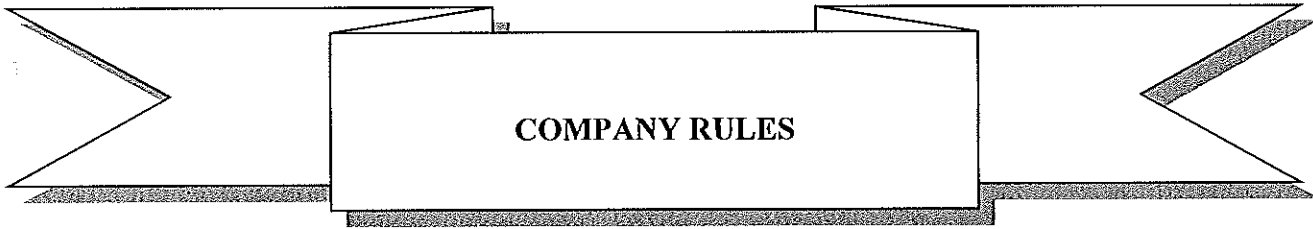
COMPANY RULES

Aircraft Safety Rules

- 1) Stand clear of the propellers at all times.
- 2) No smoking within 100 feet of aircraft.
- 3) Always wear your safety belt while a passenger in an airplane.

Loading and Unloading Aircraft

- 1) Know the carrying capacity of the aircraft. The pilot is responsible for loading arrangements.
- 2) When loading, using a ramp of any kind, make sure aircraft is tied tightly to the dock or shore and that the shore end of the ramp is solidly secured. If the ramp were to slip, the load could damage the float.
- 3) All heavy objects should be tied securely in the aircraft to prevent shifting of same.
- 4) When clearing a docking area, make sure there is plenty of clearance for the length of the wing to overhang the shore. Also, the approach and exit paths have to be clear.
- 5) If building a dock, make sure it is fastened securely to the shore and with no sharp objects projecting from the front.
- 6) If standing on the shore, keep well back to be clear of approaching propeller.
- 7) If on aircraft, never walk ahead on the float until the pilot signals all clear.
- 8) All external loads must be placed and secured under supervision of the pilot.
- 9) There are proper procedures to use when signaling the pilot. If you have not been instructed in the required method, ask your supervisor or the pilot to give you the necessary instructions.
- 10) Observe these "Safety Rules" at all times when working with aircraft.



COMPANY RULES

Helicopter Safety Rules

- 1) Workers must wear required personal protective clothing and equipment (including hard hat chin straps) and maintain in good condition.
- 2) Only workers authorized by their employers are permitted to work around helicopters.
- 3) Emergency procedures involving helicopters must be regularly reviewed and practiced.
- 4) No smoking within 100 feet of aircraft.
- 5) Determine carrying capacities and arrange loads accordingly.
- 6) All material must be properly tied when slinging.
- 7) Use cable chokers or lifting pods to move rods, casings, and core barrels. Be well prepared, to minimize effort.
- 8) Keep landing pad clear of brush and loose material. Turbulence created by helicopter can lift debris, causing damage to helicopter.
- 9) Have all loose material weighted down.
- 10) When helicopter blades are in rotation:
 - a. Approach or leave helicopter with your head down, walking in a crouch.
 - b. Never walk under the tail end of a helicopter.
 - c. Never walk downhill towards a helicopter.
 - d. Always stay in full view of the pilot when approaching or leaving a helicopter.
 - e. Never carry material on your shoulder or overhead when approaching a helicopter.
- 11) All side loads must be properly placed as directed by the pilot.
- 12) Lineman gloves are recommended on helicopter hook-up to avoid shock from static electricity.
- 13) Cargo nets, slings, chokers, and load lines must be inspected at frequent intervals.
- 14) Stay clear of areas where helicopter is landing sling loads.
- 15) Stay well away from suspended loads while machine is in motion.



COMPANY RULES

Helicopter Safety Rules Cont'd

- 16) When departing from helicopter on a hill, move 30 feet away in a crouch position and stay there until the machine lifts off.
- 17) Proper signals must be used to signal the pilot. Confirm signals with the pilot.
- 18) Always follow instruction of the pilot or an engineer.
- 19) Never turn your back on an incoming load.
- 20) Allow the load to settle before removing chokers or slings.
- 21) Worker must wear high visibility outer clothing.

Company Rules

Helicopter Hand Signals



**CLEAR TO
START ENGINE**



TAKE OFF
RIGHT HAND
BEHIND EAR
LEFT HAND
POINTING UP



HOLD-HOVER
PLACE ARMS OVER
HEAD WITH
CLENCHED FISTS



MOVE UPWARD
ARMS EXTENDED,
SWEEPING UP



**MOVE
DOWNWARD**
ARMS EXTENDED
PALMS DOWN
ARMS SWEEPING
DOWN



MOVE RIGHT
LEFT ARM
HORIZONTAL
RIGHT ARM SWEEPS
UPWARD TO POSITION
OVER HEAD



MOVE LEFT
RIGHT ARM
HORIZONTAL
LEFT ARM SWEEPS
UPWARD TO POSITION
OVER HEAD



**MOVE
FORWARD**
COMBINATION OF
ARM AND HAND
MOVEMENT IN A
COLLECTING
MOTION PULLING
TOWARD BODY



**MOVE
REARWARD**
HANDS ABOVE
ARM PALMS OUT
USING A SHOVING
MOTION



**RELEASE
SLING LOAD**
LEFT ARM DOWN AWAY
FROM BODY RIGHT ARM
CUTS ACROSS LEFT
ARM IN A SLINGING
MOVEMENT FROM
ABOVE



LAND
ARMS CROSSED
IN FRONT OF
BODY AND POINT-
ING DOWNWARD
WITH BACK TO
WIND



**SHUT OFF
ENGINE**
SLASH ACROSS
THROAT

HEALTH & SAFETY POLICY

LOGAN DRILLING LIMITED AND LOGAN GEOTECH INC

The management of this company is committed to a strong and progressive health & safety policy, which will ensure the protection from accidental loss of all its resources, including employees and physical assets.

In fulfilling this commitment to protect both people & property, Management will provide and maintain a safe and healthful work environment in accordance with industry standards and in compliance with legislative requirement. We will strive to eliminate any foreseeable hazards, which may result in property damage, accidents, or personal illness.

Employees at every level, including management, are responsible and accountable for the company's overall safety initiatives. Complete and active participation by everyone, everyday, in every job, is necessary for the safety excellence the company expects.

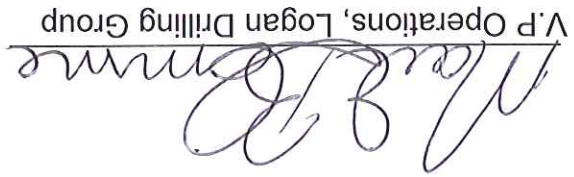
This policy will be implemented through:

- The meaningful involvement and participation of all employees through a cooperative, open, and positive attitude to health and safety issues
- The provision of safe and appropriate equipment and working conditions
- The development and maintenance of work practices and procedures ensuring the ongoing health, safety, and well being of all employees
- The training and education of all employees in safe work practices and procedures
- Emergency preparedness training and practices to minimize losses or injury arising from an accident or incident

All employees of Logan Drilling Limited have the right & obligation to work together in an environment that promotes and maintains everyone's well being.

All employees and the Joint Health & Safety Committee are committed to protecting everyone from risks arising from short cuts, poor practices, procedures, conditions, or acts.

An injury and accident free work place is our goal. We will meet or exceed all applicable rules and regulations by establishing, practicing, and maintaining the highest standards of health & safety.


V.P Operations, Logan Drilling Group

January 3, 2013
Date

Personal Protective Equipment

Foot Protection

General

Safety footwear is designed to protect against foot hazards in the workplace. Safety footwear protects against compression, puncture injuries, and impact.

Safety footwear is divided into three grades which are indicated by coloured tags and symbols.

The tag colour tells the amount of resistance the toe will supply to different weights dropped from different heights.

The symbol indicates the strength of the sole. For example, a triangle means puncture-resistant sole able to withstand 135 kgs (300 ft lbs.) of pressure without being punctured by a 5 cm (2 inch) nail. For more information, look at CSA Standard "Protective Footwear" Z195-M1981.

In construction, it is recommended that only the green triangle grade of footwear, which also gives ankle support, be used.

Your choice of protective footwear should always over protect, not under protect.

Do:

- Choose footwear according to job hazard and CSA Standards.
- Lace up boot and tie laces securely. Boots don't protect if they are a tripping hazard or they fall off.
- Use a protective boot dressing to help the boot last longer and provide greater water resistance (wet boots conduct current).
- Choose a high cut boot to provide ankle support (less injuries).

Don't:

- Wear defective safety footwear (i.e. exposed steel toe caps)
- Under protect your feet or modify safety footwear.

Personal Protective Equipment

Safety Belts, Lanyards, and Life-Lines

General

Body belts and harnesses are used in construction to provide workers working in heights above ground level with freedom of movement and protection from falls. These devices will arrest a fall and absorb some of the shock of the fall. The systems are usually worn around the body and attached to a lanyard, fall arresting device, or rope grab. Better quality systems usually have some form of shock absorbers in the system.

A lifeline should never be used as a service line. The only time a lifeline becomes a load bearing line is in the event of a fall. At all other times, it should be just slack enough to permit free movement on the service lines.

In the construction industry, full body harness systems used with a shock absorber are preferred over waist safety belts.

It is very important to get quality advice in the selection, purchase, and maintenance of your fall arresting equipment.

See CSA Standard:

- “Fall Arresting Safety Belts and Lanyards for the Construction and Mining Industries” Z259.1 -1981.
- “Fall Arresting Devices, Personal Lowering Devices and Life Lines” Z259.2 M1979
- “Lineman’s Body Belt and Lineman’s Safety Strap” Z259.3 – M1978.

Do:

- Obtain expert advice before purchasing a fall arresting device.
- Properly train and practice with the system you decide to use.
- Use webbing type harnesses instead of leather harnesses.
- Use only the manufacturer’s components for replacement parts.
- Inspect carefully before each use (inspection to be performed by a trained worker).
- Have the harness fitted snugly to the worker using the system.
- Ensure that the anchor points are secure and able to support the load in the event of a fall.
- Follow the manufacturer’s instructions on care and use.
- Ensure all lines used with the systems have thimbles.
- Use only the proper safety rated fastenings with the system.
- Use a full body harness with shock absorber whenever possible.

Personal Protective Equipment

Safety Belts, Lanyards, and Life-Lines Cont'd

Don't:

- Modify, change, or put additional holes in the harness or hardware.
- Jerry-rig the system.
- Use the system for any other than its intended use.
- Use the lifeline for a service line.

Personal Protective Equipment

Limb and Body Protection

General

Due to the nature of the construction workplace and the number of different hazards, it is not possible to cover specialized limb and body protection in detail. These types of hazards are known as “job exposures” (exposure to fire, temperature extremes, body impacts, corrosives, molten metals, and cuts from sharp or abrasive materials). PPE in the category would be items such as:

- Leg, arm, chin, and belly guards
- Specialty hand pads and grips
- Leather aprons and leg grips
- Full body suits
- Flame and chemical resistant clothing
- Various types of plastic boot covers and overshoes

For more information on the type of specialty PPE you require, check your local Department of Labour office. With all PPE, following the manufacturer’s instructions on its use, care, and cleaning is critical and will help you get the full service life from your specialty PPE.

Hand PPE (Gloves and Mitts)

PPE for the hands include: fingers guards, thimbles and cots, handpads, mitts, gloves, and barrier creams. Choose hand PPE that will protect against chemicals, scrapes, abrasions, heat and cold, punctures, and electrical shocks.

Types

PPE for the hands come in many forms, each designed to protect against certain hazards. Gloves most commonly used in the construction industry are made from leather, cotton, rubber, synthetic rubbers and other man-made materials, or combination of materials.

Vinyl coated or leather gloves are good for providing protection while handling wood or metal objects. When selecting hand PPE, keep the following in mind: look for anything at the job-site that may be a hazard to the hands. If gloves are to be used, select the proper type for the job to be done. Inspect and maintain hand PPE regularly. If in doubt about the selection or need for glove or hand PPE, consult your safety supplier or Material Safety Data Sheet (MSDS).

Personal Protective Equipment

Limb and Body Protection Cont'd

Do:

- Inspect hand PPE for defects before use.
- Wash all chemicals and fluids off gloves before removing them.
- Ensure that gloves fit properly.
- Use the proper hand PPE for the job.
- Follow manufacturer's instructions on the care and use of the hand PPE you are using.
- Ensure exposed skin is covered (no gap between the sleeve and the hand PPE).

Don't:

- Wear gloves when working with moving machinery (gloves can get tangled or caught).
- Wear hand PPE with metal parts near electrical equipment.
- Use gloves or hand protection that is worn out or defective.

Personal Protective Equipment

Respiratory Protection

General

Respiratory protection falls into two (2) major categories. The first is **Air Purifying Respirators (APR's)**, which are particle (dust) chemical cartridges but **NO** visor plate. The second category is **Atmosphere Supply Respirators**, including self-contained breathing apparatus (SCBA), air line systems and protective suits that completely enclose the worker and incorporate a life support system.

Only APR's will be dealt with here. The second category of respirators requires much more specific information and training. If you need to use Atmosphere Supplying Respirators, you should get expert advice.

APR's

There are two (2) basic types of APR's:

- Disposable fiber type with or without charcoal or chemical filter "buttons".
- The reusable rubber face mask type with disposable or rechargeable cartridges.

The choice depends on your job, labour, cost, and your maintenance facility.

It's important to remember that APR's are limited to areas where there is enough oxygen to support life. APR's don't supply or make oxygen.

The service life is affected by the type of APR, wearer breathing demand, and the concentration of airborne contaminants. When an APR is required, consult the Material Safety Data Sheet (MSDS) or supplier for the exact specifications for the APR.

Facial hair can prevent a good seal and fit of an APR – One (1) to three (3) days growth is the worst. Follow the manufacturer's instructions to the letter regarding the mask, filters, cartridges, and other components. Workers who must use respiratory protection should be clean shaven.

An APR is only as good as its seal and its ability to filter out the contaminants it was designed to filter.

Personal Protective Equipment

Respiratory Protection Cont'd

Combination Respirators

This type of APR combines separate chemical and mechanical filters. This allows for the change of the different filters when one of them becomes plugged or exhausted before the other filter (usually the dust filter plugs up before the chemical filter). **This type of respirator is suitable for most spray painting and welding.** For more information, check the:

- Material Safety Data Sheet (MSDS)
- The local Department of Labour office
- The safety equipment supplier

For more information, look at the:

- Occupational Health and Safety Act, Regulations and Code of Practices
- CSA Standards “Compressed Breathing Air” Z180.1 - M1978.
- “Selection, Care, and Use of Respirators” Z94.4 – M1982.

Do:

- Train workers very carefully in the APR’s use, care, and limitations.
- Ensure that respirators are properly cleaned and disinfected after each shift, according to the manufacturer’s instructions.
- Dispose of exhausted cartridges and masks in sealed bags or containers.
- Keep new, unused filters separate from old, used filters.
- Monitor APR use – they are useless just hung around the neck.
- Replace filters when breathing becomes difficult.

Don’t:

- Use for protection against materials which are toxic in small amounts.
- Use materials that are highly irritating to the eyes.
- Use with gases that can’t be detected by odour or throat irritation.
- Use with gases not effectively halted by chemical cartridges regardless of concentration (read the cartridge label).
- Use respirators or masks if the serviceability is in doubt.
- Use APR’s where oxygen content in the air is less than 18% or 18 kilopascals (partial pressure or greater).

Personal Protective Equipment

Eye and Face Protection

General

This PPE is designed to protect the worker from such hazards as:

- Flying objects and particles
- Molten metals
- Splashing liquids
- Ultraviolet, infrared, and visible radiation (welding)

This PPE has two (2) types. The first type, “**basic eye protection**”, includes:

- Eyecup goggles
- Monoframe goggles and spectacles with or without side shields

The second type, “**face protection**”, include:

- Metal mesh face shields for radiant heat or hot and humid conditions
- Chemical and impact resistant (plastic) face shields
- Welders shields or helmets with specified cover
- Filter plates and lens

Hardened glass prescription lens and sport glasses are no substitute for proper, required industrial safety eye protection.

Comfort and fit are very important in the selection of safety eyewear. Lens coatings, venting, or fittings may be needed to prevent fogging or to fit with regular prescription eyeglasses.

Contact lenses should **NOT** be worn at the work-site. Contact lens may trap and absorb particles or gases causing eye irritation or blindness. Hard contact lens may break into the eye when hit.

Basic eye protection should be worn with face shields. Face shields alone often aren't enough to fully protect the eyes from work hazards. When eye and face protection are required, advice from the Material Safety Data Sheet (MSDS) or your supplier will help you in your selection.

For more information, look at:

- Occupational Health and Safety Act, Regulations and Code of Practices
- CSA Standard “Industrial and Face Protectors” Z94.3 – M1982.

Personal Protective Equipment

Eye and Face Protection Cont'd

Do:

- Ensure your eye protection fits properly (close to the face)
- Clean safety glasses daily, or more often if needed.
- Store safety glasses in a safe, clean, dry place when not in use.
- Replace pitted, scratched, bent, and poorly fitted PPE (damaged face/eye protection interferes with vision and will not provide the protection it was designed to deliver).

Don't:

- Modify eye/face protection
- Use eye/face protection which does not have a CSA certification (CSA stamp for safety glasses is usually on the frame inside the temple near the hinges of the glasses).

Eye Protection for Welders

Welders and welders' helpers should also wear the prescribed equipment. Anyone else working in the area should also wear eye protection where there is a chance they could be exposed to a flash.

Eye Protection for Drilling Operations Personnel

Drilling personnel must use the best judgement towards eye protection with regards to reduced visibility when drilling with water. Water tends to collect on the lens and impedes visibility.

Personal Protective Equipment

Hearing Protection

General

Hearing protection is designed to reduce the level of sound energy reaching the inner ear.

The “rule of thumb” for hearing protection is: use hearing protection when you can’t carry on a conversation at a normal volume of voice when you are 3 feet apart.

Remember, this is only a rule of thumb. Any sound over 80 dba requires hearing protection. Hearing loss can be very gradual, usually happening over a number of years.

The most common types of hearing protection in the construction industry are **earplugs** and **earmuffs**. If you choose to use other types of hearing protection, ask your safety supplier or Department of Labour office for further information.

It is important to have different styles of hearing protection available. Different styles allow a better chance of a good fit. Each person’s head, ear shape, and size are different. One style may not fit every person on your crew. If hearing PPE does not fit properly or is painful to use, the person will likely not use it. If the hearing protection is not properly fitted, it will not supply the level of protection it was designed to deliver.

Most earplugs, if properly fitted, generally reduce noise to the point where it is comfortable (takes the sharp edge off the noise).

If your hearing protection does not take the sharp edge off the noise, or if workers have ringing, pain, headaches, or discomfort in the ears, your operation requires the advice of an expert.

Workers should have their hearing tested at least every year, twice a year if they work in a high noise area.

CSA Standard “Hearing Protectors” Z94.2 M1984.

Personal Protective Equipment

Head Protection

General

Safety Head Wear is designed to protect the head from impact from falling objects, bumps, splashes from chemicals or harmful substances, and contact with energized objects and equipment.

In construction, the recommended type of protective headwear is the Class B hard hat, which has the required “dielectric strength”. There are many designs, but they all must meet the CSA requirements for Class B industrial head protection.

Most head protection is made up of two (2) parts:

- The shell (light and rigid to deflect blows)
- The suspension (to absorb and distribute the energy of the blow)

Both parts of the headwear must be compatible and maintained according to manufacturer’s instructions. If attachments are used with headgear, they must be designed specifically for use with the specific headwear used. Bump caps are not considered a helmet.

Inspection and Maintenance

Proper care is required for headgear to perform efficiently. The service life is affected by many factors including temperature, chemicals, sunlight, and ultraviolet radiation (welding). The usual maintenance for head gear is simply washing with a mild detergent and rinsing thoroughly.

Do:

- Replace headgear that is pitted, holed, cracked, or brittle
- Replace headgear that has been subjected to a blow even though damage cannot be seen
- Remove from service any headgear if its serviceability is in doubt
- Replace headgear and components according to manufacturer’s instructions
- Consult the Department of Labour or your supplier for information on headgear

Don’t:

- Drill, remove peaks, or alter the shell or suspension in any way
- Use solvents or paints on the shell (makes shells “break down”)
- Put chin straps over the brims of Class B headgear
- Use any liner that contains metal or conductive material
- Carry anything in the hard hat while wearing the hard hat

MAINTENANCE PROGRAM POLICY

LOGAN DRILLING LIMITED
AND
LOGAN GEOTECH INC

The maintenance of drills, pumps, auxiliary equipment, drilling equipment and all tools is to be done on a timely basis so as to reduce risk of injuries to employees or damage to equipment and property.

Regular servicing of drills is to be completed in accordance with the itemized Service Schedule, dated and recorded in the Equipment Maintenance record book.

Truck, trailer and tractor maintenance is to be completed by our own licensed mechanics, or at an authorized service center, in accordance with the manufacturer's service manual to maximize safety, equipment performance and protect warranty coverage where applicable.

Shop repair tools and equipment shall be properly maintained and properly stored at the end of work day or when not in use.

Field and repair shop supervisors shall be responsible for the application of the maintenance program.

** The information in our Safety Policy does not take precedence over the Occupational Health and Safety Act. All employees should be familiar with the Occupational Health and Safety Act.

Mark J. Bernme
V.P Operations, Logan Drilling Group

January 3, 2013
Date

Maintenance Program

General Maintenance Procedures

General

Good maintenance will make drilling operations safer. Also, maintenance should be performed safely.

- Wear safety glasses when performing maintenance on a drill rig or on drilling tools.
- Shut down the drill rig engine to make repairs or adjustments to a drill rig or to lubricate fittings (except repairs or adjustments that can only be made with the engine running). Take precautions to prevent accidental starting of an engine during maintenance by removing or tagging the ignition key.
- Always block the wheels or lower the leveling jacks or both, and set hand brakes before working under a drill rig.
- Release all pressure on the hydraulic systems, the drilling fluid system and the air pressure systems of the drill rig – when possible and appropriate – prior to performing maintenance. In other words, reduce the drill rig and operating systems to a “zero energy state” before performing maintenance. Use extreme caution when opening drain plugs and radiator caps and other pressurized plugs and caps.
- Do not touch an engine or the exhaust system of an engine following its operation until the engine and exhaust system have had adequate time to cool.
- Never climb the mast (derrick) to do maintenance or make repairs. Lower mast, stop engine, and de-energize rig before starting maintenance or repair on mast.
- Never weld or cut on or near a fuel tank.
- Do not use gasoline or other volatile or flammable liquids as a cleaning agent on or around a drill rig.
- Follow the manufacturer’s recommendations for applying the proper quantity and quality of lubricants, hydraulic oils, and/or coolants.
- Replace all caps, filler plugs, protective guards or panels, and high pressure hose clamps and chains or cables that have been removed for maintenance before returning the drill rig to service.

Maintenance Program

Service and Maintenance (Between Core Runs)

Inner Tube:

- 1) After the core has been removed, pour clean water down the inner tube to wash out the sand particles and grit.
- 2) Inspect the inner tube to see if any particles are lodged on the smooth inside surface.
- 3) Check the core lifter case, stop ring, and core lifter. The core lifter should rotate freely. If the inside surface of the core lifter is smooth, the core lifter should be checked by inserting a short section of core into the core lifter and pulling it out to see if the core lifter will grip the core. If the core slips, the core lifter should be replaced. *See Service Instruction (After Service).*
- 4) If the core lifter grips the core, then apply a small amount of cup grease just above the core lifter in the core lifter case and connect it to the inner tube.

Servicing Inner Tube Head Assembly

- 1) Wash the head assembly in clear water to remove drilling mud and grit.
- 2) Inspect the action of the latches and the latch retracting case. Both should work freely.
- 3) Check the movement of the spindle bearings. They should spin freely and there should be no end play. If end play exists, the head assembly may need further repairs (*See Maintenance Instructions – After Service*)
- 4) Check the rubber shut-off valve for shredding. At this point, a determination should be made on positioning the rubber shut-off valves, as described in “Familiarization Section”. If the rubber shut-off valve is to be rearranged, it is necessary to remove the inner tube cap (18), lock nut (17), compression spring (16), and the three bearings. Make the necessary changes with the rubber valves. Install the bearings in the same position as originally assembled. Do not reverse either ball bearing. Assemble the lower end and tighten the lock nut (17) to remove free play, but do not reload the compression spring (16).
- 5) If no parts have been replaced and the bearings are in good condition, apply cup grease to the latches and the latch-retracting case. Pump “Texaco Multifak No. 2” or equivalent grease into the grease fitting until clean grease exudes out of the top thrust bearings.
- 6) Rejoin the head assembly to the inner tube.

Maintenance Program

Dropping the Inner Tube Assembly (During a Coring Cycle)

- 1) Attach inner tube spearhead to the overshot assembly. The "AQ" inner tube can be hand-carried.
- 2) Hoist inner tube assembly above rod opening.
- 3) Release inner tube so it falls freely, providing there is at least twenty (20) feet of fluid in the drill hole.
- 4) Add necessary rod.
- 5) Attach water swivel to rods.
- 6) Circulate water while inner tube is dropping.
Reason: If rock particles are on the inside of the bit, they will be washed away so the inner tube has the necessary clearance to land.
- 7) Rotate the drill string while the inner tube is falling, but do not lower the rod string into drilling position.
Reason: In deep holes, there is always a chance that the drill string may "stick" in the hole if it is stationary for any period of time. If for some reason, the drill string cannot be rotated, then raise and lower the drill string with the hydraulic head or the hoist until the inner tube reaches its coring position.
- 8) When the inner tube strikes the landing ring, contact is always audible by placing a chuck wrench against the rods and listening for the contact sound.
- 9) When the inner tube is seated in the coring position, lower the drill string with the bit rotating. Measure the "stick up" or mark to be sure the drill string has bottomed in the hole. If the hole is shallow, less than 500 feet, the drill string could rest on the bottom of the hole. But if the hole is deep, more than 500 feet, it is necessary to support the drill string with the hoist.
- 10) Stop the drill and recheck to a full hydraulic head grip and restart drill.

Maintenance Program

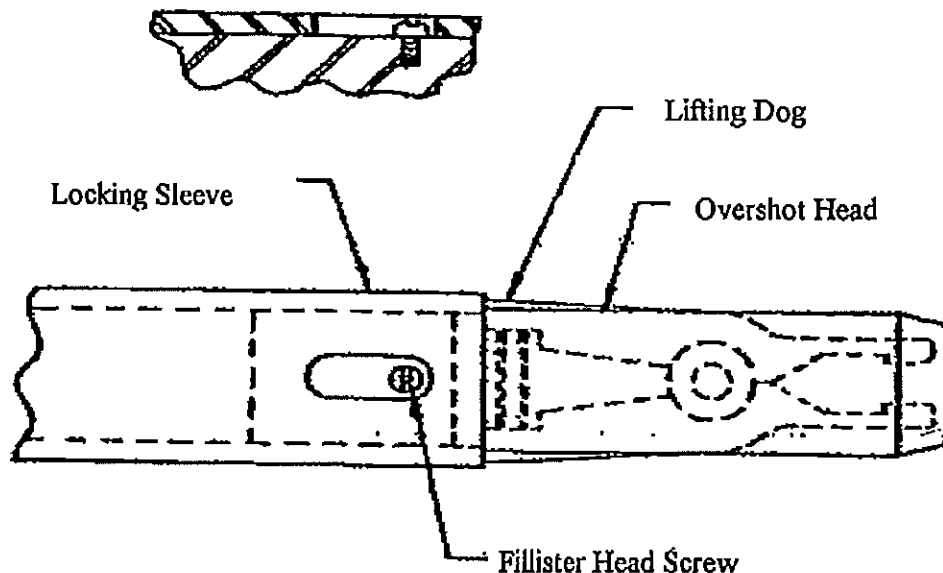
New Feed Stroke

- 1) Before a new core run is begun, be sure water is returning from the hole or that the water pressure gauge shows a reading between 50 and 100 psi.
- 2) Begin advancing the bit to complete a new stroke.
- 3) At the end of each new stroke, recheck for a new bite. While drill head is penetrating new rock, be careful that the hoist cable has some slack in it so that it is not restraining the feeding head.
- 4) Continue coring until a core block occurs or the inner tube becomes full of core.
- 5) *See paragraph on "Water Pressure & Core Blocks".*

Maintenance Program

Dry Hole Lowering Instructions

1. In a situation when the fluid level in the hole is less than 20 feet, this condition is known as a dry hole. The inner tube assembly cannot be dropped down the hole freely in a dry hole. The inner tube assembly must be attached to the overshot assembly and both are lowered as one unit down the hole.
2. Assemble the dry hole lowering locking sleeve to the overshot (use only for this operation). The cable slips through the longitudinal spiral slot. The locking sleeve sets on the back end of the lifting dog legs during the lowering operation.
3. To keep the locking sleeve from sliding up the cable during the lowering operation, install a fillister head screw into the slotted locking sleeve, as shown below.



4. Attach the overshot to the spearhead of the inner tube. Check the dry hole lowering release by pushing the overshot on the conical spearhead so the lifting dogs spread. The locking sleeve slips over the ends of the lifting dog and holds them in the open position releasing the overshot from the inner tube spearhead.
5. Reattach the overshot to the inner tube assembly and set the locking sleeve to rest on the lifting dog ends.
6. Insert both the inner tube assembly and the overshot into the drill hole. Control the hoist to a moderate speed. High speed lowering may cause a premature release of the inner tube assembly resulting in damaging both the inner tube and the bit.

Maintenance Program

Dry Hole Lowering Instructions Cont'd.

7. When the inner tube assembly lands within the outer tube assembly, the inertia of the overshot assembly will drive the lifting dog over the spearhead cone spreading the lifting dog apart. The upper end of the lifting dog will come together releasing the locking sleeve to slide downward and over the lifting dog ends together. This action releases the overshot from the inner tube assembly.
8. If the overshot is not released, pull the cable by hand so it is taut, then release quickly. The sliding weight on the overshot jar staff will act like a hammer and drive the lifting dog over the spearhead to release the overshot.
9. Hoist the overshot assembly to the surface, keeping the cable spooled evenly on the drum.
10. Remove the locking sleeve from the overshot.

CAUTION: Use the locking sleeve only on dry hole lowering the inner tube assembly in the hole. Remove the locking sleeve from the overshot when retrieving the inner tube from the hole. The locking sleeve will prevent the overshot from picking up the inner tube in a routine retrieving operation.

Overshot Trouble in the Hole

1. If a driller fails to heed the water shut-off signal, the resulting core block pushes the inner tube assembly upward - tightening the latches against the locking coupling. This effect of jamming sometimes creates a condition where the latches are held sufficiently so they will not release with the first effort of the overshot.

When Inner Tube Fails to Release

- A. Pull the cable taut and snap it so the jar mechanism on the overshot drives the inner tube downward to release the latching mechanism.
- B. Pull the cable with the wire line hoist until the shear pin in the overshot assembly fails.
 1. Reel up the wireline cable
 2. Retrieve the core barrel from the hole by removing all the rods from the hole.
 3. Before disassembling the inner tube assembly from the core barrel, try to determine why the latches failed to release.
 4. Remove the core from the inner tube.
 5. Service and repair both the inner tube assembly and the outer tube assembly.
 6. Replace the shear pin in the overshot.

Maintenance Program

Inspection and Maintenance (After Service)

- 1) Disassemble the inner tube from the head assembly. Always use a Longyear inner tube wrench on the inner tube and an open-end wrench on the head assembly.
- 2) Remove the core lifter case from the inner tube.
- 3) Wash out the core lifter and core lifter case.
- 4) Check the grip action of the core lifter by inserting a section of core and pulling it so the core lifter grips onto the core. If the core slides out, replace the core lifter.
- 5) To replace core lifter, remove the stop ring from within the core lifter case by prying it loose and inserting a thin screw driver blade under the relief at the split of the ring.
- 6) Remove both the stop ring and the old core lifter.
- 7) Inspect both the stop ring and core lifter case for wear.
- 8) Apply cup grease inside of the core lifter case. Install the new core lifter.
- 9) Install the stop ring – snap it into place. Check to be sure the ring stop is properly seated in the grooved recess of the core lifter case.
- 10) Clean the inside bore of the inner tube by pushing a cloth swabbing patch through it until the bore is clean.
- 11) Inspect the inner tube for dents, nicks, and wear on both the inside and outside surfaces. Serious dents cause core blocks. Unless the dents are close to one end, replace the inner tube. The series “Q” inner tube is reversible. Connect the core lifter case to the smoother bore end of the inner tube.
- 12) Remove the inner tube cap from the spindle bearing and wash out the grease within the cup.
- 13) Clean the grease from the compression spring and the bearing about the spindle shaft.
- 14) Check both ball bearings to see if cages are broken or if the races are spinning free.
Replace if necessary.

Maintenance Program

Inspection and Maintenance (After Service) Cont'd

Outer Tube Assembly

- 1) The general condition of the outer tube assembly should be checked each time it is pulled from the hole. A dented or crooked outer tube causes premature core blocking.
- 2) Remove the locking coupling. Note the welded hard face strips. If the hard surfacing shows excessive wear so the base material is worn, this part should be replaced. Check the inside shoulder and the condition of the drive lug. Drilling through heavy core blocks may cause latch dents on the locking coupling. When this damage is noted, the locking coupling needs to be replaced.
- 3) Remove the adapter coupling from the outer tube and inspect the condition of the shoulders above the threads for wear.
- 4) Remove the landing ring from the counterbore of the outer tube.
- 5) Clean both the landing ring and the outer tube counterbore.
- 6) Check the landing ring for wear. If the landing ring is worn or chipped, reverse it and reinstall. Otherwise, use the same landing shoulder side. Replace if both sides are worn. Apply cup grease to both the ring and the counterbore before reinstalling.
- 7) Remove the reaming shell from the outer tube. The stabilizing ring is located in the counterbore of the reaming shell.
- 8) Remove the stabilizing ring, clean it and the reaming shell counterbore.
- 9) Examine the stabilizing ring for wear by fitting it over the inner tube O.D. If there is more than .030 looseness, the ring is worn. Another check can be made by comparing the wall thickness at the root of the hear teeth with a new stabilizing ring. If the wall thickness is thinner, replace the ring. The stabilizing ring remains in the hole with the reaming shell and is accessible only when the entire drill string is pulled.
- 10) Reassemble the outer tube, replacing all worn parts. Clean each threaded connection and apply "Texaco Threadtex" or equivalent grease to each joint. Tighten each thread joint securely.
- 11) Record all spare parts used from stock. Order future replacement parts by their proper name and part number.

Maintenance Program

Inspection and Maintenance (After Services) Cont'd

- 12) If the rubber shut-off valve or any of the bearings of the compression spring need replacing, then remove the lock nut and strip the spindle shaft of all parts, keeping the bearings together as a group. Check the spindle assembly shaft for wear and straightness. Although some shaft wear is permissible, replace the shaft if galls or grooves are visible.
- 13) Thread lock nut to spindle. Tighten the lock nut so the bearings spin freely. The compression spring is not preloaded and there is no bearing end play.
- 14) Reassemble the inner tube cap to the spindle bearings.
- 15) Check the action of the latching mechanism. Apply cup grease to the latches and the latch retracting case.
- 16) If the latches show excessive wear, remove old latches by knocking out both the spring pin holding the latch retractor case to the latch body and the short pin holding the latches.
- 17) Pump "Texaco Multifak No. 2" or equivalent grease until it flows up through the thrust bearings.
- 18) Check the spearhead. If damaged, it is replaced by knocking out the pin spring. This pin is reusable.
- 19) Attach the inner tube to the head assembly.
- 20) Before the inner tube assembly is ready for coring, the gap setting between the core lifter case and the bit must be checked. This inspection is especially important if any parts have been replaced on either the inner tube assembly or the outer tube assembly.

Maintenance Program

Inspection and Maintenance (After Service) Cont'd

Core Barrel Assembly

- 1) After the inner tube assembly and the outer tube have been serviced, clean and lightly oil the surface of the inner tube. Install the inner tube assembly into the outer tube so the landing shoulder is firmly seated on the landing ring.
- 2) The gap or distance between the inside slope of the bit and the outside slope of the core lifter case should 1/16 of an inch (1.6 mm). Make the necessary correcting adjustments if the gap setting is not correct.
- 3) This gap adjustment should be checked by hoisting the core barrel assembly in a vertical position. A visual check can be made through the open bottom end of the bit.
- 4) Make the necessary adjustments to all inner tube assemblies to be used as companions with a particular outer tube assembly.

Maintenance Program

Inspection and Maintenance Cont'd (After Service)

Rods

- 1) Pin and box threads and shoulders should be thoroughly cleaned and permitted to dry. Cleaning pays off in three (3) ways: First, it removes foreign material and permits proper make up; thereby reducing the danger of wobbles. Second, it permits better inspection. Third, it increases life of connection by elimination of abrasive material.
- 2) After cleaning, inspect threads and shoulder carefully. Check for dents, gall spots, or bruises around the threads and shoulders. Slight dents can be straightened out by gently tapping the dent with a ball pen hammer and "bucking" the inner surface with a round steel surface used as an anvil. Gall spots and bruises should be filed smooth. Any pins or boxes which have wobbled or leaked can be repaired only by reworking in a machine shop. It should be remembered that such damage always occurs in both members and that both must be repaired.
- 3) When rods are not in use for short periods of time, they should be coated with diesel fuel and stacked on steel racks or on heavy timbers in a location where they cannot be accidentally bumped. For longer periods of time, coat with heavier oil and cover the rods if they are to be exposed to the weather.
- 4) When stacking rods on the drill platform, they should stand on a clean, hardwood, heavy plank or timber, which has no nails or other metal objects exposed.
- 5) Since machined box and pin ends will not withstand abuse, appropriate precautions must be taken when transporting rods from one job site to another so that neither end of the rod is damaged.

Maintenance Program

Inspection and Maintenance **(After Service)**

1. Disassemble the inner tube from the head assembly. Always use a Longyear inner tube wrench on the inner tube and an open-end wrench on the head assembly.
2. Remove the core lifter case from the inner tube.
3. Wash out the core lifter and core lifter case.
4. Check the grip action of the core lifter by inserting a section of core and pulling it so the core lifter grips onto the core. If the core slides out, replace the core lifter.
5. To replace core lifter, remove the stop ring from within the core lifter case by prying it loose and inserting a thin screw driver blade under the relief at the split of the ring.
6. Remove both the stop ring and the old core lifter.
7. Inspect both the stop ring and core lifter case for wear.
8. Apply cup grease inside of the core lifter case. Install the new core lifter.
9. Install the stop ring - snap it into place. Check to be sure the ring stop is properly seated in the grooved recess of the core lifter case.
10. Clean the inside bore of the inner tube by pushing a cloth swabbing patch through it until the bore is clean.
11. Inspect the inner tube for dents, nicks and wear on both the inside and outside surfaces. Serious dents cause core blocks. Unless the dents are close to one end, replace the inner tube. The series "Q" inner tube is reversible. Connect the core lifter case to the smoother bore end of the inner tube.
12. Remove the inner tube cap from the spindle bearing and wash out the grease within the cup.
13. Clean the grease from the compression spring and the bearing about the spindle shaft.
14. Check both ball bearings to see if cages are broken or if the races are spinning free. Replace if necessary.

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Inspection and Maintenance (After Service) Cont'd.

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Inspection and Maintenance (After Service) Cont'd.

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Maintenance Program

Inspection and Maintenance Cont'd. (After Service)

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3. When rods are not in use for short periods of time, they should be coated with diesel fuel and stacked on steel racks or on heavy timbers in a location where they cannot be accidentally bumped. For longer periods of time, coat with heavier oil and cover the rods if they are to be exposed to the weather.
4. When stacking rods on the drill platform, they should stand on a clean, hardwood, heavy plank or timber, which has no nails or other metal objects exposed.
5. Since machined box and pin ends will not withstand abuse, appropriate precautions must be taken when transporting rods from one job site to another so that neither end of the rod is damaged.

SAFETY TRAINING POLICY

LOGAN DRILLING LIMITED
AND
LOGAN GEOTECH INC

PURPOSE

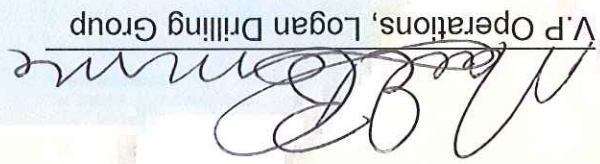
The purpose of this policy is to ensure that all employees receive adequate safety training.

POLICY

The Company will provide and ensure that all employees participate in the following safety training:

Safety orientations for all new hires;
Job-specific training as required.

In additions, safety meetings involving all employees will be held on a regular basis.


V.P Operations, Logan Drilling Group

January 3, 2013
Date



Soil Sampling - Auger Borings - Core Drilling

LOGAN GEOTECH INC.

P.O. Box 188, Stewiacke, N.S. B0N 2J0

Telephone

Fax

Stewiacke

(902)639-2343

(902)639-9010

New Employee Orientation

Employee Name: _____ Hire Date: _____

Introduction

- Company History
- Company Safety Policy
- Company Health Plan
- Occupational Health & Safety Act

Responsibility for Safety

- Worker
- Supervisor
- Manager

Emergency Procedures

- Fire
- Ambulance
- First Aid
- Security/Police
- Incident Reporting

General Rules

- Alcohol, Drugs
- Horseplay, Fighting
- Vehicle Operation
- Theft

Personal Protective Equipment

- Hard Hats
- Safety Glasses
- Fall Protection
- Respirators
- Hearing Protection

Safe Work Practice

- General Housekeeping
- Scaffolds
- Floor Openings
- Ladders
- Excavations
- Cutting/Welding
- Manual Lifting
- Rigging
- Hoisting
- Powder Actuated Tools
- Electrical Equipment
- Grounding
- Other: _____
- Other: _____
- Other: _____

Meetings

- Safety Committee
- Tool Box

Safety Courses

- Saint Johns Ambulance
- WHMIS
- Transportation of Dangerous Goods

Trainer: _____

Employee: _____

LOGAN DRILLING GROUP

SAFETY INCENTIVE PROGRAM

All awards are for the exclusive use of the Safety Incentive Program and are not available for purchase.

Hours are automatically totaled through payroll, however, it is the employees' responsibility to apply for the award.

All employees who have reached the first level of accident free hours, will receive the 3000 Hour Award and then move on to the 5000 Hour Award, without any deduction for receiving the 3000 Hour Award.

The safety awards are:

3000 Hour Accident Free – GOLF SHIRT

LDL or LGI

5000 Hour Accident Free – WATCH or WINTER COVERALLS

LDL or LGI

Hours will be deducted from the accumulated total as follows:

- A. 1000 hours for a compensable accident
- B. 500 hours for a non – compensable accident
- C. 500 hours for a non – compliance with safety regulations
- D. 500 hours for misuse of equipment, poor housekeeping etc.

Training and Safety Measures

First Aid

General

Train at least one (1) member of the drill crew, and if only one, preferably the drilling and safety supervisor, to perform first aid.

**First aid must be taught on a person-to-person basis,
not by providing or reading a manual.**

Manuals should only provide continuing reminders and be used for references. Courses provided or sponsored by the Canadian Red Cross or a similar organization best satisfy the requirements of first aid training for drill crews.

For drilling operations, it is particularly important that those responsible for first aid should be able to recognize the symptoms of and be able to provide first aid for electrical shock, heart attack, stroke, broken bones, eye injury, snake bite, and cuts or abrasions to the skin. Again, first aid for these situations is best taught to drill crew members by instructors qualified by an agency such as the Red Cross.

Keep first aid kit available and well maintained on each drill site.

Training and Safety Measures

Diamond Drillers Guide to Back Care

The rules for safe lifting are as follows:

1. Get a good grip
2. Bend your knees
3. Lift with a straight back
4. Keep the load close
5. Avoid twisting

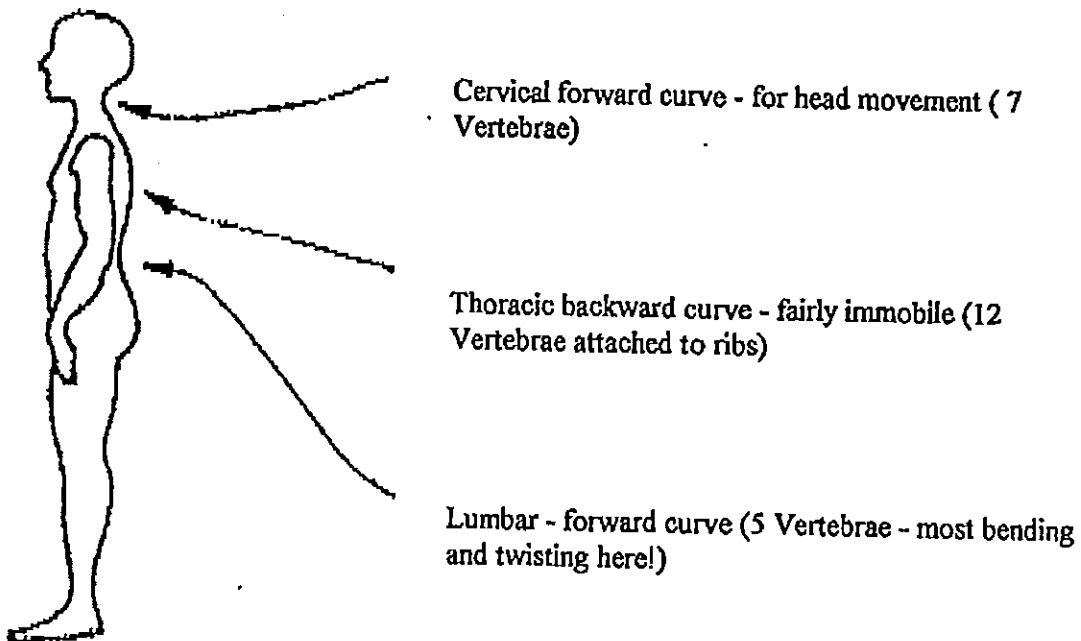
In spite of these rules, people still injure their backs when lifting: **WHAT IS THE PROBLEM?**

The rules are all very good and **WILL** protect your back **BUT...**

- Very few of the objects diamond drillers lift are small compact boxes, how can one protect his back against heavy and awkward pumps, barrels and rods?
- What exactly is meant by twisting?
- How important is the strength of our back and why the emphasis on stomach muscles?
- Backs are more often injured at home and in leisure than at work, why?
- How can sleeping and relaxing in our easy chair harm our backs?

The first step is to **UNDERSTAND YOUR BACK**

you have three natural curves in your back



Training and Safety Measures

Diamond Drillers Guide to Back Care Cont'd.

It is important to **MAINTAIN** these curves but **NOT** to **INCREASE** them. Especially, the lumbar curve. Eight out of ten people will at some time have a sore back problem in the Lumbar region.

Between each vertebrae body is a fibrous disc which is mostly water.



As you age you will slowly lose some of this cushioning water in your discs. That is why older people become shorter in height. This degeneration is **NATURAL** and **NOT** painful if your back is well taken care of.

An injury occurs when you put your back through an extreme movement and the spine is no longer in proper alignment or when you ask it to handle very large forces (this may happen at home, in leisure, or at work).

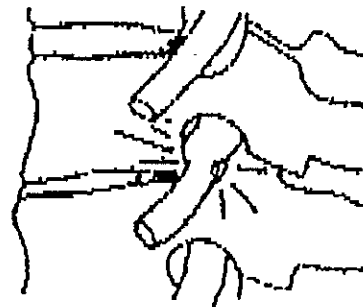
For example the "twist"

This man is keeping his feet firmly planted and twisting his spine to move an object.



At the disc level the uneven pressures on the spine have caused a bulging of the disc and small tears in the fibers.

When the bulging pinches a nerve we feel the pain of a low back injury!



Training and Safety Measures

Diamond Drillers Guide to Back Care Cont'd.

Understand Your Back

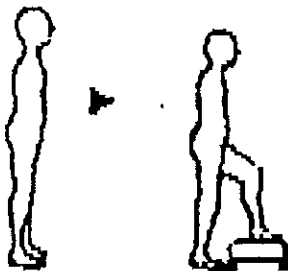


When you increase your Lumbar curve, you put excessive and uneven force on the discs and thereby run the risk of a back injury.

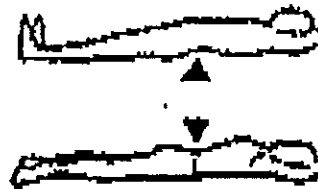
This lumbar curve is increased by:

1. Poor posture (standing, sitting, sleeping)
2. Slackened abdominal muscles
3. Excess weight on the stomach

Flatten your back and tighten your abdominal muscles whenever you can.



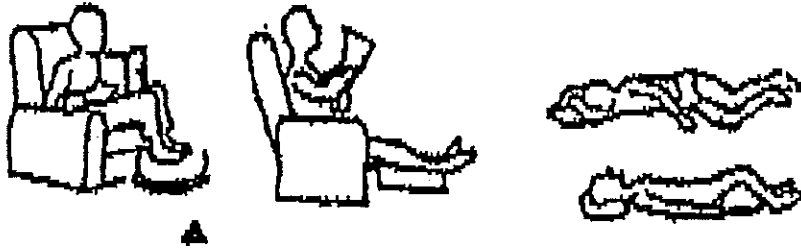
When standing, elevate one leg to flatten the lower back.



When sleeping lying on your stomach or back increases the curve, straining the lower back. Proper alignment is maintained by sleeping on your side or bending your knees.

Training and Safety Measures

Diamond Drillers Guide to Back Care Cont'd.



one or both knees higher than your hips.

When sitting, keep

Use the **PROPER POSTURE** at home, at leisure and at work to prevent your lower back curve from increasing

ALSO

1. Keep abdominal muscles strong through exercise.
2. Keep excess weight from your stomach.

PROCEDURES FOR SAFE LIFTING AND HANDLING OF MATERIAL

Because of adverse weather conditions and the intermittent nature of the work, a driller's back may become cold and stiff. Think of an elastic band which is cold and hasn't been stretched in a while. Small tears will occur the first time you put it to work, and with repeated stress, the elastic will eventual snap. Your back works the same way.

Prior to doing any lifting or rod handling;

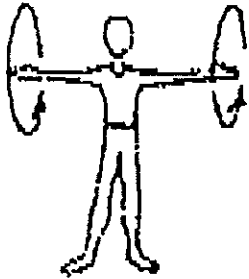
1. Mentally prepare for the work - size up the job, know your capabilities and work within them.
2. Physically prepare yourself - it only takes 20-30 seconds to warm up cold muscles and get blood circulating.

Training and Safety Measures

Diamond Drillers Guide to Back Care Cont'd.

EXAMPLE

Circle arms 5 times



Trunk twists



Bend knees and reach for the ground



Adapt the Proper Posture to protect the spine

- prevent too much low-back curve in standing and sitting by raising one leg.

It is almost impossible to lift with a straight back but your back is protected if, when lifting:

- tighten the abdominal muscles
- bend the knees and
- positively NO twisting
- this means keeping your spine in its proper alignment

With these three preparations, your back is as protected as it can be!

Training and Safety Measures

Diamond Drillers Guide to Back Care Cont'd.

The Diamond Driller's Back at Work

ROD HANDLING

INCORRECT



- Avoid bending with straight legs
- Avoid breaking rods with jerking actions. You are putting your spine in a hazardous posture, and then by jerking, putting great forces through it.

BETTER



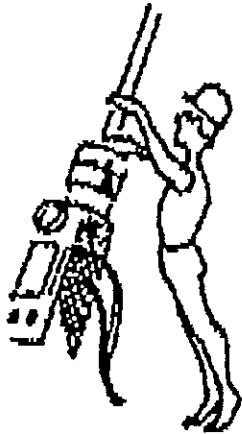
- Bend the knees and hips
- Use the muscles in your arms and legs
- Never twist

Training and Safety Measures

Diamond Drillers Guide to Back Care Cont'd.

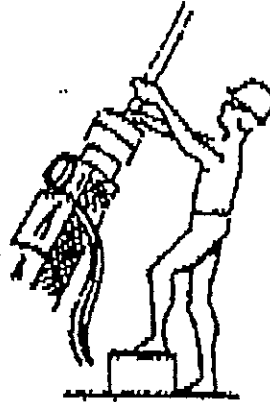
AT DRILL HEAD

INCORRECT



- Neck strained, lower back curved, spine is not in proper alignment and at high risk of injury.
- Applying enough force overhead is difficult
- Avoid working on tip-toes as your back is unstable.

BETTER



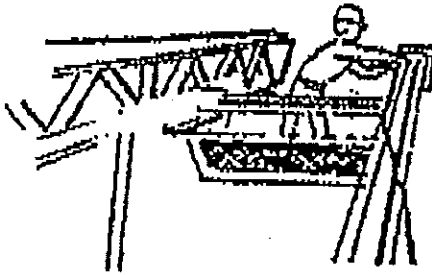
- Tighten stomach muscles and flatten back
- May
 - 1) Raise one leg to flatten backOr
 - 2) Stand on box to bring work to shoulder level.

Training and Safety Measures

Diamond Drillers Guide to Back Care Cont'd.

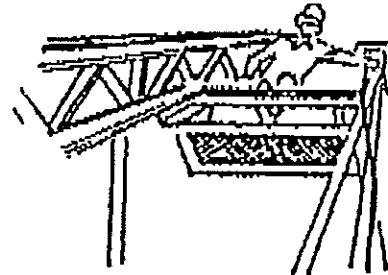
PULLING RODS

INCORRECT



- Back is curved, legs straight
- Worker twists to push rods across
- The Spine is not in proper alignment, and a twisting force is applied to these already stressed discs.

BETTER

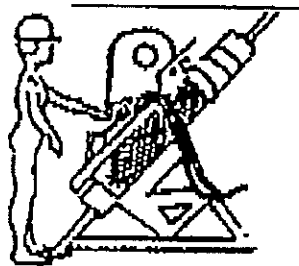


- Raise one leg on platform
- Avoid twisting - pass rods across front of body

NOTE: Proper lubrication of drill rods makes breaking rods easier

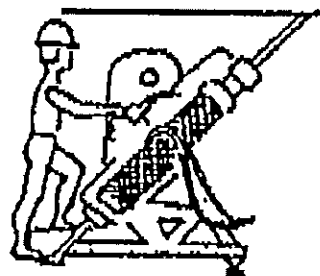
DRILL MONITORING

INCORRECT



- When standing - avoid poor posture
- lower back is curved

BETTER



- Flatten back by lifting one leg onto something and tightening stomach muscles

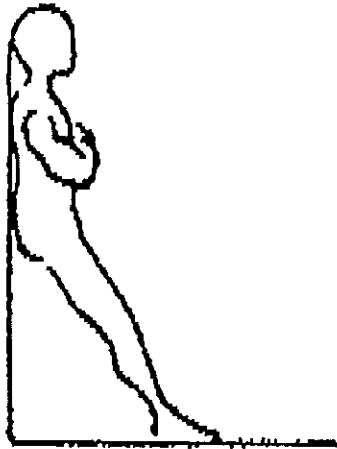
Training and Safety Measures

Diamond Drillers Guide to Back Care Cont'd.

When your back tells you its tired - LISTEN TO IT!

Adapt a "Back-Saving" Posture

Against a wall



flattens back and
relaxes muscles

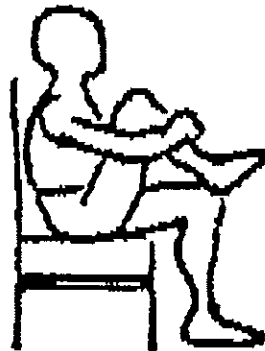
In a squat



stretches back muscles

In a chair

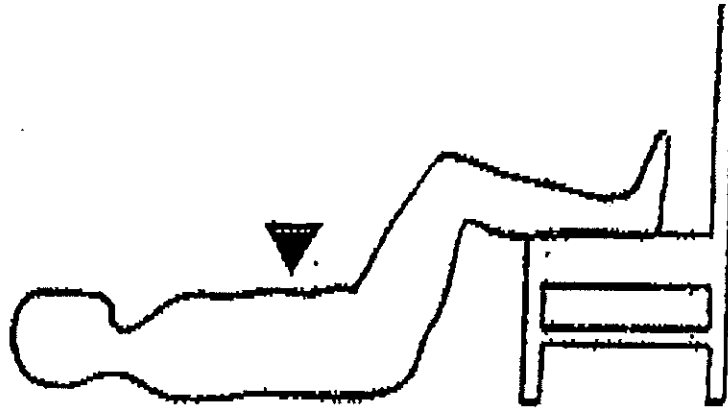
- bring one knee to your chest
at a time to stretch lower back



Training and Safety Measures

Diamond Drillers Guide to Back Care Cont'd.

At Home - Elevate Legs and Flatten Back



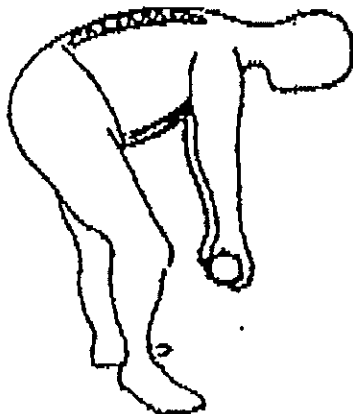
"THE SAME SHOVEL THAT CAUSES THE BLISTERS, ALSO FORMS THE CALLUSES!"



Like a sail boat, the muscles on the front and back of you must be tight to support the proper curve in your spine.

Protecting your back means:

MAINTAINING A NORMAL CURVE



If your abdominal muscles are weak they place extra strain on your back every time you move.

Most of you are fairly strong because diamond drilling is strenuous work, BUT, the majority of you probably have weak stomach muscles and poor flexibility.

Back Strength Depends On This!

Test for stomach strength and back flexibility:



With knees bent, feet unsupported, and hands behind head, slowly raise body up.

If this is impossible or difficult READ ON to learn how to strengthen stomach muscles and stretch back muscles.

Did you pass the test?

Now the exercises

Most of these exercises seem almost too easy, but they work on stomach strengthening and back flexibility - exercise which you don't get on the job.

They are the best form of therapy for a sore back but you must do them EVERY DAY, not just after a back episode.

Ten minutes a day can help prevent a back injury.

MAPAO MINERS BACK CARE EXERCISE PROGRAM

80% of low back pain is due to a lack of strength in the stomach muscles and a lack of flexibility in lower back and hip muscles. These ten exercises are a specially designed program to be done at least once per day for ten minutes in back injury prevention or in after-injury rehabilitation.

NOTE: If there is a pain during or immediately after exercise, discontinue and report your symptoms to your doctor.

1. ½ Sit-Up

Strengthens stomach muscles. Lie on back with knees bent. With one hand behind the head, and the other stretched between the knees, reach forward raising the head and shoulders off the ground 15 times with each arm.



2. Knee Hug

Stretches lower back and gluteal muscles. Lie on back and raise one knee to chest. Hold 20 seconds and change legs.



3. Bent Leg Sit-Up

Strengthens stomach muscles. Lie on back with knees bent and feet unsupported. Hands may be at side, crossed on chest or behind head. Slowly curl up at a 45 degree angle and slowly sit back again. Do as many as possible.



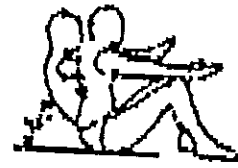
4. Hamstring Stretch

Stretches muscles at back of legs. Lie on back and raise one knee to your chest. Hold calf or ankle and work to straighten the leg.



5. Sit-Backs

Strengthens stomach muscles. Sit with knees bent, hands may be on floor or stretched forward. Keeping back rounded, sit back to a 45 degree angle and hold 10 seconds, then sit forward and relax. Repeat 5 times.



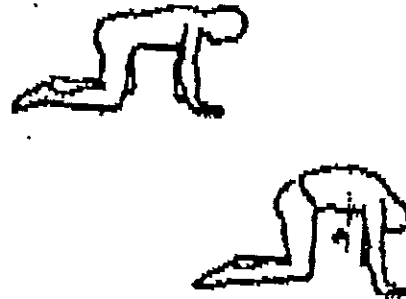
6. Sit and Reach

Stretches lower back and muscles in back of legs. Sitting with one leg bent in front and one leg straight. Reach forward and hold 10 seconds, 3 times. Repeat with other leg.



7. Cat Back

Strengthens lower back muscles. From hands and knees arch back up like a cat and drop your head. Hold this position for 10 seconds then relax your spine careful not to arch it downwards.



8. **Fencers Stretch**

Stretches groin and hip muscles. Place one foot forward with a bent knee and stretch the other leg back. Place hands on hip and legs as shown and keep spine erect. Stretch downwards for hip muscles and stretch upper body backwards for groin muscles.



9. **Wall Sit**

Strengthens quadriceps muscles group in front of legs. Keeping lower back pressed against the wall, and feet flat on the floor, lower body by bending at the knees. Knee angle should not be less than 90 degrees. Hold this position for 30 seconds and return to stand. Repeat 3-5 times.



10. **Pelvic Tilt**

Strengthens lower back muscles. Press lower back toward the floor (may have to tighten abdominal muscles to do this) and hold 10 seconds.



11. Relaxation

To relieve strain and relax lower back. Raise legs onto a chair or couch. This should flatten your lower back. Close eyes and breathe deeply.



IN SUMMARY

A diamond driller can have a trouble free back by:

1. Learning and adopting **PROPER WORK PROCEDURES AND POSTURES**. When lifting and handling material; tighten abdominal muscles bend your knees and positively **NO** twisting. Keep your spine in its proper alignment.
2. When your back gives you signs of distress **LISTEN TO IT!** Relax the muscles that hurt before they force you flat on your back for a long unwanted relaxation.
3. Stretch and strengthen your back and stomach muscles **AWAY FROM WORK** so that they can handle the stresses you put on them daily.

Training and Safety Measures

Severe Bleeding

Wounds

A wound is any break in the continuity of the soft tissues of the body. A wound usually results in bleeding. Depending on the location of the wound, it may be either:

- **External bleeding:** blood escapes from the surface wound and can be seen
- **Internal bleeding:** blood escapes from tissues inside the body and cannot be seen

Depending on the blood vessels that are damaged, bleeding can be either:

- **Arterial bleeding:** blood is bright red and spurts with each heart beats from the damaged artery. Arterial bleeding is serious and often hard to control.
- **Venous bleeding:** blood is dark red and flows steadily. It will stop more readily when being controlled.

Signs and Symptoms of Bleeding

The sign of **external bleeding** is the **appearance of blood**. Blood is not immediately visible with internal bleeding. General signs and symptoms of bleeding may vary widely, depending on the amount of blood loss. Severe blood loss will result in the following signs and symptoms:

- Pale, cold, and clammy skin
- Rapid pulse, gradually becoming weaker
- Faintness and dizziness
- Thirst and nausea
- Restlessness and apprehension
- Shallow breathing, yawning, sighing, and gasping for air (known as *air hunger*)

These signs also indicate shock.

Training and Safety Measures

Severe Bleeding Cont'd

Internal Bleeding may not be easy to recognize.

A casualty can bleed to death without any blood being seen.

You should **suspect internal bleeding** when the following **mechanisms of injury** are apparent:

- The casualty has received a severe blow or a penetrating injury to the chest, neck, abdomen, or groin.
- There are major limb fractures or a hip or pelvic fracture.

Suspect internal bleeding also with a **certain medical conditions** e.g. Ulcers, Hemophilia (bleeders).

Characteristics of Internal Bleeding

Internal bleeding may remain hidden, or you may recognize it by one or more of the following **characteristic signs**:

Blood may be:

- Discharged from the ear canal, the nose, or it may appear as a bloodshot or black eye
- Red and frothy when coughed up
- Seen in vomitus either as bright red, or brown like coffee grains
- Appearing in the stools either as black and tarry or in its normal red colour
- Seen in the urine as a red or smoky brown colour

If bleeding is severe, **signs of shock** will be present.

Training and Safety Measures

Severe Bleeding Cont'd

First Aid Principles for Severe External Bleeding

Severe bleeding is an immediate threat to life. You must act quickly. If bleeding remains uncontrolled, shock and death may result.

Control severe bleeding by:

Direct pressure to the bleeding site

- Apply continuous pressure with your hand over a pad of dressings, or with the casualty's bare hand. You may have to bring the edges of the wound together before applying pressure if the wound is large and gaping
- Continue pressure by securing dressings with a firm bandage
- If dressings become blood soaked, do not remove them. Apply additional dressings and secure with fresh bandages

Elevation

- If injuries permit, raise an injured limb above the level of the heart. This will help reduce blood flow to the wound
- Elevate an injured limb as much as the injury and the casualty's comfort will permit

Rest

- Place the casualty at rest. The preferred position is lying with lower leg raised about 12 inches if injuries permit.

Steady and support the injured part and give ongoing casualty care while awaiting medical help.

Training and Safety Measures

Severe Bleeding Cont'd

Impaired Circulation

Some injuries and first aid procedures may result in reduced blood flow to the limbs:

- **Injuries at, or close to, a joint** may pinch an artery
- **A bandage** that is too tight
- **Injury to a major blood vessel**

To check for impaired circulation below the injury:

- **Compare the temperature and colour** of the injured limb below the injury (fingers or toes) to the uninjured limb before and after bandaging
- Any drop in temperature to the limb is probably caused by a reduced blood flow

Perform a nail bed test

- Press on a fingernail or toenail until it turns white
- Release pressure. Note how long it takes for the normal colour to return
- If it returns quickly, blood flow is good
- If it remains white or regains colour slowly, blood flow is impaired

To improve impaired circulation caused by too tight bandages, you should immediately:

- **Loosen the bandages.** If bleeding starts again, re-tie the bandages

If circulation is still impaired:

- **Obtain medical help** immediately

Continue checking circulation until hand over to medical help.

Training and Safety Measures

Severe Bleeding Cont'd

Care of Amputated Tissue

In many cases, amputated parts can be surgically reattached. Therefore, proper care of the amputated tissue is very important.

For a completely amputated part, you should:

- Wrap it in a clean, moist dressing, if possible; otherwise, a clean and dry dressing
- Place it in a clean, watertight bag and seal it
- Place it into another bag with a cold pack or crushed ice to keep it cool
- Label the bag with the casualty's name, date, and the time it was wrapped
- Take or send the part to medical help with the casualty.

For a partially amputated part, you should:

- Keep it as near as possible to its normal position
- Apply direct pressure on the wound with clean, dry dressings to stop bleeding
- Cover it with a moist dressing, if possible; otherwise a dry dressing
- Secure the dressings in place with a bandage
- Obtain medical help as soon as possible

Training and Safety Measures

Severe Bleeding Cont'd

First Aid for Internal Bleeding

The most important thing you as a first aider can do is:

- Recognize the history and mechanism of injury that might cause internal bleeding
- Recognize shock
- Give first aid for shock to lessen its effects
- **Obtain prompt medical help**

While waiting for medical help, make the casualty as comfortable as possible

- Place the conscious casualty at rest on his back with feet and legs elevated to about 12 inches if injuries permit
- Place the unconscious, breathing casualty into the recovery position
- Reassure the casualty
- Preserve body heat
- Give nothing by mouth
- Reassess airway, breathing, and circulation

Training and Safety Measures

Bone and Joint Injuries Upper Limbs and Muscle Strains

Fractures

A basic knowledge of the structure of the upper limbs will help you to give first aid for injuries to these parts of the body.

A **fracture** is any break or crack in a bone.

A fracture may be **closed** or **open**.

- **Closed fracture:** a fracture where the **skin is not broken**.
- **Open fracture:** a fracture where the **skin is broken** and **bone ends may protrude**

The cause/mechanism of injury for upper limb fractures may be:

- **Direct force**, e.g. a hard blow or kick
- **Indirect force**, e.g. the bone breaks at some distance from the point of impact
- **Twisting**, e.g. abnormal turning (rotation of shoulder or wrist joint)

Training and Safety Measures

Bone and Joint Injuries Upper Limbs and Muscle Strains Cont'd

Joint Injuries

A **joint** is formed where two or more bones come together. Joints allow for body movement. The bones of a joint are held in place by supporting tissue called **ligaments**.

The major joints of the upper limb are at the:

- Shoulder
- Elbow
- Wrist

Joint injuries happen when the bones and surrounding tissues are forced to move beyond their normal range.

Two common joint injuries are **sprains** and **dislocations**:

- **Sprain:** a complete or partial tearing or stretching of the ligaments around a joint
- **Dislocation:** a displacement of one or more bone ends at a joint so that their surfaces are no longer in proper contact

Training and Safety Measures

Bone and Joint Injuries **Upper Limbs and Muscle Strains Cont'd.**

General Signs and Symptoms

Some or all of the following signs and symptoms occur in most bone and joint injuries.

You may see:

- swelling and discoloration
- deformity and irregularity
- protruding bone ends
- inability to use the limb
- guarding and tensing of muscles around the injured area
- grating noise that can be heard as the bone ends rub together
- signs of shock, increasing with the severity of the injury

The casualty may complain of:

- pain made worse by movement
- tenderness on touching

Training and Safety Measures

Bone and Joint Injuries Upper Limbs and Muscle Strains Cont'd.

Principles of First Aid

The aims of first aid for bone and joint injuries are:

- to prevent further damage and reduce pain

The first aid principles to be followed are:

- perform a scene survey
- do a primary survey and give first aid for life-threatening injuries
- treat the injury at the incident site, if possible
- control bleeding from open wounds, if present
- if medical help is close by, steady and support the injured part in the position of greatest comfort
- apply a cold compress, a wrapped, cold pack or ice bag on any closed fracture or injury to reduce pain and control swelling (15 minutes on - 15 minutes off)
- apply gentle pressure/compression with a bandage to reduce swelling
- elevate the injured part, if possible
- monitor the casualty closely for any change in his condition
- reassure the casualty
- do not give anything to eat or drink
- give ongoing casualty care until hand over

NOTE:

- All fractures, dislocations and sprains should be immobilized before the casualty is moved, unless the casualty is in immediate danger
-
- Do not realign or apply traction to injuries that are near a joint. Immobilize in the position found.

Training and Safety Measures

Bone and Joint Injuries **Upper Limbs and Muscle Strains Cont'd.**

Muscle Strains

A strain is an injury that occurs when a muscle is stretched beyond its normal limits.

The cause/mechanism or injury for a strain may be:

- sudden pulling or twisting of a muscle
- poor body mechanics during lifting
- failure to condition muscles before physical activity
- repetitive, long-term overuse

A strain can be recognized by some or all of the following

You may see:

- swelling of muscle
- discoloration

The casualty may complain of:

- sudden sharp pain
- severe cramps
- stiffness

Signs and symptoms may not appear until later.

To give first aid, you should:

- place the casualty in the position of greatest comfort
- apply cold (15 minutes on - 15 minutes off) to help relax muscle spasm, reduce pain and prevent further tissue swelling
- refer to medical help

Repetitive Strain Injury(RSI) is a term that refers to a number of injuries, including back injuries, joint injuries, tennis elbow and bursitis. It is caused by long-term overuse of some joints, muscles and support tissue.

To give first aid:

- keep the casualty as comfortable as possible with
- rest, ice, compression and elevation - think RICE
- refer to medical help

Training and Safety Measures

Bone and Joint Injuries **Upper Limbs and Muscle Strains Cont'd.**

Muscle Strains Cont'd.

Prevention: Work breaks, exercises, relaxation techniques, observing proper posture and use of personal protective equipment (wrist/back supports) are the keys to preventing repetitive strain injury.

Training and Safety Measures

Bone and Joint Injuries Lower Limbs

Fractures

A basic knowledge of the structure of the lower limbs will help you to give first aid for injuries to these parts of the body.

A fracture is any break or crack in a bone.

A fracture may be closed or open:

- **Closed fracture:** a fracture where the skin is not broken
- **Open fracture:** a fracture where the skin is broken and bone ends may protrude

The cause/mechanism or injury for lower limb fractures may be:

- **direct force**, e.g. a powerful force, a hard blow, a kick or a fall, especially in the elderly
- **indirect force**, e.g. hip fracture caused by knees forcefully striking the dashboard of a car; fracture to the kneecap caused by powerful muscle contraction
- **twisting** e.g. abnormal turning (rotation) of knee or ankle - occurs in skiing or football incidents

Training and Safety Measures

Bone and Joint Injuries - Lower Limbs Cont'd.

Joint Injuries

A **joint** is formed where two or more bones come together. Joints allow for body movement. The bones of a joint are held in place by supporting tissue called ligaments

the major joints of the lower limb are at the:

- hip
- knee
- ankle

Joint injuries happen when the bones and surrounding tissues are forced to move beyond their normal range.

Two common joint injuries are **sprains** and **dislocations**:

- **sprain:** a complete or partial tearing or stretching of the ligaments around a joint
- **dislocation:** a displacement of one or more bone ends at a joint so that their surfaces are no longer in proper contact

General Signs and Symptoms

Some or all of the following signs and symptoms occur in most bone and joint injuries

You may see:

- swelling and discoloration
- deformity and irregularity
- protruding bone ends
- inability to use the limb
- guarding and tensing of muscles around the injured area
- grating noise that can be heard as the bone ends rub together
- signs of shock, increasing with severity of the injury

The casualty may complain of:

- pain made worse by movement
- tenderness on touching

Training and Safety Measures

Bone and Joint Injuries - Lower Limbs Cont'd.

Principles of First Aid

The aims of first aid for bone and joint injuries are:

- to prevent further damage and reduce pain

The first aid principles to be followed are:

- perform a scene survey
- do a primary survey and give first aid for life-threatening injuries
- treat the injury at the incident site
- control bleeding from open wounds, if present
- if medical help is close by, steady and support the injured part in the position of greatest comfort
- apply a cold compress, a wrapped, cold pack or ice bag on any closed fracture or injury to reduce pain and control swelling (15 minutes on - 15 minutes off)
- apply gentle pressure/compression with a bandage
- elevate the injured part, if possible
- monitor the casualty closely for any change in his condition
- reassure the casualty
- do not give anything to eat or drink
- give ongoing casualty care until hand over

NOTE:

all fractures, dislocations and sprains should be immobilized before the casualty is moved, unless the casualty is in immediate danger

if gentle traction is applied to the leg, traction must be maintained until the leg has been immobilized

do not realign or apply traction to injuries that are near the joint; immobilize in position found

Training and Safety Measures

Bone and Joint Injuries - Lower Limbs Cont'd.

Principles of Immobilization

Fractured bones and injured joints should be immobilized to prevent further injury and minimize pain.

If medical help is close by, you should:

- provide manual support to steady the injured limb until medical help arrives

If medical help is delayed or transport is required

Immobilize an injured part to keep it from moving by using:

- splints
- slings (for upper limbs)
- bandages

Splints may be commercially prepared or improvised. An uninjured body part can also be used as a splint, e.g. a leg, the side of the body

A good splint should be:

- rigid enough to support the injured limb
- long enough:
 - for a fracture between two joints - to extend beyond the joint above and the joint below the fracture site
 - for an injured joint - for the limb to be secured so the joint can't move
- wide enough and padded to be comfortable

When immobilization is required, follow these basic guidelines:

- don't do anything that causes more pain to the casualty
- immobilize the injured area in the position of greatest comfort
- when realignment of a limb is required, apply gentle traction and maintain gentle traction until immobilization is complete
- check distal circulation before and after immobilization

Training and Safety Measures

Animal/Human Bites

Animal and human bites that break the skin may cause serious infection.

If you suspect that the bite was caused by an animal infected with rabies, **act quickly and obtain medical help urgently.** The infection can be prevented by immediate immunization.

Protect yourself:

- wear gloves when giving first aid and when you must handle the infected animal
- scrub your hands thoroughly after these procedures

To give first aid:

- allow moderate bleeding to cleanse the wound
- control bleeding if it is severe
- wash the wound with an antiseptic soap or detergent
- apply a dressing and bandage
- transport or obtain medical help as soon as possible

Each animal/human bite that breaks the skin should be checked by medical help.

Training and Safety Measures

Snake Bite

Snake bites are not common in Canada. You can identify a poisonous snakebite by the following signs and symptoms:

You may see:

- two tiny holes in the skin
- swelling and discoloration
- chills and sweating
- vomiting
- breathing difficulty

The casualty may complain of:

- burning in the area of the bite, followed by
- severe pain about the wound
- chills
- nausea
- general weakness

First aid is required urgently:

- begin scene survey
- do a primary survey and give first aid for life-threatening conditions
- place the casualty at rest in a semi-sitting position
- calm and reassure the casualty
- steady and support the affected limb and keep it below heart level
- flush the bite area with soapy water
- apply a constricting band to slow the spread of the poison
- immobilize the limb and transport the casualty to medical help immediately
- monitor breathing closely

Training and Safety Measures

Insect Bites & Stings

In most persons, an insect bite or sting causes only some painful swelling with redness and itching. Bee and wasp stings, however, may cause severe allergic reactions in some people.

Allergic reactions are recognized by the following

You may see:

- Hive and swelling
- Vomiting
- Breathing difficulty

The casualty may complain of:

- Nausea
- Breathing difficulty

When these signs occur, obtain medical help urgently.

While awaiting medical help, give first aid as follows:

- Assist the person to take prescribed medication, if available
- If EpiPen auto injector or AnaKit are available, follow the casualty's instructions and the manufacturers suggestions
- Apply moderate constriction above the bite site, if the bite or sting is on an arm or a leg
- Keep the arm or leg below heart level
- Monitor breathing

To give first aid to the site of a bite or sting:

- Scrape the stinger and poisons sac carefully from the skin with the thin edge of a plastic card
Example: credit card

Do NOT squeeze stinger while removing it!

- Apply rubbing alcohol, or a weak ammonia solution, or a paste of baking soda and water
- If the sting is in the mouth, give the casualty a mouthwash of one teaspoon of baking soda to a glass of water, or ice to suck.
- If there is swelling in the mouth, and breathing difficulties, get immediate medical help. Monitor the casualty closely.
- Obtain medical help.

Training and Safety Measures

How to Apply a Constricting Band

To slow the spread of a poison:

- use a soft rubber tube, narrow belt or elastic bandage
- apply the band on the limb between the bite and the heart, 2 to 4 inches above the wound
- do not tie the band too tight you should be able to slip two fingers under the band
- if you see signs of impaired circulation, loosen the band

Precautions in giving first aid for a snakebite:

- do not apply a constricting band to a joint, head, neck or trunk of the body
- do not apply cold compresses or ice to the wound
- do not allow the casualty to walk
- do not give alcoholic beverages to the casualty
- do not attempt to suck the poison out of the wound with your mouth or cut the bite mark with a knife

Training and Safety Measures

Leeches and Ticks

Leeches (bloodsuckers) are found in swamps, ponds and stagnant water. They attach themselves to the human body by making a tiny hole in the skin. Forceful removal of leeches may cause injury to the skin and infection.

First aid for leech bites:

- **remove the leech by applying salt, a lighted match, turpentine or oil to its body**
- **do not pull or scrape it off the skin**
- **wash the area around the bite**
- **apply a weak solution of baking soda or ammonia to relieve irritation**

Ticks are found in forests and drop from leaves onto animals and humans. They bite through the skin and attach themselves. Infection from ticks may be harmful.

First aid for tick bites:

- **wear gloves**
- **grasp the tick with tweezers as close to the casualty's skin as possible**
- **pull the tick away from the skin with an even steady pull**
- **avoid squashing a tick during removal; infected blood may spurt on you**
- **clean the area around the bite with soap and water**
- **wash your hands**
- **keep the tick for identification**
- **obtain medical help**

MASTER LIST SAFETY AGENDA

LOGAN DRILLING GROUP

Safety Meeting Agenda:

- Opening remarks
- Review of accidents
- Review of Health & Safety Performance
- Review new Safe Work Practices
- Review of new Job Procedures
- Review of Company Policies
- Safety Performance (WCB Report)
- Review of Safety Incentive Program
- New Business
- Closing Remarks
- _____
- _____
- _____
- _____

Attendance: _____

SAFETY INSPECTION POLICY

**LOGAN DRILLING LIMITED
AND
LOGAN GEOTECH INC**

It is the policy of this Company to maintain a program of safety inspections at all company facilities and job sites. The purpose of this program is to control losses of human and material resources by identifying and correcting unsafe conditions on site faculty and/or unsafe machinery or tools and unsafe actions by employees.

A safety check list, for various working conditions shall be used as a basic guide when inspections are carried out.

Safety inspections are to be done on a scheduled basis, dated and reported in writing with comments on both favourable and unacceptable conditions (if any). Minimum frequency that formal inspections must be completed is monthly.

Safety Inspections Reports are to be submitted to Management with copy to the safety committee.

The manager is responsible for the overall operation of the safety inspection program. The implementation of the program will be coordinated with the safety committee.

** The information in our Safety Policy does not take precedence over the Occupations Health and Safety Act. All employees should be familiar with the Occupational Health and Safety Act.

[Handwritten Signature]
V.P Operations, Logan Drilling Group

January 3, 2013
Date

Near Miss Report

To be completed when an incident almost became an accident. To be completed by Job Foreman within two days of incident and forwarded to Gerald Wright ASAP.

Logan's Client & Location of Workplace: _____

Foreman's name: _____

Date & Time of Incident: _____

Who was involved in the incident: _____

What happened to cause the incident: _____

Did any person or factor outside Logan people cause or contribute to this incident:

Yes _____ No _____

If yes, explain: _____

What prevented this from becoming an accident: _____

Recommendations to prevent reoccurrence: _____

Date of Report: _____ Signature: _____

INVESTIGATION POLICY

LOGAN DRILLING LIMITED
AND
LOGAN GEOTECH INC

PURPOSE

To investigate incidents so the causes can be determined and corrective actions can be implemented to prevent recurrence.

POLICY

In this Company, the following types of incidents shall be fully investigated:

1. Accidents that result in injuries requiring medical aid;

2. Accidents that cause property damage or interrupt operation with potential loss exceeding \$500,00;

3. Incidents that have the potential to result in (1) or (2) above;

4. All incidents, by regulation, must be reported to Department of Labour, WCB, or other regulatory agencies.

RESPONSIBILITIES

1. All employees shall report all incidents to their immediate superior.

2. Supervisors shall conduct initial investigations and submit their reports to management promptly.

3. Management shall determine the need for and, if necessary, direct detailed investigations. They shall also determine causes, and recommend corrective action.

4. Management shall review all supervisors' reports, determine corrective action to be taken, and ensure that such action is implemented.

M. J. B. B. B.
V.P Operations, Logan Drilling Group

January 3, 2013
Date



**WORKERS'
COMPENSATION
BOARD OF NOVA SCOTIA**

WCB ACCIDENT REPORT

Thank you for choosing to use an electronic version of the new WCB Accident Report. This form was developed at the request of our stakeholders and in consultation with them.

REQUIREMENTS

The WCB Accident Report is provided electronically in Portable Document Format (PDF) which requires the use of Adobe Acrobat Reader to open. If you wish to use the PDF form but do not have Adobe Acrobat Reader, you may download it free of charge from our "Forms" folder, in our "Library," on our web site (www.wcb.ns.ca). You will require a printer.

The WCB is unable to accept WCB Accident Reports by email at this time due to confidentiality and security issues with the Internet.

PROCESS

The WCB is happy to provide you with the option to save the blank form to your computer, complete it online, print it and forward it to us by fax or mail, as usual. Alternatively, you may print this form, complete it by hand, and submit it to us by fax or mail, as usual.

Due to limitations with the PDF form, you will not be able to save the completed report, unless you have purchased the complete Adobe Acrobat program. Therefore, please review the information inserted into the report carefully before exiting the document, and keep a copy of the printed version for your files.

You may find it convenient to prepare labels with your contact information and Business Number, which are required at the top of the first page of the report. A label can be affixed to the printed version of your reports. This prevents you from having to re-enter the required information each time you complete a new report.

Alternatively, you may find it convenient to purchase a more complete version of the Adobe Acrobat program which will allow you to save the completed report (from www.adobe.com), or request labels from the WCB.

USING THE ELECTRONIC WCB ACCIDENT REPORT

For clarification of the information required for any question on the WCB Accident Report, please refer to your User's Guide, or:

Call (902) 491-8999 in Halifax
Call 1-800-870-3331 toll free in mainland Nova Scotia
Call (902) 563-2444 in Sydney
Call 1-800-880-0003 toll free in Cape Breton
Send an email to info@wcb.gov.ns.ca

PROCEED



Wireline Core Drilling - Geotechnical Drilling

LOGAN DRILLING LIMITED

PO Box 188, 37 Commo Rd., Stewiacke, NS B0N 2J0

Ph (902) 639-2311 Fx (902) 639-9010 email info@logandrillinggroup.com

EMERGENCY PREPAREDNESS

LIST OF EMERGENCY CONTRACTS UPDATED NOVEMBER, 2011

EMERGENCY RESPONSE	PHONE NUMBERS
FIRE – EMERGENCY	911
AMBULANCE	911
POISON CONTROL	1-800-565-8161
EMERGENCY MEASURE ORGANIZATION (24 HOURS)	902-424-5620
COMPANY RESPONSE	PHONE NUMBERS
STEVEN MUNDLE	902-483-2299
MARK BLOMME	902-890-7733
ROB MacINNIS	902-222-1920
NOVA SCOTIA GOVERNMENT AGENCIES	PHONE NUMBERS
DEPARTMENT OF LABOUR (24 HOURS)	1-888-315-0110 902-424-6730
ENVIRONMENTAL EMERGENCY	1-800-565-1633
FORESTRY – FOREST FIRE & GAME INFRACTIONS	1-800-565-2224
OTHER	PHONE NUMBERS
NOVA SCOTIA CONSTRUCTION SAFETY ASSOC.	1-800-971-3888 902-468-6696
NOVA SCOTIA POWER	1-800-428-6230
MARITIME TEL & TEL	902-421-5884
IRVING OIL	1-888-965-8800
AIRCRAFT AND MARINE DISTRESS	1-800-565-1582
LOCATION RESIDENTS (FOR EVACUATION)	911



EMERGENCY PLAN – WAREHOUSE / OFFICE

*IN THE EVENT OF AN EMERGENCY AT OUR WAREHOUSE /
OFFICE IN STEWIACKE YOU ARE TO DO THE FOLLOWING:*

IMMEDIATELY INFORM YOUR SUPERVISOR OR THE FRONT
OFFICE, WHO WILL CALL **911**.

ADMINISTER FIRST AID AS REQUIRED.

DO NOT LEAVE THE SITE UNTIL RELEASED BY YOUR
SUPERVISOR.

AFTER HOURS

CALL 911 – IDENTIFY YOURSELF

TELL THE OPERATOR WHAT IS GOING ON AND GIVE THEM
OUR CIVIC ADDRESS.

**37 COMMO ROAD
STEWIACKE**

DO NOT LEAVE THE SITE.

CONTACT YOU SUPERVISOR OR FOREMAN.

CONTRACT NUMBERS:

Office	1-800-565-2311	or	902-639-2311
Steven Mundle	902-483-2299		
Mark Bloome	902-890-7733	or	506-383-9131
Rob MacInnis	902-222-1920	or	902-479-2963



REPORT OF ACCIDENT OR OCCUPATIONAL DISEASE
RAPPORT SUR L'ACCIDENT OU LA MALADIE PROFESSIONNELLE

Claim Number / N° de réclamation

THIS REPORT MUST BE SUBMITTED WITHIN THREE (3) DAYS AFTER THE ACCIDENT.
CE RAPPORT DOIT ÊTRE ENVOYÉ À TRAVAIL SÉCURITAIRE NB DANS UN DÉLAI DE TROIS (3) JOURS APRÈS UN ACCIDENT.

Please FAX this form TOLL-FREE IMMEDIATELY to:
Veuillez TÉLÉCOPIER ce formulaire IMMÉDIATEMENT, SANS FRAIS au :

1 888 629-4722

Last Name / Nom de famille, Given Name / Prénom(s), Sex / Sexe, Street Address or PO Box / Numéro et rue ou case postale, Apt # / N° d'app., City/Town / Ville / Village, Postal Code / Code postal, Telephone No. / N° de téléphone, Date of Birth / Date de naissance, Social Insurance No. / N° d'assurance sociale, Medicare No. / N° d'assurance-maladie, Occupation / Profession, Company Name / Nom de l'entreprise, Contact Person / Personne-ressource, Employer No. / N° de l'employeur, Operation No. / N° d'activité

PART I

PARTIE I

1. Date of accident / Date de l'accident, Time / Heure, Exposure dates for occupational disease or injury over time / Dates d'exposition provoquant la maladie professionnelle ou la blessure, 2. Date reported to employer / Date que l'accident a été signalé à l'employeur, 3. To whom reported / Nom de la personne à qui l'accident a été signalé, Position / Poste occupé, 4. Part(s) of body injured / Partie(s) atteinte(s) du corps, 5. Address or location of accident / Adresse ou lieu de l'accident, 6. Describe the accident in as much detail as possible / Décrivez en détail l'accident, 7. Name(s) of witness(es) / Nom(s) du (des) témoin(s), 8. Name of first doctor seen / Nom du premier médecin consulté, Facility / Établissement de soins, 9. Has the worker missed any time from work beyond the day of accident due to this injury? / Le travailleur s'est-il absenté du travail après le jour de l'accident en raison de cette blessure?

If "Yes", complete parts II and III. If "No", complete part III only.
Si vous avez répondu « oui », remplissez les parties II et III. Si vous avez répondu « non », remplissez la partie III seulement.

PART II
To be completed by employer

PARTIE II
À remplir par l'employeur

Claim Number / N° de réclamation

10. Date last worked _____, 20____ Time am pm Number of hours paid for that day _____
Date de l'arrêt de travail _____, 20____ Heure _____ Nombre d'heures payées pour cette journée _____
11. Has the worker returned to work? Yes / Oui No / Non If yes, when? _____, 20____
Le travailleur a-t-il repris le travail? Si vous avez répondu « oui », quand? _____
If only temporarily, give dates From To
Si c'était temporaire, indiquez les dates. Du _____, 20____ Au _____, 20____
12. Date of hire _____
Date d'entrée en service _____
13. Is the worker a subcontractor? Yes / Oui No / Non An owner/operator? Yes / Oui No / Non A piece worker? Yes / Oui No / Non
Le travailleur est-il un sous-traitant? Un propriétaire / opérateur? Payé à la pièce?
14. Worker's type of employment Permanent full-time Permanent part-time Seasonal Casual
Type d'emploi du travailleur Permanent à temps plein Permanent à temps partiel Saisonnier Occasionnel
If seasonal or casual, date commenced Expected date of termination
Si le poste est saisonnier ou occasionnel, date du début de l'emploi _____, 20____ Date prévue de la cessation _____, 20____
15. Gross earnings for the 12 months immediately prior to work stoppage
Gains bruts des 12 mois précédant immédiatement l'arrêt de travail \$ _____
OR / OU
If employed less than 12 months, gross earnings for period prior to work stoppage
Si le travailleur est employé moins de 12 mois, gains bruts pour la période précédant l'arrêt de travail \$ _____ From _____ To _____
Du _____ Au _____
16. a) Gross weekly earnings (including overtime). If varies, provide average of last 4 weeks
Gains hebdomadaires bruts (y compris les heures supplémentaires). S'ils varient, indiquez la moyenne des 4 dernières semaines. \$ _____ Hourly rate \$ _____
Taux horaire \$ _____
b) Average number of hours per day _____ Average number of days per week _____
Moyenne du nombre d'heures par jour Moyenne du nombre de jours par semaine
17. Does the Worker have Married Exemption on their TD1? Yes / Oui No / Non
Le travailleur a-t-il l'exemption de marié sur son formulaire TD1?
18. Will the employer be issuing any payment to the worker (e.g. vac, stat, sick)? No Yes (Specify)
L'employeur émettra-t-il des paiements au travailleur (par exemple, vacances, jours fériés, congés de maladie)? Non Oui (Précisez) _____

PART III

PARTIE III

WORKER / TRAVAILLEUR

I declare that I have read the DECLARATION AND RELEASE outlined on the reverse side of this form and that all the information provided by me is true and correct to the best of my knowledge.
Je déclare que j'ai lu la DÉCLARATION ET RENONCIATION qui figure au verso de ce formulaire et que tous les renseignements que j'ai fournis sont, à ma connaissance, véridiques et exacts.

Preferred language English French
Langue préférée Anglais Français

Signature of Worker/Dependant _____ Date _____, 20____
Signature du travailleur ou d'une personne à sa charge

EMPLOYER / EMPLOYEUR

I declare that all the information provided by me is true and correct to the best of my knowledge.
Je déclare que tous les renseignements que j'ai fournis sont, à ma connaissance, véridiques et exacts.

Preferred language English French
Langue préférée Anglais Français

I have objections to this claim being allowed and I have outlined my objections on a separate enclosure.
Je m'oppose à cette réclamation et j'ai résumé mes objections sur une pièce jointe. Yes / Oui No / Non

Signature of Employer/Representative _____ Date _____, 20____
Signature de l'employeur ou de son représentant

Please FAX this form TOLL-FREE to: 1 888 629-4722

Or mail to: WORKSAFENB
PO Box 160
Saint John, NB E2L 3X9

Veuillez TÉLÉCOPIER ce formulaire SANS FRAIS au 1 888 629-4722.

Ou l'envoyer à l'adresse suivante : TRAVAIL SÉCURITAIRE NB
Case postale 160
Saint John, NB E2L 3X9

If you have any questions or require assistance in completing this form, please telephone toll-free: 1 800 222-9775
Si vous avez des questions ou avez besoin d'aide pour remplir ce formulaire, veuillez composer sans frais le :

OBJECTIONS TO THE CLAIM OBJECTIONS À LA RÉCLAMATION

This form must be signed by both Employer and Worker. If an employer wishes to object to an accident, *Form 67* must still be completed, signed and returned to WorkSafeNB. Objections may be filed at the same time as the form, but on a separate enclosure. If a worker is not in agreement with the information provided by the employer, an objection may be filed on a separate enclosure. Note: A separate *Form 67* may also be used by the worker or employer to convey any disagreement with the accident report.

L'employeur et le travailleur doivent signer ce formulaire. Si un employeur désire s'opposer à un accident, le *Formulaire 67* doit quand même être rempli, signé et retourné à Travail sécuritaire NB. Les objections peuvent être envoyées avec le formulaire, mais sur une pièce jointe. Si un travailleur n'est pas d'accord avec les renseignements fournis par l'employeur, il peut envoyer une objection sur une pièce jointe. Remarque : Le travailleur ou l'employeur peut également utiliser un autre *Formulaire 67* pour communiquer tout désaccord au sujet du rapport sur l'accident.

DECLARATION AND RELEASE DÉCLARATION ET RENONCIATION

I certify that the information given on this form is true and correct. I understand that I must notify WorkSafeNB immediately of any work-related income received while on compensation, regardless of the source, and of a return to work or any other change in circumstances that may affect this claim.

Je certifie que les renseignements fournis dans ce formulaire sont véridiques et exacts. Je comprends que je dois aviser immédiatement Travail sécuritaire NB de tout revenu lié à mon emploi touché pendant la période d'indemnisation, quelle qu'en soit la source, d'une reprise du travail ou de tout autre changement de circonstances susceptibles de modifier cette réclamation.

I consent and authorize WorkSafeNB to obtain any pertinent medical records of examination or treatment as well as any information related to income for the administration of this claim. Further, I consent and authorize WorkSafeNB to release or disclose information from this claim, including medical and financial information, as authorized by legislation and in accordance with the *Protection of Personal Information Act* and the *Personal Information Protection and Electronic Documents Act*. I also consent to and agree that any physician or other medical service provider may provide any medical information related to my workers' compensation claim to WorkSafeNB, and may provide any information related to my ability to return to work to WorkSafeNB or my employer.

J'autorise Travail sécuritaire NB à obtenir tous les renseignements médicaux pertinents ainsi que tous les renseignements liés à mon revenu aux fins de l'administration de cette réclamation. J'autorise également Travail sécuritaire NB à divulguer des renseignements relatifs à cette réclamation, y compris des renseignements médicaux et financiers, comme la loi le prévoit et conformément à la *Loi sur la protection des renseignements personnels* et à la *Loi sur la protection des renseignements personnels et les documents électroniques*. Je consens également à ce que tout médecin ou autre fournisseur de services médicaux transmette des renseignements médicaux concernant ma réclamation d'indemnisation à Travail sécuritaire NB ainsi que des renseignements concernant ma capacité de reprendre le travail à Travail sécuritaire NB ou à mon employeur.

DUTY TO ACCOMMODATE OBLIGATION DE PROCÉDER À UNE ADAPTATION RAISONNABLE

WorkSafeNB wishes to make you aware that employers have a legal obligation to make every reasonable effort, short of undue hardship, to accommodate an employee with a temporary or permanent disability resulting from a work-related accident. These obligations are both statutory and constitutional and must be complied with.

Travail sécuritaire NB désire vous rappeler que les employeurs sont légalement tenus de faire tous les efforts raisonnables pour procéder à une adaptation raisonnable d'un employé atteint d'une invalidité temporaire ou permanente par suite d'un accident du travail, sauf si cela n'entraînerait des difficultés indues. Ces obligations réglementaires et constitutionnelles doivent être respectées.

Injured workers and unions also have a responsibility to co-operate as well. Duty to accommodate encompasses not only the duties of the pre-accident job but also to possible modifications of the job to suit the particular needs of the injured worker.

Les travailleurs blessés et les syndicats ont également la responsabilité de collaborer et de participer au processus. L'obligation de procéder à une adaptation raisonnable s'applique non seulement aux fonctions du poste que l'employé occupait avant son accident, mais également aux modifications possibles du poste afin de répondre aux besoins particuliers du travailleur blessé.

For further information, please contact WorkSafeNB.

Pour obtenir de plus amples renseignements, veuillez communiquer avec Travail sécuritaire NB.

If the form has been faxed, it is not necessary to mail the original.
Si le formulaire a été télécopié, il n'est pas nécessaire d'envoyer l'original.

WHSCC <small>WORKPLACE HEALTH AND SAFETY COMMISSION</small>	Phone: (709) 778-1000 Toll free: 1-800-563-9000 Fax: (709) 778-1302 Toll free fax: 1-800-276-5257	146 - 146 Forest Rd. P.O. Box 9000 St. John's, NL A1A 3B8	Employer's Report of Injury	 7
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This information is collected under the authority of the *Workplace Health, Safety and Compensation Act* to determine entitlement to benefits.

SECTION A - GENERAL INFORMATION

WHSCC firm # _____

EMPLOYER	1 Trade name _____		Legal name <i>If different from trade name</i> _____								
	Mailing address _____		Street address <i># different</i> _____								
	City / Town _____		City / Town _____								
Province _____		Postal code _____		Site name _____							
Site # _____		Site location _____									
WORKER	2 Contacts		Name		Telephone		Fax		E-mail		
	For wage information										
	For details of injury										
	For disability, return to work										
3 Worker's last name _____			First name _____			Initial _____		Date of birth <small>yyyy/mm/dd</small> _____		Gender <input type="checkbox"/> M <input type="checkbox"/> F	
Mailing address _____						City / Town _____		Province _____		Postal code _____	
Home telephone _____				Work telephone _____				Social Insurance Number _____			
4 Do you regularly employ 20 or more workers?		<input type="checkbox"/> Yes <input type="checkbox"/> No		Is the worker an owner / operator of this business?		<input type="checkbox"/> Yes <input type="checkbox"/> No		How long has this worker been in your employ?		<input type="checkbox"/> less than 12 months <input type="checkbox"/> more than 12 months	
Is the worker employed as part of a HRSDC Program?		<input type="checkbox"/> Yes <input type="checkbox"/> No		Employment status:		<input type="checkbox"/> Full-time <input type="checkbox"/> Contractual <input type="checkbox"/> Casual <input type="checkbox"/> Part-time <input type="checkbox"/> Seasonal		What date was the worker initially hired? <small>yyyy/mm/dd</small> _____			
5 What occupation was the worker performing at the time of the injury / incident?						What are the lifting requirements of this occupation?					
						<input type="checkbox"/> < 11 lbs <input type="checkbox"/> 11-21 lbs <input type="checkbox"/> 22-44 lbs <input type="checkbox"/> > 44 lbs					

SECTION B - INJURY / INCIDENT INFORMATION

6 Date / time of injury / incident <small>yyyy/mm/dd</small> _____		<small>hh:mm</small> _____ <input type="checkbox"/> AM <input type="checkbox"/> PM		Did this injury develop over time without a specific injury / incident? <input type="checkbox"/> Yes <input type="checkbox"/> No		Date/time injury/incident was reported to employer: <small>yyyy/mm/dd</small> _____			
<small>hh:mm</small> _____		<input type="checkbox"/> AM <input type="checkbox"/> PM				<small>hh:mm</small> _____ <input type="checkbox"/> AM <input type="checkbox"/> PM			
7 Did this injury / incident occur outside Newfoundland and Labrador? <input type="checkbox"/> Yes <input type="checkbox"/> No									
8 To whom was the injury / incident first reported?		Last name _____		First name _____		Occupation _____		Telephone _____	
9 What part(s) of the worker's body was affected?				Did the worker seek medical attention? <input type="checkbox"/> Yes <input type="checkbox"/> No		Did the worker require hospitalization for more than two days? <input type="checkbox"/> Yes <input type="checkbox"/> No			
10 Was the work / activity being done for the purpose of the employer's business? <input type="checkbox"/> Yes <input type="checkbox"/> No				Did the injury / incident happen on the employer's property or worksite? <input type="checkbox"/> Yes <input type="checkbox"/> No					
If no, what was the purpose? _____				Specify where: _____					
11 Describe your understanding of how the injury / incident occurred or condition developed: _____									
12 Was the injury / incident caused by anything listed at right? <input type="checkbox"/> Yes <input type="checkbox"/> No									
<i>If yes, tick applicable:</i>		<input type="checkbox"/> Motor vehicle accident (e.g., forklift, car, truck, ATV)		<input type="checkbox"/> Malfunction of product / equipment		<input type="checkbox"/> Other: _____			
<input type="checkbox"/> Person(s) not employed by the employer		<input type="checkbox"/> Slip and fall							
If yes to Question 12, was someone else involved? <input type="checkbox"/> Yes <i>If yes, please specify name and contact information, if available.</i> <input type="checkbox"/> No									
Last name _____		First name _____		Address _____		Work telephone _____		Home telephone _____	

SECTION C - INJURY / INCIDENT NOTIFICATION

13 Has your occupational health and safety committee and / or representative / designate been notified of the incident / condition? <input type="checkbox"/> Yes <input type="checkbox"/> No	
14 Do you have any objections to this claim? <input type="checkbox"/> Yes <input type="checkbox"/> No	
<i>If yes, please use an additional sheet to explain your objections. Further to Section 63 of the WHSC Act, you must provide a copy of your objections to the Commission within 10 days of the claim being reported to you. Also, you must provide the worker with a copy of your objections.</i>	

SECTION D - RETURN-TO-WORK INFORMATION

Worker's name _____ Social Insurance Number _____

15 Did the worker stop working? Yes No

When? AM PM
 yyyy/mm/dd hh:mm

Has the worker since returned to work? Yes No

When? _____
 Has the worker been offered alternate / modified duties? Yes No

What is the worker's current return-to-work status?

- Returned to pre-injury job with no changes
- Returned to pre-injury job with duties only changed
- Returned to pre-injury job with hours only changed
- Returned to pre-injury job with duties and hours changed
- Returned to work in a different job to accommodate injury
- Other accommodations specify _____

16 Has an early and safe return-to-work (ESRTW) plan been completed? Yes No *Attach plan or forward within five days*

SECTION E - EARNINGS INFORMATION *Complete only if claim involves lost-time / ESRTW greater than the day of injury.*

17 If the worker has not returned to work in any capacity, are you continuing to pay the worker directly during the lost-time period? Yes No

The employer must pay worker for day of injury.

Provide date worker stopped receiving wages: yyyy/mm/dd _____

Are you paying 80% of net? Yes No
The employer cannot pay the worker an amount in excess of compensation entitlement.

18 Showing separately for each week or pay period, indicate the worker's gross wages for the four pay periods before lost-time or ESRTW:
include bonuses, overtime, and periods without pay

	Period from			To			Wages		Lost-time		
	yyyy	mm	dd	yyyy	mm	dd	\$	¢	Holidays without pay	Sickness without pay	Lack of work
1.									Days	Days	Days
2.									Days	Days	Days
3.									Days	Days	Days
4.									Days	Days	Days

19 Worker's regular hourly rate: _____

Next pay day: yyyy/mm/dd _____

Frequency of pay: Weekly Bi-weekly Monthly Semi-monthly

20 Indicate on this 14-day chart the hours per day the worker would work:

	Sun	Mon	Tue	Wed	Thur	Fri	Sat
1. Week 1							
2. Week 2							

If the worker is a shift worker, how many shifts did they lose as a result of the injury / incident? _____

SECTION F - FISHER'S INFORMATION *To be completed by master, owner or part owner of a fishing vessel.*

21 Vessel name _____ Vessel length (feet) _____ Is the worker an owner or part owner of the vessel? Yes No

22 Master's name _____ Master's telephone _____ Master's mailing address _____ City/Town _____ Province _____ Postal code _____

23 Are the worker's earnings based on a share of the catch? Yes *If yes, describe the worker's share arrangement: _____* No

Fish buyer's information <i>If you need more space, please use an additional sheet.</i>				Gross sales	Start of fishing period yyyy/mm/dd	End of fishing period yyyy/mm/dd
Name	Telephone	Fax				
1.						
2.						
3.						

SECTION G - INFORMATION ACCESS AUTHORIZATION

Attach pay stubs or other verification from the fish buyer, if available.

24 Do you authorize another individual outside your organization or company to act on your behalf and access employer information regarding this claim? Yes No *This authorization will remain in effect until you notify the Commission of a change using Form 13.*

Last name	First name	Address	Organization if applicable	Telephone

SECTION H - SIGNATURE, CONSENT AND DECLARATION

25 I declare this form to be complete and correct. I understand that giving false information or omitting relevant information is a serious offence.

Name please print	Position	Signature	Telephone	Date yyyy/mm/dd

SECTION I - CO-OPERATION AND OBLIGATION

This form must be filed within three days of the injury • Late and incomplete reports may result in a fine • All employers and workers must co-operate in early and safe return to work • A re-employment obligation may exist if there are 20 or more workers in your employment and if you continuously employed the injured worker for more than one year • The Occupational Health and Safety Act requires that all incidents resulting in serious injury be reported to the Occupational Health and Safety Branch at (709) 729-4444.

WHSCC USE ONLY

If attaching additional information, put the worker's first name, last name and Social Insurance Number at the top of each sheet.



Phone: (709) 778-1000
Toll free: 1-800-563-9000
Fax: (709) 778-1302
Toll free fax: 1-800-276-5257

Instructions for Completing Employer's Report of Injury (Form 7)

146 - 148 Forest Rd.
P.O. Box 9000
St. John's, NL
A1A 3B8

Use this form when:

- Your employee has a work-related injury / illness or recurring work-related injury / illness that results in any of the following:
 - medical attention;
 - loss of earnings; and / or
 - lost-time from work.

This includes injuries or illnesses that occurred over time as well as those caused by a single event.

- If you are a partner, proprietor or independent operator (also referred to as owner/operator on this form), you do not need to complete this form. Instead, you should complete a form 6 – worker's report of injury. Please note that coverage will be extended only when optional personal coverage has been purchased from the Commission.

Points to remember:

- Complete and accurate information is important so as not to delay processing the claim.
- If you have additional information, attach additional pages noting the worker's name and SIN on each page.
- As per the *Workplace Health, Safety and Compensation Act*, the form 7 must be forwarded to the Commission within three days of the injury.

Section A General Information

How long has this worker been in your employ?

- Workers hired for one year or more before the injury are considered continuously employed unless the year was interrupted by a work cessation that ended the employment relationship. For seasonal workers, periods of unemployment are not considered work cessation. For example, if you employed the worker for three years except for a seasonal period of five months per year, this worker is considered to be in your employ for more than 12 months, even if the months are not consecutive.

What date was the worker initially hired?

- This refers to the date the worker became your employee. If the worker has been hired in the past as a seasonal or temporary worker, record the most recent hire date.

What occupation was the worker performing at the time of the work injury / incident?

- In some cases, this may not be the worker's regular job. For example, if the worker's normal job is a welder, but he/she was temporarily working as a shipper / receiver when injured, shipper / receiver would be the occupation at the time of the injury/incident.

Section B – Injury / Incident Information

Did this injury develop over time without a specific injury / incident?

- If the worker is unable to recall when the injury / incident occurred or pain started, and there is no identifiable event, the injury may have developed over time. The worker may report discomfort performing their normal duties (e.g., full-time cashier continually scanning products with the left arm and begins to experience pain in the left elbow). However, if the worker is able to say when their symptoms began, note this date on the form.

Did the injury / incident happen on the employer's property or worksite?

- Detailed information as to where the injury / incident happened is important to process the claim. For example, if on your premises, where did it occur? The shipping area, paint shop or warehouse? If not, where did it happen? For example, you operate a cleaning company and your employee was working at a retail store when the injury happened. In this case, note the name and location of the store.

Describe your understanding of how the injury / incident occurred or condition developed.

- Detailed information about how the injury / incident happened and what the worker was doing when it occurred is important to process the claim. This may include information such as: sizes, weights and names of objects involved; a description of any machinery, tools or vehicles used at the time of the injury/incident; any environmental conditions (work area, temperature, noise, chemicals, gas, fumes); if another person was involved; or any information you think is important.

For example: "Bob was moving boxes in the storage room. He lifted a 40-pound box from the floor to put on a shelf. He twisted to the right while lifting, and hurt his upper back."

- If the condition developed over time, provide a description of the worker's duties. Explain how often he / she performs a particular task; the sizes and weights of objects involved; how long he / she has been doing this work; if there have been any recent changes to the schedule and / or tools or products he / she uses.

Additional information on access, release and protection of your information by the Commission can be found in Policy GP-01: "Information Protection and Access," available at www.whscc.nl.ca or by calling The Commission's Access to Information and Protection for Privacy (ATIPP) Co-ordinator at 1-800-563-9000.



Phone: (709) 778-1000
Toll free: 1-800-563-9000
Fax: (709) 778-1302
Toll free fax: 1-800-276-5257

Additional Employer Information

146 - 148 Forest Rd.
P.O. Box 9000
St. John's, NL
A1A 3B8

Early and safe return-to-work

The goal of early and safe return to work is to safely return the worker to employment or employability that is comparable to the pre-injury level as soon as possible. With effective return-to-work planning, the human and financial costs associated with a workplace injury are significantly reduced.

Employers and workers are obligated to co-operate in the worker's early and safe return to suitable and available employment with the injury employer. This may involve modified work, ease back to regular work, transfer to an alternate job, or trial work to assess the worker's capability.

Re-employment obligation

Employers who have a legislative duty to modify the workplace in order to accommodate the injured worker's return to the workplace are obligated to do so to the extent that it does not cause undue hardship for the employer. This may include work site/job modification or on-the-job skills development for alternate work.

Finding the right duties

When identifying early and safe return-to-work opportunities with your employee, the first priority should be to maintain the connection to the pre-injury job at some level. Where this is not possible, it is important to work with your employee to identify suitable and available employment that is within your employee's physical capabilities. If you and your employee require any assistance during this process, you should contact your case manager.

Documenting a plan

Once you and your employee have identified suitable job duties that are in keeping with your employee's abilities, you will complete an early and safe return-to-work plan that outlines the agreed upon schedule and progression of duties. If any change occurs to this plan, you must immediately notify your case manager.

Your early and safe return-to-work plan should also outline the scheduled hours and the hourly wage earned. This information will then be used to determine if there is any entitlement to compensation during your return-to-work process.

Employers' role in occupational health and safety

- Ensure the health, safety and welfare of workers and those not in your employ;
- Maintain a healthy and safe workplace, systems, equipment, and tools;
- Provide operating instruction for the use of devices/equipment;
- Ensure workers are aware of hazards;
- Establish an OH&S committee/worker health and safety representative/workplace health and safety designate as required and consult/co-operate with them;
- Respond in writing to recommendations of the OH&S committee / worker health and safety representative / workplace health and safety designate and provide them with periodic written updates on implementation;
- Make arrangements for and consult with the OH&S committee / worker health and safety representative / workplace health and safety designate during workplace inspections;
- Co-operate with anyone exercising a duty imposed under OH&S legislation;
- Ensure safety clothing/equipment/devices are used;
- Ensure safety procedures are followed at all times; and
- Notify the Assistant Deputy Minister responsible for OH&S in the provincial government of a workplace accident that results in, or has the potential to result in, a serious injury or fatality.



Phone: (709) 776-1000
 Toll free: 1-800-563-9000
 Fax: (709) 776-1302
 Toll free fax: 1-800-276-5267

146 - 148 Forest Rd.
 P.O. Box 9000
 St. John's, NL
 A1A 3B8

Worker's Report of Injury



6

This information is collected under the authority of the *Workplace Health, Safety and Compensation Act* to determine entitlement to benefits and manage your claim.

SECTION A - GENERAL INFORMATION

WORKER	1	Last name	First name	Initial	Date of birth yyyy/mm/dd	Gender <input type="checkbox"/> M <input type="checkbox"/> F
	Mailing address		City / Town		Province	Postal code
	Home telephone	Work telephone	Social Insurance Number	MCP		
EMPLOYER	2	Occupation	Are you the owner / operator of this business? <input type="checkbox"/> Yes <input type="checkbox"/> No	Were you employed as part of a HRSDC program? <input type="checkbox"/> Yes <input type="checkbox"/> No		
	3	Employer				Telephone
	Mailing address		City / Town	Street address <i>if different</i>		City / Town
Province		Postal code	Supervisor's name		Supervisor's telephone	

SECTION B - INJURY / INCIDENT INFORMATION

4	Date / time of injury / incident yyyy/mm/dd hh:mm	<input type="checkbox"/> AM <input type="checkbox"/> PM	Did this injury develop over time without a specific injury / incident? <input type="checkbox"/> Yes <input type="checkbox"/> No	Date / time injury / incident was reported to employer: yyyy/mm/dd hh:mm		<input type="checkbox"/> AM <input type="checkbox"/> PM
5	Did this injury / incident occur outside Newfoundland and Labrador? <input type="checkbox"/> Yes <input type="checkbox"/> No					
6	To whom was the injury / incident first reported?	Last name	First name	Occupation	Telephone	
7	What part(s) of your body was affected? <i>Indicate right, centre or left, if applicable.</i>					
8	How did the injury / incident occur or the condition develop?					
9	Did the injury / incident happen on the employer's property or worksite? <input type="checkbox"/> Yes <input type="checkbox"/> No				Specify where:	
10	Were there any witnesses to this injury / incident? <input type="checkbox"/> Yes <i>If yes, please specify name and contact information, if available.</i> <input type="checkbox"/> No					
	Last name	First name	Address	Work telephone	Home telephone	
1.						
2.						
11	Was the injury / incident caused by anything listed at right? <input type="checkbox"/> Yes <input type="checkbox"/> No	<i>If yes, tick applicable:</i>	<input type="checkbox"/> Motor vehicle accident <i>(e.g., forklift, car, truck, ATV)</i>	<input type="checkbox"/> Malfunction of product / equipment	<input type="checkbox"/> Other: _____	
			<input type="checkbox"/> Person(s) not employed by your employer	<input type="checkbox"/> Slip and fall		
	If yes to Question 11, was someone else involved? <input type="checkbox"/> Yes <i>If yes, please specify name and contact information, if available.</i> <input type="checkbox"/> No					
	Last name	First name	Address	Work telephone	Home telephone	
1.						
2.						

SECTION C - MEDICAL INFORMATION

12	Did you seek medical attention? <input type="checkbox"/> Yes <input type="checkbox"/> No	Date of visit yyyy/mm/dd	Were you seen in emergency? <input type="checkbox"/> Yes <input type="checkbox"/> No	Did you require hospitalization for more than two days? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		If yes, which hospital? _____			
13	Name the health care person you saw during this first visit:	Last name	First name	Address <i>if known</i>	
14	Name your family physician:	Last name	First name	Address <i>if known</i>	
15	Have you experienced similar problems in the past? <input type="checkbox"/> Yes <i>If yes, explain in chart below. If related to a previous claim, record the number.</i> <input type="checkbox"/> No				
	Similar problems	Year	Part of body	Location <i>if applicable</i> <input type="checkbox"/> Right <input type="checkbox"/> Centre <input type="checkbox"/> Left	WHSCC claim number
1.				<input type="checkbox"/> Right <input type="checkbox"/> Centre <input type="checkbox"/> Left	
2.				<input type="checkbox"/> Right <input type="checkbox"/> Centre <input type="checkbox"/> Left	
3.				<input type="checkbox"/> Right <input type="checkbox"/> Centre <input type="checkbox"/> Left	



SECTION D - RETURN-TO-WORK INFORMATION

16 Did you stop working beyond the day of the injury? <input type="checkbox"/> No <input type="checkbox"/> Yes		Worker's name _____ Social Insurance Number _____
Were your work duties and / or hours modified or changed? <input type="checkbox"/> Yes <input type="checkbox"/> No		When did you stop working beyond the day of the injury? yyyy/mm/dd hh:mm <input type="checkbox"/> AM <input type="checkbox"/> PM
		Have you since returned to work? <input type="checkbox"/> No <input type="checkbox"/> Yes When? yyyy/mm/dd
		Have you been offered or participated in alternate / modified duties? <input type="checkbox"/> Yes <input type="checkbox"/> No

SECTION E - EARNINGS INFORMATION

Complete only if claim involves lost time / early safe return to work greater than the day of injury.

17 At the time of your injury / incident, were you working in a second job? <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, have you lost time / wages from the second job as a result of the injury / incident? <input type="checkbox"/> Yes <input type="checkbox"/> No
18 Are you receiving other benefits in relation to this injury / incident? <input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is it: <input type="checkbox"/> Short-term or long-term disability insurance benefits <input type="checkbox"/> Canada Pension Plan <input type="checkbox"/> WHSCC benefits <input type="checkbox"/> Other: _____
19 At the time of your injury, were you receiving EI benefits? <input type="checkbox"/> Yes <input type="checkbox"/> No	
20 Indicate the personal income tax credits you are claiming: <input type="checkbox"/> a. Basic personal amount <input type="checkbox"/> b. Full equivalent to spouse amount (If not full amount, then d. applies) <input type="checkbox"/> c. Number of children under age 18 you are claiming _____ <input type="checkbox"/> d. Other (complete a new TD1 and TD1NL available from Canada Revenue Agency at www.cra.gc.ca). <i>If nothing is indicated above, you will be assumed as (a) basic personal amount.</i>	

SECTION F - FISHER'S INFORMATION To be completed by workers on a fishing vessel.

21 Vessel name _____	Vessel length (feet) _____	Are you an owner or part owner of the vessel? <input type="checkbox"/> Yes <input type="checkbox"/> No																																
22 Master's name _____	Master's telephone _____	Master's mailing address _____ City/Town _____ Province _____ Postal code _____																																
23 Are your earnings based on a share of the catch? <input type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes, describe your share arrangement: _____</i>																																		
<table border="1"> <thead> <tr> <th colspan="4">Fish buyer's Information <i>If you need more space, please use an additional sheet.</i></th> <th rowspan="2">Gross sales</th> <th rowspan="2">Start of fishing period yyyy/mm/dd</th> <th rowspan="2">End of fishing period yyyy/mm/dd</th> </tr> <tr> <th>Name</th> <th>Telephone</th> <th>Fax</th> <th></th> </tr> </thead> <tbody> <tr> <td>1. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>2. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>			Fish buyer's Information <i>If you need more space, please use an additional sheet.</i>				Gross sales	Start of fishing period yyyy/mm/dd	End of fishing period yyyy/mm/dd	Name	Telephone	Fax		1. _____	_____	_____	_____	_____	_____	_____	2. _____	_____	_____	_____	_____	_____	_____	3. _____	_____	_____	_____	_____	_____	_____
Fish buyer's Information <i>If you need more space, please use an additional sheet.</i>				Gross sales	Start of fishing period yyyy/mm/dd	End of fishing period yyyy/mm/dd																												
Name	Telephone	Fax																																
1. _____	_____	_____	_____	_____	_____	_____																												
2. _____	_____	_____	_____	_____	_____	_____																												
3. _____	_____	_____	_____	_____	_____	_____																												

Attach pay stubs or other verification from the fish buyer, if available.

SECTION G - INFORMATION ACCESS AUTHORIZATION

24 Do you authorize another individual (e.g., union representative, MHA) to act on your behalf and access your information regarding this claim? <input type="checkbox"/> Yes <input type="checkbox"/> No	<i>This authorization will remain in effect until you notify the Commission of a change using Form 13.</i>										
<table border="1"> <thead> <tr> <th>Last name</th> <th>First name</th> <th>Address</th> <th>Organization if applicable</th> <th>Telephone</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		Last name	First name	Address	Organization if applicable	Telephone					
Last name	First name	Address	Organization if applicable	Telephone							

SECTION H - SIGNATURE, CONSENT AND DECLARATION

25 I believe this is an injury related to my work and I declare that all information I have provided to the Commission is true and correct. I understand I must immediately inform the Commission if I return to, or become capable of, performing work of any kind. I consent to the Commission collecting and using all information it considers relevant for the purposes of determining my entitlement to benefits and managing my claim under the <i>Workplace Health, Safety and Compensation Act (WHSC Act)</i> . This includes, but is not limited to, collecting and using information from physicians, hospitals, health care providers, and employers pertaining to my examinations, treatment, medical history, injury/incident and employment. I consent to the Commission disclosing to my employer or my Employer's Authorized Representative, a summary of my injury costs, which is disclosed to the employer for the purpose of verifying claims' costs. I consent to the Commission disclosing to external physicians, hospitals and health care providers all relevant information necessary for the purpose of determining entitlement to benefits and managing my claim under the <i>WHSC Act</i> . I understand information may be collected, used and/or disclosed for other purposes and/or disclosed to other parties only as permitted by law, including, but not limited to, the <i>WHSC Act</i> and the <i>Access to Information and Protection of Privacy Act</i> and I agree that this consent is valid for the duration of my claim.
Name <i>please print</i> _____ Signature _____ Date _____

SECTION I - CO-OPERATION AND OBLIGATION

All workers and employers must co-operate in early and safe return to work. A re-employment obligation may exist if there are 20 or more workers with your employer and if you have been continuously employed for more than one year. Contact your employer to determine if this re-employment obligation applies to you.

WHSCC USE ONLY

If attaching additional information, put your first name, last name and Social Insurance Number at the top of each sheet.

Worker's role in early and safe return to work

The main focus of early and safe return to work is to enable you to remain at the workplace following an injury or to return to the workplace in a safe and timely manner if you have already lost time from work.

Going back to work may involve making changes to the duties and/or the hours of work. It may also involve changes to the workplaces such as acquiring equipment or other devices to help you with your return to work.

Staying in touch with work

It is important to stay connected to your workplace following an injury. If your injury prevents you from performing your regular job duties, both you and your employer are required to work together to identify suitable and available employment, even while you are receiving medical treatment for your injury.

During each medical appointment, your doctor will provide you with a copy of their report (form 8/10) for your records and a second copy to bring to your employer. The employer's copy of the doctor's report does not contain your personal medical information; it simply identifies your functional abilities as a result of the injury.

It is extremely important for you to provide this report to your employer by the next working day after each doctor's visit. This will enable you to assist your employer in identifying suitable job duties so you can continue working without aggravating your injury. If you work in a unionized environment, you may want to involve your union representative in this process.

Finding the right duties

When identifying early and safe return-to-work opportunities with your employer, the first priority should be to maintain the connection to the pre-injury job at some level. Where this is not possible, it is important to work with your employer to identify suitable and available employment that is within your physical capabilities. If you and your employer require any assistance during this process, you should contact your case manager.

Documenting a plan

Once you and your employer have identified suitable job duties that are in keeping with your abilities, you will complete an early and safe return-to-work plan that outlines the agreed upon schedule and progression of duties. If any change occurs to this plan, you must immediately notify your case manager.

Your early and safe return-to-work plan should also outline the scheduled hours and the hourly wage earned. This information will then be used to determine if there is any entitlement to compensation during your return-to-work process.

Communicating progress

Communication is critical during early and safe return to work. The frequency and method of communication between you and your employer will be determined by the employer's procedures. However, we recommend you contact your employer weekly during the early and safe return-to-work program. You should also contact them immediately if there is an improvement or deterioration in your physical condition that could affect your return-to-work plan. It is also important to keep your case manager updated on your progress.

Worker's role in occupational health and safety (OH&S)

- Worker's duties:
 - Protect your health and safety and that of co-workers and others at or near the workplace;
 - Co-operate with your employer, co-workers, OH&S committee/worker health and safety representative/workplace health and safety designate, and anyone exercising a duty imposed under OH&S legislation;
 - Follow instructions and training;
 - Report hazardous conditions; and
 - Properly use all safety equipment, devices and clothing.
- Workers' rights:
 - Know about workplace hazards;
 - Participate and assist in identifying and resolving OH&S issues; and
 - Refuse unsafe work.

Use this form when:

- You have a work-related injury / incident or recurring work-related injury or illness that results in any of the following:
 - medical attention;
 - loss of earnings; and / or
 - lost-time from work.

This includes injuries or illnesses that occurred over time as well as those caused by an event.

- If you feel your current symptoms are related to a previous work injury, complete this form based on your current situation, as opposed to restating what happened at the time of your initial injury. For example, for question 4 under section B "Date/time of injury/incident," your response should be the date and time your current symptoms developed or the date a new incident happened which caused your current symptoms.
- As a partner, proprietor or independent operator (also referred to as owner/operator on this form), you have experienced a work-related injury. Please note that coverage will be extended only when optional personal coverage has been purchased from the Commission.

Points to remember:

- Complete and accurate information is important so as not to delay processing your claim.
- If you have additional information, attach additional pages and include your name and SIN on each page.
- Be sure to sign page 2 so we can process your claim.

Section A General Information

Occupation & Employer Information

- This refers to your occupation and employer at the time of your injury / incident.

Section B Injury / Incident Information

How did your injury / incident occur or the condition develop?

- Explain how the injury / incident happened and what you were doing at that time. This may include information such as: sizes, weights and names of objects involved; description of any machinery, tools or vehicles used at the time of the injury / incident; environmental conditions (work area, temperature, noise, chemicals, gas, fumes); if another person was involved; or any other information you think is important.

For example: "I was moving boxes in the storage room. I lifted a 40-pound box from the floor to put on a shelf. I twisted to the right while lifting, and hurt my upper back."

- If your condition developed over time, a detailed description of the work you do is helpful. Explain how often you do a particular task; the sizes and weights of objects involved; how long you have been doing this work; and if there have been any recent changes to your schedule and / or tools or products you use.

For example: "I am a cashier. I continuously scan products for my entire eight-hour shift using my left arm. The products can weigh from a few ounces to up to 10 pounds. The belt hasn't been working properly for the past three weeks, forcing me to reach further than I usually do to ring things in. I recently started to have pain in my left elbow."

Did the injury / incident happen on the employer's property or worksite?

- Detailed information as to where the injury / incident happened is important to process your claim. For example, if on the employer's premises, where did it occur? The shipping area, paint shop, or warehouse? If not on the employer's premises, where did it happen?

For example: "I work for a cleaning company and was working at a retail store when the injury happened. The store was ABC Clothing on Anywhere Street."

Section D: Return-to-work Information

- You and your employer may be able to change your duties and / or hours so you can stay at work while you are receiving medical treatment for your injury. This is called early and safe return-to-work.
- An early and safe return-to-work plan should be developed in co-operation with your employer, based on the functional abilities information from your health care provider(s).

Section E: Earnings Information

- If you are off work for more than one day, or have an early and safe return-to-work plan of more than one day, you may be entitled to wage-loss benefits. You should complete this section so the Commission can make this determination.

Additional information on access, release and protection of your information by the Commission can be found in Policy GP-01: "Information Protection and Access," available at www.whscc.nl.ca or by calling The Commission's Access to Information and Protection for Privacy (ATIPP) Co-ordinator at 1-800-563-9000.



Mall To: 200 Front Street West Toronto ON M5V 3J1
 OR Fax To: 416-344-4684 OR 1-888-313-7373

7 Employer's Report of Injury/Disease (Form 7)

Please PRINT in black ink

Claim Number

A. Worker Information

Job Title/Occupation (at the time of accident/illness - do not use abbreviations) | Length of time in this position while working for you | Social Insurance Number

Please check if this worker is a: executive elected official owner spouse or relative of the employer

Last Name | First Name | Address (number, street, apt., suite, unit) | City/Town | Province | Postal Code

is the worker covered by a Union/Collective Agreement? yes no

Worker's preferred language: English French Other

Worker Reference Number | Date of Birth (dd mm yy) | Telephone | Sex (M F) | Date of Hire (dd mm yy)

B. Employer Information Fold here for #10 envelope

Trade and Legal Name (if different provide both) | Check one: Firm Number OR Account Number | Provide Number

Mailing Address | Rate Group Number | Classification Unit Code

City/Town | Province | Postal Code | Telephone

Description of Business Activity | Does your firm have 20 or more workers? yes no | FAX Number

Branch Address where worker is based (if different from mailing address - no abbreviations)

City/Town | Province | Postal Code | Alternate Telephone

C. Accident/Illness Dates and Details

1. Date and hour of accident/Awareness of illness (dd mm yy) | AM PM | 2. Who was the accident/illness reported to? (Name & Position) | Telephone | Ext.

Date and hour reported to employer (dd mm yy) | AM PM

3. Was the accident/illness: Sudden Specific Event/Occurrence Gradually Occuring Over Time Occupational Disease Fatality

4. Type of accident/illness: (Please check all that apply) Struck/Caught Overexertion Repetition Fire/Explosion Fall Harmful Substances/Environmental Assault Other Slip/Trip Motor Vehicle Incident

5. Area of Injury (Body Part) - (Please check all that apply)

<input type="checkbox"/> Head	<input type="checkbox"/> Teeth	<input type="checkbox"/> Upper back	Left	Right	Left	Right	Left	Right	Left	Right
<input type="checkbox"/> Face	<input type="checkbox"/> Neck	<input type="checkbox"/> Lower back	<input type="checkbox"/> Shoulder	<input type="checkbox"/> Arm	<input type="checkbox"/> Wrist	<input type="checkbox"/> Hand	<input type="checkbox"/> Hip	<input type="checkbox"/> Thigh	<input type="checkbox"/> Ankle	<input type="checkbox"/>
<input type="checkbox"/> Eye(s)	<input type="checkbox"/> Chest	<input type="checkbox"/> Abdomen	<input type="checkbox"/> Elbow	<input type="checkbox"/>	<input type="checkbox"/> Finger(s)	<input type="checkbox"/>	<input type="checkbox"/> Knee	<input type="checkbox"/>	<input type="checkbox"/> Foot	<input type="checkbox"/>
<input type="checkbox"/> Ear(s)		<input type="checkbox"/> Pelvis	<input type="checkbox"/> Forearm	<input type="checkbox"/>			<input type="checkbox"/> Lower Leg		<input type="checkbox"/> Toe(s)	<input type="checkbox"/>
<input type="checkbox"/> Other										

6. Describe what happened to cause the accident/illness and what the worker was doing at the time (lifting a 50 lb. box, slipped on wet floor, repetitive movements, etc. . .). Include what the injury is and any details of equipment, materials, environmental conditions (work area, temperature, noise, chemical, gas, fumes, other person) that may have contributed. For a condition that occurred gradually over time, please attach a description of the physical activity required to do the work.

Please PRINT in black ink

Claim Number

Worker Name

Social Insurance Number

C. Accident/Illness Dates and Details (Continued)

7. Did the accident/illness happen on the employer's premises (owned, leased or maintained)? <input type="checkbox"/> yes <input type="checkbox"/> no	Specify where (shop floor, warehouse, client/customer site, parking lot, etc..).
8. Did the accident/illness happen outside the Province of Ontario? <input type="checkbox"/> yes <input type="checkbox"/> no	If yes , where (city, province/state, country).
9. Are you aware of any witnesses or other employees involved in this accident/illness? <input type="checkbox"/> yes <input type="checkbox"/> no	If yes , provide name(s), position(s), and work phone number(s). 1. _____ 2. _____
10. Was any individual, who does not work for your firm, partially or totally responsible for this accident/illness? <input type="checkbox"/> yes <input type="checkbox"/> no	If yes , please provide name and work phone number
11. Are you aware of any prior similar or related problem, injury or condition? <input type="checkbox"/> yes <input type="checkbox"/> no	If yes , please explain
12. If you have concerns about this claim, attach a written submission to this form. <input type="checkbox"/> submission attached	

D. Health Care

1. Did the worker receive health care for this injury? <input type="checkbox"/> yes <input type="checkbox"/> no	dd mm yy	2. When did the employer learn that the worker received health care?	dd mm yy
If yes , when: _____			
3. Where was the worker treated for this injury? (Please check all that apply)			
<input type="checkbox"/> On-site health care	<input type="checkbox"/> Ambulance	<input type="checkbox"/> Emergency department	<input type="checkbox"/> Admitted to hospital
<input type="checkbox"/> Other: _____	<input type="checkbox"/> Health professional office	<input type="checkbox"/> Clinic	
Name, address and phone number of health professional or facility who treated this worker (if known)			

E. Lost Time - No Lost Time

1. Please choose one of the following indicators. After the day of accident/awareness of illness, this worker:			
<input type="checkbox"/> Returned to his/her regular job and has not lost any time and/or earnings. (Complete sections G and J).			
<input type="checkbox"/> Returned to modified work and has not lost any time and/or earnings. (Complete sections F, G, and J).			
<input type="checkbox"/> Has lost time and/or earnings. (Complete ALL remaining sections).			
Provide date worker first lost time	dd mm yy	Date worker returned to work (if known)	dd mm yy
<input type="checkbox"/> regular work		<input type="checkbox"/> modified work	
2. This Lost Time - No Lost Time - Modified Work information was confirmed by:		Telephone	Ext.
<input type="checkbox"/> Myself	<input type="checkbox"/> Other		
Name _____			

F. Return To Work

1. Have you been provided with work limitations for this worker's injury? <input type="checkbox"/> yes <input type="checkbox"/> no	2. Has modified work been discussed with this worker? <input type="checkbox"/> yes <input type="checkbox"/> no	3. Has modified work been offered to this worker? <input type="checkbox"/> yes <input type="checkbox"/> no	If yes , was it <input type="checkbox"/> Accepted <input type="checkbox"/> Declined
			<input type="checkbox"/> If Declined please attach a copy of the written offer given to the worker.
4. Who is responsible for arranging worker's return to work		Telephone	Ext.
<input type="checkbox"/> Myself	<input type="checkbox"/> Other		
Name _____			

Please PRINT in black ink

Worker Name _____ Social Insurance Number _____

G. Base Wage/Employment Information - (Do not include overtime here)

1. Is this worker (Please check all that apply)

Permanent Full Time Casual/Irregular Student Registered Apprentice Owner Operator or (Sub) Contractor
 Permanent Part Time Seasonal Unpaid/Trainee Optional Insurance
 Temporary Full Time Contract Other _____
 Temporary Part Time

2. Regular rate of pay \$ _____ per hour day week other _____

H. Additional Wage Information

1. Net Claim Code or Amount Federal _____ Provincial _____

2. Vacation pay - on each cheque? yes no Provide percentage _____ %

3. Date and hour last worked dd mm yy AM PM

4. Normal working hours on last day worked From AM PM To AM PM

5. Actual earnings for last day worked \$ _____

6. Normal earnings for last day worked \$ _____

7. Advances on wages: Is the worker being paid while he/she recovers? yes no If yes, indicate: Full/Regular Other _____

8. Other Earnings (Not Regular Wages): Provide the total of additional earnings for each week for the 4 weeks before the accident/illness.

* For Rotational Shift workers - If the shift cycle exceeds 4 weeks, please attach the earnings information for the last complete shift cycle prior to the date of accident/illness.

Use these spaces for any other earnings (Indicate Commission, Differentials, Premiums, Bonus, Tips, In Lieu %, etc..)

Period	From Date (dd/mm/yy)	To Date (dd/mm/yy)	Mandatory Overtime Pay	Voluntary Overtime Pay	Commission	Commission	Commission	Commission
Week 1			\$	\$	\$	\$	\$	\$
Week 2			\$	\$	\$	\$	\$	\$
Week 3			\$	\$	\$	\$	\$	\$
Week 4			\$	\$	\$	\$	\$	\$

I. Work Schedule (Complete either A, B or C. Do not include overtime shifts)

(A) Regular Schedule - Indicate normal work days and hours. **Example: Monday to Friday, 40 hours**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday

Example: S M T W T F S
8 8 8 8 8 8

or,

(B) Repeating Rotational Shift Worker - Provide

NUMBER OF DAYS ON	NUMBER OF DAYS OFF	HOURS PER SHIFT(S)	NUMBER OF WEEKS IN CYCLE

Example: 4 days on, 4 days off, 12 hours per shift, 8 weeks in cycle.

or,

(C) Varied or Irregular Work Schedule - Provide the total number of regular hours and shifts for each week for the 4 weeks prior to the accident/illness. (Do not include overtime hours or shifts here).

	Week 1	Week 2	Week 3	Week 4
From/To Dates (dd/mm/yy)	/ /	/ /	/ /	/ /
Total Hours Worked				
Total Shifts Worked				

J. It is an offence to deliberately make false statements to the Workplace Safety and Insurance Board. I declare that all of the information provided on pages 1, 2, and 3 is true.

Name of person completing this report (please print) _____ Official title _____

Signature _____ Telephone _____ Ext. _____ Date dd mm yy _____

Please PRINT in black ink

Worker Name	Social Insurance Number
-------------	-------------------------

Claim Number

K. Additional Information

THE WORKPLACE SAFETY AND INSURANCE ACT REQUIRES YOU GIVE A COPY OF THIS FORM TO YOUR WORKER

PEI



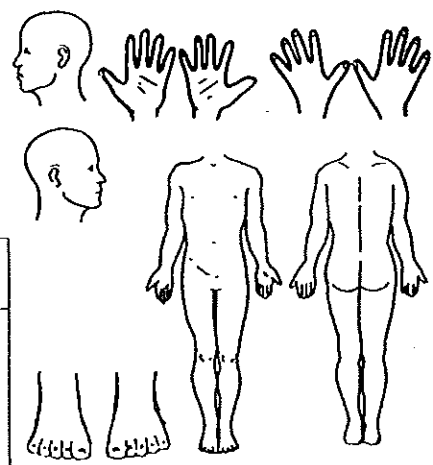
WORKER'S REPORT FORM 6

Mail To: P.O. Box 757, Charlottetown, Prince Edward Island C1A 7L7
Drop Off: 14 Weymouth Street www.wcb.pe.ca
Phone: (902) 368-5680
Fax: (902) 368-5698
Toll Free: 1-800-237-5049

Worker Information Please print Case I.D. #(if known)
Last Name: First Name and Initials:
Address:
City: Province: Date of Birth: M D Y Sex: M F
Postal Code: Home Telephone:
Job Title at time of injury:

Employment Information
Employer's Name: Supervisor's Name:
Address: Telephone:
City: Province: Postal Code:

Injury/Accident or Occupational Disease Information
1 Provide time and date of injury/accident or occupational disease. Time: am pm M D Y
Or did this condition develop over a period of time? Yes No
If yes, you will need to complete a Progressive Injury Questionnaire which is available by contacting the Board office.
2 Was it a relapso or recurrence of an earlier work related condition? Yes No
If yes, when was your initial injury?
Did you file with WCBPEI? Yes No If no, explain.
3 When did you report the injury/accident or occupational disease to your employer? am pm M D Y
To whom did you report the injury/accident? Name: Title: Telephone:
4 If you delayed reporting for more than 1 day, why?
5 If your workplace has a health and safety committee or representative, have they been notified of the accident? Yes No
6 Did the injury/accident occur on your employer's premises? Yes No Check which applies: Prince Cnty. Queens Cnty. Kings Cnty. Out of Prov.
7 Was the work you were doing for the purpose of your employer's business? Yes No If yes, was it part of your usual work? Yes No
8 a) Describe fully what happened to cause this injury/accident or occupational disease. Please mark area(s) affected below. Describe what you were doing and include any tools, equipment, materials, that you were using. Attach an extra page to fully explain if needed. Provide time and date of injury/accident:
b) Were there witnesses? Yes No Give names and job titles.
9 Did any person or factor outside your employment cause or contribute to the injury/accident or occupational disease? Yes No unsure Attach an extra page to fully explain.
10 Did you receive medical treatment? Yes No
If so, where were you first treated?
Date am pm
Provide doctor's name:
11 If there was a delay in seeking treatment, explain. Attach an extra page to fully explain if needed.
Were you off work after the day of injury? Yes No
12 Have you had a similar injury before? Yes No If yes, when?
How did it happen?
Was it work related? Yes No
If work related, was it claimed at WCBPEI? Yes No If no, attach extra page to explain.



13 Have you reported or claimed any injuries with any other WCB? Yes No
 Where? _____ When? _____
 For what condition? _____

Type of Employment Fill in A, B or C Date you were hired? M | D | Y

A Permanent Full Time Permanent Part Time

B Seasonal Work Summer Student Casual

Had this injury not happened, what would have been your last day of employment: Estimated or Actual M | D | Y

With this employer how many weeks per year would this job last? _____

Do you have a second job? Yes No If yes, Employer's name: _____ Telephone: _____

C Sub Contract Piece Work Vehicle Owner/Operator Owner/Operator Other or Self Employed Explain on separate sheet.

Hours of Work State your usual hours (exclude overtime) per day _____ per week _____ per rotation _____

Does work schedule repeat? Yes No How many weeks did you work in the previous year? _____

Show the three weeks prior to and including your injury, include hours and code if you work shifts. Code: D Days, E Evenings, N Nights
 If regular schedule is more than 21 days, attach a copy. Circle day of injury.

	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
2 wks prior							
1 wk prior							
Injury wk							

Time Loss / Return to Work Information You are expected to discuss return to work options with your employer.

1 Date and time you first missed work: _____ Time: am pm M | D | Y

2 Number of work days missed after the day of injury: _____ days

3 If you returned to work indicate date: _____ Time: am pm M | D | Y
 regular work modified work

4 Is there any other work you can do until you are fit to return to your regular duties? Yes No If yes, specify: _____

5 Who can we call about other work duties that are available? _____ Telephone: _____

Earnings Information This is necessary information used to determine your WCB benefit level. SIN: _____

1 What is your regular gross weekly rate of pay? \$ _____ Hourly Rate? \$ _____

2 Did you have any earnings or income from other employers during the last 12 months? Yes No Please attach copies of pay stubs and/or T4 slips.

3 Have you received Employment Insurance benefits in the last 12 months? Yes No

DECLARATION Please read carefully. Keep a copy of this form for your reference.

- I solemnly declare that I will notify my employer and my health care providers that I am filing a claim for Workers Compensation; that I will immediately notify the Workers Compensation Board of PEI of any monies received for work done by me and of any changes in my ability to return to employment
- I understand that this will authorize the Workers Compensation Board to obtain or review information from any source whatsoever, including records of physicians, qualified practitioners or hospitals, a copy of records pertaining to examinations, treatment, history and employment of the undersigned.
- I hereby consent to the release of information to my employer concerning my functional abilities and limitations. I understand and agree it may be used to assist me to return to employment safely.
- I will notify WCB of any application for or monies received from Long-Term Disability, Canada Pension Disability or from any other potential source of financial benefit as a result of this injury/accident
- I understand that it is illegal to provide false or misleading information to WCB, its employees or service providers concerning my claim.
- I make this solemn declaration as if it had the same force and effect as if made under oath.

Date: _____ Name Printed: _____ Signature: _____

NOTE: The information required in the Worker's Report is collected under the authority of subsection 59(1),(2) of the Workers Compensation Act for the purpose of determining entitlement to compensation, for determining employer's assessment rates and for monitoring workplace safety. Questions can be directed to the Client Services Division at the address and phone number noted on the front of this form. The information provided to the Workers Compensation Board of PEI is protected by the provisions of the Freedom of Information and Protection of Privacy Act.

NOTE: To improve its services, the WCB may contract an independent survey company to survey a sample of workers. The WCB does not know which workers will be contacted. If you are contacted, you can decide whether or not you want to take part. The research company does not share your personal responses with the WCB.

THE WORKERS COMPENSATION ACT PROVIDES AUTHORITY TO REFER WORKERS AND/OR THEIR FILES TO MEDICAL OR REHABILITATION PERSONNEL.

Mail To: P.O. Box 757, Charlottetown, Prince Edward Island C1A 7L7
Drop Off: 14 Weymouth Street
Website: www.wcb.pe.ca

Phone: (902) 368-5680
Fax: (902) 368-5696
Toll Free: 1-800-237-5049

Please submit this form within three (3) days after any notice of a workplace injury or occupational disease.
Also, if this is a serious workplace injury please call, 902-628-7513, within 24 hours.

Please refer to user guide when filling out the Employer's Report Form

1. WORKER INFORMATION		<input type="checkbox"/> LOST TIME	<input type="checkbox"/> NO LOST TIME	<input type="checkbox"/> UNKNOWN						
Last Name:		First Name:		Initials:						
Address:										
City:		Date of Birth: <table border="1"><tr><td>M</td><td>D</td><td>Y</td></tr><tr><td> </td><td> </td><td> </td></tr></table>		M	D	Y				Sex: <input type="checkbox"/> M <input type="checkbox"/> F
M	D	Y								
Postal Code:		Province:		Job Title:						
Home Telephone:		Date of Hire: <table border="1"><tr><td>M</td><td>D</td><td>Y</td></tr><tr><td> </td><td> </td><td> </td></tr></table>			M	D	Y			
M	D	Y								
2. EMPLOYER INFORMATION										
Employer Firm Name:		Employer Firm Number:								
		Employer Operation Number:								
Address:		Is the worker a partner/director in this business? <input type="checkbox"/> Y <input type="checkbox"/> N								
City:		Does your firm have 20 or more workers? <input type="checkbox"/> Y <input type="checkbox"/> N								
Postal Code:		Province:		Contact Name:						
Company Telephone:		Contact Telephone:								
3. INJURY OR OCCUPATIONAL DISEASE INFORMATION COMPLETE EITHER a OR b OR c										
a) Please provide date and time of injury or specific incident.										
Date: <table border="1"><tr><td>M</td><td>D</td><td>Y</td></tr><tr><td> </td><td> </td><td> </td></tr></table>		M	D	Y				Time: _____ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.		
M	D	Y								
Scheduled hours of employment on the day of the accident: From: _____ To: _____										
b) <input type="checkbox"/> The injury developed over a period of time.		c) <input type="checkbox"/> The injury is a recurrence of a prior injury.								
4. REPORT TO EMPLOYER										
Was the injury reported to the employer? <input type="checkbox"/> Y <input type="checkbox"/> N										
If yes, please provide the following: To Whom: _____ Job Title: _____										
Date: <table border="1"><tr><td>M</td><td>D</td><td>Y</td></tr><tr><td> </td><td> </td><td> </td></tr></table>		M	D	Y				Time: _____ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.		
M	D	Y								
5. LOCATION OF ACCIDENT										
Did the injury occur on the employer's premises? <input type="checkbox"/> Y <input type="checkbox"/> N										
If no, where did it happen?										
6. WITNESSES										
Were there witnesses? <input type="checkbox"/> Y <input type="checkbox"/> N		Name:	Job Title:	Telephone:						
		Name:	Job Title:	Telephone:						
7. PREVIOUS PAIN OR INJURY										
Do you know of any previous pain or injury in the area of the worker's present injury? <input type="checkbox"/> Y <input type="checkbox"/> N										
If yes, please explain:										
8. PART OF BODY			9. ACCIDENT DESCRIPTION:							
a) Body Part Injured: _____			Describe fully what happened: (If necessary, use a separate sheet)							
b) Circle area injured:										

Please complete the other side

Submit Promptly

COMPLETE SECTIONS 10, 11, 12 & 13 ONLY IF THE WORKER HAS LOST TIME FROM WORK

10. LOST TIME / RETURN TO WORK INFORMATION

Date worker first missed work:

M	D	Y
---	---	---

 SIN: _____

Has the worker returned to work? Y N If yes, please provide the date:

M	D	Y
---	---	---

If yes, what type of duties has the worker returned to: Regular duties **OR** Modified/Alternate duties

If no, are modified/alternate duties available? Y N Unknown

11. TYPE OF EMPLOYMENT

a) Full Time Part Time Other Please Specify _____

b) Permanent Seasonal Temporary Other Please Specify _____

Had the injury not occurred, what would be the worker's last day of work?

M	D	Y
---	---	---

c) Is the worker employed as: Contractor Independent Operator Apprentice Not Applicable

12. WAGE INFORMATION COMPLETE EITHER a OR b

a) Worker's Rate of Pay: \$ _____ Hourly Weekly Bi-weekly Monthly Other
 Vacation Pay: % _____ Taken as paid time off Included in regular wages Other
 Regular Overtime: \$ _____ Hourly Weekly Bi-weekly Other N/A

b) Gross Earnings: Last 12 Months \$ _____ From:

M	D	Y
---	---	---

 To:

M	D	Y
---	---	---

OR Gross Earnings: Last Tax Year \$ _____ Year: _____

13. HOURS OF WORK COMPLETE EITHER a OR b

a) Usual hours worked per day: _____ Usual number of days worked per week: _____

b) Average hours per week for shift workers: _____

	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Wk 1 - Hours per day							
Wk 2 - Hours per day							
Wk 3 - Hours per day							

Circle day of injury

Does the work schedule repeat? Y N

Contact name for payroll information: _____ Contact telephone number: _____

RE-EMPLOYMENT OBLIGATION:

A re-employment obligation may exist if there are 20 or more workers in your employment and if, at the date of injury, you have employed the injured worker for at least 12 continuous months.

PLEASE NOTE:

If you have concerns with this claim, please contact the Workers Compensation Board of PEI to discuss your concerns or you may submit a letter detailing your concerns. An Employer Advisor is available to provide advice and/or clarification on a WCB claim related to your firm. The Employer Advisor operates independently of the Workers Compensation Board and can be reached at 902-368-6132.

To improve services, the WCB may contract an independent survey company to survey a sample of employers. The WCB does not know which employers will be contacted. If you are contacted, you can decide whether or not you want to take part. The research company does not share your personal responses with the WCB.

Declaration: I certify that the information given on this form is true. I agree to notify the Workers Compensation Board of PEI immediately of any change in circumstances affecting this claim, including any return to work. I understand that the Workers Compensation Act requires employers to submit a report within three days of notification or awareness of an injury or occupational disease requiring treatment or an absence from work. I am aware that penalties may be levied for late filing.

Note: Where applicable, the employer information on this form is collected under the authority of subsection 59(3) of the Workers Compensation Act and will be used for the purpose of identifying the accident employer and for monitoring workplace safety.

Name of person completing the form (print): _____ Job Title: _____

Signature: _____ Date: _____



HALIFAX: 5668 South Street, PO Box 1150 Halifax, Nova Scotia B3J 2Y2 Tel: (902) 491-8999 Fax: (902) 491-8001 Toll Free: 1-800-870-3331

SYDNEY: Medical Arts Building, 336 Kings Road, Suite 117 Sydney, Nova Scotia B1S 1A9 Tel: (902) 563-2444 Fax: (902) 563-0512 Toll Free: 1-800-880-0003

MUST BE COMPLETED ON EACH PAGE SOCIAL INSURANCE NUMBER WCB Claim No.

WCB ACCIDENT REPORT

ACCIDENT INFORMATION

To be completed by both the employer and the worker. If more space is needed, please attach additional pages, or use the space provided on page 3.

1. Please check one. The injury or illness occurred: From a specific accident DATE (D/M/Y) TIME AM PM Please complete questions 2-7. Over a period of time. Date symptoms first noticed: DATE (D/M/Y) Please complete questions 2-12.

2. What body part was injured? Left side Right side Upper body Lower body

3. How did the injury(ies) / illness(es) happen? List any and all weights, distances, movements and equipment involved and the conditions or activity occurring at the time of the incident. If relevant, list exposures to noise or chemical agents, and the duration of the exposure.

CITY/TOWN/PROVINCE WHERE INCIDENT OCCURRED

Did any person or factor other than the employer or coworkers contribute to the cause of the injury or illness? YES NO

If person, please provide name:

If factor, please explain:

4. If medical attention was sought, please provide the name of the doctor OR medical facility where the worker was first seen. Also provide the date, phone number and location of the doctor OR medical facility.

NAME OF DOCTOR OR MEDICAL FACILITY

DATE (D/M/Y) PHONE LOCATION

5. Did the worker lose time because of this injury or illness? YES NO If yes, give the date and time when time-loss started: DATE (D/M/Y) TIME AM PM Did the worker lose earnings because of this injury or illness? YES NO If yes, give the date and time when earnings-loss started: DATE (D/M/Y) TIME AM PM Please complete page 3 if you answered yes to either of these questions.

6. Indicate if the worker is: a proprietor a partner an active officer or director of the company Indicate if the worker is a family member living in the household of any proprietor / partner / active officer or director of the company. YES NO

7. To whom at your place of employment was the injury or illness reported? NAME TITLE PHONE Date reported: Please explain any delay in reporting:

IF THE INJURY OR ILLNESS OCCURRED OVER A PERIOD OF TIME, PLEASE COMPLETE QUESTIONS 8-12. USE EXTRA PAGES IF NECESSARY.

8. What are the worker's main job tasks?

9. Is the worker left or right hand dominant? Left Right

10. How long has the worker been employed in this specific job / position? If less than 90 days, in what job / position were they previously employed?

11. How much overtime did the worker perform in the 90-180 days before this injury or illness occurred?

12. Have there been any changes in the worker's responsibilities in the past 90-180 days? (eg. changes in duties, changes in workload, a leave of absence). Please explain.

YOU MAY FAX/SUBMIT A JOB DESCRIPTION WITH THIS REPORT.



HALIFAX:
 5668 South Street, PO Box 1150
 Halifax, Nova Scotia B3J 2Y2
 Tel: (902) 491-8999 Fax: (902) 491-8001
 Toll Free: 1-800-870-3331

SYDNEY:
 Medical Arts Building, 338 Kings Road, Suite 117
 Sydney, Nova Scotia B1S 1A9
 Tel: (902) 563-2444 Fax: (902) 563-0512
 Toll Free: 1-800-880-0003

MUST BE COMPLETED ON EACH PAGE

SOCIAL INSURANCE NUMBER

WCB Claim No.

WCB ACCIDENT REPORT

EARNINGS / EMPLOYMENT INFORMATION

If you answered YES to either time loss or earnings loss in question 5, please complete this section.

The earnings information provided will normally be used to establish the benefit amount. We may request additional earnings information from both the employer and the worker to determine a more accurate benefit amount. Benefits provided by the Canada Pension Plan may affect the amount WCB pays.

13. Has the worker been employed with this company for the 12 months preceding the earnings loss? YES NO

14. Indicate the worker's employment type:

- A. Permanent Casual/Temporary Seasonal/Irregular
 B. Sub-contractor Vehicle Owner/Operator Courier Service
 Logging/Chain Saw Operator Self-Employed
 Other: _____

Note: If you check any box in B above, the worker must submit a detailed income and expense statement. If this information is not readily available, the WCB will estimate the worker's employment expenses.

15. If the worker is part-time, seasonal or casual, please indicate the date the original employment began. _____
 DATE (D/M/Y)

16. A. Worker's normal gross earnings at the time of the injury: \$ _____
 per hour per day per week bi-weekly
 per month other (please specify) _____

Note: complete B only if you are unable to complete A, above. (Usually applies to seasonal, irregular or casual workers).

B. Gross earnings for the period of one year or less: \$ _____
 From: _____ to: _____
 12 MONTHS OR LESS PRIOR (D/M/Y) DATE BEFORE INJURY (D/M/Y)

17. Usual number of hours/days worked:

Hours per day _____ Days per week _____ Other _____

Show usual days of work: S__ M__ T__ W__ T__ F__ S__

If shift or casual worker, please attach the first three weeks of schedule after the earnings loss began. If the worker works on a fixed rotation schedule, please attach a sample of the rotation schedule.

18. Indicate the worker's tax deduction (TD) code: _____

19. Number of hours scheduled on day time/earnings loss began: _____

Number of hours worked on day time/earnings loss began: _____

Number of hours paid on day time/earnings loss began: _____

20. Did the worker return to work after the injury or onset of symptoms?

YES NO

If yes, give the date and time:

_____ : _____ AM PM
 DATE (D/M/Y) TIME

Did the worker return to regular duties? YES NO

If yes, give the date and time:

_____ : _____ AM PM
 DATE (D/M/Y) TIME

21. Will you be making any payments to the worker while the worker is off work due to the injury or illness? YES NO

If yes, type of benefit paid: _____

How long will payments continue: _____

Use this space if necessary to explain any answers.

This document cannot be saved once completed. Please Tab through and review your information, or Print document if you are satisfied with its content. Click here.



Workplace Health, Safety and Compensation Commission
 146-148 Forest Road, P.O. Box 9000, St. John's, NL A1A 3B8
 Telephone: (709) 778-1000 Fax: (709) 778-1302
 www.whscc.nf.ca

January 2003

CLAIM NUMBER <small>THIS NUMBER WILL BE ASSIGNED BY WHSCC WHEN THE FIRST REPORT OF INJURY IS RECEIVED. IT SHOULD THEN BE QUOTED ON ALL CORRESPONDENCE.</small>	FORM <h1>6</h1>
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Please FAX or MAIL to

WORKER'S REPORT OF INJURY

ALL WORKERS MUST CO-OPERATE IN EARLY AND SAFE RETURN-TO-WORK

THIS FORM SHOULD BE FILED WITHIN 3 DAYS OF THE INJURY.

PART 1 - TO BE COMPLETED IN ALL CASES INVOLVING WAGE LOSS AND/OR VISIT TO A PHYSICIAN/CHIROPRACTOR

WORKER'S SURNAME		GIVEN NAMES	
WORKER'S ADDRESS			MCP NUMBER
CITY OR TOWN		PROV.	POSTAL CODE
DATE OF BIRTH	YEAR	MONTH	DAY
		GENDER	SOCIAL INSURANCE NUMBER
		M	F
TELEPHONE NO.			
EMPLOYER'S NAME			
EMPLOYER'S ADDRESS			
CITY OR TOWN		PROV.	POSTAL CODE
FIRM NO.	FAX NO.	TELEPHONE	

- Date and time of injury.
 Year _____ Month _____ Day _____ Hour _____ am
 pm
 Date and time injury reported to employer.
 Year _____ Month _____ Day _____ Hour _____ am
 pm
 Date and time of first medical visit.
 Year _____ Month _____ Day _____ Hour _____ am
 pm
- Give the first day you missed work after the injury.
 Year _____ Month _____ Day _____
- To whom was the report made?
 Name: _____
 Title: _____
- How many workers does your employer regularly employ?
 (see re-employment obligation below.)
 less than 20 _____ 20 or more _____

- How long have you worked for your employer? years _____ or other (specify) _____
 Are you? full-time _____ part-time _____ seasonal _____ casual _____
- Occupation: _____
- Are you an owner or partner of the business? Yes _____ No _____
- Did you notify your Occupational Health & Safety Committee or Workplace Health & Safety Representative of this injury? Yes _____ No _____
- Did injury occur on employer's premises? Yes _____ No _____ State the injury worksite location and address. _____

- Was the work being done for the purpose of the employer's business? Yes _____ No _____
 How did this injury occur? Indicate the size, weight and description of any object, tool, machine, substance or equipment which was being handled or involved. _____

- Describe the injury, mentioning the part of the body and if applicable, whether right or left side.

- Give the names and addresses of witnesses (if any).
 1. _____
 2. _____
- Give name of attending doctor: _____
 and clinic/hospital: _____

Please answer the following questions in as much detail as possible (attach separate sheet if necessary).

- Describe what you were doing when you felt pain. _____
- Was the pain felt immediately? Yes _____ No _____
 Did you fall? Yes _____ No _____ If Yes, from what height? _____
- Did you experience pain elsewhere? Yes _____ No _____ If Yes, describe. _____
- Did you have any unusual feelings, i.e. numbness, tingling, weakness? Yes _____ No _____
 If Yes, describe. _____
- Did you stop working immediately? Yes _____ No _____ If No, when did you stop? _____
- Have you returned to work? Yes _____ No _____ If Yes, when? _____
 If No, how much longer does your doctor expect you to be off? _____

Please complete Part 2 in all cases involving lost-time greater than the day of the injury.

RE-EMPLOYMENT OBLIGATION

A re-employment obligation may exist if there are 20 or more workers with your employer and if you have been continuously employed for greater than one year. Contact your employer to determine if this re-employment obligation applies to you.

WORKER MUST SIGN BELOW

I authorize the Commission to obtain any information for the management of my claim and to share such information, including medical information, with external sources authorized by the Commission including, but not limited to, Human Resources Development Canada and Human Resources and Employment. I declare this form is complete and correct and understand that giving false information or omitting relevant information is a serious offense.

Signature _____

Date _____

PLEASE COMPLETE REVERSE BOTH SIDES OF DOCUMENT MUST BE SIGNED.

WHSCC USE ONLY

IMPORTANT: BOTH SIDES OF DOCUMENT MUST BE SIGNED.

Name _____

Date of Injury _____ YEAR MONTH DAY

PART 2 - TO BE COMPLETED IN ALL CASES INVOLVING LOST-TIME GREATER THAN THE DAY OF INJURY

If you worked since your injury please give dates.

Period Worked Since Injury	From	Year Month Day			To	Year Month Day			Total earnings for this period \$	Has your employer paid you any other amounts during your disability?	Yes	
											No	

2. What were your gross earnings at the time of the injury? \$ _____ Indicate hourly, weekly, or specify, if other. _____

Show normal work week by entering hours worked each day.

Week 1	Sun	Mon	Tue	Wed	Thur	Fri	Sat	Week 2	Sun	Mon	Tue	Wed	Thur	Fri	Sat

3. Is this your first claim with the Commission? Yes _____ No _____ If No, are you currently receiving any Commission benefits (including permanent disability pension)? Yes _____ No _____

4. Will you or are you receiving any benefits other than from the Commission? Yes _____ No _____
 If Yes, please specify if it is salary or other benefits from an employer. _____
 If Yes, please specify if it is Employment Insurance, Post-TAGS benefits, etc. Explain. _____

5. Have you asked your employer about returning to modified/light duties during your recovery? Yes _____ No _____
 Has your employer offered you alternate/modified duties? Yes _____ No _____ If Yes, are you currently participating in these duties? Yes _____ No _____

6. Please choose the ones that best describe your status for income tax purposes:
- Married and claiming no exemption for spouse (spouse working)
 - Married and claiming full exemption for spouse or equivalent
 - Claiming for a disabled dependent relative
 - Other _____

7. Do you want to authorize your spouse, other family member, a union representative, lawyer or MHA to access information on your claim?
 Yes _____ No _____ If Yes, please name the individual: _____
 (You may change this person anytime by completing a WHSCC Form 13.)

PART 3 - PREVIOUS PROBLEMS

Have you had problems of this nature before? Yes _____ No _____ If Yes, please explain in the chart below.

Previous Problems	Year	Part of Body	Indicate Left or Right	WHSCC Claim		Saw Specialist		Tests				Surgery		Comments (attach additional paper if necessary)
				Yes	No	Yes	No	CT Scan	MRI	X-Ray	Other	Yes	No	
1st Problem														
2nd Problem														
3rd Problem														
4th Problem														

PART 4 - TO BE COMPLETED BY WORKERS ON FISHING VESSELS

1. Vessel Name / Type / Length _____

2. Personal Commercial Fishing Licence Year _____ Number _____ Date of Issue _____

3. Master's Name _____ Phone _____

Address _____
 City/Town _____ Prov. _____ Postal Code _____

4. Are your earnings based on a share of the catch? Yes _____ No _____ If so, describe the share arrangement. _____

5. What overall expenses (i.e. gas, clothing, equipment, food, etc.) do you share and claim? _____

6. Show vessel's sales for the four weeks prior to date of injury.

Fish Buyer's Name, Address & Phone Number	Gross Sales	Periods Fished

Signature _____

Date _____

IMPORTANT: BOTH SIDES OF DOCUMENT MUST BE SIGNED.



Workplace Health, Safety and Compensation Commission
 146-148 Forest Road, P.O. Box 9000, St. John's, NL A1A 3B8
 Telephone: (709) 778-1000 Fax: (709) 778-1302
 www.whscc.nf.ca

January 2003

CLAIM NUMBER <small>THIS NUMBER WILL BE ASSIGNED BY WHSCC WHEN THE FIRST REPORT OF INJURY IS RECEIVED. IT SHOULD THEN BE QUOTED ON ALL CORRESPONDENCE</small>	FORM 7
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------

Please FAX or MAIL to _____

EMPLOYER'S REPORT OF INJURY

ALL EMPLOYERS MUST CO-OPERATE IN EARLY AND SAFE RETURN-TO-WORK

THE EMPLOYER MUST FILE THIS FORM WITHIN 3 DAYS OF THE INJURY (Late and Incomplete reports may result in a \$200 fine for a lost-time claim or \$100 for a medical aid only claim.)

PART 1 - TO BE COMPLETED IN ALL CASES INVOLVING WAGE LOSS AND/OR VISIT TO A PHYSICIAN/CHIROPRACTOR

WORKER'S - SURNAME		GIVEN NAMES	
WORKER'S ADDRESS			
CITY OR TOWN		PROV.	POSTAL CODE
DATE OF BIRTH	YEAR	MONTH	DAY
		GENDER	SOCIAL INSURANCE NUMBER
		M F	TELEPHONE NO.
EMPLOYER'S NAME			
<input type="checkbox"/> INCORPORATED <input type="checkbox"/> LIMITED <input type="checkbox"/> PARTNER <input type="checkbox"/> PROPRIETOR <input type="checkbox"/> HRDC PROJECT <input type="checkbox"/> OPTIONAL PERSONAL COVERAGE (If the business is not incorporated or limited, only partner/propietor who has optional personal coverage is eligible for compensation.)			
EMPLOYER'S ADDRESS			
CITY OR TOWN		PROV.	POSTAL CODE
FIRM NO.	SITE NO.	FAX NO.	TELEPHONE

1. Date and time of injury.
 Year _____ Month _____ Day _____ Hour _____ am/pm

2. Date and time injury reported to employer.
 Year _____ Month _____ Day _____ Hour _____ am/pm

3. To whom was the report made?
 Name: _____
 Title: _____

4. How many workers do you regularly employ? _____
 (see re-employment obligation below.)
 Do you have seasonal, casual or contractual workers?
 Yes _____ No _____

5. How long has this worker been in your employ?
 Years _____ or other (specify) _____
 Is this worker:
 full-time _____ part-time _____ seasonal _____ casual _____

6. Occupation: _____ 7. Did injury occur on employer's premises? Yes _____ No _____
 State the injury worksite location and address: _____

8. Was the work being done for the purpose of the employer's business? Yes _____ No _____
 Has the Occupational Health and Safety Committee or Worker Health and Safety Representative been notified of this injury? Yes _____ No _____
 Will the injury be investigated? Yes _____ No _____ 11. Has this kind of injury happened before? Yes _____ No _____

12. How did this injury occur? Indicate the size, weight and description of any object, tool, machine, substance or equipment which was being handled or involved. _____

13. Describe the injury, mention the part of the body and if applicable, whether right or left side (attach incident report if available.) _____

14. Give the names and addresses of witnesses (if any).
 1. _____
 2. _____

15. Give name of attending doctor: _____
 and clinic/hospital: _____

16. Was any person not in your employ involved in the injury?
 (If Yes, please attach explanation on separate paper.) Yes _____ No _____

17. Do you know any reason why this claim should not be allowed?
 (If Yes, please attach explanation on separate paper.) Yes _____ No _____

18. Has the worker lost-time at work beyond the day of injury?
 (If Yes, please complete Part 2 on reverse side.) Yes _____ No _____

19. Has the worker been offered alternate/modified duties?
 If Yes, is the worker currently participating in these duties? Yes _____ No _____
 If No, are alternate/modified duties available? Yes _____ No _____

EMPLOYERS MUST SIGN BELOW
 I am a representative of the employer and I declare the form is complete and correct. I understand that giving false information or omitting relevant information is a serious offense.

Employer Representative (Please Print) _____

Employer Signature _____

Position _____

Telephone Number _____ Date (Y/M/D) _____

IF WORKER IS A FISHER COMPLETE PART 3. PLEASE ATTACH ADDITIONAL COMMENTS ON SEPARATE PAPER.

Please complete Part 2 in all cases involving lost-time greater than the day of the injury.

RE-EMPLOYMENT OBLIGATION
 re-employment obligation may exist if there are 20 or more workers in your employment and if you have continuously employed the injured worker for greater than one year.

WHSCC USE ONLY

IMPORTANT: BOTH SIDES OF DOCUMENT MUST BE SIGNED.

Worker's name _____ Date of injury _____
YEAR MONTH DAY

FORM
7

PART 2 - TO BE COMPLETED IN ALL CASES INVOLVING LOST-TIME GREATER THAN THE DAY OF THE INJURY AND/OR WHERE MODIFIED DUTIES ARE PROVIDED. (The employer is responsible for wages on the day of the injury.)

Date and time worker stopped work: Year _____ Month _____ Day _____ Time _____ am/pm

20. If the worker returned to work for any period since the injury, please give dates:
 Year _____ Month _____ Day _____ TO Year _____ Month _____ Day _____

21. Are you continuing to pay the worker directly during the lost-time period? Yes _____ No _____
 (The employer cannot pay the worker an amount in excess of compensation entitlement.)

If Yes, please give details: _____
 If No, give date worker stopped receiving wages: Year _____ Month _____ Day _____

22. If the worker is back to work, please give date of return: Year _____ Month _____ Day _____

23. Show separately for each week or pay period the worker's gross wages and lost-time for the four pay periods preceding injury (include bonuses, overtime, etc.).

Period From			To			Wages		Lost-Time		
Year	Month	Day	Year	Month	Day	\$	¢	HOLIDAYS WITHOUT PAY	SICKNESS WITHOUT PAY	LACK OF WORK
								DAYS	DAYS	DAYS
								DAYS	DAYS	DAYS
								DAYS	DAYS	DAYS
								DAYS	DAYS	DAYS

24. Please enter hours per day normally worked on this 14-day chart.

	Sun.	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.
Week 1							
Week 2							

PART 3 - THIS SECTION IS TO BE COMPLETED BY MASTER, OWNER OR PART OWNER. IF THE INJURED FISHER IS SELF-EMPLOYED IT IS ONLY NECESSARY TO COMPLETE THE WORKER'S REPORT OF INJURY - FORM 6.

1. Vessel Name / Type / Length _____

2. Personal Commercial Fishing Licence:
 Year _____ Number _____ Date of Issue _____

3. Master's Name _____ Phone _____
 Address _____
City/Town Prov. Postal Code

4. Are you owner, part owner or master of the vessel? Yes _____ No _____

5. How many crew members are on the vessel? _____

6. Are earnings based on a share of the catch? Yes _____ No _____ If so, describe the share arrangement: _____

7. Show vessel's sales for the four weeks prior to date of injury.

Fish Buyer's Name, Address & Phone Number	Gross Sales	Periods Fished

 Employer Representative Signature

NOTE: The Occupational Health and Safety Act requires that all incidents resulting in serious injury be reported to the Occupational Health and Safety Branch at (709) 729-4444.

FOR ADDITIONAL FORMS CALL 778-1248 OR 778-1000 OR 1-800-563-9000

IMPORTANT: BOTH SIDES OF DOCUMENT MUST BE SIGNED.

Claim Number / N° de réclamation

REPORT OF ACCIDENT OR
INDUSTRIAL DISEASE

RAPPORT SUR L'ACCIDENT OU LA
MALADIE PROFESSIONNELLE

THIS REPORT IS TO BE SUBMITTED WITHIN THREE (3) DAYS AFTER ANY
ACCIDENT OR NOTICE OF ANY INDUSTRIAL DISEASE. PLEASE TYPE OR
PRINT CLEARLY IN INK.

CE RAPPORT DOIT ÊTRE ENVOYÉ À LA COMMISSION DANS UN DÉLAI DE
TROIS (3) JOURS APRÈS TOUT ACCIDENT OU AVIS DE TOUTE MALADIE
PROFESSIONNELLE. VEUILLEZ DACTYLOGRAPHIER OU INSCRIRE
DISTINCTEMENT EN LETTRES MOULÉES À L'ENCRE.

THIS SECTION MUST BE COMPLETED IN ORDER TO PROCESS. / CETTE PARTIE DOIT ÊTRE REMPLIE POUR QU'ON PUISSE TRAITER LE FORMULAIRE.

Last Name of Worker
Nom de famille de (de la) travailleur(e) _____ Given Name
Prénom(s) _____

Address / Adresse _____ County / Comté _____

Postal Code
Code postal _____ Telephone No.
N° de téléphone _____ Date of Birth
Date de naissance _____ Y/A M/J D/J

Sex / Sexe M F Other Married
État civil Married Single Other Social Insurance No.
N° d'assurance sociale _____

Marriage No.
N° d'assurance-maladie _____ Occupation
Profession _____

Name of Employer
Nom de l'employeur _____ Trade Name
Nom commercial _____

Address of Employer
Adresse de l'employeur _____ Postal Code
Code postal _____

Telephone No.
N° de téléphone _____ Type of Business
Genre d'entreprise _____

Employer's Firm No.
N° de l'employeur à la CSSIAT _____ Operation No. (SIC)
Activité (N° GTI) _____

PART I

PARTIE I

- Date and Time of accident
Date et heure de l'accident _____ at _____ h _____
Period of exposure resulting in industrial disease, from
Période d'exposition provoquant la maladie professionnelle, du _____ to _____
 a.m. p.m.
- Date and hour reported
Date et heure que l'accident a été signalé à l'employeur _____
To whom reported
Nom de la personne à qui l'accident a été signalé _____ Title
Titre _____
 a.m. p.m.
- Did the accident or industrial disease occur on the Employer's premises or job site?
Est-ce que l'accident ou la maladie professionnelle est survenu sur les propriétés de l'employeur ou les lieux de travail? Yes No
Oui Non
Describe the work area
Décrivez les lieux de travail _____
- Describe precisely how the injury or disease was caused. Please state size, weight and description of any objects, products or equipment which was being handled or otherwise involved. Use separate sheet, if necessary.
Donner une description détaillée de l'accident qui a provoqué la blessure. Bien indiquer les dimensions, le poids et la description de tout objet, produit ou matériel manipulé ou autrement en cause. Utiliser une autre feuille au besoin.

Indicate part of body involved.
Indiquer la partie du corps atteinte _____
- Was the work being performed for the purpose of the Employer's business?
Le travail exécuté avait-il trait au commerce de l'employeur? Yes No
Oui Non
- What happened unexpectedly to cause the injury?
Qu'est-il arrivé d'imprévu pour provoquer la blessure? _____
- Any previous work injuries to same area of body?
Blessures antérieures subies au travail à la même région du corps? Yes No No
Oui Non Non If yes, specify.
Dans l'affirmative, préciser: _____
- Give names and addresses of persons who saw the accident. Two if possible.
Nom et adresse des personnes qui ont vu l'accident (deux si possible).
Name _____ Address _____ Telephone _____
Nom _____ Adresse _____ Téléphone _____
- Name of first Doctor seen
Nom du premier médecin consulté _____
- Has Worker lost time at work because of this accident?
Le (la) travailleur(e) a-t-il (e) absenté(e) de travail à cause de cet accident? Yes No
Oui Non
If "Yes," complete Parts II and III. If "No," complete Part IV only.
Dans l'affirmative, remplir les parties II et III. Dans le négatif, remplir la partie IV seulement.

PART II

PARTIE II

1. Date and hour last worked
Date et heure de l'arrêt de travail _____ 20 _____ at a.m. p.m. Number of hours paid for that day
Nombre d'heures payées pour cette journée _____

Hourly rate of pay _____
Salaires horaires _____

Daily rate of pay _____
Salaires par jour _____

2. Has Worker returned to work for any temporary period since this accident?
Le (La) travailleur-euse a-t-il (a-t-elle) repris le travail pour une période temporaire depuis l'accident? Yes No
Oui Non

If yes, give dates.
Dans l'affirmative, indiquer les dates. Du _____ 20 _____ to _____ 20 _____

3. Has the Worker returned to work?
Le (La) travailleur-euse a-t-il (a-t-elle) repris le travail? Yes No
Oui Non

If no, explain.
Dans la négative, expliquer. _____

4. Usual number of days worked per week _____ Hours per day _____ Show usual days of rest _____
Nombre habituel de jours de travail par semaine _____ Heures par jour _____ Temps libre habituel _____

Sun. Day	Mon. Day	Tue. Day	Wed. Day	Thurs. Day	Fri. Day	Sat. Day
----------	----------	----------	----------	------------	----------	----------

5. Indicate type of position Worker is employed.
Préciser la nature du poste du (de la) travailleur-euse. Permanent/Full-time Part-time Seasonal Casual
Permanent/à temps plein À temps partiel Saisonnier Occasionnel

Date commenced _____
Date de début de l'emploi _____

If not permanent/Full-time, expected date of termination _____
Si le poste n'est pas permanent/à temps plein, date prévue de cessation _____

6. How long has the Worker been working for Employer?
Depuis quand le (la) travailleur-euse travaille-t-il (travaille-t-elle) chez l'employeur? _____

7. Is there alternate employment available for the Worker?
Y a-t-il un autre emploi qui peut être offert au (à la) travailleur-euse? Yes No
Oui Non

If yes, specify.
Dans l'affirmative, préciser. _____

8. Is the Worker related to Employer?
Y a-t-il de la parenté entre le (la) travailleur-euse et l'employeur? Yes No
Oui Non

If yes, specify.
Dans l'affirmative, préciser. _____

9. GROSS EARNINGS FOR THE 16 WEEKS IMMEDIATELY PRIOR TO WEEK OF ACCIDENT AND NUMBER OF DAYS WORKED IN EACH WEEK.
RÉMUNÉRATION BRUTE DES SEPT SEMAINES PRÉCÉDANT IMMÉDIATEMENT LA SEMAINE DE L'ACCIDENT ET NOMBRE DE JOURS DE TRAVAIL

Week Ending Semaine finissant le	Days Worked Jours de travail	Gross Earnings Salaires brut	Week Ending Semaine finissant le	Days Worked Jours de travail	Gross Earnings Salaires brut
1		9			
2		10			
3		11			
4		12			
5		13			
6		14			
7		15			
8		16			

FOR OFFICE USE ONLY
À L'USAGE DU BUREAU

TOTAL GROSS WAGES (Item above)
TOTAL DES SALAIRES BRUTS (selon ci-dessus) _____

10. What are the Worker's total income tax exemptions for the current year?
(Insert figure opposite word Total on back page of TDI tax exemption form)
Indiquer le total des exemptions d'impôt du (de la) travailleur-euse pour l'année courante.
(Chiffre à l'opposé du mot - Total - au verso du formulaire TDI) _____ \$ _____

Please append additional information if preceding weeks reveal a variance.
Préciser des renseignements supplémentaires s'il y a un écart entre les semaines qui précèdent.

PART III

PARTIE III

1. Will the Employer be advancing any payment to the Worker?
L'employeur avancera-t-il des paiements au (à la) travailleur-euse? Yes No
Oui Non

If yes, explain.
Dans l'affirmative, préciser. _____

2. Is the Worker receiving any employment-related income because of a provision in a collective agreement, union award or contract of employment?
Le (La) travailleur-euse reçoit-elle un revenu lié à l'emploi en raison d'une disposition contenue dans une convention collective, une décision arbitrale ou un contrat d'emploi? Yes No
Oui Non

If yes, effective date of agreement _____ End date of agreement _____
Dans l'affirmative, date d'entrée en vigueur de la convention _____ Date d'expiration _____

3. Will the Worker receive any of the following types of employment-related income following the accident?
Le (La) travailleur-euse recevra-t-il (recevra-t-elle) l'un des revenus liés à l'emploi suivants après l'accident?

<input type="checkbox"/> Wages or salary Gains ou salaires \$ _____	<input type="checkbox"/> Sick leave benefits Prévisions pour congé de maladie \$ _____
<input type="checkbox"/> Retrospective pay increases Augmentation de salaires rétroactive \$ _____	<input type="checkbox"/> Statutory Holiday pay Rémunération pour jours fériés \$ _____
<input type="checkbox"/> Employer-sponsored disability coverage Indemnité pour incapacité payée par l'employeur \$ _____	<input type="checkbox"/> Any payment by the Employer made to or on behalf of the Worker Tout paiement que l'employeur fait au (à la) travailleur-euse blessé-e ou en son nom \$ _____
<input type="checkbox"/> Vacation pay Paié de vacances \$ _____	

4. Comments / Commentaires _____

PART IV

PARTIE IV

This form must be signed by both Employer and Worker. If the Employer wishes to object to the accident report, he/she may do so by advising the Commission by writing under separate cover. If the Worker does not agree with the information provided by the Employer, a separate form can be obtained by asking any of the Commission's offices, or from the Employer.

Ce formulaire doit être signé par l'employeur et le (la) travailleur-euse. L'employeur qui désire s'opposer à l'accident signalé peut le faire en avisant le CESSAT par écrit sous pli distinct. Si le (la) travailleur-euse n'est pas d'accord avec les renseignements fournis par l'employeur, il (elle) peut s'adresser à l'un des bureaux de la CESSAT ou à l'employeur afin d'obtenir un autre formulaire.

Worker requests that all future communications be in _____
Le (La) travailleur-euse demande qu'à l'avenir, toutes les communications soient faites (indiquer votre préférence)

Signature of Worker _____
Signature du (de la) travailleur-euse _____

Employer requests that all future communications be in _____
L'employeur demande qu'à l'avenir, toutes les communications soient faites (indiquer votre préférence)

Signature of Employer _____
Signature de l'employeur _____

Date _____
Date _____

Date _____
Date _____



SURFACE DIAMOND DRILL SAFETY INSPECTION FORM

CONTRACTOR NAME: LOCATION:
SUPERVISOR: INSPECTION DATE:
MODEL/TYPE OF DRILL ON SITE: SUPPORT EQUIPMENT:
DIVISION: INSPECTOR:

HOUSEKEEPING? EXCELLENT GOOD FAIR POOR

PERSONNEL

Personnel wearing approved hard hats? YES NO
Personnel wearing approved safety glasses? YES NO
Personnel wearing proper and clean snug fit clothing? YES NO
Personnel wearing approved hearing protection? YES NO

FIRE FIGHTING EQUIPMENT

Are extinguishers available for the drill site, fuel station, and vehicles? YES NO
* Monthly inspections being performed on all extinguishers? YES NO
* Annual service current on ALL extinguishers? YES NO
Is other fire fighting equipment available and clearly marked? YES NO

JOB ENVIRONMENT

Are the drill rig, vehicles and equipment clean? YES NO
Is the work area clean and organized? YES NO
Are guards on all rotating pieces of equipment (drill, pump, wire line, etc.)? YES NO
Are guards on all light bulbs? YES NO
Are generators or light plants properly grounded? YES NO
Are ladders provided for accessing deck, mast, etc. and secured? YES NO
Where applicable, have appropriate railings been installed? YES NO
Are proper pressure relief devices installed? YES NO
Has the rig been set up properly? YES NO
Is barricade tape or railing in place over/around holes, sumps or banks? YES NO
Have trip hazards been eliminated? YES NO
Is there a fall arrest system in place? YES NO
Are all containers fuel tanks labeled? YES NO
Are pre-shift inspections performed each shift for each piece of equipment? YES NO
Was the rig drilling upon arrival? YES NO
Are Emergency Shut Down devices present and functional? YES NO

EMERGENCY ACTION PLAN

Is emergency preparedness information posted? Are personnel aware? YES NO
Is a copy of the spill reporting procedure and phone #'s at the work site? YES NO
Have appropriate medical facilities been selected to treat injuries? YES NO
Is there a communication source on site, i.e. cellular, radio, etc.? YES NO
Is there a properly equipped First Aid Kit on site? YES NO
Is there a stretcher and emergency blanket available on the job site? YES NO

ENVIRONMENT

Is a MSDS available for all chemicals being used? YES NO
Is appropriate signage in place? YES NO
Are all WHMIS labels properly displayed? YES NO
Is only biodegradable drilling fluids used? YES NO
Do all secondary containment hold 130% of the maximum storage volume? YES NO
Do all engines have full size drip pans & oil absorbent matting? YES NO
Is all refuse (wire line and broken material etc.) removed on a timely basis? YES NO
Are approved fuel/oil cans being used and properly stored in drip pans? YES NO
Is fuel being stored away from the drill, as per local legislation (4 meters)? YES NO
Are spill kits complete and present on site (drill, supply pumps)? YES NO
Are pressurized cylinders properly stored and secured? YES NO

Remarks and/or suggestions:

Inspector signature: Driller/Supervisor signature:

Records and Statistics

Sizes and Weights of Drill Rods and Casings

SIZE	O.D. (Inches)	I.D. (Inches)	WEIGHT (Lbs. Per 10')	COUPLING I.D. (Inches)	THREADS PER INCH	CONTENT (GAL PER 100')
E*	1 5/16	27/32	28	7/16	3	2.9
A*	1 5/8	1 1/8	38	9/16	3	5.2
B	1 29/32	1 13/32	46	5/8	5	8.1
N	2 3/8	2	49	1	4	16.3
RW*	1 3/32	23/32	19	13/32	4	2.1
EW*	1 3/8	7/8	31	1/2	3	3.1
AW*	1 3/4	1 7/32	44	5/8	3	6.1
BW	2 1/8	1 3/4	42	3/4	3	12.5
NW	2 5/8	2 1/4	54	1 3/8	3	20.7
HW	3 1/2	3 1/16	85	2 3/8	3	38.3

* Parallel Wall

Flush-coupled Casing

SIZE	O.D. (Inches)	I.D. (Inches)	WEIGHT (Lbs. Per 10')	COUPLING I.D. (Inches)	THREADS per Inch	CONTENT (Gal. Per 100')
RX**	1 7/16	1 3/16	18	1 3/16	8	5.7
EX	1 13/16	1 5/8	18	1 1/2	8	10.8
AX	2 1/4	2	29	1 29/32	8	16.3
BX	2 7/8	2 9/16	47	2 3/8	8	26.7
NX	3 1/2	3 3/16	60	3	8	41.4
HX	4 1/2	4 1/8	90	3 15/16	5	69.4

** Formerly XRT

Flush-joint Casing

SIZE	O.D. (Inches)	I.D. (Inches)	WEIGHT (Lbs. Per 10')	THREADS Per Inch	CONTENT (Gal. Per 100 Feet)
RW	1 7/16	1 3/16	18	5	5.7
EW	1 13/16	1 1/2	28	4	9.2
AW	2 1/4	1 29/32	38	4	14.8
BW	2 7/8	2 3/8	70	4	23.0
NW	3 1/2	3	86	4	36.7
HW	4 1/2	4	113	4	65.2

All dimensions, weights and volumes shown are nominal approximations in inches, pounds and U.S. gallons

Records and Statistics

Wireline Drill Rods Series "Q" Wireline "Wedg-lok" Drill Rods

SIZE	O.D. (Inches)	I.D. (Inches)	WEIGHT (Lbs. Per 10')	THREADS per Inch	CONTENT (Gal. Per 100')
AQ	1 3/4	1 3/8	31	4	7.7
BQ	2 3/16	1 13/16	40	3	13.4
NQ	2 3/4	2 3/8	51	3	23.0
HQ	3 1/2	3 1/16	77	3	38.2
PQ	4 5/8	4 1/16	103**	3	67.4

* Coupling O.D.

** With Coupling

Series "CO" Composite Wireline Drill Rods

SIZE	O.D. (Inches)	ROD BODY I.D. (Inches)	TOOL JOINT I.D. (Inches)	WEIGHT (Lbs. Per 10')	THREADS per Inch	CONTENT (gal per 100')
BCQ	2 1/16	1 7/8	1 13/16	34.5	3	14.2
NCQ	2 3/4	2	2 1/8	44.0	3	24.1
HCQ	3 1/2	3	3 1/16	57.3	3	41.1
PCQ	4 5/8	4 1/4	4	102.8	3	71.6

Records and Statistics

Decimal Diamond Coring Bits Series "O" Wireline Diamond Bits

SIZE	CORE DIAMETER (Inches)		HOLE DIAMETER (Inches)		HOLE VOLUME (Gal. Per 100')
	Decimal	Fractional	Decimal	Fractional	
AQ, AQ-U	1.062	1 1/16	1.890	1	14.6
BQ, BQ-U	1.432	1 1/16	2.360	2	22.7
NQ, NQ-U	1.875	1 7/8	2.980	2	36.3
HQ	2.500	2 1/2	3.782	3	58.3
PQ	3.345	3 11/32	4.827	4	95.05

Decimal

SIZE	CORE DIAMETER (Inches)		HOLE DIAMETER (Inches)		HOLE VOLUME (Gal. Per 100')
	Decimal	Fractional	Decimal	Fractional	
BQ-3	1.320	1 5/16	2.360	2	22.7
NQ-3	1.775	1 23/32	2.980	2	36.3
HQ-3	2.406	1	3.782	3	58.3
PQ-3	3.270	3 1/22	4.827	4	95.05

SIZE*	CORE DIAMETER (Inches)		HOLE DIAMETER (Inches)		HOLE VOLUME (Gal per 100')
	Decimal	Fractional	Decimal	Fractional	
RWG	735		1 175	1 11/64	5 6
EWG, EWM, EWL	845	27/32	1 485	1 31/64	9 0
AWG, AWM, AWL	1 185	1 3/16	1 890	1 57/64	14 6
BWG, BWM, BWL	1 655	1 21/32	2 360	2 23/64	22 7
NWG, NWM, NWL	2 155	2 5/32	2 980	2	36 3
HWG	3 000	3	3 907	3 28/32	62 3
2 3/4 X 3 7/8	2 690	2 11/16	3 875	3 7/8	61 2
4 X 5 1/2	3 970	3 31/32	5 495	5 1/2	123 4
6 X 7 3/4	5 970	5 31/32	7 750	7 3/4	245 1

* DCDMA "WG" Sizes were formerly designated "X"

All dimensions, weights and volumes shown are nominal approximations in inches, pounds and US gallons

Records and Statistics

Drill Rods and Casing

Drill Rods

SIZE	O.D. (MM)	I.D. (MM)	WEIGHT (Kg. Per 10')	COUPLING I.D. (MM)	THREADS Per Inch	CONTENT (Litres per 100')
E*	33.3	21.4	12.7	11.1	3	11.0
A*	41.3	28.5	17.2	14.3	3	19.5
B	48.4	35.7	20.8	15.9	5	30.5
N	50.3	50.8	22.2	25.4	4	61.7
RW*	27.8	8.6	10.3	4	4	7.9
EW*	34.9	14.0	12.7	3	3	11.7
AW*	44.4	19.9	15.9	3	3	22.9
BW	54.0	19.0	19.0	3	3	47.3
NW	66.7	24.5	34.9	3	3	78.3
HW	88.9	38.6	60.3	3	3	145.0

* Parallel Wall

Flush Coupled Casing

SIZE	O.D. (MM)	I.D. (MM)	WEIGHT Kg. Per 10'	COUPLING I.D. (MM)	THREADS Per Inch	CONTENT (Litres per 100')
RX**	36.5	30.2	8.2	30.2	8	21.6
EX	46.0	41.3	8.2	38.1	8	40.9
AX	57.1	50.8	13.1	48.4	8	61.7
BX	73.0	65.1	21.3	60.3	8	101.1
NX	88.9	80.9	27.2	76.2	8	156.7
HX	114.3	104.8	40.8	100.0	5	262.7

** Formerly XRT

Flush Joint Casing

SIZE	O.D. (MM)	I.D. (MM)	WEIGHT (Kg. Per 10')	THREADS Per Inch	CONTENT (Litres per 100')
RW	36.5	30.2	8.2	5	21.6
EW	46.0	38.1	12.7	4	34.7
AW	57.1	48.4	17.2	4	56.1
BW	73.0	60.3	31.8	4	87.1
NW	88.9	76.2	39.0	4	138.9
HW	114.3	101.6	51.3	4	247.0

All dimensions, weights and volumes are nominal approximations

Records and Statistics

Metric Diamond Coring Bits Series "Q" Wireline Diamond Bits

SIZE	CORE DIAMETER (MM)	HOLE DIAMETER (MM)	HOLE VOLUME (Litres per 100')
AQ, AQ-U	27.0	48.0	55.2
BQ, BQ-U	36.5	60.0	86.0
NQ, NQ-U	47.6	75.7	137.5
HQ	63.5	96.0	220.8
PQ	85.0	122.6	359.8

Metric

SIZE	CORE DIAMETER (MM)	HOLE DIAMETER (MM)	HOLE VOLUME (Litres per 100')
BQ-3	33.5	60.0	86.0
NQ-3	45.0	75.7	137.5
HQ-3	61.1	96.0	220.8
PQ-3	83.0	122.6	359.8

Other Diamond Coring Bits

SIZE	CORE DIAMETER (MM)	HOLE DIAMETER (MM)	HOLE VOLUME (Litres per 100')
RWG	18.7	29.8	21.2
EWG, EWM, EWL	21.5	37.7	34.0
AWG, AWM, AWL	30.1	48.0	55.2
BWG, BWM, BWL	42.0	60.0	86.0
NWG, NWM, NWL	54.7	75.7	137.5
HWG	76.2	99.2	235.8
2 3/4 X 3 7/8	68.3	98.4	231.8
4 X 5	100.8	139.6	467.0
6 X 7 3/4	151.6	196.9	927.6

* DCDMA "WG" sizes were formerly designated "X"

All dimensions, weights and volumes are nominal approximations

Records and Statistics

Wireline Drill Rods Series "Q" Wireline "Wedg-lok" Drill Rods

SIZE	O.D. (MM)	I.D. (MM)	WEIGHT (Kg. Per 10')	THREADS Per Inch	CONTENT (Litres per 100')
AQ	44.5	34.9	14.1	4	29.2
BQ	55.6	46.0	18.2	3	50.7
NQ	69.9	60.3	23.1	3	87.1
HQ	88.9	77.8	34.9	3	144.6
PQ	117.5*	103.2	46.5**	3	255.0

* Coupling O.D.

** With Coupling

Series "Cq" Composite Wireline Drill Rods

SIZE	O.D. (MM)	ROD BODY I.D. (MM)	TOOL JOINT I.D. (MM)	WEIGHT (Kg. Per 10')	THREADS Per Inch	CONTENT (Litres per 100')
BCQ	55.6	47.6	46.0	15.7	3	53.7
NCQ	69.9	61.9	60.3	20.0	3	91.2
HCQ	88.9	80.9	77.8	26.0	3	155.6
PCQ	117.5	108.0	101.6	46.7	3	271.0



Wireline Core Drilling - Geotechnical Drilling

LOGAN DRILLING LIMITED

P.O. Box 188, Stewiacke, N.S. B0N 2J0
Phone (902) 639-2311 Fax (902) 639-9010

Logan Drilling Limited/Logan Geotech Inc.
Near Miss Report

To be completed when an incident almost became an accident. To be completed by Job Foreman within two days of incident and forwarded to Gerald Wright as soon as possible.

Logan's Client and location of workplace: _____

Foreman's name: _____

Date and time of incident Day _____ Month _____ Year _____
Time _____

Who was involved in the incident: _____

What happened to cause the incident: _____

Did any person or factor outside Logan people cause or contribute to this incident: Yes ___ No ___

If yes explain: _____

What prevented this from becoming an accident: _____

Recommendations to prevent reoccurrence: _____

Date of Report _____

Signature _____

Company Name

Monthly Safety Summary

Date: _____

1. Number Workers Hired: _____
Number Completed Orientation: _____

2. Number Tool Box Meetings Scheduled: _____
Number Conducted: _____
Percentage Attendance: _____

3. Number Formal Inspections Scheduled: _____
Number Completed: _____
Total Unsafe Acts/Conditions Identified: _____
Number Corrected: _____
Number Outstanding: _____

4. Number of Incidents
 Damage Only: _____
 Injury Only: _____
 Injury and Damage: _____
 Near Miss: _____

Number of Investigations completed:
 Outstanding: _____

Number of Recommendations Made:
 Complete: _____
 Outstanding: _____

Manager's Signature: _____

Records and Statistics

WIND CHILL INDEX

WIND SPEED MPH	WHAT THE THERMOMETER READS (degrees F.)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	WHAT IT EQUALS IN ITS EFFECT ON EXPOSED FLESH											
CALM	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148

The body is heated by burning food and by absorbing radiant energy from the sun or other heat source as a fire. The rate of heat production varies greatly, depending on whether you are working hard (cutting lines) or sleeping.

You use insulating materials such as clothing and sleeping bags to preserve that heat. The quality of insulation depends on cells of layers of non-circulating dry air. If you sweat and saturate the air spaces, you destroy the efficiency of the insulation. Getting wet in winter is a hazard you must avoid if possible, so prepare carefully for your winter excursions.



LOGAN DRILLING GROUP

LIST OF EMPLOYEES TRAINED IN FIRST AID

Fred Logan	St. John Ambulance, Standard First Aid St. John Ambulance, Emergency First Aid WHMIS
Steven Mundle	St. John Ambulance, Emergency First Aid
Andy Shand	St. John Ambulance, Emergency First Aid
Craig Spinney	St. John Ambulance, Standard First Aid St. John Ambulance, Emergency First Aid Second Line Supervisor's Well Control Second Line Supervisor's Offshore Well Control WHMIS
Mark Woodin	St. John Ambulance, Emergency First Aid WHMIS
Mike Benson	St. John Ambulance, Emergency First Aid WHMIS
Jamie Leedham	WHMIS
David Bryden	St. John Ambulance, Emergency First Aid
Donald Cooke	St. John Ambulance, Emergency First Aid
Donnie MacLellan	St. John Ambulance, Emergency First Aid
John Newsome	St. John Ambulance, Emergency First Aid
Reginald Tower	St. John Ambulance, Emergency First Aid
Gary Miller	St. John Ambulance, Standard First Aid
Robert Miller	St. John Ambulance, Standard First Aid
Donald J. MacDonald	St. John Ambulance, Emergency First Aid
Kevin Hughes	St. John Ambulance, Standard First Aid
Chris Young	St. John Ambulance, Emergency First Aid
Harold Fraser	St. John Ambulance, Standard First Aid
Brad Dobbin	St. John Ambulance, Emergency First Aid
Lavern Pynn	St. John Ambulance, Emergency First Aid
Jerry Young	St. John Ambulance, Standard First Aid



Occupational Health and Safety Act

CHAPTER 7

OF THE

ACTS OF 1996

amended 2000, c. 28, ss. 86, 87; 2004, c. 6, s. 24; 2007, c. 14, s. 7;
2009, c. 24

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An Act Respecting Occupational Health and Safety

Short title

1 This Act may be cited as the Occupational Health and Safety Act. *1996, c. 7, s. 1.*

Internal Responsibility System

2 The foundation of this Act is the Internal Responsibility System which

(a) is based on the principle that

(i) employers, contractors, constructors, employees and self-employed persons at a workplace, and

(ii) the owner of a workplace, a supplier of goods or provider of an occupational health or safety service to a workplace or an architect or professional engineer, all of whom can affect the health and safety of persons at the workplace,

share the responsibility for the health and safety of persons at the workplace;

(b) assumes that the primary responsibility for creating and maintaining a safe and healthy workplace should be that of each of these parties, to the extent of each party's authority and ability to do so;

(c) includes a framework for participation, transfer of information and refusal of unsafe work, all of which are necessary for the parties to carry out their responsibilities pursuant to this Act and the regulations; and

(d) is supplemented by the role of the Occupational Health and Safety Division of the Department of Labour, which is not to assume responsibility for creating and maintaining safe and healthy workplaces, but to establish and clarify the responsibilities of the parties under the law, to support them in carrying out their responsibilities and to intervene appropriately when those responsibilities are not carried out.
1996, c. 7, s. 2.

Interpretation

3 In this Act,

(a) "aggrieved person" means an employer, constructor, contractor, employee, self-employed person, owner, supplier, provider of an occupational health or safety service, architect, engineer or union at a workplace who is directly affected by an order or decision;

(b) "analyst" means a person appointed as an analyst by the Minister pursuant to this Act;

(c) "appeal panel" means an appeal panel designated pursuant to this Act;

(d) "committee" means a joint occupational health and safety committee established pursuant to this Act;

(e) "compliance notice" means a response, in writing, to an order of an officer, describing the extent to which the person against whom the order was made has complied with each item identified in the order;

(f) "constructor" means a person who contracts for work on a project or who undertakes work on a project himself or herself;

(g) "contractor" means a person who contracts for work to be performed at the premises of the person contracting to have the work performed, but does not include a dependent contractor or a constructor;

(h) "contracts for work" includes contracting to perform work and contracting to have work performed;

(i) "Council" means the Occupational Health and Safety Advisory Council established pursuant to this Act;

(j) "dependent contractor" means a person, whether or not employed under a contract of employment and whether or not furnishing the person's own tools, vehicles, equipment, machinery, material or any other thing, who performs work or services for another on such terms and conditions that the person is

(i) in a position of economic dependence upon the other,

(ii) under an obligation to perform duties mainly for the other, and

(iii) in a relationship with the other more closely resembling that of an employee than an independent contractor;

(k) "Deputy Minister of Labour" includes a person designated by the Deputy Minister of Labour to act in the stead of the Deputy Minister;

- (l) "Director" means the Director of Occupational Health and Safety or any person designated by the Director pursuant to this Act to act on behalf of the Director;
- (m) "Director of Labour Standards" means the Director of Labour Standards under the Labour Standards Code;
- (n) "Division" means the Occupational Health and Safety Division of the Department of Labour;
- (o) "employee" means a person who is employed to do work and includes a dependent contractor;
- (p) "employer" means a person who employs one or more employees or contracts for the services of one or more employees, and includes a constructor, contractor or subcontractor;
- (q) "former Act" means Chapter 320 of the Revised Statutes, 1989, the Occupational Health and Safety Act;
- (r) "Labour Standards Tribunal" means the Labour Standards Tribunal under the Labour Standards Code;
- (s) "Minister" means the Minister of Labour;
- (t) "occupation" means any employment, business, calling or pursuit;
- (u) "officer" means an occupational health and safety officer appointed pursuant to this Act and includes the Director;
- (v) "owner" includes a trustee, receiver, mortgagee in possession, tenant, lessee or occupier of lands or premises used as a workplace and a person who acts for, or on behalf of, an owner as an agent or delegate;
- (w) "police officer" means
- (i) a member of the Royal Canadian Mounted Police, or
 - (ii) a member or chief officer of a police force appointed pursuant to Section 14 or 17 of the Police Act;
- (x) "policy" means an occupational health and safety policy made pursuant to this Act;
- (y) "practicable" means possible, given current knowledge, technology and invention;
- (z) "program" means an occupational health and safety program required pursuant to this Act, unless the context otherwise requires;
- (aa) "project" means a construction project, and includes
- (i) the construction, erection, excavation, renovation, repair, alteration or demolition of any structure, building, tunnel or work and the preparatory work of land clearing or earth moving, and
 - (ii) work of any nature or kind designated by the Director as a project;

- (ab) "reasonably practicable" means practicable unless the person on whom a duty is placed can show that there is a gross disproportion between the benefit of the duty and the cost, in time, trouble and money, of the measures to secure the duty;
- (ac) "regularly employed" includes seasonal employment with a predictably recurring period of employment that exceeds four weeks, unless otherwise established by regulation or ordered by an officer;
- (ad) "representative" means a health and safety representative selected pursuant to this Act;
- (ae) "self-employed person" means a person who is engaged in an occupation on that person's own behalf but does not include a dependent contractor;
- (af) "supplier" means a person who manufactures, supplies, sells, leases, distributes or installs any tool, equipment, machine or device or any biological, chemical or physical agent to be used by an employee;
- (ag) "union" includes a trade union as defined in the Trade Union Act that has the status of bargaining agent under that Act in respect of any bargaining unit at a workplace, and includes an organization representing employees where the organization has exclusive bargaining rights under any other Act in respect of the employees;
- (ah) "workplace" means any place where an employee is or is likely to be engaged in any occupation and includes any vehicle or mobile equipment used or likely to be used by an employee in an occupation. *1996, c. 7, s. 3; 2000, c. 28, s. 86.*

APPLICATION AND ADMINISTRATION

Application of Act

4 (1) This Act binds Her Majesty in right of the Province.

(2) This Act applies to

(a) every agency of the Government of the Province; and

(b) all matters within the legislative jurisdiction of the Province.

(3) To the extent that Her Majesty in right of Canada submits, this Act binds Her Majesty in right of Canada, every agency of the Government of Canada and every other person whose workplace health and safety standards are ordinarily within the legislative jurisdiction of the Parliament of Canada. *1996, c. 7, s. 4.*

Conflict with other enactments

5 Notwithstanding any general or special Act, where there is a conflict between this Act and the regulations and any other enactment, this Act and the regulations prevail. *1996, c. 7, s. 5.*

Supervision and management of Act

6 The Minister has the general supervision and management of this Act and the regulations. *1996, c. 7, s. 6.*

Research, programs and activities

7 The Minister may undertake research, programs and activities to promote occupational health and safety and may undertake such programs in co-operation with the Government of Canada or of any other province of Canada or with any person or organization undertaking similar programs. *1996, c. 7, s. 7.*

Continuation of Division

8 The Occupational Health and Safety Division of the Department of Labour, established by the former Act, is hereby continued. *1996, c. 7, s. 8.*

Functions of Division

9 The Division shall

- (a) be concerned with occupational health and safety and the maintenance of reasonable standards for the protection of the health and safety of employees and self-employed persons;
- (b) either alone or in conjunction with the Workers' Compensation Board, the Department of Health or other departments and agencies, prepare and maintain statistics and information relating to employees and self-employed persons;
- (c) provide assistance to persons concerned with occupational health and safety and provide services to assist joint occupational health and safety committees, health and safety representatives, employers, employees and self-employed persons in maintaining reasonable standards for the protection of the health and safety of employees and self-employed persons;
- (d) promote or conduct studies and research projects in the field of occupational health and safety;
- (e) encourage and conduct educational programs to promote occupational health and safety;
- (f) annually, submit to the Advisory Council a report on a review of this Act; and
- (g) perform such other functions as the Minister or the Governor in Council may direct. *1996, c. 7, s. 9.*

Payment from Accident Fund

10 Part of the costs of the Division pursuant to this Act and the regulations and costs of education and research related to occupational health and safety shall be paid out of the Accident Fund by the Workers' Compensation Board as determined by the Governor in Council. *1996, c. 7, s. 10.*

Director and other personnel

11 (1) There shall be appointed in accordance with the Civil Service Act ~~an~~ [a] Director of Occupational Health and Safety and such officers and employees as are necessary for the administration and enforcement of this Act and the regulations.

(2) Notwithstanding subsection (1), the Minister may appoint officers, to administer and enforce this Act and the regulations, who are employees of

- (a) the Government of Canada or an agency thereof;

- (b) the government of another province of Canada or an agency thereof;
- (c) another department or an agency of the Government;
- (d) a municipality within the meaning of the Municipal Affairs Act or an agency thereof; or
- (e) an agency created by any combination of the governments of this Province, other provinces of Canada or the Government of Canada,

and who work in the field of occupational health and safety.

(3) The Director may, in writing, delegate to any person any of the Director's powers, duties or functions pursuant to this Act and shall, when so delegating, specify the powers, duties or functions to be exercised by the person to whom the Director delegates.

(4) Notwithstanding anything contained in this Act, an officer appointed pursuant to subsection (2) shall not exercise the powers, duties and functions the officer has pursuant to this Act in relation to the agency, department or municipality, as the case may be, that employs the officer. *1996, c. 7, s. 11; 2000, c. 28, s. 87.*

Designation of inspectors

12 The Minister may designate certain officers as inspectors or chief inspectors for the purpose of this Act or any other Act or part thereof that is administered by the Division. *1996, c. 7, s. 12.*

DUTIES AND PRECAUTIONS

Employers' precautions and duties

13 (1) Every employer shall take every precaution that is reasonable in the circumstances to

- (a) ensure the health and safety of persons at or near the workplace;
- (b) provide and maintain equipment, machines, materials or things that are properly equipped with safety devices;
- (c) provide such information, instruction, training, supervision and facilities as are necessary to the health or safety of the employees;
- (d) ensure that the employees, and particularly the supervisors and foremen, are made familiar with any health or safety hazards that may be met by them at the workplace;
- (e) ensure that the employees are made familiar with the proper use of all devices, equipment and clothing required for their protection; and
- (f) conduct the employer's undertaking so that employees are not exposed to health or safety hazards as a result of the undertaking.

(2) Every employer shall

- (a) consult and co-operate with the joint occupational health and safety committee, where such a committee has been established at the workplace, or the health and safety representative, where one has been selected at the workplace;
 - (b) co-operate with any person performing a duty imposed or exercising a power conferred by this Act or the regulations;
 - (c) provide such additional training of committee members as may be prescribed by the regulations;
 - (d) comply with this Act and the regulations and ensure that employees at the workplace comply with this Act and the regulations; and
 - (e) where an occupational health and safety policy or occupational health and safety program is required pursuant to this Act or the regulations, establish the policy or program.
- (3) The employer at a subsea coal mine shall provide such additional resources or information for the committee as may be prescribed by the regulations. *1996, c. 7, s. 13; 2007, c. 14, s. 7.*

Precautions to be taken by contractors

14 Every contractor shall take every precaution that is reasonable in the circumstances to ensure

- (a) the health and safety of persons at or near a workplace;
- (b) that the activities of the employers and self-employed persons at the workplace are co-ordinated;
- (c) communication between the employers and self-employed persons at the workplace of information necessary to the health and safety of persons at the workplace;
- (d) that the measures and procedures prescribed pursuant to this Act and the regulations are carried out at the workplace; and
- (e) that every employee, self-employed person and employer performing work at the workplace complies with this Act and the regulations. *1996, c. 7, s. 14.*

Precautions to be taken by constructors

15 Every constructor shall take every precaution that is reasonable in the circumstances to ensure

- (a) the health and safety of persons at or near a project;
- (b) that the activities of the employers and self-employed persons at the project are co-ordinated;
- (c) communication between the employers and self-employed persons at the project of information necessary to the health and safety of persons at the project, and facilitate communication with any committee or representative required for the project pursuant to this Act or the regulations;
- (d) that the measures and procedures prescribed under this Act and the regulations are carried out on the project; and

(e) that every employee, self-employed person and employer performing work in respect of the project complies with this Act and the regulations. *1996, c. 7, s. 15.*

Precautions to be taken by suppliers

16 Every supplier shall take every precaution that is reasonable in the circumstances to

(a) ensure that any device, equipment, machine, material or thing supplied by the supplier is in safe condition, and in compliance with this Act and the regulations when it is supplied;

(b) where it is the supplier's responsibility under a leasing agreement to maintain it, maintain any device, equipment, machine, material or thing in safe condition and in compliance with this Act and the regulations; and

(c) ensure that any biological, chemical or physical agent supplied by the supplier is labelled in accordance with the applicable federal and Provincial regulations. *1996, c. 7, s. 16.*

Employees' precautions and duties

17 (1) Every employee, while at work, shall

(a) take every reasonable precaution in the circumstances to protect the employee's own health and safety and that of other persons at or near the workplace;

(b) co-operate with the employer and with the employee's fellow employees to protect the employee's own health and safety and that of other persons at or near the workplace;

(c) take every reasonable precaution in the circumstances to ensure that protective devices, equipment or clothing required by the employer, this Act or the regulations are used or worn;

(d) consult and co-operate with the joint occupational health and safety committee, where such a committee has been established at the workplace, or the health and safety representative, where one has been selected at the workplace;

(e) co-operate with any person performing a duty or exercising a power conferred by this Act or the regulations; and

(f) comply with this Act and the regulations.

(2) Where an employee believes that any condition, device, equipment, machine, material or thing or any aspect of the workplace is or may be dangerous to the employee's health or safety or that of any other person at the workplace, the employee shall

(a) immediately report it to a supervisor;

(b) where the matter is not remedied to the employee's satisfaction, report it to the committee or the representative, if any; and

(c) where the matter is not remedied to the employee's satisfaction after the employee reports in accordance with clauses (a) and (b), report it to the Division. *1996, c. 7, s. 17.*

Self-employed persons' precautions and duties

18 Every self-employed person shall

- (a) take every reasonable precaution in the circumstances to protect the self-employed person's own health and safety and that of other persons who may be affected by the self-employed person's undertaking;
- (b) co-operate with any employer, joint occupational health and safety committee or health and safety representative that may be found at a place at which the self-employed person conducts an undertaking, to protect the self-employed person's own health and safety and that of other persons who may be affected by the undertaking;
- (c) co-operate with any person performing a duty or exercising a power conferred by this Act or the regulations; and
- (d) comply with this Act and the regulations. *1996, c. 7, s. 18.*

Owners' precautions and duties

19 Every owner shall

- (a) take every precaution that is reasonable in the circumstances to provide and maintain the owner's land or premises being or to be used as a workplace
 - (i) in a manner that ensures the health and safety of persons at or near the workplace, and
 - (ii) in compliance with this Act and the regulations; and
- (b) give to the employer at the workplace the information that is
 - (i) known to the owner or that the owner could reasonably be expected to know, and
 - (ii) necessary to identify and eliminate or control hazards to the health or safety of persons at the workplace. *1996, c. 7, s. 19.*

Precautions to be taken by providers of service

20 Every person or body who, for gain, is a provider of an occupational health or safety service shall take every precaution that is reasonable in the circumstances to

- (a) ensure that no person at a workplace is endangered as a result of the provider's activity; and
- (b) ensure, where the service involves providing information, that the information provided, at the time that it is provided, is accurate and sufficiently complete to enable the recipient to make a competent judgement on the basis of the information. *1996, c. 7, s. 20.*

Precautions to be taken by architects and offence

21 (1) An architect, as defined in the Architects Act, who gives advice or affixes the architect's seal to

documents or a professional engineer, as defined in the Engineering Profession Act, who gives advice or stamps documents shall take every precaution that is reasonable in the circumstances to ensure that a person who is likely to rely on the advice, seal or stamp will not be in contravention of this Act or the regulations as a result of such reliance.

(2) Where

(a) an architect, as defined in the Architects Act, gives advice or affixes the architect's seal to documents; or

(b) a professional engineer, as defined in the Engineering Profession Act, gives advice or stamps documents,

negligently or incompetently and a person at a workplace is endangered thereby, the architect or professional engineer contravenes this Act. *1996, c. 7, s. 21.*

Required instruction in principles

22 The curricula of

(a) a trade school or home study course within the meaning of the Trade Schools Regulation Act;

(b) a program of instruction within the meaning of the Community Colleges Act; and

(c) any other educational institution or class of educational institution designated pursuant to the regulations,

shall include instruction in the principles of occupational health and safety contained in this Act. *1996, c. 7, s. 22.*

Nature and extent of duties and requirements

23 (1) A specific duty or requirement imposed by this Act or the regulations does not limit the generality of any other duty or requirement imposed by this Act or the regulations.

(2) Where a provision of this Act or the regulations imposes a duty or requirement on more than one person, the duty or requirement is meant to be imposed primarily on the person with the greatest degree of control over the matters that are the subject of the duty or requirement.

(3) Notwithstanding subsection (2), but subject to subsection (5), where the person with the greatest degree of control fails to comply with a duty or requirement referred to in subsection (2), the other person or persons on whom the duty or requirement lies shall, where possible, comply with the provision.

(4) Where the person with the greatest degree of control complies with a provision described in subsection (2), the other persons are relieved of the obligation to comply with the provision only

(a) for the time during which the person with the greatest degree of control is in compliance with the provision;

(b) where simultaneous compliance by more than one person would result in unnecessary duplication of effort and expense; and

(c) where the health and safety of persons at the workplace is not put at risk by compliance by only one person.

(5) Where the person with the greatest degree of control fails to comply with a provision described in subsection (2) but one of the other persons on whom the duty or requirement is imposed complies with the provision, the other persons, if any, to whom the provision applies are relieved of the obligation to comply with the provision in the circumstances set out in clauses 4(a) to (c) with the necessary modifications. *1996, c. 7, s. 23.*

OCCUPATIONAL HEALTH AND SAFETY ADVISORY COUNCIL

Continuation of Council

24 (1) The Occupational Health and Safety Advisory Council, established by the former Act, is hereby continued.

(2) The Minister shall appoint to the Council persons who have a particular knowledge and experience relating to the protection and promotion of occupational health and safety generally. *1996, c. 7, s. 24.*

Membership of Council and subcommittees

25 (1) The membership of the Council shall include equal representation from employers and employees.

(2) In addition, the Director and the Chair of the Workers' Compensation Board, or a person designated to represent the Chair, and a representative of any group or groups selected by the Minister are members of the Council.

(3) The Minister may appoint one or more alternate members of the Council.

(4) An alternate member of the Council shall act in place of a member of the Council.

(5) A member or alternate member of the Council holds office during the term prescribed in that person's appointment and may be re-appointed.

(6) The Council may, with the approval of the Minister, appoint one or more subcommittees of the Council and a subcommittee shall perform any of the functions described in Section 26, as determined by the Council.

(7) For greater certainty, a person who is not a member of the Council may be a member of a subcommittee of the Council.

(8) The Minister may designate one employer representative and one employee representative as co-chairs of the Council.

(9) Persons appointed to the Council or a subcommittee of the Council shall be paid the reasonable expenses incurred by them in the course of carrying out their duties for the Council or subcommittee of the Council, plus such remuneration as is determined by the Minister. *1996, c. 7, s. 25; 2004, c. 6, s. 24.*

Functions of Council

26 The Council may advise the Minister on

- (a) the administration of this Act and the regulations;
- (b) occupational health and safety including, but not limited to, providing recommendations, giving advice and monitoring and reporting on occupational health and safety throughout the Province;
- (c) the exclusion of any profession, employee, employer, workplace, project, owner, occupation, industry, self-employed person or dependent contractor from all or part of the application of this Act or the regulations;
- (d) any other matter relating to occupational health and safety. *1996, c. 7, s. 26.*

OCCUPATIONAL HEALTH AND SAFETY POLICY

Requirement for policy

27 (1) Where

- (a) five or more employees are regularly employed by an employer other than a constructor or contractor;
- (b) five or more employees are regularly employed directly by a constructor or contractor, not including employees for whose services the constructor or contractor has contracted;
- (c) the regulations require an occupational health and safety policy; or
- (d) an officer so orders,

the employer shall prepare and review, at least annually, a written occupational health and safety policy, in consultation with the committee or representative, if any.

(2) Where this Act or the regulations do not require there to be a committee at a workplace, consultation on the development of the policy shall be carried out by the employer and shall include discussion of the proposed policy at one or more workplace health and safety meetings involving the employees.

(3) The policy shall express the employer's commitment to occupational health and safety and shall include

- (a) the reasons for the employer's commitment to health and safety;
- (b) the commitment of the employer to co-operate with the employees in pursuing occupational health and safety; and
- (c) the responsibilities of the employer, supervisors and other employees in fulfilling the commitment required pursuant to clause (b). *1996, c. 7, s. 27.*

OCCUPATIONAL HEALTH AND SAFETY PROGRAM

Requirement for program

28 (1) Where

(a) twenty or more employees are regularly employed by an employer other than a constructor or contractor;

(b) twenty or more employees are regularly employed directly by a constructor or contractor, not including employees for whose services the constructor or contractor has contracted; or

(c) the regulations require an occupational health and safety program,

the employer shall establish and maintain a written occupational health and safety program, in consultation with the committee or representative, if any, that is adapted to the circumstances of the organization for the purpose of implementing the employer's policy, this Act and the regulations.

(2) The program shall include

(a) provision for the training and supervision of employees in matters necessary to their health and safety and the health and safety of other persons at the workplace;

(b) provision for the preparation of written work procedures required to implement safe and healthy work practices, including those required pursuant to this Act, the regulations or by order of an officer, and identification of the types of work for which the procedures are required at the employer's workplace;

(c) provision for the establishment and continued operation of a committee required pursuant to this Act, including maintenance of records of membership, rules of procedure, access to a level of management with authority to resolve health and safety matters and any information required under this Act or the regulations to be maintained in relation to a committee;

(d) provision for the selection and functions of a representative where required pursuant to this Act, including provision for access by the representative to a level of management with authority to resolve health and safety matters;

(e) a hazard identification system that includes

(i) evaluation of the workplace to identify potential hazards,

(ii) procedures and schedules for regular inspections,

(iii) procedures for ensuring the reporting of hazards and the accountability of persons responsible for the correction of hazards, and

(iv) identification of the circumstances where hazards must be reported by the employer to the committee or representative, if any, and the procedures for doing so;

(f) a system for workplace occupational health and safety monitoring, prompt follow-up and control of identified hazards;

(g) a system for the prompt investigation of hazardous occurrences to determine their causes and the actions needed to prevent recurrences;

(h) maintenance of records and statistics, including reports of occupational health and safety inspections

and occupational health and safety investigations, with provision for making them available to persons entitled to receive them pursuant to this Act; and

(i) provision for monitoring the implementation and effectiveness of the program.

(3) The employer shall make available a copy of the program

(a) to the committee or representative, if any; and

(b) on request, to an employee at the workplace. *1996, c. 7, s. 28.*

JOINT OCCUPATIONAL HEALTH AND SAFETY COMMITTEES

Requirement for committees

29 (1) At every workplace where twenty or more persons are regularly employed, the employer shall establish and maintain one joint occupational health and safety committee or, at the discretion of the employer, more than one such committee and, where twenty or more persons are regularly employed by one or more constructors at a project, a constructor shall establish and maintain a joint occupational health and safety committee for the project.

(2) At a workplace where fewer than twenty persons are regularly employed, the Director may

(a) consult with the employer and employees at the workplace regarding whether a committee should be formed at the workplace; and

(b) order that a committee be established.

(3) Where an order respecting establishment of a committee is given pursuant to subsection (2), the employer shall ensure that the committee is chosen and functioning in accordance with this Act within fifteen days of receipt of the order. *1996, c. 7, s. 29.*

Committee where subsea coal mine

29A Notwithstanding Section 29, at a subsea coal mine where fewer than twenty persons are regularly employed, the employer shall establish and maintain a joint occupational health and safety committee where so prescribed by the regulations. *2007, c. 14, s. 7.*

Composition and procedure of committee

30 (1) A committee shall consist of such number of persons as may be agreed to by the employer and the employees or their union or unions.

(2) At least half of the members of a committee shall be employees at the workplace who are not connected with the management of the workplace and the employer may choose up to one half of the members of the committee if the employer wishes to do so.

(3) The employees on the committee are to be determined by the employees they represent, or designated by the union that represents the employees.

(4) A committee shall meet at least once each month unless

(a) a different frequency is prescribed by the regulations; or

(b) the committee alters the required frequency of meetings in its rules of procedure.

(5) Where a committee alters the required frequency of meetings by its rules of procedure and the Director is not satisfied that the frequency of meetings is sufficient to enable the committee to effectively perform its functions, the frequency of meetings shall be as determined by the Director.

(6) An employee who is a member of a committee is entitled to such time off from work as is necessary to attend meetings of the committee, to take any training prescribed by the regulations and to carry out the employee's functions as a member of the committee, and such time off is deemed to be work time for which the employee shall be paid by the employer at the applicable rate.

(7) A committee shall establish its own rules of procedure and shall adhere to the applicable regulations.

(8) Unless a committee determines another arrangement for chairing the committee in its rules of procedure, two of the members of the committee shall co-chair the committee, one of whom shall be selected by the members who represent employees and the other of whom shall be selected by the other members.

(9) The rules of procedure established pursuant to subsection (7) shall include an annual determination of the method of selecting the person or persons who shall

(a) chair the committee; and

(b) hold the position of chair for the coming year.

(10) Where agreement is not reached on

(a) the size of the committee;

(b) the designation of employees to be members; or

(c) rules of procedure,

the Director shall determine the matter. *1996, c. 7, s. 30.*

Functions of committees

31 (1) It is the function of the committee to involve employers and employees together in occupational health and safety in the workplace and, without restricting the generality of the foregoing, includes

(a) the co-operative identification of hazards to health and safety and effective systems to respond to the hazards;

(b) the co-operative auditing of compliance with health and safety requirements in the workplace;

(c) receipt, investigation and prompt disposition of matters and complaints with respect to workplace

health and safety;

(d) participation in inspections, inquiries and investigations concerning the occupational health and safety of the employees and, in particular, participation in an inspection referred to in Section 50;

(e) advising on individual protective devices, equipment and clothing that, complying with this Act and the regulations, are best adapted to the needs of the employees;

(f) advising the employer regarding a policy or program required pursuant to this Act or the regulations and making recommendations to the employer, the employees and any person for the improvement of the health and safety of persons at the workplace;

(g) maintaining records and minutes of committee meetings in a form and manner approved by the Director and providing an officer with a copy of these records or minutes on request; and

(h) performing any other duties assigned to it

(i) by the Director,

(ii) by agreement between the employer and the employees or the union, or

(iii) as are established by the regulations. *1996, c. 7, s. 31.*

Deemed establishment of committee

32 Where a committee was established prior to January 1, 1986, and has been maintained, pursuant to a collective agreement or other arrangement in a workplace, and the Director is satisfied that such committee or arrangement provides benefits for the health and safety of employees equal to or greater than the benefits to be derived under a committee established pursuant to this Act, the committee or arrangement is deemed to have been established in compliance with this Act. *1996, c. 7, s. 32.*

HEALTH AND SAFETY REPRESENTATIVES

Requirement for and functions of representatives

33 (1) At a workplace where no committee is required pursuant to Section 29 and where the number of persons employed is five or more, the employer shall cause the employees to select at least one health and safety representative from among the employees at the workplace who are not connected with the management of the workplace.

(2) At a project where no committee is required pursuant to Section 29 and where the number of persons employed is five or more, a constructor shall cause the employees to select at least one health and safety representative for the purposes of the project from among the employees at the project who are not connected with the management at the project.

(3) At a workplace where fewer than five persons are employed, the Director may

(a) consult with the employer and employees at the workplace regarding whether a representative should be selected at the workplace; and

(b) order that a representative be selected by the employees from among the employees at the workplace

who are not connected with the management of the workplace.

(4) Where an order respecting the selection of a representative is given pursuant to subsection (3), the employer shall ensure that the representative is selected and functioning in accordance with this Act within fifteen days of receipt of the order.

(5) An employee who is a representative is entitled to such reasonable time off from work as is necessary to carry out the employee's functions as a representative, and such time off is deemed to be work time for which the employee shall be paid by the employer at the applicable rate.

(6) It is the function of the representative to be involved, on behalf of the employees together with the employer, in occupational health and safety in the workplace and, without restricting the generality of the foregoing, includes

(a) the co-operative identification of hazards to health and safety and effective systems to respond to the hazards;

(b) the co-operative auditing of compliance with health and safety requirements in the workplace;

(c) receipt of and co-operation with the employer in the investigation and prompt disposition of matters and complaints with respect to workplace health and safety;

(d) participation in inspections, inquiries and investigations concerning the occupational health and safety of the employees and, in particular, participation in an inspection referred to in Section 50;

(e) advising on individual protective devices, equipment and clothing which, complying with this Act and the regulations, are best adapted to the needs of the employees;

(f) advising the employer regarding a policy or program required by this Act or the regulations and making recommendations to the employer, the employees and any person for the improvement of the health and safety of persons at the workplace; and

(g) performing any other duties assigned to the representative

(i) by the Director,

(ii) by agreement between the employer and the employees or the union, or

(iii) as are established by the regulations. *1996, c. 7, s. 33.*

COMMUNICATION OF INFORMATION

Response to written recommendations

34 (1) An employer who receives written recommendations from a committee or representative and a request in writing to respond to the recommendations, shall respond in writing to the committee or representative within twenty-one days, and the response shall

(a) indicate acceptance of the recommendations; or

(b) give reasons for the disagreement with any recommendations that the employer does not accept,

or, where it is not reasonably possible to provide a response before the expiry of the twenty-one day period, provide within that time a reasonable explanation for the delay, indicate to the committee or representative when the response will be forthcoming, and provide the response as soon as it is available.

(2) Where the committee or representative makes a request pursuant to subsection (1) and is not satisfied that the explanation provided for a delay in responding is reasonable in the circumstances, the chair or co-chairs of the committee, or representative, as the case may be, shall promptly report this fact to an officer. *1996, c. 7, s. 34.*

Duty of employer to provide certain information

35 (1) An employer shall notify the committee or representative, if any, of the existence of reports of

- (a) workplace occupational health or safety inspections; and
- (b) workplace occupational health or safety monitoring or tests,

undertaken at the workplace by, or at the request of, an officer or the employer and, on request, the employer shall make the reports available to the committee or the representative.

(2) An employer shall make available to an employee at a workplace, on request, reports of

- (a) workplace occupational health or safety inspections; and
- (b) workplace occupational health or safety monitoring or tests,

undertaken at the workplace by, or at the request of, an officer or the employer.

(3) Within twenty-one days of receiving a request in writing from the committee, representative or, where there is no committee or representative, an employee at a workplace for any information of a health or safety nature other than that specified in subsection (1), the employer shall respond in writing and the response shall

- (a) provide the requested information; or
- (b) give reasons for not providing the information, in whole or in part,

and where it is not reasonably possible to provide a response before the expiry of the twenty-one day period, provide within that time a reasonable explanation for the delay, indicate to the committee, representative or employee when the response will be forthcoming and provide the response as soon as it is available.

(4) Where the committee, representative or employee makes a request pursuant to subsection (3) and is not satisfied that the explanation provided for a delay in responding is reasonable in the circumstances, the chair or co-chairs of the committee, the representative or the employee, as the case may be, shall promptly report this fact to an officer. *1996, c. 7, s. 35.*

Duty of officer to provide certain information

36 An officer shall provide to the employer at a workplace reports of

- (a) workplace occupational health or safety inspections; and
- (b) workplace occupational health or safety monitoring or tests,

undertaken at the workplace by, or at the request of, an officer, and the employer shall comply with subsections 35(1) and (2). *1996, c. 7, s. 36.*

Duty of employer to post certain information

37 The employer shall

- (a) post and maintain the current names of the committee members or the representative, if any, and the means of contacting them; and
- (b) post promptly, where there is a committee, the minutes of the most recent committee meeting and ensure they remain posted until superseded by minutes of the next committee meeting. *1996, c. 7, s. 37.*

Availability of information at workplace

38 (1) Every employer shall

- (a) make available for examination at the workplace
 - (i) a copy of the regulations that relate to the workplace, and
 - (ii) information and reports that an officer considers advisable to enable employees to become acquainted with their rights and responsibilities pursuant to this Act and the regulations;

and

- (b) post in a prominent place or places in the workplace capable of being easily accessed by the employees
 - (i) a current copy of this Act,
 - (ii) a code of practice required pursuant to this Act or the regulations,
 - (iii) a current telephone number for reporting occupational health or safety concerns to the Division, and
 - (iv) where the employer is required pursuant to this Act or the regulations to have an occupational health and safety policy, the policy,

and ensure they remain posted.

(2) Where anything other than the information listed in subsection (1) is required to be posted pursuant to this Act or the regulations, the person who has the duty to post shall

- (a) post a legible copy of it in a prominent place or places in the workplace capable of being easily accessed by the employees; and

(b) ensure that it remains posted for at least seven days, or longer if additional time is necessary to enable employees at the workplace to inform themselves of the content, unless this Act or the regulations otherwise specify,

or in lieu of complying with clauses (a) and (b), shall provide the information to each employee, in writing. *1996, c. 7, s. 38.*

Duty of employer to provide certain information

39 (1) Where

(a) an officer makes an order pursuant to this Act or the regulations against an employer;

(b) a compliance notice is required of an employer pursuant to subsection 56(1); or

(c) an appeal is initiated or disposed of pursuant to Section 67 or 69,

the employer shall, subject to subsections (2) and (3), immediately

(d) post the order, compliance notice, notice of appeal or decision; and

(e) deliver a copy of the order, compliance notice, notice of appeal or decision to the committee or representative, if any.

(2) An officer may authorize in writing an officer's order to be edited to protect a trade secret, secret manufacturing process or confidential personal information, the disclosure of which is limited pursuant to this Act.

(3) Where an order is edited pursuant to subsection (2), the authorization of the officer shall be affixed to the order and it shall be posted in accordance with this Act in substitution for the unedited order. *1996, c. 7, s. 39.*

Service of documents

40 (1) For the purpose of this Act and the regulations and any proceedings thereunder, any order, notice, document or other communication sent through the mail shall be presumed, unless the contrary is proved, to have been received by the addressee in the ordinary course of mail.

(2) An order, notice, document or other communication may be served or delivered for the purpose of this Act or the regulations by personal service or by sending by registered mail to the last known address of the addressee. *1996, c. 7, s. 40.*

Right to annual summary of data

41 Where the Workers' Compensation Act applies to a workplace,

(a) a committee;

(b) a representative;

(c) an employee; or

(d) an employer,

at the workplace who so requests in writing shall receive an annual summary of data relating to the employer. *1996, c. 7, s. 41.*

WORKPLACE MONITORING, MEASUREMENTS AND TESTS

Right of employee to observe and be paid

42 (1) Every employer shall permit an employee selected pursuant to subsection (2) to observe workplace occupational health or safety monitoring and the taking of samples or measurements that relate to the health or safety of employees at the workplace, unless the monitoring or taking of samples or measurements takes place

(a) continuously or on a regular and frequent basis, except to observe the initial setup of the workplace occupational health or safety monitoring process and to be informed and observe the monitoring where there has been a malfunction of the monitor or alteration in the process;

(b) in a location that is remote and is part of the regular task of a person employed at the location; or

(c) during an emergency situation,

and time spent by the employee in such activities is deemed to be work time for which the employee shall be paid by the employer at the applicable rate.

(2) Where there is

(a) a committee or representative at a workplace, the employee who observes workplace occupational health or safety monitoring and the taking of samples or measurements shall be selected by the committee or representative, as the case may be; or

(b) no committee or representative at a workplace, the employee who observes workplace occupational health or safety monitoring and the taking of samples or measurements shall be selected by the employees.

(3) Every employer shall provide

(a) reasonable notice to an observer of the commencement of the occupational health or safety monitoring and of the taking of samples or measurements undertaken pursuant to subsection (1); and

(b) access to a workplace for the purpose of the observation.

(4) Where an observer requests, the procedure for occupational health or safety monitoring and the taking of samples or measurements shall be identified and explained to the observer.

(5) Where an owner, constructor or contractor performs occupational health or safety monitoring or takes samples or measurements that relate to the health or safety of employees at the workplace,

(a) the owner, constructor or contractor shall provide reasonable notice to all employers at the workplace of the commencement of the occupational health or safety monitoring and of the taking of samples or measurements; and

(b) the requirements of subsections (1) to (4) apply.

(6) Where the monitoring, samples or measurements referred to in subsection (1) are conducted by, or at the request of, an officer, the officer may undertake the monitoring, samples or measurements whether or not notice has been given pursuant to subsection (3) or (5). *1996, c. 7, s. 42.*

RIGHT TO REFUSE WORK

Right to refuse work and consequences of refusal

43 (1) Any employee may refuse to do any act at the employee's place of employment where the employee has reasonable grounds for believing that the act is likely to endanger the employee's health or safety or the health or safety of any other person until

(a) the employer has taken remedial action to the satisfaction of the employee;

(b) the committee, if any, has investigated the matter and unanimously advised the employee to return to work; or

(c) an officer has investigated the matter and has advised the employee to return to work.

(2) Where an employee exercises the employee's right to refuse to work pursuant to subsection (1), the employee shall

(a) immediately report it to a supervisor;

(b) where the matter is not remedied to the employee's satisfaction, report it to the committee or the representative, if any; and

(c) where the matter is not remedied to the employee's satisfaction after the employee has reported pursuant to clauses (a) and (b), report it to the Division.

(3) At the option of the employee, the employee who refuses to do any act pursuant to subsection (1) may accompany an officer or the committee or representative, if any, on a physical inspection of the workplace, or part thereof, being carried out for the purpose of ensuring others understand the reasons for the refusal.

(4) Notwithstanding subsection 50(8), an employee who accompanies an officer, the committee or a representative, as provided in subsection (3), shall be compensated in accordance with subsection (7), but the compensation shall not exceed that which would otherwise have been payable for the employee's regular or scheduled working hours.

(5) Subject to any applicable collective agreement, and subsection (3), where an employee refuses to do work pursuant to subsection (1), the employer may reassign the employee to other work and the employee shall accept the reassignment until the employee is able to return to work pursuant to subsection (1).

(6) Where an employee is reassigned to other work pursuant to subsection (5), the employer shall pay the employee the same wages or salary and grant the employee the same benefits as would have been received had the employee continued in the employee's normal work.

(7) Where an employee has refused to work pursuant to subsection (1) and has not been reassigned to other work pursuant to subsection (5), the employer shall, until clause (1)(a), (b) or (c) is met, pay the employee the same wages or salary and grant the employee the same benefits as would have been received had the employee continued to work.

(8) A reassignment of work pursuant to subsection (5) is not discriminatory action pursuant to Section 45.

(9) An employee may not, pursuant to this Section, refuse to use or operate a machine or thing or to work in a place where

(a) the refusal puts the life, health or safety of another person directly in danger; or

(b) the danger referred to in subsection (1) is inherent in the work of the employee. *1996, c. 7, s. 43.*

Restriction on assignment of work where refusal

44 Where an employee exercises the employee's right to refuse to work pursuant to subsection 43(1), no employee shall be assigned to do that work until the matter has been dealt with under that subsection, unless the employee to be so assigned has been advised of

(a) the refusal by another employee;

(b) the reason for the refusal; and

(c) the employee's rights pursuant to Section 43. *1996, c. 7, s. 44.*

DISCRIMINATORY ACTION

Prohibition of "discriminatory action"

45 (1) In this Section and in Section 46, "discriminatory action" means an action that adversely affects an employee with respect to terms or conditions of employment or any opportunity for employment or promotion and includes dismissal, layoff, suspension, demotion, transfer of job or location, change in hours of work, coercion, intimidation, imposition of any discipline, reprimand or other penalty including reduction in wages, salary or other benefits, or the discontinuation or elimination of the job of the employee.

(2) No employer or union shall take, or threaten to take, discriminatory action against an employee because the employee has acted in compliance with this Act or the regulations or an order or direction made thereunder or has sought the enforcement of this Act or the regulations or, without limiting the generality of the foregoing, because

(a) of the participation of the employee in, or association with, a committee or the employee has sought the establishment of a committee or performed functions as a committee member;

(b) of the association of the employee with a representative or the employee has sought the selection of a representative or performed functions as a representative;

- (c) the employee has refused to work pursuant to subsection 43(1);
- (d) the employee has sought access to information to which the employee is entitled by this Act or the regulations, or has been assigned the role of observer pursuant to Section 42;
- (e) the employee has testified or is about to testify in any proceeding or inquiry pursuant to this Act or the regulations; or
- (f) the employee has given information to the committee, a representative, an officer or other person concerned with the administration of this Act or the regulations with respect to the health and safety of employees at the workplace,

unless the employer or union, as the case may be, establishes that such action is solely motivated by legitimate business reasons.

(3) On an inquiry into a complaint pursuant to Section 46 alleging that there has been a failure by an employer or a union to comply with subsection (2), the burden of proving that there has been no such failure is upon the employer or the union, as the case may be. *1996, c. 7, s. 45.*

Right to make complaint or file grievance

46 (1) An employee who complains that

(a) an employer has failed to pay wages, salary, pay or a benefit entitlement required pursuant to

- (i) subsection 30(6), 33(5), 42(1), 43(4), 43(6), 43(7) or 50(8), or
- (ii) the regulations; or

(b) an employer or a union has taken, or threatened to take, discriminatory action contrary to subsection 45(2),

may

(c) where the employee is not subject to a collective agreement under which the employee is entitled to file a grievance, within thirty days, make a complaint in writing to an officer; or

(d) where the employee is subject to a collective agreement under which the employee is entitled to file a grievance,

- (i) have the complaint dealt with by final and binding arbitration under the collective agreement, or
- (ii) within thirty days, make a complaint in writing to an officer, if an arbitrator has not seized jurisdiction over the matter under the collective agreement, in which case the matter shall be dealt with by the arbitrator under the collective agreement.

(2) Where an officer receives a complaint pursuant to subsection (1), the officer shall investigate the complaint and

(a) issue an order specifying the provision of this Act or the regulations that has been contravened; or

(b) determine that there are no grounds upon which to issue an order, and so notify the complainant.

(3) Where the officer determines that an employer has failed to pay wages, salary, pay or a benefit entitlement required by a provision referred to in clause (1)(a), the officer's order issued pursuant to clause (2)(a) shall require, by a specified date,

(a) the employer to pay the wages, salary, pay or other benefits required by the provision referred to in clause (1)(a); or

(b) the employer or the union to do the things that, in the opinion of the officer, are necessary to secure compliance with this Act and the regulations.

(4) Where the officer determines that discriminatory action has been taken or threatened against an employee contrary to subsection 45(2), the officer's order issued pursuant to clause (2)(a) shall require, by a specified date,

(a) the employer to reinstate the employee pursuant to the same terms and conditions under which the employee was formerly employed;

(b) the employer to pay any wages, salary, pay or other benefits that the employee would have earned but for the discriminatory action;

(c) that any reprimand or other references to the matter in the employer's records on the employee be removed;

(d) the reinstatement of the employee to the union and the payment by the union to the employee of any wages, salary, pay or other benefits that the employee would have earned but for the discriminatory action; or

(e) the employer or the union to do the things that, in the opinion of the officer, are necessary to secure compliance with this Act and the regulations.

(5) Where an order or decision of an officer made pursuant to clause (2)(a) is not appealed, the decision of the officer is final and binding. *1996, c. 7, s. 46; 2009, c. 24, s. 1.*

NOTE - Chapter 24 of the Acts of 2009 provides in part as follows:

6 Where a complaint regarding discriminatory action is commenced pursuant to the Occupational Health and Safety Act before the coming into force of this Act, the provisions of the Occupational Health and Safety Act respecting appeals apply to that complaint as if this Act had not been enacted.

Chapter 24 came into force on February 23, 2010.

Powers of officers

47 For the purpose of ensuring compliance with this Act and the regulations and any order made thereunder, an officer may

(a) at a reasonable hour of the day or night enter and inspect a workplace, conduct tests and make such examinations as the officer considers necessary or advisable;

- (b) require the production of records, drawings, specifications, books, plans or other documents in the possession of the employer that relate to the workplace or the health and safety of employees or other persons at the workplace and remove them temporarily for the purpose of making copies;
- (c) require the production of documents or records that may be relevant to the investigation of a complaint pursuant to subsection 46(1), and remove them temporarily for the purpose of making copies;
- (d) take photographs or recordings of the workplace and any activity taking place in the workplace;
- (e) make any examination, investigation or inquiry as the officer considers necessary to ascertain whether there is compliance with this Act and the regulations and any order made under them;
- (f) inspect, take samples and conduct tests of samples, including tests in which a sample is destroyed, of any material, product, tool, equipment, machine or device being produced, used or found at the workplace for which the officer shall be responsible, except for a sample that has been destroyed, until the material, product, tool, equipment, machine or device is returned to the person being inspected;
- (g) examine a person with respect to matters pursuant to this Act or the regulations;
- (h) for the purposes of an investigation, inquiry or examination made by the officer pursuant to this Act or the regulations, summons to give evidence and administer an oath or affirmation to a person;
- (i) in an inspection, examination, inquiry or test be accompanied and assisted by or take with the officer a person having special, expert or professional knowledge of any matter;
- (j) exercise such other powers as may be necessary or incidental to the carrying out of the officer's functions pursuant to this Act or the regulations. *1996, c. 7, s. 47.*

Power of officer to seize, remove and detain

48 (1) Where an officer reasonably believes that this Act or the regulations have been contravened and that a thing that is produced to the officer or that is in plain view would afford evidence of the contravention, the officer may, while acting under the authority of this Act, without a warrant or court order, seize the thing.

(2) The officer may remove the thing seized pursuant to subsection (1) or may detain it in the place in which it was seized.

(3) The officer shall inform the person from whom the thing is seized pursuant to subsection (1) as to the reason for the seizure and shall give the person a receipt for it.

(4) The officer shall bring a thing seized pursuant to subsection (1) before a justice or, if that is not reasonably possible, shall report the seizure to a justice.

(5) An officer who seizes anything pursuant to subsection (1) shall deal with it in the same way as if it were seized pursuant to the authority of a search warrant issued pursuant to the Summary Proceedings Act. *1996, c. 7, s. 48.*

Powers of a peace officer

49 While acting under the authority of this Act, an officer has and may exercise, in any part of the

Province, all the powers, authorities and immunities of a peace officer under the Criminal Code (Canada). 1996, c. 7, s. 49.

Accompaniment during inspections

50 (1) For the purpose of this Section, "inspection" means a physical inspection of a workplace, or any part or parts of a workplace, pursuant to the powers conferred upon an officer pursuant to Section 47.

(2) Where an officer conducts an inspection,

(a) the employer shall give the representative or an employee member of the committee, if any; and

(b) a representative of the employer shall have,

the opportunity to accompany the officer during the officer's inspection.

(3) Where there is no committee member representing employees or representative available, the officer may select one or more employees who shall accompany the officer during the officer's inspection.

(4) Where a representative or employee member of the committee is unavailable to accompany the officer during the officer's inspection, the officer shall endeavour to consult with a reasonable number of employees during the inspection.

(5) For greater certainty, where

(a) a person referred to in clause (2)(a) or (b) is unavailable to accompany an officer during the officer's inspection; and

(b) in the officer's opinion it is necessary to proceed with the inspection without accompaniment,

the officer may conduct the inspection without accompaniment.

(6) Notwithstanding subsections (2) and (3) and subject to subsection (7), an officer may question any person who is or was in a workplace either separate and apart from another person or in the presence of any other person regarding anything that is or may be relevant to the officer's inspection, examination, investigation, inquiry or test.

(7) The individual who is questioned pursuant to subsection (6) may request to be accompanied and may be accompanied by another person during the questioning.

(8) Subject to subsection 43(4), time spent by a committee member, representative or employee in accompanying or consulting with an officer during an inspection is deemed to be work time for which the committee member, representative or employee shall be paid by the employer at the applicable rate. 1996, c. 7, s. 50.

Power to issue stop orders

51 Where an officer determines that any device, equipment, machine, material or thing to be used by an employee or self-employed person

(a) is unsafe; or

(b) does not comply with the standards prescribed by this Act or the regulations,

the officer may order the supplier or any other person to stop selling, renting, leasing or otherwise supplying the device, equipment, machine, material or thing to any employer, employee or self-employed person. *1996, c. 7, s. 51.*

Power to require reports, assessments and tests

52 Where

(a) an officer determines that there may be a risk to health or safety; and

(b) an employer, owner, contractor or constructor fails to establish that it would not be reasonably practicable to carry out the order,

the officer may order, at the expense of the employer, owner, contractor or constructor that the employer, owner, contractor or constructor, as the case may be,

(c) obtain a report or assessment from a person who possesses such special expert or professional knowledge or qualifications as are specified by the officer for the purpose of determining whether any biological, chemical or physical agent, material, equipment, machine, device, article, thing or procedure, in or about a workplace, conforms with this Act or the regulations or good professional practice; and

(d) cause any tests necessary to the production of the report or assessment to be conducted or taken. *1996, c. 7, s. 52.*

Prohibition against disclosure of certain information

53 Except in accordance with this Act and the regulations, a person who, at the request of an officer, makes an examination, inquiry or a test pursuant to clause 47(i) shall not publish, disclose or communicate to a person any information, material, statement, report or result of any examination, test or inquiry acquired, furnished, obtained, made or received under the powers conferred pursuant to this Act or the regulations, and, for greater certainty, subsection 61(3) applies. *1996, c. 7, s. 53.*

Service of notice of decision and right to appeal

54 Where

(a) an officer conducts an investigation of a work refusal by an employee pursuant to subsection 43(1) and the employee or employer is not satisfied with the advice provided by the officer or the failure to provide advice; or

(b) a complaint of an alleged contravention of this Act or the regulations is investigated by an officer and the officer does not issue an order that, in the opinion of the complainant, is necessary for the health or safety of persons at the workplace,

and the employee, employer or complainant so requests, the officer shall serve the employee, employer or complainant, as the case may be, in writing, with notice of the officer's decision and, where the employee, employer or complainant is an aggrieved person, the employee, employer or complainant may appeal the decision pursuant to Section 67. *1996, c. 7, s. 54.*

Orders and consequences of orders

55 (1) An officer may give an order orally or in writing to a person for the carrying out of any matter or thing regulated, controlled or required by this Act or the regulations, and may require that the order be carried out within such time as the officer specifies.

(2) Where an officer makes an oral order pursuant to subsection (1), the officer shall confirm the oral order in writing.

(3) For greater certainty, an oral order is effective pursuant to this Act before it is confirmed in writing.

(4) Where an officer makes an order pursuant to subsection (1) and finds that the matter or thing referred to therein is a source of danger or a hazard to the health or safety of a person at the workplace, the officer may order that

(a) any place, device, equipment, machine, material or thing not be used until the order is complied with;

(b) work at the workplace or any part of the workplace stop until the order to stop work is withdrawn or cancelled by an officer;

(c) the workplace or any part of the workplace be cleared of persons and isolated by barricades, fencing or any other means suitable to prevent access thereto until the danger or hazard is removed.

(5) Where an order is made pursuant to clause (4)(c), no employer or supervisor shall require or permit an employee to enter the workplace or part of the workplace that is the subject of the order except for the purpose of doing work that is necessary or required to remove the danger or the hazard and only where the employee is protected from the danger or the hazard.

(6) Where an officer issues an order pursuant to this Section, the officer may affix to the workplace or to any device, equipment, machine, material or thing a copy or notice of the order and no person except an officer shall remove the copy or notice unless authorized to do so by an officer. *1996, c. 7, s. 55.*

Compliance notices and determination of compliance

56 (1) Where an officer makes an order pursuant to this Act or the regulations, unless the officer records in the order that compliance with the order was achieved before the officer left the workplace, the person against whom an order is made shall submit to the officer a compliance notice within the time specified in the order.

(2) Where a compliance notice is required pursuant to subsection (1), the officer shall specify in the order the time within which the person against whom the order is made shall submit the compliance notice to the officer.

(3) Notwithstanding the submission of a compliance notice, a person against whom an order is made achieves compliance with an order made pursuant to this Act or the regulations when an officer determines that compliance is achieved. *1996, c. 7, s. 56.*

Prohibition against interference with officer

57 (1) No person shall hinder, obstruct, molest or interfere with an officer in the exercise of a power or the performance of a duty pursuant to this Act or the regulations.

(2) No person shall knowingly furnish an officer with false information or neglect or refuse to furnish information required by an officer in the exercise of the officer's powers or performance of the officer's duties pursuant to this Act or the regulations.

(3) A person who

(a) wilfully delays an officer in the exercise of the officer's powers or the performance of the officer's duties pursuant to this Act or the regulations; or

(b) fails to comply with a direction or summons of an officer given pursuant to this Act or the regulations or to produce any certificate or document that the person is required by this Act or the regulations to produce,

is guilty of obstructing the officer in the exercise of the officer's powers or the performance of the officer's duties pursuant to this Act.

(4) A person shall furnish all necessary means in that person's power to facilitate any entry, inspection, examination, testing or inquiry by an officer in the exercise of the officer's powers or performance of the officer's duties pursuant to this Act or the regulations. *1996, c. 7, s. 57.*

CHEMICAL SAFETY

Restriction on use of chemicals

58 Where a biological, chemical or physical agent or a combination of such agents is used or intended to be used in the workplace and its presence in the workplace or the manner of its use is, in the opinion of the Director, likely to endanger the health or safety of an employee, the Director may, by notice in writing to the employer, constructor, contractor or self-employed person, order that

(a) labelling be utilized to identify at least the presence and composition, including common or generic names, of the biological, chemical or physical agent, the risks associated with its use and the measures to be taken in case of emergency;

(b) the use, intended use, presence or manner of use be

(i) prohibited,

(ii) limited or restricted in such manner as the Director specifies,

(iii) subject to such conditions regarding administrative control, work practices, engineering control and time limits for compliance as the Director specifies; or

(c) labelling be in accordance with applicable federal and Provincial regulations. *1996, c. 7, s. 58.*

Duty of employer to prepare list of chemicals

59 (1) Subject to Section 61, unless the employer has received from the Director specific written direction to the contrary and the direction has not been revoked by the Director, the employer shall prepare a list of all chemical substances regularly used, handled, produced or otherwise present at the workplace that may be a hazard to the health or safety of the employees or that are suspected by the employees of being such a hazard, and the list shall identify all chemical substances by their common or generic names where they

are known to the employer.

(2) The list referred to in subsection (1) shall include the trade name and the address of the supplier and manufacturer of any chemical substance, the chemical composition or common or generic name of which is unknown to the employer.

(3) The employer shall advise the committee at the workplace or the representative, if any, of the list referred to in this Section and any amendments to the list and, where there is no committee or representative, the employer shall advise the employees, the union, if any, a self-employed person and an officer upon request by any of them. *1996, c. 7, s. 59.*

Duties of suppliers and manufacturers

60 (1) A supplier or manufacturer of a chemical substance shall, at the request of the Director, provide the following information with respect to a chemical substance referred to in subsection 59(1):

- (a) the ingredients and their common or generic name or names;
- (b) the composition and properties;
- (c) the toxicological effect of the chemical substance;
- (d) the effect of exposure to the chemical substance, whether by contact, inhalation or ingestion;
- (e) the protective measures used or to be used regarding the chemical substance; and
- (f) the emergency measures used or to be used to deal with exposure to the chemical substance.

(2) Where a supplier or manufacturer fails to provide the information referred to in subsection (1) within such time as is specified by the Director, the chemical substance for which the information has been requested is deemed to be an unsafe material and an order may be made pursuant to Section 51. *1996, c. 7, s. 60.*

TRADE SECRETS

Extent of right to withhold trade secrets

61 (1) Notwithstanding anything contained in this Act or the regulations, an employer, a supplier or a chemical manufacturer may withhold trade secrets or information that might disclose a trade secret and the identity of a specific chemical, including the chemical name and other specific identification of a hazardous chemical, provided that the specific chemical identity is made available to health professionals in accordance with the procedures established by regulations made pursuant to this Act.

(2) Where a treating physician or nurse determines that

- (a) a medical emergency exists; and
- (b) the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment,

an employer, a supplier or a chemical manufacturer shall immediately disclose the specific chemical

identity of a trade secret chemical to the treating physician or nurse regardless of the existence of a written statement of need or a confidentiality agreement, but the employer, supplier or chemical manufacturer may require a written statement of need and confidentiality agreement in accordance with regulations made pursuant to this Act as soon as circumstances permit.

(3) Notwithstanding Section 35, no person shall publish, disclose or communicate to a person a secret manufacturing process or trade secret acquired, furnished, obtained or received pursuant to this Act or the regulations. *1996, c. 7, s. 61.*

MEDICAL INFORMATION

Disclosure of medical information

62 (1) Notwithstanding Section 35, no person shall disclose information obtained in a medical examination, test, X-ray or hospital record of an employee made, taken or provided pursuant to this Act except in a form calculated to prevent the information from being identified with a particular person or case or with the permission of the employee.

(2) No person to whom information is communicated in confidence pursuant to this Act or the regulations

(a) shall divulge the information, except in accordance with this Act and the regulations;

(b) is competent or compellable to divulge the information before a court or other tribunal or in any other proceeding. *1996, c. 7, s. 62.*

ACCIDENTS

Notice of accident at the workplace

63 (1) The employer shall send written notice to the Director

(a) of a fire or accident at the workplace that occasions bodily injury to an employee, within seven days of its occurrence;

(b) of an accidental explosion at the workplace, whether any person is injured or not, within twenty-four hours of its occurrence; and

(c) where at the workplace a person is killed from any cause or is injured from any cause in a manner likely to prove fatal, within twenty-four hours of the occurrence of the death or injury.

(2) A true copy of the notice of accident required to be given by an employer to the Workers' Compensation Board, pursuant to the Workers' Compensation Act, may be delivered or mailed to the Director as sufficient notice pursuant to this Section.

(3) Where a notice is required to be sent to the Director pursuant to this Section, the employer shall furnish the committee or representative at the workplace, if any, with a copy of the notice. *1996, c. 7, s. 63.*

Disturbance of accident scene

64 Except as otherwise directed by an officer, no person shall disturb the scene of an accident that results

in serious injury or death except as is necessary to

- (a) attend to persons injured or killed;
- (b) prevent further injuries; or
- (c) protect property that is endangered as a result of the accident. *1996, c. 7, s. 64.*

Duty to disclose accident information

65 Every person present at an accident when it occurred or who has any information relating to the accident shall, upon the request of an officer, provide to the officer such information respecting the accident as the officer requests. *1996, c. 7, s. 65.*

CODE OF PRACTICE

Power to require code of practice

66 (1) The Director may, in writing, require an employer to establish a code of practice or adopt a code of practice specified by the Director.

(2) A code of practice established or adopted pursuant to subsection (1) may be revised or required to be revised from time to time by the Director. *1996, c. 7, s. 66.*

APPEALS

Right to appeal and consequences of appeal

67 (1) An aggrieved person may appeal

- (a) an order made by an officer pursuant to this Act or the regulations, except an order made pursuant to a complaint under clause 46(1)(b);
- (b) the decision of an officer not to issue an order;
- (c) the decision of an officer to advise an employee to return to work or the decision to provide no advice, pursuant to clause 43(1)(c); or
- (d) any decision for which a right of appeal to the Director is provided in the regulations,

within fourteen days after the order or decision is served on the recipient, by making written application to the Director.

(1A) Where so prescribed by the regulations, a matter described in clauses (1)(a) to (d) arising at a subsea coal mine may be appealed to an appeal panel and Section 69 applies in place of the procedure set out in this Section.

(2) Where the aggrieved person who appeals pursuant to subsection (1) has sufficient authority in the workplace to ensure that the application for appeal is posted, the aggrieved person shall post a copy of the application and, where the aggrieved person does not have such authority, the aggrieved person shall

serve a copy of the application on the employer and the employer shall communicate it in accordance with Section 39(1).

(3) On an appeal pursuant to subsection (1), the Director

(a) may consider new information including, but not limited to, information provided by any aggrieved person;

(b) shall summarily review and decide the matter and may, by order, confirm, vary, revoke or suspend the order or decision appealed from or make any order or decision that an officer may make pursuant to this Act.

(4) The Director is not disqualified from hearing an appeal by reason only that the Director, in the course of performing the Director's powers, duties or functions pursuant to this Act, receives information regarding the appeal or communicates with a person concerning the matter appealed.

(5) Subject to subsection (6), an appeal of an order or decision pursuant to subsection (1) does not suspend the operation of the order or decision.

(6) Subsection (5) does not apply to an appeal of an order of an officer regarding a provision referred to in subsection 46(1).

(7) Notwithstanding subsection (5), the Director may order the suspension of the operation of an order until the appeal is disposed of.

(8) An order or decision of the Director made pursuant to subsection (3) that is not appealed pursuant to subsection 69(1) is final and binding.

(9) The Director shall provide a copy of the Director's decision to

(a) the employer;

(b) the aggrieved person who appealed; and

(c) any other aggrieved person who has made representations in relation to the matter appealed,

and the employer shall communicate the decision in accordance with subsection 39(1). *1996, c. 7, s. 67; 2007, c. 14, s. 7; 2009, c. 24, s. 2.*

Clause 46(1)(b) appeal

67A (1) An aggrieved person may appeal an order by an officer pursuant to a complaint under clause 46 (1)(b) to an appeal panel designated to hear the appeal pursuant to subsection 68(3).

(2) An appeal pursuant to subsection (1) must be initiated by filing a notice of appeal with the Deputy Minister of Labour and Workforce Development within twenty-one days after the order is served on the recipient.

(3) An appeal pursuant to subsection (1) suspends the operation of the order. *2009, c. 24, s. 3.*

Appeal panels

68 (1) The Minister shall

(a) seek recommendations from labour organizations and employer associations on the identification of persons to be included in the list of persons established by the Governor in Council pursuant to subsection (2); and

(b) provide advice to the Governor in Council regarding the list of persons.

(2) After receiving the advice provided by the Minister pursuant to clause (1)(b), the Governor in Council shall establish a list of persons from which an appeal panel shall be designated pursuant to subsection (3).

(3) Where an appeal has been filed pursuant to subsection 67A(1) or 69(1), the Minister shall designate an appeal panel to hear the appeal.

(4) Subject to subsection (5), an appeal panel designated pursuant to subsection (3) shall be composed of

(a) one person representing employees;

(b) one person representing employers; and

(c) one person to act as chair of the appeal panel,

chosen from the list established pursuant to subsection (2).

(5) Where the parties to an appeal agree to have the appeal heard by only one person, the appeal panel shall be composed of one person designated by the Minister from the list established pursuant to subsection (2).

(6) Before acting as a member of an appeal panel, an appeal panel member shall take and subscribe before a judge of the Supreme Court of Nova Scotia and file with the Minister an oath or affirmation of office in the following form or to like effect:

I do solemnly swear (or affirm) that I will faithfully, truly and impartially, to the best of my judgement, skill and ability, execute and perform the office of member of any appeal panel to which I accept an appointment pursuant to the Occupational Health and Safety Act and will not, except in the discharge of my duties, disclose to any person any of the evidence or other matters brought before the appeal panel. So help me God.

(7) An appeal panel and each member of an appeal panel has the powers, privileges and immunities of a commissioner appointed pursuant to the Public Inquiries Act.

(8) For greater certainty, an appeal panel may receive any evidence or information on oath, affidavit or otherwise as, in its discretion, it deems fit and proper, whether or not it is admissible as evidence in a court of law.

(9) The Director has standing as a party in any case that is appealed to an appeal panel.

(10) Except where the parties to an appeal agree that one person may hear the appeal, three panel members of an appeal panel constitute a quorum and a decision of any two panel members is the decision of the appeal panel.

(11) The members of an appeal panel shall be paid

(a) such remuneration as may be fixed by the Governor in Council, which may be in a nominal amount and may be set to a maximum rate per appeal; and

(b) the reasonable expenses incurred by the member in the course of carrying out the member's duties for the appeal panel. *1996, c. 7, s. 68; 2009, c. 24, s. 4.*

Right to appeal and consequences of appeal

69 (1) An aggrieved person may appeal an order or decision of the Director made pursuant to this Act or the regulations, or an order or decision of an officer referred to in subsection 67(1A), to an appeal panel designated to hear the appeal pursuant to subsection 68(3).

(2) An appeal pursuant to subsection (1) shall be initiated by filing a notice of appeal with the Deputy Minister of Labour within twenty-one days of the date of the order or decision being appealed.

(3) A notice of appeal filed pursuant to subsection (2) or subsection 67A(2) shall

(a) identify and state the decision appealed from;

(b) set out the grounds of the appeal and the relief requested, including any request for the suspension of all or a portion of the order or decision appealed from; and

(c) include any other information required pursuant to the regulations.

(4) Where the aggrieved person who appeals pursuant to subsection (1) or subsection 67A(1) has sufficient authority in the workplace to ensure that the notice of appeal is posted, the aggrieved person shall post a copy of the notice and, where the aggrieved person does not have such authority, the aggrieved person shall serve a copy of the notice on the employer and the employer shall communicate it in accordance with subsection 39(1).

(5) On receipt of a notice of appeal,

(a) the Deputy Minister of Labour shall provide a copy of the notice of appeal to the members of the appeal panel designated by the Minister to hear the appeal; and

(b) the appeal panel shall hold a hearing that provides any aggrieved persons who have so requested the opportunity to present evidence and make representations, in accordance with the regulations.

(6) An appeal panel may, by order, confirm, vary, revoke or suspend the order or decision appealed from or make any order that an officer is empowered to make pursuant to this Act.

(7) Subject to subsection (8), an appeal of an order or decision pursuant to subsection (1) does not suspend the operation of the order or decision.

(8) Subsection (7) does not apply to an appeal of an order of the Director regarding a provision referred to in subsection 46(1).

(9) Notwithstanding subsection (7), an appeal panel may order the suspension of the operation of an order or decision until the appeal is disposed of.

- (10) The chair of an appeal panel shall provide a copy of the decision of the appeal panel to
- (a) the employer;
 - (b) the aggrieved person who appealed; and
 - (c) any other aggrieved person who has made representations in relation to the matter appealed,

and the employer shall communicate the decision in accordance with subsection 39(1). *1996, c. 7, s. 69; 2007, c. 14, s. 7; 2009, c. 24, s. 5.*

Jurisdiction of appeal panels and court review

70 (1) Subject to subsection (2), an appeal panel has exclusive jurisdiction to determine all questions of

- (a) law respecting this Act;
- (b) fact; and
- (c) mixed law and fact,

that arise in any matter before it, and a decision of an appeal panel is final and binding and not open to review except for error of law or jurisdiction.

(2) The review of a decision of an appeal panel shall be conducted

- (a) by the Nova Scotia Court of Appeal, and only with leave of that Court; and
- (b) with recognition that the appeal panel is established, for the purpose of this Act, as an expert body.

(3) The Director has standing as a party in a review conducted pursuant to subsection (2). *1996, c. 7, s. 70.*

ENFORCEMENT

Registration of decision or order with Supreme Court

71 (1) A final decision or order of an arbitrator, an officer, the Director or an appeal panel regarding a claim arising from subsection 30(6), 33(5), 42(1), 43(4), 43(6), 43(7), 45(2) or 50(8) or subclause 46(1)(a)(ii) may, for the purpose of enforcement thereof, be registered with the Supreme Court of Nova Scotia and shall be enforced in the same manner as a judgment of that Court.

(2) To register a final decision or final order referred to in subsection (1) with the Supreme Court of Nova Scotia, the Director may make a certified copy of the decision or order, upon which shall be made the following endorsement, signed by the Director:

Register the within with the Supreme Court of Nova Scotia.

Dated this day of, 19....

.....

Director

(3) The Director may forward the certified copy referred to in subsection (2), so endorsed, to a prothonotary of the Supreme Court of Nova Scotia who shall, on receipt of the certified copy, enter it as a record and it shall thereupon be registered with the Supreme Court and enforceable as a judgment of that Court.

(4) Where a decision or order referred to in subsection (1) is registered with the Supreme Court of Nova Scotia, a subsequent decision or order rescinding or varying the first-mentioned decision or order may, in the same manner, be registered with the Supreme Court and enforced in the same manner as a judgment of the Supreme Court. *1996, c. 7, s. 71.*

Enforcement of final decision or order

72 (1) The Director may request the Director of Labour Standards to enforce a final decision or order of an officer, the Director or an appeal panel regarding a complaint that an employer has failed to pay wages, salary, pay or a benefit entitlement required pursuant to subsection 30(6), 33(5), 42(1), 43(4), 43(6), 43(7), 45(2) or 50(8) or subclause 46(1)(a)(ii).

(2) A decision or order referred to in subsection (1) shall, for the purpose of enforcement pursuant to subsection (1), be made an order of the Labour Standards Tribunal and may be enforced in the same manner as an order of the Labour Standards Tribunal may be enforced.

(3) To make a final decision or order an order of the Labour Standards Tribunal, the Director shall make a certified copy of the decision or order, upon which shall be made the following endorsement, signed by the Director:

Make the within an order of the Labour Standards Tribunal.

Dated this day of , 19.....

.....
Director

and the Director shall forward the certified copy, so endorsed, to the Director of Labour Standards and the Labour Standards Tribunal.

(4) The Director of Labour Standards may enforce a final decision or order referred to in subsection (1) as if the decision or order were an order made by the Labour Standards Tribunal under Section 26 of the Labour Standards Code and, for greater certainty, Sections 87, 88, 89A, 90 and 90A of the Labour Standards Code apply mutatis mutandis.

(5) Where the Director

(a) provides the Director of Labour Standards with a certified copy of an order of an officer, the Director or an appeal panel regarding a complaint that an employer has failed to pay wages, salary, pay or a benefit entitlement required pursuant to subsection 30(6), 33(5), 42(1), 43(4), 43(6), 43(7), 45(2) or 50(8) or subclause 46(1)(a)(ii), whether the order is final or not; and

(b) requests the Director of Labour Standards to treat the order as a complaint pursuant to Section 81 of the Labour Standards Code,

the Director of Labour Standards may exercise the power set out in Section 85(1) of the Labour Standards Code and subsections 85(2), 85(3), 85(3A) and 85(4) of the Labour Standards Code apply.

(6) Any money received by the Labour Standards Tribunal as a result of a request made by the Director pursuant to clause 5(b) shall be held in trust by the Labour Standards Tribunal for the employer concerned.

(7) Where

(a) the appeal period has expired; or

(b) any appeal has been disposed of,

whichever is later, regarding an order or decision of an officer, the Director or an appeal panel respecting payment, by the employer to the employee, of money held in trust pursuant to subsection (6), the Labour Standards Tribunal shall pay the employee from the trust money up to the amount specified in the order and the surplus, if any, shall be paid to the employer.

(8) Where a decision is made an order of the Labour Standards Tribunal, a decision or order rescinding or varying the first-mentioned decision is deemed to rescind or vary the order of the Labour Standards Tribunal and may be made an order of the Labour Standards Tribunal in accordance with this Section. *1996, c. 7, s. 72.*

Power to arrest

73 (1) A police officer who has reasonable and probable grounds to believe that a person is failing to comply with an order issued pursuant to subsection 55(4) may arrest the person without warrant and shall take the person before a justice as soon as practicable.

(2) A person taken before a justice pursuant to subsection (1) is entitled to an immediate hearing but, if a hearing cannot then be had, the person shall be released from custody on giving a personal undertaking to appear to answer to the charge at such time and place as shall then be fixed by the justice.

(3) A police officer who arrests a person pursuant to subsection (1) shall promptly inform the person of the reason for the arrest and of the right to retain and instruct counsel without delay. *1996, c. 7, s. 73.*

Offences and penalties

74 (1) A person who

(a) contravenes this Act or the regulations; or

(b) fails to comply with

(i) an order or direction made pursuant to this Act or the regulations, or

(ii) a provision of a code of practice adopted pursuant to Section 66,

is guilty of an offence and liable on summary conviction to a fine not exceeding two hundred and fifty thousand dollars, or to a term of imprisonment not exceeding two years, or to both a fine and imprisonment.

(2) In addition to a fine imposed pursuant to subsection (1) or (3), the court may impose a fine not exceeding twenty-five thousand dollars for each additional day during which the offence continues.

(3) Where a person is convicted of an offence pursuant to this Act and the court is satisfied that, as a result of the commission of the offence, monetary benefits accrued to the offender, the court may order the offender to pay, in addition to a fine imposed pursuant to subsection (1) or (2), a fine in an amount equal to the estimation by the court of the amount of the monetary benefits. *1996, c. 7, s. 74.*

Powers of court on conviction

75 (1) Where a person is convicted of an offence pursuant to this Act, in addition to any other punishment that may be imposed pursuant to this Act, the court may, having regard to the nature of the offence and the circumstances surrounding its commission, make an order

(a) directing the offender to publish, in the manner prescribed, the facts relating to the offence;

(b) directing the offender to pay to the Minister, in the manner prescribed by the regulations, an amount for the purpose of public education in the

(i) safe conduct of the activity in relation to which the offence was committed, and

(ii) principles of internal responsibility provided for in this Act;

(c) on application by the Director made within three years after the date of conviction, directing the offender to submit to the Director such information with respect to the activities of the offender as the court considers appropriate and just in the circumstances;

(d) directing the offender to perform community service, subject to such reasonable conditions as may be imposed in the order;

(e) directing the offender to provide such bond or pay such amount of money into court as will ensure compliance with an order made pursuant to this Section;

(f) requiring the offender to comply with such other reasonable conditions as the court considers appropriate and just in the circumstances for securing the offender's good conduct and for preventing the offender from repeating the same offence or committing other offences,

but the total of any moneys payable or direct cost incurred by the offender pursuant to this subsection and subsection 74(1) shall not exceed the maximum amount payable pursuant to subsection 74(1).

(2) Where an offender fails to comply with an order made under clause (1)(a) directing the publication of the facts relating to the offence, the Director may publish the facts in compliance with the order and recover the costs of publication from the offender.

(3) Where the court makes an order pursuant to clause(1)(b) directing the offender to pay an amount for the purpose of education or the Director incurs publication costs pursuant to subsection (2), the amount or costs constitutes a debt due to Her Majesty in right of the Province and may be recovered as such in a court of competent jurisdiction.

(4) An order made pursuant to subsection (1) comes into force on the day on which it is made or on such other day as the court may order and shall not continue in force for more than three years after that day.

1996, c. 7, s. 75.

Deemed act or omission of employer

76 (1) In a proceeding or prosecution against an employer pursuant to this Act or the regulations, the act or omission of a manager, a superintendent or another person who exercises management functions for the employer is deemed to be the act or omission of the employer.

(2) Notwithstanding subsection (1), the act or omission of a manager, a superintendent or another person who exercises management functions for the employer is not the act or omission of the employer where it is proven that the employer took every precaution reasonable in the circumstances to ensure that the act or omission would not occur and the employer

(a) did not have actual knowledge of, or could not reasonably have known of, the act or omission; and

(b) did not expressly or impliedly consent to the act or omission. 1996, c. 7, s. 76.

Participation in offence

77 An officer, director, manager or agent of a corporation who directs, authorizes, assents to, acquiesces or participates in the commission of an offence pursuant to this Act is guilty of that offence. 1996, c. 7, s. 77.

Immunity from civil action

78 No action lies or shall be instituted against an officer, a committee, a member of a committee, a representative, the Director, an appeal panel, a member of an appeal panel or the Director of Labour Standards where that person or body is acting pursuant to the authority of this Act or the regulations for any loss or damage suffered by a person because of an act or omission done in good faith by the person or body

(a) pursuant to, or in the exercise or supposed exercise of, a power conferred by this Act or the regulations; or

(b) in the carrying out, or supposed carrying out, of a function or duty imposed by this Act or the regulations. 1996, c. 7, s. 78; 2007, c. 14, s. 7.

Limitation period for prosecution

79 A prosecution for an offence pursuant to this Act shall not be commenced more than two years after the later of

(a) the date on which the offence was committed; or

(b) the date on which evidence of the offence first came to the attention of an officer. 1996, c. 7, s. 79.

Analysts

80 (1) The Minister may appoint as an analyst any person who, in the opinion of the Minister, has the qualifications and experience to be so appointed and an analyst shall perform such functions and carry out such duties as may be determined by regulation.

(2) No document of an analyst may be received in evidence unless the party intending to produce it has given to the party against whom it is intended to be produced reasonable notice of that intention together with a copy of the document.

(3) The party against whom a document of an analyst is produced may, with leave of the court, require the attendance of the analyst for the purpose of cross-examination. *1996, c. 7, s. 80.*

Proof of orders and other documents

81 In any proceeding or prosecution pursuant to this Act,

(a) a copy of an order, decision or certificate purporting to have been made or issued pursuant to this Act or the regulations and purporting to have been signed by a person authorized to make or issue the order, decision or certificate;

(b) a document purporting to be a copy of a notice, drawing, record or other document, or any extract therefrom, given or made pursuant to this Act or the regulations and purporting to be certified by an officer or an analyst;

(c) a document purporting to certify the result of a test or an analysis of a sample of air and setting forth the concentration or amount of a biological, chemical or physical agent in a workplace, or part of a workplace, and purporting to be certified by an officer or an analyst;

(d) a document purporting to certify the result of a test or an analysis of any equipment, machine, device, article, thing or substance and purporting to be certified by an officer or an analyst;

(e) a document purporting to be signed by the Director stating that a report, request, notice or order was or was not given or received;

(f) a document purporting to be signed by a person authorized pursuant to this Act or the regulations to issue a certificate of examination or authorize a deviation, stating that on a specified day or during a specified period a person named in the document was or was not the holder of a certificate of examination or authorized for a deviation of regulations pursuant to this Act;

(g) a document setting out with reasonable particularity the conviction and sentence of a person for an offence pursuant to this Act or the regulations purporting to be signed by

(i) the person who made the conviction, or

(ii) the prothonotary or clerk of the court in which the conviction was made,

shall be admitted in evidence as prima facie proof of the order, decision, certificate or document and the contents of the order, decision, certificate or document, without proof of the signature or official character of the person appearing to have signed the order, decision, certificate or document, as the case may be. *1996, c. 7, s. 81.*

REGULATIONS

Regulations

82 (1) The Governor in Council may make such regulations as the Governor in Council considers

necessary or advisable for the purpose of this Act or to ensure the health or safety of all persons at a workplace and, without limiting the generality of the foregoing, the Governor in Council may make regulations

- (a) requiring an employer or class of employers to prepare a written policy or a written program;
- (b) setting out the health or safety standards to be established and complied with at workplaces or classes of workplaces;
- (c) establishing conditions regarding the design, construction and use of plants or undertakings in order to protect the health and safety of employees;
- (d) prescribing standards for devices, equipment, machines, material and things including, but not limited to, the adoption by reference of any codes or standards, and providing for the prohibition of the use, sale, rental, lease or supply of any devices, equipment, machines, materials or things that do not comply with the prescribed standards;
- (e) prohibiting or controlling the manufacture, supply, storage, handling or use of any device, equipment, machine, chemical, biological or physical agent or material in order to protect the health or safety of employees;
- (f) respecting the safe use of any device, equipment, machine, material or thing;
- (g) imposing requirements regarding the testing, labelling or examination of any material that may affect the health and safety of employees;
- (h) requiring the making of arrangements by employers for measuring and monitoring the atmospheric or other conditions of workplaces;
- (i) requiring the use of certain protective devices, equipment or clothing by persons at a workplace or class of workplaces;
- (j) requiring the making of arrangements by employers for the prevention of occupational disease and for securing the health of employees including, but not limited to, arrangements for medical examinations and health surveys;
- (k) requiring and governing medical facilities or first-aid facilities to be located at workplaces;
- (l) prescribing
 - (i) the making of reports by committees,
 - (ii) procedures for the operation of committees including, but not limited to, minimum requirements for the contents of, and a retention period for, minutes and records of committees,
 - (iii) the activities that may be carried on by committees or representatives within the functions described in subsection 31(1) or 33(6);
- (m) altering the frequency of committee meetings required pursuant to this Act;
- (n) prescribing additional requirements for the training of committee members including, but not limited

- to, requiring employers or classes of employers to provide for and pay for the training;
- (o) increasing or decreasing the period of employment to be considered in a determination of the number of persons regularly employed at a workplace;
- (p) excluding any profession, employee, employer, workplace, project, owner, occupation, industry, self-employed person or dependent contractor from all or part of the application of this Act or the regulations;
- (q) designating occupations as hazardous occupations;
- (r) determining the amount, manner and method of payments out of the Accident Fund;
- (s) defining education and research to be paid for out of the Accident Fund;
- (t) prescribing educational institutions or classes of educational institutions for which the curricula must include instruction in the principles of occupational health and safety contained in this Act;
- (u) designating agencies, divisions or parts of other departments of the Government, or any other body constituted by an enactment, and their employees, to become part of the Division;
- (v) prescribing the type of information to be transferred, the form in which information shall be transferred and the frequency of transfer of the information to be exchanged between the Division and the Workers' Compensation Board;
- (w) prescribing records to be kept by employers and submitted to the Division;
- (x) requiring the making of reports by employers to the Division;
- (y) requiring the filing of drawings, layouts and specifications;
- (z) prescribing information required to be provided by owners and the manner and form of its communication;
- (aa) imposing requirements on health insurers and health-care agencies to provide to the Division statistical reports regarding occurrences of injury and disease arising from employment;
- (ab) prescribing procedures with respect to disclosure of information that is considered trade secrets;
- (ac) prescribing confidentiality protection for trade secrets;
- (ad) respecting the publication and distribution in the workplace of this Act and the regulations made pursuant to this Act;
- (ae) restricting the performance of certain tasks to persons having certain qualifications;
- (af) prescribing the duties and functions of analysts;
- (ag) establishing boards of examiners for the certification of occupational qualifications and providing processes for the issuance and revocation of certificates of examination;

- (ah) altering the standard or processes according to which an application for a deviation from regulations must be considered pursuant to this Act;
 - (ai) prescribing regulations for which a deviation is not permitted pursuant to this Act;
 - (aj) modifying the provisions of the Labour Standards Code for the purposes of enforcement pursuant to this Act;
 - (ak) interpreting Sections 23 and 29 and subsections 33(1), (2) and (3) and 38(1) in the context of an industry, occupation, project or workplace;
 - (al) establishing a means of identifying the persons referred to in Section 23 and the manner of communicating the identity of the persons;
 - (am) enabling the adoption of a code of practice at a workplace containing one or more provisions from a regulation that would not otherwise apply to the workplace;
 - (an) respecting the administration of a system of administrative penalties;
 - (ao) respecting appeals including, but not limited to,
 - (i) who may be a party to an appeal,
 - (ii) limiting the amount of time available to parties to make representations at appeal hearings,
 - (iii) the contents of a notice of appeal,
 - (iv) the appeal of matters other than those permitted pursuant to this Act,
 - (v) the conduct and procedure of appeals generally;
 - (ap) prescribing forms for use pursuant to this Act;
 - (aq) prescribing charges to recover the cost of services pursuant to this Act and fees in relation to appeals and deviations, certificates, licences, permits, review of documents and filing of documents;
 - (ar) defining words or expressions used but not defined in this Act.
- (2) Without limiting the generality of this Section, the Governor in Council may, in respect of a subsea coal mine, make regulations that the Governor in Council considers necessary or advisable to ensure the health and safety of all persons at a subsea coal mine
- (a) requiring the establishment of a committee;
 - (b) prescribing additional functions of a committee;
 - (c) prescribing additional requirements for the provision of resources or information to a committee;
 - (d) requiring the filing or approval of drawings, layouts, specifications, plans, procedures, methods, machinery and equipment;

(e) providing that a matter that is being appealed must be appealed directly to an appeal panel instead of the director; and

(f) prescribing charges to recover the cost of services pursuant to this Act and fees in relation to matters referred to in clause (d).

(3) The exercise by the Governor in Council of the authority contained in subsections (1) and (2) is regulations within the meaning of the Regulations Act. 1996, c. 7, s. 82; 2007, c. 14, s. 7.

Authorized deviation from regulations

83 (1) Where an application is made in writing to the Director for authorization to deviate at a workplace or workplaces from a provision of the regulations, unless the standard to be used by the Director in considering an application is altered by regulation, the Director may authorize the deviation where the Director is satisfied that the deviation affords protection for the health and safety of employees equal to or greater than the protection prescribed by the regulations from which the deviation is requested.

(2) The Director may attach such terms and conditions to an authorization of a deviation pursuant to subsection (1) as the Director considers advisable.

(3) Subsections (4) to (13) apply to an application for a deviation made pursuant to subsection (1) unless

(a) the processes required pursuant to those subsections are altered by regulation; or

(b) a notice period is reduced or eliminated pursuant to subsection (15).

(4) Where the workplace location or locations exist for which a deviation pursuant to subsection (1) is requested, unless

(a) the committee or representative at a workplace, if any; or

(b) where there is no committee or representative, all the employees at the workplace,

agree otherwise, upon applying for a deviation, the applicant for the deviation shall post a copy of the application, ensure it remains posted for at least twenty-eight days and furnish a copy to the committee or representative, if any, at the workplace.

(5) Where the workplace location or locations for which a deviation pursuant to subsection (1) is requested are not yet in existence, the applicant shall, upon applying for a deviation, publish, at the applicant's cost, a notice of the application for a deviation

(a) that contains information regarding the deviation being requested; and

(b) where it would reasonably be expected to come to the attention of persons interested in health and safety who might be affected by the decision regarding the deviation.

(6) After receiving an application for a deviation pursuant to subsection (1), the Director may conduct such consultation or give such notice of the application as the Director considers advisable.

(7) The applicant for a deviation pursuant to subsection (1) shall submit with the application, at the applicant's cost,

- (a) the technical information required to enable the Director to determine the application;
 - (b) information with respect to the benefits and drawbacks to health and safety that might reasonably be anticipated if the deviation is authorized; and
 - (c) any fee prescribed by the regulations.
- (8) The applicant for a deviation pursuant to subsection (1) for an existing workplace location or locations shall ensure that the information required pursuant to clauses (7)(a) and (b) is made available for examination at the applicant's workplace by the committee or representative, if any, and by the employees.
- (9) The Director may make available the information required pursuant to clauses (7)(a) and (b) to any person for examination on request.
- (10) A decision by the Director pursuant to subsection (1) shall
- (a) not be made less than twenty-eight days following the date of the application; and
 - (b) be accompanied by written reasons for the decision that shall include
 - (i) the information considered in arriving at the decision and the rationale for the decision,
 - (ii) the specifics of a deviation that is authorized, including the location of the workplace or workplaces where the deviation applies, and
 - (iii) the details of any terms or conditions attached to the authorization of a deviation.
- (11) The applicant for a deviation pursuant to subsection (1) shall ensure that
- (a) a copy of the Director's decision is
 - (i) posted for at least seven days, or longer if additional time is necessary to enable employees at the workplace to inform themselves of the content, and
 - (ii) furnished to the committee or representative, if any, at the workplace; and
 - (b) where a deviation is authorized, a copy of the Director's decision is posted and maintained throughout the time the deviation is in effect.
- (12) The Director shall provide a copy of the decision referred to in subsection (10) to anyone from whom the Director has received a written response to the application for a deviation pursuant to subsection (1).
- (13) In applying a regulation for which a deviation pursuant to subsection (1) is authorized, a deviation and any terms and conditions authorized pursuant to this Section shall, while the deviation is in effect, be substituted for the prescription or requirement in the regulations.
- (14) The Director may, at the initiative of the Director or upon application, reconsider, confirm, vary, revoke or suspend the Director's decision regarding a deviation at any time when information is produced that, had it been known when the request for the deviation was determined previously, would reasonably

be expected to have resulted in a different decision from the one made at that time, and subsections (1) to (13) apply with the necessary modifications.

(15) Notwithstanding the periods of notice required pursuant to this Section, where information that was not available at the time a decision was made by the Director regarding a deviation pursuant to this Section is produced that indicates that imminent danger might result as a result of the deviation, the Director may reduce or eliminate a period of notice required pursuant to this Section. *1996, c. 7, s. 83.*

TRANSITIONAL PROVISIONS

Alleged contravention under former Act

84 (1) Where an employee has alleged in writing, pursuant to subsection 25(3) of the former Act, that an employer or a union has contravened subsection 25(2) of that Act, and at the time of the coming into force of this Act the matter has not been concluded pursuant to subsection (3) of that Section, the employee may, within thirty days of the coming into force of this Act, make a complaint pursuant to Section 46(1) of this Act, in which case this Act applies to the complaint and the complaint shall be heard, concluded and enforced pursuant to this Act.

(2) Where an employee referred to in subsection (1) does not make a complaint pursuant to Section 46(1) of this Act, the former Act applies to the complaint and the complaint shall be heard, concluded and enforced pursuant to that Act. *1996, c. 7, s. 84.*

Enforcement under Act and substituted references

85 (1) Any regulation, order or direction made under the Metalliferous Mines and Quarries Regulation Act, the Coal Mines Regulation Act or the former Act or under any Act relating to occupational health and safety may be enforced as if the regulation, order or direction were made pursuant to this Act.

(2) Any reference in any Act of the Legislature or in any rule, order, regulation, by-law, ordinance or in any document whatsoever to the Occupational Safety Division of the Department of Labour and Manpower, the Occupational Health Division of the Department of Health, the Mine Safety Division of the Department of Mines and Energy or the Accident Prevention Division of the Workers' Compensation Board, whether such reference is by official name or otherwise, shall, as regards any subsequent transaction, matter or thing relating to the affairs or matters or any of them assigned to those divisions, be held and construed to be a reference to the Division, as defined in this Act. *1996, c. 7, s. 85.*

EFFECTIVE DATES

Coal Mines Regulation Act repealed

86 Chapter 73 of the Revised Statutes, 1989, the Coal Mines Regulation Act, is repealed. *1996, c. 7, s. 86.*

Metalliferous Mines and Quarries Act repealed

87 Chapter 284 of the Revised Statutes, 1989, the Metalliferous Mines and Quarries Regulation Act, is repealed. *1996, c. 7, s. 87.*

Former Act repealed

88 The former Act is repealed. *1996, c. 7, s. 88.*

Effective dates

89 (1) Section 22 has effect on and after July 1, 1999, or such earlier day as the Governor in Council orders and declares by proclamation.

In force - July 1, 1999

(2) Section 27 has effect on and after July 1, 1997.

(3) Section 28 has effect on and after January 1, 1998.

(4) Sections 86 and 87 come into force on such day as the Governor in Council orders and declares by proclamation.

Proclaimed - August 11, 2003
In force - November 8, 2003

(5) This Act, except for Sections 22, 27, 28, 86 and 87, has effect on and after January 1, 1997. *1996, c. 7, s. 89.*



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Labour Standards Code

CHAPTER 246

OF THE

REVISED STATUTES, 1989

amended 1991, c. 14; 2000, c. 35; 2001, c. 6, s. 110;
2003 (2nd Sess.), c. 4; 2003 (2nd Sess.), c. 7, ss. 4-14;
2004, c. 6, ss. 15-20; 2005, c. 38, ss. 3, 4; 2006, c. 10, ss. 1-5;
2006, c. 13, ss. 8, 9; 2006, c. 32; 2007, c. 11, s. 3; 2009, c. 18

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An Act to Provide for a Labour Standards Code

Short title

1 This Act may be cited as the Labour Standards Code. *R.S., c. 246, s. 1.*

INTERPRETATION

Interpretation

2 In this Act,

- (a) "construction industry" means the on-site constructing, erecting, altering, decorating, repairing, demolishing of buildings, structures, roads, sewers, water mains, pipe-lines, tunnels, shafts, bridges, wharves, piers, canals or other works;
- (b) "Director" means the Director of Labour Standards or other officer of the Department of Labour designated by the Minister to administer this Act, and any person acting under the control and direction of the person designated by the Minister to administer this Act;
- (c) "discharge" means a termination of employment by an employer other than a lay-off or suspension;

- (d) "employee" means a person employed to do work and includes a deceased employee but does not include a teacher employed by Her Majesty, the Minister of Education, a school board as defined in clause (c) of Section 2 of the Education Act, or other employer, to teach, supervise or administer in a public school, a school established or maintained under the Education Act or in a school system;
- (e) "employer" means a person, firm, corporation, agent, manager, representative, contractor or subcontractor having control or direction of or being responsible, directly or indirectly, for the employment of any employee;
- (f) "establishment" means a place or places at or in which all or any part of a business or undertaking of an employer is or has been carried on;
- (g) "forest industry" means all operations in or incidental to the production or manufacture of articles produced from wood;
- (h) "industrial undertakings" includes mines, quarries and other works for the extraction of minerals from the earth, undertakings in which articles are manufactured, altered, cleaned, repaired, ornamented, finished, adapted for sale, broken up or demolished, or in which materials are transformed, including ship building and the generation, transformation, transmission and distribution of electricity or motive power of any kind, and undertakings in the construction industry;
- (i) "lay-off" means temporary or indefinite termination of employment because of lack of work and includes a temporary, indefinite or permanent termination of employment because of the elimination of a position, and "laid off" has a corresponding meaning;
- (j) "minimum wage" means the amount of wages fixed by order of the Governor in Council pursuant to Section 50;
- (k) repealed 1991, c. 14, s. 1.
- (l) "Minister" means the Minister of [Environment and] Labour;
- (m) "officer" means a person appointed for the purposes of this Act and who is under the control and direction of the Minister;
- (n) "pay" means wages due or paid to an employee and compensation paid or due to an employee under Sections 32, 33 and 34, but does not include deductions from wages that may lawfully be made by an employer;
- (o) "period of employment" means the period of time from the last hiring of an employee by an employer to his discharge by that employer and includes any period on lay-off or suspension of less than twelve consecutive months and "employed" has a corresponding meaning;
- (p) "regulations" means regulations made by the Governor in Council;
- (pa) "retail business" means the selling or offering for sale of goods or services by retail;
- (q) "sector" has the same meaning as in the Trade Union Act;
- (r) "suspension" means a temporary interruption of employment, other than a lay-off at the direction of the employer, and "suspend" and "suspended" have corresponding meanings;

- (s) "Tribunal" means the Labour Standards Tribunal established under this Act;
- (sa) "uniform closing day" means a uniform closing day as defined in the Retail Business Uniform Closing Day Act;
- (t) "unpaid pay" means any vacation or pay in lieu of vacation which has not been paid in accordance with Sections 32, 33 and 34 and wages which have not been paid in accordance with Sections 79 and 80; and
- (u) "wage" or "wages" includes salaries, commissions and compensation in any form for work or services measured by time, piece or otherwise, and includes compensation under Sections 37, 40, 41, 46, 50, 57, 58, 72 and 74, but does not include vacation pay and pay in lieu of vacation under Sections 32, 33 or 34 or gratuities. *R.S., c. 246, s. 2; 1991, c. 14, s. 1; 2003 (2nd Sess.), c. 7, s. 4; 2006, c. 10, s. 1.*

POWERS AND DUTIES OF THE MINISTER

Powers and duties of Minister

3 The Minister of [Environment and] Labour is charged with the administration of this Act and shall exercise the powers and perform the duties imposed on the Minister by this Act. *R.S., c. 246, s. 3.*

APPLICATION

Application of Act

4 (1) Subject to exceptions expressly provided for by other provisions of this Act, this Act applies to all matters within the legislative jurisdiction of the Province including Her Majesty in right of the Province and the employees of Her Majesty.

(2) The Governor in Council may by regulation expressly exempt the following persons from application of this Act or any Section or Sections of this Act:

- (a) members of named professions;
- (b) those who are engaged in classes of work designated in the regulations. *R.S., c. 246, s. 4.*

Application of former Act

5 Under no circumstances shall Chapter 322 of the Revised Statutes, 1967, have at any time applied or be deemed to have applied in respect of any teacher employed by an employer as defined in clause (c) of Section 1 of said Chapter 322 to teach, supervise or administer in a public school, a school established or maintained under the Education Act or in a school system. *R.S., c. 246, s. 5.*

Effect of Act

6 This Act applies notwithstanding any other law or any custom, contract or arrangement, whether made before, on or after the first day of February, 1973, but nothing in this Act affects the rights or benefits of an employee under any law, custom, contract or arrangement that are more favourable to him than his rights or benefits under this Act. *R.S., c. 246, s. 6.*

GENERAL

Regulations

7 The Governor in Council may make regulations concerning any matter or thing which appears to him necessary or advisable for the effectual working of this Act and, without limiting the generality of the foregoing, may

(a) designate professions or classes of work as professions or classes of work to which this Act, or any Section of this Act, does not apply;

(b) exempt specified employers or classes of employers from the obligation to grant pregnancy leave pursuant to Section 59;

(ba) exempt specified employers or classes of employers from the obligation to grant parental leave pursuant to Section 59B;

(bb) exempt specified employers or classes of employers from the obligation to grant bereavement leave pursuant to Section 60A;

(bc) exempt specified employers or classes of employers from the obligation to grant court leave pursuant to Section 60B;

(bd) prescribing classes of persons for the purpose of subclause (iv) of the definition of "family member" in clause (b) of subsection (1) of Section 60E;

(be) exempting classes of retail business from the application of Section 66A;

(bf) prescribing the time within which an employee must return to work or apply to return to work;

(bg) limiting periods or classes of training as service for the purpose of Section 60H;

~~(bi)~~[(bh)] prescribing a circumstance for the purpose of subclause (v) of the definition of "emergency" in clause (b) of subsection (1) of Section 60I;

(c) prohibit the employment of any child under sixteen years of age in any work or class of work pursuant to subsections (1) and (2) of Section 68;

(d) establish, in accordance with subsection (3) of Section 72, the circumstances in which a lay-off is excepted from the provisions of subsections (1) and (2) of Section 72;

(e) exempt any employer or class of employers from the notice requirements of subsection (1) of Section 72;

(f) exempt any employer or class of employers from the notice requirements of subsection (2) of Section 72;

(g) establish the amount, terms and conditions, of any bond which may be required by the Tribunal under Section 84;

(ga) defining any word or expression used but not defined in this Act;

(h) require the use in industrial undertakings by employers of mechanical or other devices for

ascertaining or assisting in ascertaining or for recording the time worked by employees and other employment information as is in his opinion convenient for the administration of this Act;

(i) determine the procedure to be followed and the forms to be used in any proceeding under this Act, except where this Act provides that a complaint may be made in any form. *R.S., c. 246, s. 7; 1991, c. 14, s. 2; 2003 (2nd Sess.), c. 4, s. 1; 2006, c. 10, s. 2; 2006, c. 13, s. 8; 2009, c. 18, s. 1.*

Service of document

8 (1) For the purpose of this Act, and of any proceedings taken thereunder, any notice or other communication sent through Her Majesty's mails shall be presumed, unless the contrary is proved, to have been received by the addressee in the ordinary course of mail.

(2) A document may be served or delivered for the purpose of this Act or any proceedings thereunder by personal service or by sending by registered mail to the last known address of the addressee, or in any other manner prescribed by regulation. *R.S., c. 246, s. 8.*

Certificate as prima facie evidence

9 A certificate purporting to be signed by the Minister or his Deputy or by an official in his Department stating that a report, request or notice was or was not received or given by the Minister or by an official in his Department pursuant to this Act, and if so received or given, the date upon which it was so received or given, is prima facie evidence of the facts stated therein without proof of the signature or of the official character of the person appearing to have signed the certificate. *R.S., c. 246, s. 9.*

Irregularity

10 No proceedings under this Act are invalid by reason of any defect in form or any technical irregularity. *R.S., c. 246, s. 10.*

Related business

11 Where, in the opinion of the Director or the Tribunal, associated or related activities or businesses are carried on, concurrently or consecutively, by or through more than one corporation, individual, firm, syndicate or association, or any combination thereof, under common control or direction, the Director or the Tribunal may treat the corporations, individuals, firms, syndicates or associations or any combination thereof as constituting one employer for the purposes of this Act. *R.S., c. 246, s. 11; 1991, c. 14, s. 3.*

Transfer of business

12 If an activity, business, trade or undertaking is disposed of, transferred or sold in any manner or amalgamated, whether by agreement, will, instrument, transfer, including transfer of shares, or by operation of law, the period of employment of an employee of the activity, business, trade or undertaking at the time of such disposition, transfer, sale or amalgamation, shall be deemed to have been employment with the disposee, transferee, purchaser or amalgamation and the continuity of employment is not broken. *R.S., c. 246, s. 12.*

Evidence of document

13 A document purporting to contain or to be a copy of any rule, decision or order of the Director or Tribunal, and purporting to be signed by the Director or a member of the Tribunal shall be accepted by

any court as evidence of the regulation, rule, direction, order or other matter therein contained of which the document purports to be a copy. *R.S., c. 246, s. 13.*

Personnel

14 There may be employed any officers, clerks and employees who are necessary for the administration of this Act. *R.S., c. 246, s. 14.*

RECORDS

Retention of records

15 Every employer shall keep and maintain at his principal place of business for at least twelve months after the work was performed records from which it may be ascertained whether or not he is complying with this Act, and shall produce the same or a certified true copy thereof to the Director upon request of the Minister or the Director, including

(a) a register of the names of all employees employed by him in which is noted the age, sex and last known residential address of each;

(b) a record of the rates of wages, hours of work, vacation periods, leaves of absence, pay and vacation pay of each of the employees;

(ba) a record of the date each employee began and, if applicable, ended employment with the employer;

(c) a record of the dates of all lay-offs or discharges of every employee and the dates of any notices of lay-offs or discharge;

(d) a record of all pay paid to each of the employees. *R.S., c. 246, s. 15; 1991, c. 14, s. 4.*

Inspection of records

16 The Director or an officer may

(a) inspect and examine all registers, books, payrolls and other records of any employer that in any way relate to the employment of employees;

(b) require an employer to verify by statutory declaration any entry in any such register, book, payroll or other record;

(c) take extracts from or make copies of any such register, book, payroll or other record;

(d) at all reasonable times enter any establishment, inspect any place where he has reason to believe any person is or was employed and question any employee during or outside working hours apart from or together with his employer for the purpose of ascertaining whether this Act or any regulation or order made under it is being observed. *R.S., c. 246, s. 16.*

LABOUR STANDARDS TRIBUNAL (NOVA SCOTIA)

Labour Standards Tribunal (Nova Scotia)

17 (1) The Governor in Council may establish and appoint the members of a tribunal called the "Labour Standards Tribunal (Nova Scotia)" consisting of three members.

(2) The Governor in Council shall designate one of the members to be the Chairman of the Tribunal.

(3) The Governor in Council may appoint another person to be an alternate member for each member of the Tribunal and the Chairman of the Tribunal may request an alternate member to attend a meeting of the Tribunal when a member appointed pursuant to subsection (1) is unable to attend.

(4) The Governor in Council may appoint a person, whether or not already a member of the Tribunal, as Vice-chairman to act in the place of the Chairman during the time or in respect of the matters that the Governor in Council designates, or in the absence of the Chairman, and the Chairman shall not sit as a member while the Vice-chairman is presiding and the Vice-chairman, if not already a member, shall be deemed to be a member while so acting in the place of the Chairman.

(5) The members of the Tribunal appointed pursuant to subsection (1) or their alternates constitutes a quorum.

(6) A decision of the majority of the members of the Tribunal is the decision of the Tribunal.

(7) The Tribunal and each member thereof has the powers, privileges and immunities of a commissioner appointed pursuant to the Public Inquiries Act.

(8) The Tribunal may receive and accept any evidence and information on oath, affidavit or otherwise as in its discretion it deems fit and proper, whether admissible as evidence in a court of law or not.

(9) The Tribunal shall determine its own procedure, but shall in every case give an opportunity to all interested parties to present evidence and make representation.

(10) Each member of the Tribunal shall, before acting as such, take and subscribe before a judge of the ~~Supreme or county court~~ [Supreme Court of Nova Scotia] and shall file with the Minister, an oath or affirmation of office in the following form:

I,, do solemnly swear (affirm) that I will faithfully, truly and impartially, to the best of my judgement, skill and ability, execute and perform the office of a member of the Labour Standards Tribunal (Nova Scotia) and will not, except in the discharge of my duties, disclose to any person any of the evidence or other matter brought before the said Tribunal. So help me God.

R.S., c. 246, s. 17.

Remuneration and expenses

18 The members of the Tribunal shall be paid remuneration as may be fixed by the Governor in Council, and actual and reasonable expenses as may be incurred by them in the discharge of their duties. *R.S., c. 246, s. 18.*

Power to make rules of procedure

19 The Tribunal may make rules governing its procedure under this Act. *R.S., c. 246, s. 19.*

Determination by Tribunal and appeal to court

20 (1) If in any proceeding before the Tribunal a question arises under this Act as to whether

(a) a person is an employer or employee;

(b) an employer or other person is doing or has done anything prohibited by this Act,

the Tribunal shall decide the question and the decision or order of the Tribunal is final and conclusive and not open to question or review except as provided by subsection (2).

(2) Any party to an order or decision of the Tribunal may, within thirty days of the mailing of the order or decision, appeal to the ~~Appeal Division of the Supreme Court~~ [Nova Scotia Court of Appeal] on a question of law or jurisdiction.

(3) The practice and procedure in relation to an appeal under subsection (2) are the same as upon an appeal from the ~~Trial Division of the Supreme Court~~ [of Nova Scotia].

(4) The Tribunal may of its own motion state a case in writing for the opinion of the ~~Appeal Division of the Supreme Court~~ [Nova Scotia Court of Appeal] upon any question that, in the opinion of the Tribunal, is a question of law.

(5) The ~~Appeal Division of the Supreme Court~~ [Nova Scotia Court of Appeal] shall hear and determine the question or questions of law arising thereon and remit the matter to the Tribunal, with the opinion of the Court thereon.

(6) Costs shall not be awarded in a case stated under subsection (4). *R.S., c. 246, s. 20.*

ADMINISTRATION

Complaint to or inquiry by Director

21 (1) Where the Director receives a complaint in any form alleging that there has been a failure to comply with this Act, he or a person designated by him shall inquire into the complaint and may endeavour to effect a settlement.

(2) Where the Director has reasonable grounds to believe that there has been a failure to comply with this Act, he or a person designated by him may inquire into the matter and endeavour to effect a settlement.

(3) Notwithstanding Section 72, where, after inquiry pursuant to subsection (1) or (2), the Director concludes that an employer or an employee has contravened a provision of this Act and he has been unable to effect a settlement, or an employer or employee has contravened the terms of a settlement under this Section, the Director may, in writing, order the contravening employer or employee to

(a) do any act or thing that in the opinion of the Director constitutes full compliance with this Act;

(b) rectify an injury caused to the person injured or make compensation therefor; and

(c) for greater certainty and without limiting the generality of clauses (a) and (b), reinstate the employee,

but where the Director concludes that a complaint under Section 81 is made out he shall order the employer to pay over to the Tribunal by a specified date the amount of pay found to be unpaid.

(3A) The Director shall not make an order pursuant to subsection (3) unless the failure to comply with the Act occurred within the six months preceding

(a) the receipt of the complaint by the Director; or

(b) the initiation of an inquiry by the Director.

(4) The Director shall, in any order made under subsection (3), specify the provision or provisions of this Act or the terms of any settlement which have, in his opinion, been contravened and advise the employer or employee against whom the order is made of his right to appeal to the Tribunal.

(5) Any employer or employee against whom the Director has made an order under subsection (3) may, within ten days after the order is served upon him, file an appeal to the Tribunal in accordance with the regulations, and, where no such appeal is filed for the purpose of Section 88, the Director's order is deemed to be an order of the Tribunal.

(6) Notwithstanding subsection (5), the Tribunal may, either before or after the ten days referred to in that subsection, extend the time for filing an appeal.

(7) Where, in the opinion of the Director, there has been no failure to comply with this Act or the terms of any settlement under this Section he shall so inform the complainant and advise him of his right to make a complaint to the Tribunal and that he may wish the advice of legal counsel.

(8) The Director is not required to serve notice upon or hear any person before making an order under this Section or advising a complainant that there has been no failure to comply with this Act.

(9) Any employer or employee against whom the Director has made an order under subsection (3) shall comply with the order unless he has filed an appeal with the Tribunal.

(10) Subject to the rights under subsection (4) of Section 90 of persons other than the employer, an order of the Director under this Section is final and conclusive and not open to review by any court by certiorari or otherwise or to appeal except to the Tribunal as provided by this Section. *R.S., c. 246, s. 21; 1991, c. 14, s. 5; 2003 (2nd Sess.), c. 7, s. 5.*

Parties to proceeding under Section 21

22 In any proceeding before the Tribunal with respect to any matter arising under Section 21, including any matter arising under Section 81, the parties shall be

(a) the Director, who shall have the carriage of the matter;

(b) the person alleged by the Director to have failed to comply with this Act;

(c) the complainant, if any; and

(d) any other person specified by the Tribunal upon such notice as the Tribunal may determine, provided that at the hearing he is given an opportunity to be heard against his joinder as a party. *R.S., c. 246, s. 22.*

Complaint to Tribunal

23 (1) A complaint under subsection (2) of Section 31, subsection (3) of Section 43, subsection (3) of

Section 56, subsection (3) of Section 60, subsection (2) of Section 67, subsection (2) of Section 70, subsection (3) of Section 78 or subsection (1) of Section 83 or any other complaint to the Tribunal by a complainant who has made a complaint to the Director and is not satisfied with the result shall be in writing in the form set out in the regulations.

(2) The Tribunal shall not proceed with any matter arising out of a complaint referred to in subsection (1) until the complainant has made a complaint in writing to the Director in the form set out in the regulations and either

(a) the Director has informed the complainant in writing that he will not entertain the complaint or that he is not proceeding with the matter; or

(b) one month has elapsed and the complainant has not received either notice of an order by the Director under subsection (3) of Section 21 or a notice of hearing in accordance with subsection (1) of Section 24.

(3) In any proceeding before the Tribunal with respect to any matter arising out of a complaint referred to in subsection (1) the parties shall be

(a) the complainant, who shall have the carriage of the complaint;

(b) the person alleged by the complainant to have failed to comply with this Act; and

(c) any other person specified by the Tribunal upon such notice as the Tribunal may determine, provided that at the hearing he is given an opportunity to be heard against his joinder as a party.

(4) The Tribunal shall not proceed with any matter arising out of a complaint referred to in subsection (1) unless the matter to which the complaint to the Director refers occurred within the six months preceding

(a) the receipt of that complaint by the Director; or

(b) the initiation of an inquiry by the Director. *R.S., c. 246, s. 23; 2004, c. 6, s. 15.*

Notice of hearing and hearing in absentia

24 (1) In any proceeding leading to an order or decision the Tribunal shall set a date for a hearing and shall serve notice of the hearing on the parties at least ten days before the day set.

(2) The notice of hearing shall contain

(a) a statement of the time and place of the hearing;

(b) a statement of the statutory power under which the hearing is being held;

(c) a statement as to where and how further information about the proceedings may be obtained;

(d) a concise statement of the issues; and

(e) a statement that, if a party who has been duly notified does not attend at the hearing, the Tribunal may proceed in his absence and he is not entitled to notice of any further proceedings.

(3) If a person who has been duly notified of a hearing does not attend, the Tribunal may proceed in his absence. *R.S., c. 246, s. 24.*

Hearings public

25 All hearings are open to the public except where the Tribunal finds that intimate financial or personal matters or other matters may be disclosed at the hearing of a nature that, having regard to the circumstances, the desirability of avoiding their disclosure in the interests of any person affected, or in the public interest, outweighs the desirability of adhering to the principle that hearings be open to the public, in which case the Tribunal may hold the hearing concerning the matters in camera. *R.S., c. 246, s. 25.*

Duty of Tribunal

26 (1) The Tribunal, in determining any matter under this Act, shall

- (a) decide whether or not a party has contravened this Act; and
- (b) make an order in writing.

(2) Notwithstanding Section 72, where the Tribunal decides that a party has contravened a provision of this Act the Tribunal may order the contravening party to

- (a) do any act or thing that, in the opinion of the Tribunal, constitutes full compliance with the provision;
- (b) rectify an injury caused to the person injured or to make compensation therefor; and
- (c) for greater certainty and without limiting the generality of clauses (a) and (b), reinstate the employee,

but where the Tribunal decides that a complaint under Section 81 is made out the Tribunal shall order the employer to pay over to the Tribunal by a specified date the amount of pay found to be unpaid. *R.S., c. 246, s. 26; 2003 (2nd Sess.), c. 7, s. 6.*

Record of hearing

27 All oral evidence received by the Tribunal shall be recorded in writing and together with

- (a) the notice of hearing;
- (b) the complaint;
- (c) any rulings or orders made in the course of the proceedings of the Tribunal;
- (d) any written submissions received by the Tribunal; and
- (e) the decision and the reasons therefor,

forms the record. *R.S., c. 246, s. 27.*

EMPLOYEE PROTECTION

Protection of identity of complainant

28 Where a person who makes a complaint to the Director or the Tribunal requests that his name and identity be withheld, the Director or the Tribunal shall not disclose his name or identity to any person except where disclosure is considered by the Tribunal to be in the public interest. *R.S., c. 246, s. 28; 1991, c. 14, s. 6.*

Employer not to discriminate if garnishment

29 An employer shall not discharge, lay off or discriminate in any other manner against any employee because garnishment proceedings have been or may be taken against that employee. *R.S., c. 246, s. 29.*

No discrimination against complainant or witness

30 (1) An employer shall not discharge, lay off, suspend, intimidate, penalize, discipline or discriminate in any other manner against any person because

- (a) that person has made a complaint pursuant to this Act;
 - (b) that person has testified or is about to testify, or the employer believes that person may testify, in any proceeding pursuant to an enactment;
 - (c) that person has made or is about to make any disclosure that that person is required or permitted to make by this Act;
 - (d) that person has taken or has evidenced an intention to take, or the employer believes that that person may take, a leave of absence to which that person is entitled pursuant to this Act; or
 - (e) that person has refused or attempted to refuse to work on a uniform closing day in a retail business or refuses to sign a contract of employment or agreement that requires that person to work in a retail business on [a] uniform closing day if the employee is not required to work on [a] uniform closing day by or pursuant to Section 66A[.]
- (2) Without limiting the meaning of "discriminate" in subsection (1), an employer discriminates against an employee contrary to clause (d) of that subsection where the employer discharges, lays off or suspends the employee within three months of that person taking or evidencing an intention to take, or the employer believing that the employee may take, a leave of absence to which the employee is or was entitled to pursuant to this Act unless
- (a) the employee is guilty of wilful misconduct, disobedience or neglect of duty that has not been condoned by the employer;
 - (b) the employer has just cause to discharge or suspend the employee;
 - (c) the reason for the discharge or lay-off is beyond the control of the employer and the employer has exercised due diligence to foresee and avoid the cause of the discharge or lay-off; or
 - (d) the employer, in good faith and for legitimate business reasons, ceases operation or eliminates the position in which the employee is employed and is unable to provide reasonable alternative employment to the employee.

(3) In any proceeding under this Act, the burden of proof that an employer did not contravene a provision set out in this Section lies with the employer. *1991, c. 14, s. 7; 2003 (2nd Sess.), c. 7, s. 7; 2004, c. 6, s. 16; 2006, c. 10, s. 3.*

Duty of Director upon contravention of clause 30(1)(e)

30A (1) Where the Director determines that an employer has contravened clause (e) of subsection (1) of Section 30 or, with respect to the Retail Business Uniform Closing Day Act, clause (b) of subsection (1) of Section 30, the Director shall require, by a specified date,

- (a) that the employer reinstate the employee pursuant to the same terms and conditions under which the employee was employed immediately before the termination;
- (b) that the employer pay any wages, salary, pay or other benefits that the employee would have earned but for the contravention;
- (c) that any reprimand or other references to the matter in the employer's records on the employee be removed;
- (d) that the employer do the things that, in the opinion of the Director, are necessary to secure compliance with this Act and the regulations.

(2) Where an order or requirement of the Director pursuant to subsection (1) is not appealed pursuant to this Act, the order or requirement is final and binding. *2003, (2nd Sess.), c. 7, s. 8; 2006, c. 10, s. 4.*

Complaint to Director or Tribunal

31 (1) A person who has reasonable grounds to believe that he has been discharged or otherwise discriminated against contrary to Section 29 or Section 30 may make a complaint to the Director in accordance with Section 21.

(2) A person who has made a complaint under subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *R.S., c. 246, s. 31.*

VACATION PAY

Vacation

32 (1) Where an employee works for an employer at any time during a continuous twelve-month period, the employer

- (a) not later than ten months after the twelve-month period ends, shall give the employee an unbroken vacation of at least two weeks or, where the employee has been in the employ of the employer for more than eight years, an unbroken vacation of at least three weeks;
- (b) at least one week in advance, shall notify the employee of the date his vacation begins; and
- (c) at least one day before his vacation begins, shall pay the employee an amount at least equal to four per cent or, where the employee has been in the employ of the employer for more than eight years, an amount at least equal to six per cent, of the employee's wages for the twelve-month period during which the employee established his right to a vacation.

(2) Notwithstanding clause (a) of subsection (1), the employer and the employee may by agreement provide for two or more vacation periods if

(a) the periods are in total equal to at least the length of vacation to which the employee is entitled under that clause; and

(b) include an unbroken period of at least one week prior to which the employer gives notice as required by clause (b) of subsection (1) and pays the employee the full amount as required by clause (c) of subsection (1). *R.S., c. 246, s. 32; 1991, c. 14, s. 8; 2003 (2nd Sess.), c. 7, s. 9; 2004, c. 6, s. 17.*

Waiver of entitlement under subsection 32(1)

33 (1) An employee who works for an employer for less than ninety per cent of the regular working hours during a continuous twelve-month period may waive the entitlement set out in subsection (1) of Section 32 to a period of vacation leave.

(2) Where the employee notifies the employer in writing that the employee is exercising the option specified in subsection (1), Section 32 does not apply and the employer shall pay to the employee, not later than one month after the twelve-month period ends, an amount at least equal to four per cent or, where the employee has been in the employ of the employer for more than eight years, an amount at least equal to six per cent, of the wages of the employee for the twelve-month period. *1991, c. 14, s. 9; 2004, c. 6, s. 18.*

Vacation pay on termination

34 Where an employee works for an employer and is not entitled to a vacation with pay or pay in lieu of a vacation as provided for in Sections 32 and 33, and his employment with that employer terminates, the employer shall pay to the employee within ten days after his employment terminates an amount at least equal to four per cent or, where the employee has been in the employ of the employer for more than eight years, an amount at least equal to six per cent, of the wages of the employee during the time he was employed. *R.S., c. 246, s. 34; 2004, c. 6, s. 19.*

Calculation of vacation pay

35 (1) For the purpose of calculating vacation pay or pay in lieu of vacation as provided for in Sections 32, 33 and 34, the wages of the employee include the cash value of board or lodging provided by the employer, which is the greater of

(a) the amount agreed upon between the employer and the employee as being its cash value; and

(b) the amount specified in any order issued under the authority of this Act.

(2) Subsection (1) does not apply to the construction industry.

(3) For the purpose of calculating vacation pay or pay in lieu of vacation pay as provided for in Sections 32, 33 and 34, the twelve-month period or any other period of employment shall commence on the first day the employee is employed. *R.S., c. 246, s. 35.*

Vacation pay in trust and deemed secure debt due

36 (1) Every employer is deemed to hold vacation pay accruing due to an employee in trust for the

employee and for payment of the vacation pay over in the manner and at the time provided under this Act and the regulations, and the amount is a charge upon the assets of the employer or his estate in his hands or the hands of a trustee and has priority over all other claims.

(2) Notwithstanding any other Act, the amount of vacation pay accruing due to an employee is a debt due or accruing due by the employer to the employee and the employee shall be deemed to hold a mortgage on the assets of the employer to the amount of the vacation pay accruing due and may enforce the mortgage by foreclosure proceedings.

(3) The mortgage referred to in subsection (2) shall be payable in priority over all liens, charges or mortgages of every person in respect of the real and personal property of the employer, including those of Her Majesty in right of the Province, but excepting liens for wages due to workmen by that employer. *R.S., c. 246, s. 36.*

HOLIDAYS WITH PAY

Employer to grant general holiday

37 (1) In this Section and Sections 38, 39, 40 and 41, "general holiday" means New Year's Day, Good Friday, Canada Day, Labour Day, Christmas Day and a day specified as a general holiday in a regulation, and includes any day substituted for one of those days pursuant to Section 39.

(2) Except as provided by Section 39 and Section 41, every employer shall grant each of his employees a holiday with pay on each general holiday falling within any period of his employment. *R.S., c. 246, s. 37.*

Alternative holiday

38 Except as otherwise provided in this Act, when a general holiday falls on a day that is a non-working day for an employee, his employer shall grant him a holiday with pay on either

(a) the working day immediately following the general holiday; or

(b) the day immediately following the vacation of the employee, or grant the employee another day agreed upon by the employee and the employer. *R.S., c. 246, s. 38.*

Substituted holiday

39 An employer may substitute any other holiday for a general holiday in any of the circumstances following:

(a) where a class of employees of an employer is represented by a trade union and the parties to a collective agreement entered into with respect to the terms or conditions of employment of the employees notify the Director in writing that a specified day has been designated in the collective agreement as a holiday with pay in lieu of a general holiday under this Act, the designated day shall, for those employees mentioned in the collective agreement, be a general holiday for the purposes of this Act; or

(b) where no employees of an employer are represented by a trade union or where a class of employees is not provided for under a collective agreement with regard to general holidays, and the employer applies to the Director to substitute another designated holiday for any general holiday under this Act, the Director may, if he is satisfied that a majority of the employees or, as the case may be, that a majority of the class of employees who are not provided for under a collective agreement in regard to general

holidays, concur with the application, approve the substitution of the designated holiday for the specified general holiday, and the designated day shall for those employees be a general holiday for the purposes of this Act. *R.S., c. 246, s. 39.*

Wages not to be reduced or not paid

40 (1) An employer of an employee whose wages are calculated on a weekly or monthly basis shall not reduce his employee's weekly or monthly wages for a week or month in which a general holiday occurs by reason only that the employee does not work on the general holiday.

(2) An employer of an employee whose wages are calculated on a daily or hourly basis shall pay the employee for a general holiday on which he does not work at least the equivalent of the wages he would have paid at the employee's regular rate of wages for his normal hours of work.

(3) An employer of an employee whose wages are calculated on any basis other than a basis mentioned in subsection (1) or (2) shall pay the employee for a general holiday on which he does not work at least the equivalent of the wages he would have paid at the employee's regular rate of wages for his normal working day.

(4) Notwithstanding anything contained in this Act, where an employee is required to work more than forty-eight hours in a week, that employee shall be paid one and a half times the employee's regular hourly wage for each additional hour worked in that week in excess of forty-eight hours. *R.S., c. 246, s. 40; 2003 (2nd Sess.), c. 7, s. 10.*

Holiday pay at one and one-half times regular rate

41 (1) In this Section and Section 42, "employed in a continuous operation" refers to employment in

(a) any industrial establishment in which in each seven-day period, operations once begun normally continue without cessation until the completion of the regularly scheduled operations for that period;

(b) any operations or services concerned with the running of trucks and other vehicles whether in scheduled or non-scheduled operations;

(c) any telephone or other communication operations or services; or

(d) any operation or service normally carried on without regard to Sundays or public holidays.

(2) Except in the case of an employee employed in a continuous operation, an employer of an employee who is required to work on a day on which he is entitled under this Act to a holiday with pay shall pay that employee an amount equal to the amount he would otherwise have received for that holiday and at a rate at least equal to one and one-half times his regular rate of wages for the time worked by him on that day.

(3) An employer of an employee employed in a continuous operation who is required to work on a day on which he is entitled under this Act to a holiday with pay

(a) shall pay the employee an amount equal to the amount he would otherwise have received for that holiday and at a rate at least equal to one and one-half times his regular rate of wages for the time worked by him on that day; or

(b) shall grant the employee a holiday and pay in accordance with Section 40 on the working day immediately following the annual vacation of the employee or another day agreed upon by the employee and the employer. *R.S., c. 246, s. 41.*

Entitlement to holiday pay

42 (1) An employee shall be entitled to be paid for a general holiday if

(a) he has received or is entitled to receive pay for at least fifteen days during the thirty calendar days immediately preceding the general holiday; and

(b) he has worked on his scheduled working day immediately preceding and immediately following the holiday.

(2) Clause (b) of subsection (1) shall not apply if the employer has directed the employee not to report for work on his scheduled working day either immediately prior to or following the holiday.

(3) An employee in a continuous operation is not entitled to be paid for a general holiday on which he did not report for work after having been called upon to work on that day.

(4) Where the employment of an employee ceases before the day agreed upon by the employee and the employer as a holiday for the employee under clause (b) of Section 38 or clause (b) of subsection (3) of Section 41, the employer shall pay the employee, in addition to any other payment to which the employee is entitled, at least the equivalent of the wages he would have paid the employee for that day at his regular rate of wages for his normal working day. *R.S., c. 246, s. 42; 1991, c. 14, s. 10.*

Complaint respecting general holiday

43 (1) An employee who is not granted a general holiday to which he is entitled by this Act may make a complaint to the Director in accordance with Section 21.

(2) The Director shall treat a complaint under subsection (1) which alleges that an employee has not been paid all pay as a complaint under Section 81.

(3) An employee who has made a complaint under subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *R.S., c. 246, s. 43.*

INDUSTRIAL STANDARDS

Construction industry conference schedule of wages and hours

44 (1) This Section and Sections 45, 46 and 47 apply to the cities, towns, municipalities, municipal districts, polling divisions of a municipal district or other areas of a municipality that the Governor in Council determines by proclamation from time to time.

(2) The Minister may, upon the petition of representatives of employees or employers in the construction industry, convene a conference or series of conferences of employees and employers engaged in the industry, for the purpose of investigating or considering the condition of labour and the practices prevailing in the industry and for negotiating standard or uniform rates of wages and hours and days of labour.

(3) If, in the opinion of the Minister, a schedule of wages and of hours of labour for all or any class of employees in any sector or sectors of the construction industry in any geographic area or areas is agreed upon in writing by a proper and sufficient representation of employees and employers, he may approve the schedule.

(4) The Minister shall not approve a schedule that prescribes wages that are less for a female employee than for a male employee.

(5) Upon the recommendation of the Minister, the Governor in Council may declare a schedule agreed upon and approved in accordance with subsection (3) to be in force for the period agreed upon and thereafter until the Governor in Council rescinds his declaration or declares another schedule to be in force.

(6) A schedule declared to be in force by the Governor in Council becomes effective ten days after publication of the order in council in the Royal Gazette. *R.S., c. 246, s. 44.*

Posting of schedule

45 Every employer bound by a schedule shall cause a copy of the schedule to be posted and maintained for as long as it remains in force in a conspicuous place where his employees engaged in their duties may readily see and read it. *R.S., c. 246, s. 45.*

Schedule binds employer and employee

46 (1) An employer of an employee to whom an effective schedule applies shall not pay the employee less than prescribed by the schedule, nor shall he require the employee to work a greater number of hours in each day, or a greater number of days in each week, than is prescribed by the schedule.

(2) An employee to whom an effective schedule applies shall not agree or consent to be employed for wages less than he is entitled to by the schedule and an employee to whom an effective schedule applies shall not work a greater number of hours in each day, or a greater number of days in each week, than is prescribed by the schedule. *R.S., c. 246, s. 46.*

Complaint respecting hours

47 (1) An employee who is required to work a greater number of hours in a day or a greater number of days in a week than is prescribed by a schedule that applies to him may make a complaint to the Director in accordance with Section 21.

(2) The Director shall treat a complaint under subsection (1) which alleges that an employee has not been paid all pay as a complaint under Section 81.

(3) An employee who has made a complaint under subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *R.S., c. 246, s. 47.*

48 and 49 repealed 1991, c. 14, s. 11.

MINIMUM WAGES

Minimum wage order

50 (1) The Governor in Council may

- (a) fix a minimum wage for employees in different employments or in different classes or descriptions of an employment at the rate and in the manner that the Governor in Council considers advisable;
- (b) direct that no employer, who employs employees for whom minimum wages are so fixed, shall employ an employee at a rate of wages less than the minimum wages so fixed.

(2) The Governor in Council may

- (a) apply the minimum wage so fixed to all employees or to a group or class of employees in any industry, business, trade or occupation, or to any group or class of employees in all or in any two or more industries, businesses, trades or occupations;
- (b) fix a different minimum wage to be paid to employees in the same industry, business, trade or occupation in different parts of the Province;
- (c) fix a minimum wage applicable only in the part or parts of the Province designated in the order;
- (d) fix the minimum wage upon an hourly, daily, weekly or monthly basis;
- (e) fix the maximum number of hours of labour for which the minimum wage shall be paid;
- (f) fix the minimum wage payable for time worked in excess of the maximum number of hours of work established under clause (e);
- (g) fix a special rate of wages for apprentices or inexperienced employees, and limit the number of such employees to whom the special rate may be payable by any employer;
- (h) specify when and under what conditions deductions may be made from the minimum wage;
- (i) fix the maximum amount, if any, that may be deducted from the minimum wage in cases where the employer furnishes to the employee board, lodging, uniforms, laundry or other services;
- (j) prescribe the periods in respect of which wages shall be paid whether daily, weekly, monthly or for any other period, and fix the day upon which the wages payable for any period whether so prescribed or not shall be paid, either generally or with respect to any designated employer, and prescribe the manner in which wages shall be paid;
- (k) establish the regular working period and the maximum number of hours of labour that may be worked regularly in any industry, business, trade or occupation, or the part or parts thereof to which the order is applicable;
- (l) exempt from the operation of this Act or any order made hereunder any group, class or description of employees or employers in any industry, business, trade or occupation. *R.S., c. 246, s. 50; 1991, c. 14, s. 12.*

Minimum Wage Review Committee

51 (1) There is hereby established a committee to be known as the Minimum Wage Review Committee.

- (2) The Minimum Wage Review Committee shall be composed of an equal number of employee and employer representatives appointed by the Minister.
- (3) The function of the Minimum Wage Review Committee is to conduct an annual review of the minimum wage and submit to the Minister a report containing the recommendations of the Committee.
- (4) The Minister shall
- (a) make the report referred to in subsection (3) public within thirty days of receipt of the report; and
- (b) make public the response of the Government to the report within sixty days of receipt of the report.
- 2003 (2nd Sess.), c. 7, s. 11.*

Publication of minimum wage order

52 Every order of the Governor in Council fixing a minimum wage shall be published in the Royal Gazette and shall take effect ten days after it is so published, or on a later day fixed by the Governor in Council and stated in the order. *R.S., c. 246, s. 52; 1991, c. 14, s. 14.*

Temporary suspension or variation of order

53 (1) repealed 1991, c. 14, s. 15.

(2) The Governor in Council, without making a new order, may temporarily suspend or vary any order made pursuant to Section 50 so as to conform to special conditions in an industry, business, trade or occupation. *R.S., c. 246, s. 53; 1991, c. 14, s. 15.*

Posting of order

54 Every employer of employees affected by an order of the Governor in Council fixing a minimum wage shall post and keep posted in a conspicuous place in his establishment or plant a copy of the order so that all employees affected thereby may have ready access to and see the same. *R.S., c. 246, s. 54; 1991, c. 14, s. 16.*

Deemed agreement to pay minimum wage

55 An employer who permits an employee to perform any work with respect to which a minimum wage is established is deemed to have agreed to pay the employee at least the minimum wage established. *R.S., c. 246, s. 55.*

Complaint respecting minimum wage

56 (1) Where an employer contravenes an order made under Section 50, an employee may make a complaint to the Director in accordance with Section 21.

(2) The Director shall treat a complaint under subsection (1) which alleges that an employee has not been paid all pay as a complaint under Section 81.

(3) An employee who has made a complaint under subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *R.S., c. 246, s. 56.*

EQUAL PAY

Equal pay for women and men

57 (1) An employer and any person acting on his behalf shall not pay a female employee at a rate of wages less than the rate of wages paid to a male employee, or a male employee at a rate of wages less than the rate of wages paid to a female employee, employed by him for substantially the same work performed in the same establishment, the performance of which requires substantially equal skill, effort and responsibility, and which is performed under similar working conditions.

(2) Where an employer or person acting on the employer's behalf establishes that a different rate of wages is justified based on payment in accordance with

(a) a seniority system;

(b) a merit system;

(c) a system that measures wages by quantity or quality of production; or

(d) another differential based on a factor other than sex,

a difference in the rate of wages between a male and a female employee based on any of the factors referred to in clauses (a) to (d) does not constitute a failure to comply with this Section.

(3) No employer shall reduce the rate of wages of an employee in order to comply with this Section.

(4) Every employer shall post and keep posted, in a conspicuous place in the employer's establishment, a copy of this Section so that all employees may have ready access to and see the same. *R.S., c. 246, s. 57; 1991, c. 14, s. 18.*

Complaint to Director or Tribunal

58 (1) An employee who is denied equal pay to which the employee is entitled by Section 57 may make a complaint to the Director in accordance with Section 21.

(2) An employee who has made a complaint pursuant to subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *1991, c. 14, s. 19.*

PREGNANCY LEAVE AND PARENTAL LEAVE

Pregnancy leave

59 (1) A pregnant employee, who has been employed by her employer for at least one year, is entitled to an unpaid leave of absence of up to seventeen weeks upon

(a) giving the employer notice of the date that she will begin the leave and the date she will return to work, as required by Section 59D; and

(b) providing to the employer, where the employer so requests, a certificate of a legally qualified medical practitioner stating that the employee is pregnant and specifying the expected date of delivery.

(2) Pregnancy leave pursuant to this Section begins on such date, not sooner than sixteen weeks preceding the expected date of delivery, as the employee determines, and not later than the date of delivery.

(3) Pregnancy leave pursuant to this Section ends on such date

(a) not sooner than one week after the date of delivery; and

(b) not later than seventeen weeks after the pregnancy leave began pursuant to this Section,

as determined by the employee. *1991, c. 14, s. 19.*

Requirement by employer to take leave

59A (1) Notwithstanding Section 59, an employer may require a pregnant employee, who has been employed by the employer for at least one year, to take an unpaid leave of absence while the duties of her position cannot reasonably be performed by a pregnant woman or the performance of the employee's work is materially affected.

(2) For greater certainty, nothing in subsection (1) affects any protection provided to a pregnant employee, regardless of the length of employment, by the Human Rights Act. *1991, c. 14, s. 19.*

Parental leave

59B (1) An employee, who has been employed by an employer for at least one year, and who becomes, before or after this Section comes into force, a parent of one or more children through

(a) the birth of the child or children; or

(b) the placement of the child or children in the care of the employee for the purpose of adoption of the child or children pursuant to the law of the Province,

is entitled to an unpaid leave of absence of, subject to subsection (4), up to fifty-two weeks upon giving the employer notice of the date that the employee will begin the leave and the date that the employee will return to work, as required by Section 59D.

(2) Where an employee takes pregnancy leave pursuant to Section 59 and the employee's new-born child or children arrive in the employee's home during the pregnancy leave, parental leave pursuant to this Section

(a) begins immediately upon completion of the pregnancy leave and without the employee returning to work; and

(b) ends not later than thirty-five weeks after the parental leave began pursuant to this Section, as determined by the employee.

(3) Where subsection (2) does not apply, parental leave pursuant to this Section

(a) begins on such date, coinciding with or after the birth of the child or children or the child or children first arriving in the employee's home; and

(b) ends not later than fifty-two weeks after the child or children first arrive in the employee's home, as determined by the employee.

(4) The maximum combined pregnancy leave and parental leave to which an employee is entitled is fifty-two weeks. *1991, c. 14, s. 19; 2000, c. 35, s. 1.*

Interruption of leave by hospitalization of child

59C (1) Notwithstanding Section 59B, where an employee has begun parental leave pursuant to that Section and the child to whom the parental leave relates is hospitalized for a period exceeding or likely to exceed one week, the employee is entitled to return to and resume work in accordance with Section 59G and defer the unused portion of the parental leave until the child is discharged from the hospital, upon giving the employer notice in accordance with Section 59D.

(2) An employee is entitled pursuant to subsection (1) to only one interruption and deferral of each parental leave. *1991, c. 14, s. 19.*

Notice

59D (1) An employee shall give the employer four weeks' notice of

(a) the date the employee will begin pregnancy leave pursuant to Section 59 or parental leave pursuant to subsection (3) of Section 59B; and

(b) the date the employee will return to work upon completion of the leave unless the employee will take the maximum leave to which the employee is entitled.

(2) Notice given pursuant to subsection (1) may be amended from time to time by the employee

(a) by changing any date in the notice to an earlier date if the notice is amended at least four weeks before that earlier date;

(b) by changing any date in the notice to a later date if the notice is amended at least four weeks before the original date; and

(c) by adding the date that the employee will return to work if the notice is amended at least four weeks before the employee would have been required to return to work.

(3) An employee shall give the employer as much notice as reasonably practicable of

(a) the date the employee will begin pregnancy leave pursuant to Section 59 where she is advised by a legally qualified medical practitioner to begin pregnancy leave sooner than planned because of medical circumstances resulting from her pregnancy;

(b) the delivery where the actual delivery occurs sooner than expected;

(c) the first arrival of the child or children in the employee's home where that arrival is not anticipated or occurs sooner than reasonably expected;

(d) the return to work of the employee pursuant to Section 59C; and

(e) the resumption of parental leave by the employee in accordance with Section 59C, and subsection (1) does not apply.

(4) Notice given pursuant to this Section shall be put in writing where the employer so requests. *1991, c. 14, s. 19.*

Proof of entitlement

59E (1) Upon the request of the employer, where an employee takes parental leave pursuant to Section 59B, interrupts and defers leave pursuant to Section 59C or gives notice pursuant to subsection (3) of Section 59D, the employee shall provide such proof as is reasonably necessary to establish the entitlement of the employee pursuant to those provisions.

(2) The certificate of a legally qualified medical practitioner or, in the case of adoption, of an official in the Department of Community Services with knowledge of the proposed adoption is sufficient proof for the purpose of subsection (1) of the matters attested to in the certificate. *1991, c. 14, s. 19.*

Maintenance of benefit plan

59F (1) For the periods of time specified in Sections 59, 59A, 59B and 59C, the employer shall grant to the employee the option of maintaining a benefit plan in which the employee participated prior to the commencement of that period and shall notify the employee in writing of the option and the date beyond which the option may no longer be exercised at least ten days prior to the last day on which the option could be exercised to avoid an interruption in benefits.

(2) Where the employee opts in writing to maintain the benefit plan referred to in subsection (1), the employee shall enter into an arrangement with the employer to pay the cost required to maintain the benefit plan, including the employer's share thereof, and the employer shall process the documentation and payments as arranged.

(3) Nothing in subsection (2) prevents an employer from contributing to the cost of a benefit plan referred to in subsection (1). *1991, c. 14, s. 19.*

Resumption of work

59G (1) When an employee returns to work upon the expiry of a leave of absence taken pursuant to Section 59, 59A or 59B or returns to work pursuant to Section 59C, the employer shall permit the employee to resume work

(a) in the position held by the employee immediately before the leave began or, where that position is not available, in a comparable position with not less than the same wages and benefits; and

(b) with no loss of seniority or benefits accrued to the commencement of the leave.

(2) Where the employer's operations are or will be suspended or discontinued when the employee returns to work upon the expiry of a leave of absence taken pursuant to Sections 59, 59A or 59B or returns to work pursuant to Section 59C, subsection (1) of this Section does not apply and the employer shall comply with Section 72 and, when the operation resumes, subsection (1) applies subject to the employer's seniority system, if any.

(3) For greater certainty, nothing in this Section limits any protection provided to an employee by a collective agreement or other contract of employment or by the Human Rights Act. *1991, c. 14, s. 19.*

Interpretation of Sections 59 to 59G

59H For greater certainty, nothing in Sections 59 to 59G limits any benefits to which an employee would otherwise be entitled. *1991, c. 14, s. 19.*

Complaint to Director or Tribunal

60 (1) An employee who is denied a leave of absence, the opportunity to resume work, seniority or benefits to which the employee is entitled by Section 59, 59A, 59B, 59C, 59F or 59G may make a complaint to the Director in accordance with Section 21.

(2) The Director shall treat a complaint under subsection (1) which alleges that an employee has not been paid all pay as a complaint under Section 81.

(3) An employee who has made a complaint under subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *R.S., c. 246, s. 60; 1991, c. 14, s. 20.*

BEREAVEMENT LEAVE AND COURT LEAVE

Bereavement leave

60A An employee is entitled to an unpaid leave of absence of

(a) up to, at the employee's option, three consecutive working days upon the death of the employee's spouse, parent, guardian, child or ward;

(b) one working day upon the death of the employee's grandparent, grandchild, sister, brother, mother-in-law, father-in-law, son-in-law, daughter-in-law, sister-in-law or brother-in-law. *1991, c. 14, s. 21.*

Court leave

60B An employee is entitled to an unpaid leave of absence for such time as the employee is required to perform jury duty or is required by subpoena or summons to attend as a witness at a place other than the place of employment of the employee. *1991, c. 14, s. 21.*

Notice

60C Before taking bereavement leave pursuant to Section 60A or court leave pursuant to Section 60B, an employee shall give the employer as much notice as reasonably practicable of the employee's intention to take the leave. *1991, c. 14, s. 21.*

Complaint to Director or Tribunal

60D (1) An employee who is denied a leave of absence pursuant to Section 60A or 60B or the opportunity to resume work on account of taking such leave may make a complaint to the Director in accordance with Section 21.

(2) An employee who makes a complaint pursuant to subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *1991, c. 14, s. 21.*

COMPASSIONATE-CARE LEAVE

Entitlement to unpaid compassionate-care leave

60E (1) In this Section,

(a) "common-law partner" of an individual means another individual who has cohabited with the individual in a conjugal relationship for a period of at least one year;

(b) "family member", in relation to an employee, means

(i) a spouse or common-law partner of the employee,

(ii) a child of the employee or a child of the employee's spouse or common-law partner,

(iii) a parent of the employee or a spouse or common-law partner of the parent, and

(iv) any other person who is a member of a class of persons prescribed in the regulations for the purpose of this definition;

(c) "week" means the period between midnight on Saturday and midnight on the following Saturday.

(2) An employee who has been employed by an employer for a period of at least three months is entitled to an unpaid leave of absence of up to eight weeks to provide care or support to a family member of the employee if a legally qualified medical practitioner issues a certificate stating that the family member has a serious medical condition with a significant risk of death within twenty-six weeks from

(a) the day the certificate is issued; or

(b) where the leave was begun before the certificate was issued, the day the leave was begun.

(3) The leave of absence referred to in subsection (2) may only be taken during the period

(a) that begins with

(i) the first day of the week in which the certificate is issued, or

(ii) where the leave was begun before the certificate was issued, the first day of the week in which the leave was begun if the certificate is valid from any day in that week; and

(b) that ends with the last day of the week in which either of the following occurs:

(i) the family member dies, or

(ii) the expiration of twenty-six weeks following the first day of the week referred to in clause (a).

(4) A leave of absence under this Section may only be taken in periods of not less than one week's

duration.

(5) Where requested in writing by the employer, the employee must provide the employer with a copy of the certificate referred to in subsection (2).

(6) For the period of time specified in subsection (2), the employer shall grant to the employee the option of maintaining a benefit plan in which the employee participated before the beginning of that period and shall notify the employee in writing of the option and the date beyond which the option may no longer be exercised at least ten days before the last day on which the option could be exercised to avoid an interruption in benefits.

(7) Where the employee opts in writing to maintain the benefit plan referred to in subsection (6), the employee shall enter into an arrangement with the employer to pay the cost required to maintain the benefit plan, including the employer's share thereof, and the employer shall process the documentation and payments as arranged.

(8) Nothing in subsection (7) prevents an employer from contributing to the cost of a benefit plan referred to in subsection (6).

(9) An employee shall advise an employer as soon as possible of any intention to take a leave of absence under this Section. *2003 (2nd Sess.), c. 4, s. 2.*

Sections 59G to 60 apply

60F Sections 59G to 60 apply mutatis mutandis to an employee who takes a leave of absence pursuant to Section 60E. *2003 (2nd Sess.), c. 4, s. 2.*

SICK LEAVE

Entitlement to unpaid sick leave

60G (1) An employee is entitled to a maximum of three days of unpaid leave per year where the leave is required

- (a) due to the sickness of a child, parent or family member; or
- (b) for medical, dental or other similar appointments during working hours.

(2) Section 60D applies mutatis mutandis. *2003 (2nd Sess.), c. 7, s. 12; 2004, c. 6, s. 20.*

RESERVISTS

Unpaid service leave

60H (1) In this Section,

- (a) "Reserves" means that component of the Canadian Forces referred to in the National Defence Act (Canada) as the reserve force;
- (b) "service" means a period of active duty or training in the Reserves

- (2) An employee, who has been employed by an employer for at least one year and is required to be absent from the employer's civilian employment for purpose of service, is entitled to an unpaid leave of absence upon
- (a) giving the employer the required notice of the date that the leave will begin and the anticipated date of return to work; and
 - (b) providing to the employer, where the employer so requests, a certificate from an official with the Reserves stating that the employee is a member, is required for service and, where possible, specifying the expected dates for the period of service.
- (3) Every employee taking a leave of absence pursuant to subsection (2) shall
- (a) provide the employer with reasonable notice prior to the date when the employee intends to take a leave of absence for a period of service; and
 - (b) provide the employer with reasonable notice prior to the date when the employee intends to return to work upon completion of service.
- (4) Notice given pursuant to this Section must be put in writing if the employer so requests.
- (5) Sections 59F to 60 apply mutatis mutandis to an employee who takes a leave of absence pursuant to this Section. *2006, c. 13, s. 9.*

EMERGENCY LEAVE

Unpaid leave of absence

60I (1) In this Section,

- (a) "common-law partner" means a "common-law partner" as defined in Section 60E;
- (b) "emergency" means
 - (i) an emergency declared under the Emergency Management Act that prevents the employee from performing the employee's work duties,
 - (ii) a direction or order of a medical officer under the Health Protection Act that prevents the employee from performing the employee's work duties,
 - (iii) a public health emergency declared by the Minister under Section 53 of the Health Protection Act that prevents the employee from performing the employee's work duties,
 - (iv) an emergency declared under Part 1, Part 2 or Part 3 of the Emergencies Act (Canada) that prevents the employee from performing the employee's work duties, or
 - (v) such other circumstances as are prescribed in the regulations;
- (c) "family member", in relation to an employee, means a family member as defined in Section 60E.

(2) Notwithstanding clause (b) of subsection (1), an emergency includes a circumstance under subclause (i), (ii), (iii), (iv) or (v) of clause (b) that applies to a family member of an employee if

(a) the declaration, direction, order or other prescribed circumstance directly applies to a family member of the employee;

(b) the declaration, direction, order or other prescribed circumstance results in a situation where the family member of the employee requires care or assistance;

(c) the employee is the only person reasonably able under the circumstances to provide the family member with the required care or assistance; and

(d) providing the required care or assistance to the family member has the effect of preventing the employee from performing the employee's work duties.

(3) An employee is entitled to an unpaid leave of absence for such time as the employee cannot perform the duties of the employee's position because of the emergency.

(4) An employee shall give the employer as much notice as reasonably practicable of the employee's intention to take an emergency leave or, where required to leave before notice can be provided, the employee shall advise the employer of the emergency leave as soon as possible after the leave begins.

(5) An employee who takes a leave under this Section shall provide to the employer, where the employer so requests, evidence that is reasonable in the circumstances that the employee is entitled to the leave and such evidence must be provided within a time that is reasonable in the circumstances.

(6) A leave under this Section continues for as long as the emergency continues and the emergency prevents the employee from performing the employee's work duties but the entitlement ends on the day the emergency is terminated or the emergency no longer prevents the employee from performing the employee's work duties.

(7) Where an emergency as defined in clause (b) of subsection (1) is made retroactive under subsection (3) of Section 25 of the Emergency Management Act or under subsection (2), an employee who does not perform the duties of the employee's position because of the declared emergency is deemed to have been on leave beginning on the first day that the employee did not perform the duties of the position on or after the date to which the declared emergency was made retroactive.

(8) Sections 59F to 60 apply mutatis mutandis to an employee who takes a leave of absence pursuant to this Section. *2009, c. 18.*

HOURS OF LABOUR

Powers respecting hours of labour

61 (1) The Governor in Council may determine all or any of the following:

(a) the number of hours per day or per week during which a person employed in industrial undertakings may work;

(b) the kinds of industrial undertakings to which this Section applies;

- (c) the categories of employees employed in an industrial undertaking to whom this Section applies;
- (d) the districts of the Province to which this Section applies;
- (e) the length of time during which this Section applies.

(2) This Section does not apply to persons holding positions of supervision or management, nor to persons employed in a confidential capacity.

(3) Notwithstanding subsection (1), the limit of hours of work determined by the Governor in Council may be exceeded in those processes which are required by reason of the nature of the processes to be carried on continuously by a succession of shifts. *R.S., c. 246, s. 61; 1991, c. 14, s. 22.*

Variation of hours in certain cases

62 Where by law, custom, or agreement between employers' and workers' organizations, or, where no such organizations exist, between employers' and workers' representatives, the hours of work on one or more days of the week are less than the period determined by the Governor in Council, the period so determined may be exceeded on the remaining days of the week by agreement between such organizations or representatives. *R.S., c. 246, s. 62; 1991, c. 14, s. 23.*

Excess hours in special cases

63 The limit of hours of work determined by the Governor in Council may be exceeded in case of accident, actual or threatened, or in case of urgent work to be done to machinery or plant, or in case of vis major, but only so far as may be necessary to avoid serious interference with the ordinary working of the undertaking. *R.S., c. 246, s. 63; 1991, c. 14, s. 24.*

Exception

64 The limit of hours of work determined by the Governor in Council may be exceeded in those processes which are required, by reason of the nature of the process, to be carried on continuously by a succession of shifts. *R.S., c. 246, s. 64; 1991, c. 14, s. 25.*

Where hours of labour restricted

65 An employer engaged in an industry to which Section 61 is declared to apply shall

(a) notify by means of notices posted conspicuously in the establishment, or any other convenient place, or in any other manner determined by or under the authority of the Governor in Council, the hours at which work begins and ends, and, where work is carried on by shifts, the hours at which each shift begins and ends, and no change shall be made in these hours except upon such notice and in such manner as may be approved by or under the authority of the Governor in Council; and

(b) notify in the same way the rest intervals accorded during the period of work that are not reckoned as part of the working hours. *R.S., c. 246, s. 65; 1991, c. 14, s. 26.*

Period of rest

66 (1) An employer in any industrial undertaking, except as otherwise provided herein, shall

(a) grant each of his employees a period of rest comprising at least twenty-four consecutive hours in every period of seven days; and

(b) whenever possible grant the period of rest simultaneously to all employees in any establishment and grant the day of rest on Sunday.

(2) An employer, other than in an industrial undertaking, except as otherwise provided herein, shall grant each of the employees a period of rest comprising at least twenty-four consecutive hours in every period of seven days.

(3) Notwithstanding subsection (1) or (2), an employer may require more than six consecutive days of work

(a) in case of an accident;

(b) in the case of work required to be done to the machinery or establishment of the employer whose employees are affected;

(c) in the case of an occurrence beyond human control,

but only to the extent necessary to avoid serious interference with the ordinary working of the employer's undertaking.

(4) Notwithstanding subsection (1) or (2), an employer may require more than six consecutive days of work in accordance with an order of the Director, where, upon application of the employer, the Director by such order approves, with or without conditions, the substitution of an alternative arrangement for a period of rest. *R.S., c. 246, s. 66; 1991, c. 14, s. 27.*

Working in retail business on uniform closing day

66A (1) Notwithstanding any contract of employment or agreement made before or after the coming into force of this subsection, no employee is required, and no employer shall require an employee, to work or to sign a contract of employment or agreement that requires the employee to work in a retail business on a uniform closing day unless the retail business is of a class of retail business exempted from the application of this Section.

(2) Where an employee to whom subsection (1) applies has agreed to work on uniform closing days, the employee may refuse to work on uniform closing days or on a particular uniform closing day if the employee gives the employer at least seven days notice to that effect before the employee is scheduled to begin such work or, where the employee receives less than seven days notice of being scheduled for such work, the employee gives the employer notice to that effect within two days of receiving the notice from the employer. *2003 (2nd Sess.), c. 7, s. 13; 2006, c. 10, s. 5.*

Rest or eating break

66B (1) An employee is entitled to a rest or eating break of at least one-half hour at intervals such that as a result no employee is required to work longer than five consecutive hours without a rest or eating break.

(2) Notwithstanding subsection (1), where an employee works more than ten consecutive hours, the employee is entitled to at least one rest or eating break of at least one-half hour and other rest or eating breaks totalling at least one-half hour for each five consecutive hours of work.

(3) Subsections (1) and (2) do not apply

(a) where an accident occurs, urgent work is necessary or unforeseeable or unpreventable circumstances occur;

(b) where it is unreasonable for an employee to take a meal break;

(c) to an employee whose terms of employment are determined by a collective agreement; or

(d) in any other case prescribed by the regulations.

(4) Where it is necessary for medical reasons, an employee is entitled to a rest or eating break at a time or times other than when provided by subsection (1) or (2).

(5) Where an employee has worked five hours and has not been provided a rest or eating break, the employee is entitled to eat while working.

(6) The Governor in Council may make regulations prescribing cases where subsections (1) or (2) do not apply.

(7) The exercise by the Governor in Council of the authority contained in subsection (6) is regulations within the meaning of the Regulations Act, 2006, c. 32, s. 1.

Complaint to Director or Tribunal

67 (1) An employee to whom Section 61 applies who is required to work more hours than provided by order in accordance with Section 61 or whose employer does not grant him a day of rest in accordance with Section 66 or a rest or eating break in accordance with Section 66B may make a complaint to the Director in accordance with subsection (2) of Section 21.

(2) An employee who has made a complaint under subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *R.S., c. 246, s. 67; 2006, c. 32, s. 2.*

EMPLOYMENT OF CHILDREN

Children under sixteen years

68 (1) No person shall pay wages to a child under fourteen years of age to do work that is or is likely to be

(a) unwholesome or harmful to his health or normal development; or

(b) such as to prejudice his attendance at school or capacity to benefit from instruction there given.

(2) No person shall employ a child under sixteen years of age in work of any kind in

(a) an industrial undertaking;

(b) the forest industry;

- (c) garages and automobile service stations;
 - (d) hotels;
 - (da) restaurants, except where an employee is not operating cooking equipment and where safety training on all equipment and adequate supervision is provided and the person is at least fourteen years of age;
 - (e) the operating of elevators;
 - (f) theatres, dance halls, shooting galleries, bowling-alleys, billiard and pool rooms;
 - (g) work or class of work in which the employment of a child under sixteen years of age is prohibited by regulation.
- (3) No person shall employ a child under fourteen years of age to work
- (a) for more than eight hours in any day;
 - (b) for more than three hours on any school day unless an employment certificate authorizing the employment of the child has been issued under the Education Act;
 - (c) on any day for a period that, when added to the time required for attendance at school on that day, totals more than eight hours;
 - (d) between the hour of ten o'clock in the afternoon of any day and the hour of six o'clock in the forenoon of the following day;
 - (e) in any work or class of work in which the employment of a child under fourteen years of age is prohibited by regulation.
- (4) Subject to any other Act or regulation, subsection (2) does not apply to an employer who employs members of his family.
- (5) The parent or guardian of a child employed in contravention of this Act, unless he establishes that the child was so employed without his consent or connivance, is liable to a fine in accordance with Section 93. *R.S., c. 246, s. 68; 2006, c. 32, s. 3.*

Effect of Section 68

69 The provisions of Section 68 are in addition to and not in derogation of the provisions of any other Act respecting the employment of children. *R.S., c. 246, s. 69.*

Complaint to Director or Tribunal

70 (1) A person who has reasonable grounds to believe that any employer is employing a child contrary to Section 68 may make a complaint to the Director in accordance with Section 21.

(2) A person who has made a complaint under subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *R.S., c. 246, s. 70.*

TERMINATION OF EMPLOYMENT

Dismissal or suspension without just cause

71 (1) Where the period of employment of an employee with an employer is ten years or more, the employer shall not discharge or suspend that employee without just cause unless that employee is a person within the meaning of person as used in clause (d), (e), (f), (g), (h) or (i) of subsection (3) of Section 72.

(2) An employee who is discharged or suspended without just cause may make a complaint to the Director in accordance with Section 21.

(3) An employee who has made a complaint under subsection (2) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23 and such complaint shall be and shall be deemed to be a complaint within the meaning of subsection (1) of Section 23. *R.S., c. 246, s. 71.*

Termination of employment by employer

72 (1) Subject to subsection (3) and Section 71, an employer shall not discharge, suspend or lay off an employee, unless the employee has been guilty of wilful misconduct or disobedience or neglect of duty that has not been condoned by the employer, without having given at least

- (a) one week's notice in writing to the person if his period of employment is less than two years;
- (b) two weeks' notice in writing to the person if his period of employment is two years or more but less than five years;
- (c) four weeks' notice in writing to the person if his period of employment is five years or more but less than ten years; and
- (d) eight weeks' notice in writing to the person if his period of employment is ten years or more.

(2) Subject to subsection (3), and notwithstanding subsection (1), where an employer discharges or lays off ten or more persons in an establishment within any period of four weeks or less, the employer shall give notice of not less than

- (a) eight weeks if the employment of ten or more persons and fewer than one hundred persons is to be terminated;
- (b) twelve weeks if the employment of one hundred or more persons and fewer than three hundred is to be terminated;
- (c) sixteen weeks if the employment of three hundred or more persons is to be terminated.

(3) Subsections (1) and (2) do not apply to

- (a) a person whose period of employment is less than three months;
- (b) a person employed for a definite term or task for a period not exceeding twelve months;
- (c) a person who is laid off or suspended for a period not exceeding six consecutive days;

(d) a person who is discharged or laid off for any reason beyond the control of the employer including complete or partial destruction of plant, destruction or breakdown of machinery or equipment, unavailability of supplies and materials, cancellation, suspension or inability to obtain orders for the products of the employer, fire, explosion, accident, labour disputes, weather conditions and actions of any governmental authority, if the employer has exercised due diligence to foresee and avoid the cause of discharge or lay-off;

(e) a person who has been offered reasonable other employment by his employer;

(f) a person who, having reached the age of retirement *established by the employer on the basis of a bona fide occupational requirement for the position in which that person is employed*, has his employment terminated;

(g) a person who is laid off in circumstances established by regulation as an exception to subsection (1) or (2);

(h) a person employed in the construction industry;

(i) a person employed in an activity, business, work, trade, occupational profession, or any part thereof, that is exempted by regulation.

(4) Notwithstanding subsections (1), (2) and (3), but subject to Section 71, the employment of a person may be terminated forthwith where the employer gives to the person notice in writing to that effect and pays him an amount equal to all pay to which he would have been entitled for work that would have been performed by him at the regular rate in a normal, non-overtime work week for the period of notice prescribed under subsection (1) or (2), as the case may be. *R.S., c. 246, s. 72; 2007, c. 11, s. 3.*

Termination of employment by employee

73 (1) Where an employee has been employed by an employer continuously for three months or more, the employee shall not terminate the employment unless the employer has been guilty of a breach of the terms and conditions of employment, without first having given

(a) one week's notice in writing to the employer if the period of employment is less than two years; and

(b) two weeks' notice in writing to the employer if the period of employment is two years or more.

(2) Subsection (1) does not apply to a person employed in the construction industry. *R.S., c. 246, s. 73.*

Duty of employer if notice given

74 Where the notice referred to in Section 72 or 73 has been given

(a) the employer shall not alter the rates of wages or any other term or condition of employment of a person to whom or by whom notice has been given; and

(b) at the expiry of the notice, the employer shall pay to the person all pay to which he is entitled. *R.S., c. 246, s. 74.*

Notice of termination by employer

75 (1) Every employer required by Section 72 to give notice of termination shall give notice in writing addressed to each person whose employment is to be terminated and shall serve the notice personally or by registered mail.

(2) Where an employer is required by subsection (2) of Section 72 to give notice he shall at the same time inform the Minister in writing of any such notices. *R.S., c. 246, s. 75.*

Conditional notice of termination and where lay-off and no notice

76 (1) Notice of termination of employment may be made conditional upon the happening of the future event if the length of notice complies with this Act.

(2) Where a person who has been laid off and who, by virtue of the duration of his lay-off was not entitled to the notice under Section 72, has his employment terminated by continued lay-off or otherwise, the employer shall pay to that person an amount calculated in accordance with Section 72 as though his employment had been terminated without notice on the day he was laid off. *R.S., c. 246, s. 76.*

If employment continues

77 (1) Where a person continues to be employed after the expiry of notice of termination of employment for a period exceeding the length of the notice, his employer shall not terminate his employment except in accordance with Section 72.

(2) Where a person employed for a definite term or task continues to be employed for a period of three months or more after completion of the term or task for which he was employed, his employment shall be deemed not to be for a definite term or task and shall be deemed to have commenced at the beginning of the term or task.

(3) Successive periods of employment of a person by an employer constitute one period of employment, except for successive periods of employment more than thirteen weeks apart in which case the last employment constitutes the period of employment for the purposes of Sections 71, 72 and 73.

(4) Periods of employment referred to in Sections 71, 72 and 73 include employment before the first day of February, 1973. *R.S., c. 246, s. 77.*

Complaint to Director or Tribunal

78 (1) A person entitled to notice in accordance with Section 72 or Section 73 who has not received notice or pay in lieu of notice in accordance with subsection (4) of Section 72 may make a complaint to the Director in accordance with Section 21.

(2) The Director shall treat a complaint under subsection (1) which alleges that an employee has not been paid all pay as a complaint under Section 81.

(3) A person who has made a complaint under subsection (1) and who is not satisfied with the result may make a complaint to the Tribunal in accordance with Section 23. *R.S., c. 246, s. 78.*

PROTECTION OF PAY

Frequency of pay

79 (1) Subject to subsections (2) and (3), an employer shall

(a) at least as often as semi-monthly pay to each of his employees all wages earned by the employee; and

(b) make that payment within five working days after the expiration of each pay period.

(2) An employee who is absent at the time fixed for payment or who, for any other reason, is not paid at that time, is entitled to the pay at any time thereafter during regular hours of work on demand.

(3) This Section does not prohibit an employer

(a) from paying any of his employees at intervals less frequent than those set out in clause (a) of subsection (1); or

(b) from paying any of his employees within a period that is longer than that mentioned in clause (b) of subsection (1),

if the payments are made in accordance with the terms of an existing practice or under the terms of an existing collective agreement, or in accordance with the provisions of an order of the Director with respect thereto granted on application. *R.S., c. 246, s. 79.*

Deductions for loss

79A (1) An employer shall not, directly or indirectly, withhold, deduct or require payment of all or part of the employee's wages for the purpose of paying for a loss that occurs while the employee is working unless allowed by statute, court order or written authorization.

(2) An employee's written authorization is not lawful if the deduction is for a loss that is the result of a customer leaving the employer's business without paying for the purchase of goods or services unless the employer can verify that the loss is the fault of the employee.

(3) An employee's written authorization is not lawful if the deduction is for a loss that brings the employee's wages below the minimum wage.

(4) The Governor in Council may make regulations concerning deductions from pay.

(5) The exercise by the Governor in Council of the authority contained in subsection (4) is regulations within the meaning of the Regulations Act, 2005, c. 38, s. 3.

Form of wages

80 Every employer shall pay all wages

(a) in lawful currency of Canada;

(b) by cheque or bill of exchange or demand for payment drawn upon a chartered bank, credit union, trust company or other company insured under the Canada Deposit Insurance Corporation Act; or

(c) by deposit in an account of the employee in a chartered bank, credit union, trust company or other company insured under the Canada Deposit Insurance Corporation Act. *R.S., c. 246, s. 80.*

Complaint to Director

81 Where, within the preceding six months,

(a) an employer has failed or refused to pay an employee any pay earned by or becoming due and payable to an employee in accordance with Sections 21, 32, 33, 34, 58, 60D, 71, 79, 79A and 80, or in accordance with existing practice or the provisions of a contract or collective agreement by which he is bound; or

(b) an employer has failed or refused to pay any benefit to which an employee is entitled but which is not required to be made directly to the employee,

the employee may make a complaint to the Director in accordance with Section 21. *R.S., c. 246, s. 81; 1991, c. 14, s. 28; 2005, c. 38, s. 4.*

When Director not to entertain complaint

82 Subject to Section 83A, where the Director has received a complaint from an employee and the Director is satisfied

(a) that the employee is proceeding with or has commenced or was successful in an action for the recovery of the unpaid pay; or

(b) that the employee is bound by a collective agreement, as defined in the Trade Union Act, and that the employee could file a grievance under that agreement for the recovery of unpaid pay,

he shall not entertain the application. *R.S., c. 246, s. 82; 1991, c. 14, s. 29.*

Complaint to Tribunal

83 (1) An employee who has made a complaint under Section 81 and who is not satisfied with the result may apply to the Tribunal for a determination of the matter in accordance with Section 23.

(2) In a case where the Director finds that there is no pay unpaid or where, in accordance with Section 82, he does not entertain an application he shall so advise the employee and advise him of his right to apply to the Tribunal as provided by subsection (1) and that he may wish to seek the advice of legal counsel.

(3) Subject to Section 83A, where the Tribunal is satisfied

(a) that the employee is proceeding with or has commenced or was successful in an action for the recovery of the unpaid pay; or

(b) that the employee is bound by a collective agreement, as defined in the Trade Union Act, and that the employee could file a grievance under that agreement for the recovery of unpaid pay,

the Tribunal shall not entertain the application. *R.S., c. 246, s. 83; 1991, c. 14, s. 30.*

Mechanics' Lien Act

83A Notwithstanding clause (a) of Section 82 and clause (a) of subsection (3) of Section 83, the Director may entertain an application pursuant to those clauses where the employee has commenced an action pursuant to the Mechanics' Lien Act. *1991, c. 14, s. 31.*

Security if appeal by employer

84 (1) Before proceeding to deal with an appeal by an employer under subsection (5) of Section 21, the Tribunal may require an employer to furnish, and where the Tribunal so requires the employer shall furnish, to the Tribunal security in the form of a bond with one or more sureties acceptable to the Tribunal in such amount and subject to such conditions as may be prescribed by regulations.

(2) Where an employer has furnished a bond under subsection (1) and the Tribunal, after completion of its consideration of and the investigation into the complaint of the employee, finds that the employer is indebted to the employee for unpaid pay it may apply the proceeds of the bond towards the payment of the unpaid pay in accordance with Section 87.

(3) Where, under subsection (2), the Tribunal has applied the proceeds of a bond towards the payment of unpaid pay, it shall in writing, as soon as is reasonably possible, notify the employer to that effect and where after the application of the proceeds there remains a surplus of funds, the surplus shall be turned over by the Tribunal to the surety or sureties, as the case may be. *R.S., c. 246, s. 84.*

Statutory garnishee

85 (1) Where a complaint is received by the Director under Section 81 and the Director has knowledge or has reason to believe that a person is or is about to become indebted to the employer for any sum of money, or that the person is about to pay to the employer a sum of money, the Director may, notwithstanding that he has not determined whether or not the employer is indebted to the employee for unpaid pay as alleged, by order served personally or by registered mail on that person, require him to pay to the Tribunal part or all of the moneys owing, likely to be owed or about to be paid by that person to the employer.

(2) For the purposes of this Section, money on deposit in a general bank account or in a credit union account in the name of an employer is money for which the bank or credit union is indebted to the employer.

(3) A person to whom an order of the Director under subsection (1) is directed shall upon service of the order forthwith comply with the order.

(3A) Where a person

(a) is ordered pursuant to this Section to pay money to the Tribunal; and

(b) is or becomes indebted to the employer or, by reason of an assignment by the employer, is or becomes indebted to another person for a sum of money,

then

(c) that sum of money is subject to a lien and charge in favour of and is a debt due or accruing due to the Tribunal and is payable in accordance with subsection (2) of Section 88;

(d) notwithstanding that that sum of money has, subsequent to service of the order pursuant to subsection (1) of this Section, been paid to the employer or another person, the person referred to in clause (a) is liable to pay that sum to the Tribunal; and

(e) the Director has standing in any court of competent jurisdiction to bring an action to recover that sum

of money.

(4) Immediately upon receipt of any money in accordance with this Section, the Tribunal shall in writing notify the employer concerned and issue a receipt therefor to the person from whom the money was received, and the receipt of the Tribunal is a good and sufficient discharge of the liability of the person to whom the order was made to the employer to the extent of the amount shown on the receipt.

(5) Any money received by the Tribunal under this Section shall be held by the Tribunal in trust for the employer concerned and where

(a) the Director finds that the employer is indebted to the employee for unpaid pay; and

(b) either

(i) the time for the employer to apply to the Tribunal has expired, or

(ii) the Tribunal has determined the matter,

the Tribunal shall pay over the amount of unpaid pay as determined by it, in accordance with Section 87, and if after making such payment there remains a surplus, the surplus shall be paid over to the employer. *R.S., c. 246, s. 85; 1991, c. 14, s. 32.*

Payment where employee cannot be found

86 (1) An employer who is unable to locate an employee in order to pay him shall pay all pay due and owing the employee to the Director.

(2) Payment by an employer under subsection (1) constitutes, to the extent of the payment, a discharge of the employer in respect of pay owing. *R.S., c. 246, s. 86.*

Payment by Tribunal or Director

87 (1) All money received by the Tribunal or the Director on account of pay owing to an employee shall be paid

(a) to the employee to whom the pay is owing;

(b) if the employee is deceased, to his estate;

(c) if the employee is deceased and he has no other estate, to such other person as the Tribunal considers entitled thereto; or

(d) if no other person is entitled thereto, to the Minister of Finance to and for the public uses of the Province.

(2) Where the Tribunal or the Director is unable, within one month, to locate an employee for the purpose of payment under subsection (1), the Tribunal or the Director shall pay the money to the Minister of Finance to be held in trust for the employee.

(3) Notwithstanding any other provision of this Act, the Tribunal shall not pay over any money received by it in any proceeding until the time for an appeal from the order of the Tribunal has expired or where an

appeal is taken, the appeal is either withdrawn, abandoned or determined. *R.S., c. 246, s. 87.*

Lien

88 (1) Notwithstanding any other Act, an order of the Tribunal under Section 26 constitutes a lien and charge in favour of the Tribunal for the amount set forth in the order and the amount set forth in the order is a debt due or accruing due to the Tribunal by the employer and the Tribunal shall be deemed to hold a mortgage on the assets of the employer to the amount set forth in the order and may enforce the mortgage by foreclosure proceedings.

(2) The lien and charge and mortgage referred to in subsection (1) shall be payable in priority over all liens, charges or mortgages of every person in respect of the real and personal property of the employer, including those of Her Majesty in right of the Province, but excepting liens for wages due to workmen by that employer.

(3) The lien and charge and mortgage referred to in subsection (1) has no effect with respect to property registered pursuant to the Land Registration Act until the order of the ~~tribunal~~ [Tribunal] under Section 26 is recorded in the judgment roll. *R.S., c. 246, s. 88; 2001, c. 6, s. 110.*

Unlawful assignment of wages

89 An assignment of wages or any portion thereof to secure payment of a debt is unlawful. *R.S., c. 246, s. 89.*

Reciprocal enforcement of orders

89A (1) Where the Governor in Council is satisfied that reciprocal provisions will be made by another province for the enforcement of orders made pursuant to this Act, the Governor in Council may declare that province to be a reciprocating province and may designate an authority of that province for the purpose of this Section.

(2) Where an order, judgment or certificate for the payment of wages has been obtained by an authority designated pursuant to subsection (1), the authority may apply to the Director to enforce the order, judgment or certificate for the payment of wages.

(3) On receiving a copy of the order, judgment or certificate for the payment of wages

(a) certified by the court in which the order, judgment or certificate is registered; or

(b) where there is no provision in the reciprocating province for registration in a court of the order, a copy of the order, judgment or certificate, certified to be a true copy by the designated authority,

and on being satisfied that the wages are still owing, the Director shall issue an order for payment of the amount owing and enter the order with the Prothonotary, and on being so entered, the order is enforceable as of the date it was issued by the Director and as if it were an order of the Supreme Court [of Nova Scotia], and the order of the Director is deemed to be an order of the Tribunal pursuant to Section 26. *1991, c. 14, s. 33.*

ENFORCEMENT AND PENALTIES

Standing of Director to bring action and effect of order

90 (1) The Director shall have standing to bring action in any court of competent jurisdiction or otherwise to pursue any claim to recover unpaid pay on behalf of the Tribunal, any employee or group of employees.

(2) The Director or any complainant on whose behalf the order has been made may enter with the prothonotary

(a) an order of the Director by which an employer is ordered to pay unpaid pay, in respect of which the time for appeal to the Tribunal under subsection (5) of Section 21 has elapsed and no appeal has been filed; or

(b) an order of the Tribunal by which an employer is ordered to pay unpaid pay,

as if it were an order of the Supreme Court [of Nova Scotia] and every such order is thereafter enforceable as an order of the Supreme Court by the Director or the complainant for whose benefit it was made.

(3) Subject to subsection (4), where any sheriff has in his possession or under his control any property of a person against whom an order has been entered under subsection (2) or the proceeds thereof he shall disperse the proceeds in accordance with the priorities established by Section 88.

(4) Where an order of the Director or the Tribunal has been entered as an order of the Supreme Court [of Nova Scotia] in accordance with subsection (2), any person, other than the employer, may challenge the order in interpleader proceedings or an application to set aside any execution order or execution thereunder as provided for by the Civil Procedure Rules or any other court proceedings in which priority among creditors is determined, but the order of the Director or the Tribunal is prima facie proof that the amount of money ordered to be paid was due and owing when the order was made.

(5) Where, in the opinion of the Director, an employee has good cause for a complaint under Section 81, the Director shall notify the sheriff and may apply for an attachment order against the employer as provided for in the Civil Procedure Rules.

(6) Notwithstanding the requirement of the Civil Procedure Rules, the Director is not required to have sureties or give any security. *R.S., c. 246, s. 90; revision corrected.*

Agreement between Director and employer's creditors

90A Where an asset of an insolvent employer would, by lawful means, otherwise be subject to a process that would make it unavailable to satisfy an order of the Tribunal, the Director may negotiate and enter into an agreement with the creditors of the employer with respect to the asset of the employer for the purpose of enabling the recovery of funds payable to the Tribunal. *1991, c. 14, s. 34.*

Employer vicariously liable

91 In a prosecution under this Act against an employer, the act or omission of any manager, or superintendent or of any other person who exercises management functions for the employer shall be deemed to be the act or omission of the employer, unless and until it is proved that the act or omission was without the knowledge or consent of the employer. *R.S., c. 246, s. 91.*

Consent to prosecution

92 (1) No prosecution for an offence under this Act shall be instituted without the consent in writing of the Minister.

(2) A writing by the Minister indicating that he has consented to the prosecution of a person named therein for an offence under this Act alleged to have been committed, or in the case of a continuing offence, alleged to have commenced, on a date therein set out, is a sufficient consent for the purposes of this Section to the prosecution of the person for any offence under this Act committed by or commencing on that date.

(3) This Section does not apply to a prosecution instituted by the Minister or the Attorney General. *R.S., c. 246, s. 92.*

Offences

93 (1) Every person who

(a) does anything prohibited by this Act or who refuses or neglects to do anything required by this Act to be done by that person;

(b) does any act or thing prohibited by an order made under this Act, fails to perform an act required by an order made under this Act or otherwise contravenes an order made under this Act;

(c) being an employer, wilfully makes or causes to be made false or misleading entries in any record that the employer is required to keep by this Act or by the regulations or by an order of the Governor in Council;

(d) being an employer, wilfully supplies or causes to be supplied false or misleading information to the Director, an officer or the Tribunal;

(e) being an employer, refuses or neglects to permit an inspection or examination authorized by this Act; or

(f) being an employer, wilfully fails to furnish a bond when required to do so by the Tribunal,

is guilty of an offence.

(2) Where an employee by collusion with the employee's employer or otherwise wilfully works for less than the minimum wage to which the employee is entitled under this Act, or directly or indirectly returns to the employer any part of the employee's wages thereby in effect reducing the wages actually received and retained by the employee to an amount less than the minimum wage to which the employee is entitled, the employee and the employer are both guilty of an offence. *2003 (2nd Sess.), c. 7, s. 14.*

Penalty

94 (1) A person that is guilty of an offence under this Act is liable on summary conviction to a fine of

(a) in the case of an employer that is a corporation, not more than twenty-five thousand dollars;

(b) in the case of an employer that is not a corporation or in the case of a director of a corporation, not more than five thousand dollars; or

(c) in the case of an employee, not more than two thousand five hundred dollars.

(2) A person guilty of a second or subsequent offence under this Act is liable, in addition to the fine under subsection (1), to

(a) an additional fine of not more than the maximum fine set out in subsection (1) for that person; or

(b) imprisonment for a term of three months,

or to both.

(3) Where a contravention or failure to comply continues for more than one day, the person is guilty of a separate offence for each day that the offence continues. *2003 (2nd Sess.), c. 7, s. 14.*

95 to 98 repealed 2003 (2nd Sess.), c. 7. s. 14.



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ENVIRONMENTAL POLICY

LOGAN DRILLING LIMITED AND LOGAN GEOTECH INC

At LOGAN DRILLING LIMITED we believe all personnel are responsible for protecting the environment, health and safety of workers, customers and the communities in which we work while, at the same time, providing superior returns and shareholder value. In particular, we expect all personnel to pay meticulous attention to safety, respect the environmental and assure that we maintain or better Canada's standards for environmental protection.

We also believe:

All health, safety and environmental (HS&E) incidents are preventable.

HS&E objectives must never be sacrificed for expediency.

HS&E objectives are an integral part of our business objectives.

Our driving Principles state:

We will manage and operate LOGAN DRILLING LIMITED so that nobody gets hurt.

We accept our responsibility as a guardian of the environment.

To support these principles, we have established the following objectives:

Nobody will get hurt today or tomorrow.

Our environmental performance will continuously improve and be beyond challenge.

We will include all participants in the safety planning process.

We will document and share our learning from any incidents and safety concerns.

We will ensure that all relevant HS&E training and equipment are provided.


V.P Operations, Logan Drilling Group

January 3, 2013
Date