

# Eaton Drilling Co., Inc.

## Injury and Illness Prevention Program

*2015-2020 Revision*

*12/6/2016 Revision date*

CONSOLIDATED OPERATIONS

**EATON** EXCAVATING  
& GRADING

**EATON** PUMPS  
SALES & SERVICE

**EATON**  
FABRICATION

Eaton  
**Machine**  
Shop

Well **Swage**  
services





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# Injury and Illness Prevention Program



## ASSIGNMENT OF RESPONSIBILITY AND POLICY STATEMENT

### SAFETY POLICY STATEMENT

As company President, it is my responsibility to anticipate change; in both the economic and working environment that our company operates in. In order for us to cope with change it is necessary to develop and institute proactive policies promoting our company; taking advantage of an evolving landscape positioning our operations for a future of prosperity and growth. It is deeply rooted in our company culture to respect each and every individual who has chosen to expend their time, talent and energy to our enterprises.

Our management maintains that no single component in our company's operations is more critical to the success of the future than employee health and welfare. Surveying similar mature industries, we found that companies that have employee and public safety interwoven into their culture are the ones that survive, grow and learn to morph, incorporating appropriate policies, being open to evolving enterprises thereby enjoy continued economic growth.

Some say the future is here now. It's possible that some of the habits and traditions of your past, if carried into the future may become stumbling blocks in our path in the present business world. Our companies conduct operations in an environment that is inherently dangerous.

While our Injury and Illness Prevention Program has a mandated portion dedicated to documentation and procedures, it is our hope that these components do not overshadow its intended purpose. The purpose is to recognize, document, and more importantly eliminate hazards in our workplace.

It is the policy of Eaton Drilling Co., Inc., Eaton Pumps, Eaton Fabrication and Well Swage, that injury and illness prevention shall be considered of primary importance in all phases of operations and administration.

It is the intention of the company's top management to provide safe and healthy working conditions and to establish and insist upon safe practices at all times by all employees.

The prevention of injuries and illnesses is an objective affecting all levels of the organization and its activities. It is therefore, a basic requirement that each supervisor make the safety of employees an integral part of his or her regular management function. It is equally the duty of each employee to accept and follow established safety regulations and procedures.

Every effort will be made to provide adequate training to employees. However, if an employee is



ever in doubt as to how to do a job safely, it is their duty to ask a qualified person for assistance. It is also the employee's responsibility to inform supervision that additional training will be required before any task is attempted.

Employees are expected to assist management in injury and illness prevention activities. It is management's expectation that unsafe conditions are reported. Fellow employees that need help should be assisted. Everyone is responsible for housekeeping duties that pertain to their jobs.

Any injury that occurs on the job, even a slight cut or strain, must be reported to management as soon as possible. In no circumstance, except an emergency, should an employee leave a shift without reporting an injury that occurred.

When you have an injury or an illness, everyone loses; you, your family, your fellow workers, and the company. Please work safely. It's good for everyone. Without exception injuries and illnesses interfere with our personal lives and business options.

# Tom Eaton

## President

April 21, 2015



## ASSIGNMENT OF RESPONSIBILITY

Kevin Bottimore will see to it that our company's managers and supervisors will assume their respective responsibility for the safety and health of their assigned staff. Those responsibilities will include but are not limited to providing support and guidance in the execution of the following:

- Review safety policies and procedures; become familiar with functions and responsibilities of supervisors, and the interrelationships with other departments.
- Develop a sound technical knowledge of all applicable Cal/OSHA Safety Orders and Regulations; also stay current with requirements made by other governmental agencies.
- Maintain an occupational training program covering hazards basic to all types of employment and those unique to each worker's job assignment.
- Correct unsafe and unhealthy work practices in a timely manner (also document this on provided forms).
- Schedule and conduct regular safety training meetings with all employees.
- Perform first-aid duties as required, which will include maintaining appropriate first aid supplies, dissemination of emergency procedures, and provide first aid training.
- Keep all records of all employee training, corrections of unsafe conditions, dates and results of work place inspections. Submit all documentation to main administration office for record-keeping.

As new services and products become available to our customers additional responsibilities are to be added where appropriate. In addition, supervisors of this company will be responsible for seeing that all company rules and policies are adhered to by all employees. This may include employee incentives, retraining, and disciplinary action.

## DESIGNATED SAFETY PROGRAM COORDINATORS

The responsibility of implanting the company safety program is to be shared by all supervisory staff, with the overall administration of the program assigned to:

<b>Kevin Bottimore</b>	PUMP MANAGER / OPERATIONS
<b>Jeff Gerken</b>	OPERATIONAL MANAGER
<b>Catherine Brooks</b>	ADMINISTRATION
<b>Mark Newman</b>	EQUIPMENT MANAGER / LOGISTICS

Other safety officers will include, but not limited to:

<b>Tom Eaton</b>	IIPP GRAPHIC SUPPORT / PRESIDENT
<b>Ben Alexander</b>	MACHINE SHOP OPERATION
<b>Mahlon Barklow</b>	REVERSE DRILLING SUPERVISOR
<b>Ronnie Stewart</b>	MUD DRILLING SUPERVISOR
<b>Scott Irby</b>	PUMP SUPERVISOR / PUMP LOGISTICS
<b>Matt Hunt</b>	MANAGER / SALES DEPARTMENT
<b>Ryan Eaton</b>	VIDEO CAMERA / ELECTRIC LOGGING
<b>Dan Morris</b>	WELL SWAGE
<b>Eric Vincent</b>	WELL REHABILITATION





#### KEVIN BOTTIOMORE - OPERATIONS / PUMP MANAGER

- Issues the organization's IIPP policy and sets the example for IIPP culture through executive action and policy decisions.
- Assumes overall responsibility for the implementation and oversight of Eaton's Health and Safety Policy and Occupational Health and Safety Management Systems (IIPP) in all departments or facilities under their control.
- Assess safety performance during regularly scheduled operations / production integrated management reviews, and directs risk control actions to continually improve the IIPP and reduce risk in the workplace based on performance data information provided.
- Insures that all department heads establish safety goals and objectives for the IIPP annually.
- Ensures that necessary resources are provided to effectively administer the IIPP.
- Provide visible guidance and operational leadership for implementing the culture and IIPP policies and protocols during operational processes.
- Meet with employees periodically to share the Eaton's safety vision.
- Delegate and assign staff to monitor and maintain regulatory requirements of crane operations, lockout tag out, heat illness prevention, forklift & backhoe compliance, new employee training, reoccurring training, Personal Protective Equipment, Execution of Employee Safety Infraction Awareness, Employee Communication, Confined Spaces, Hearing conservation.
- Insure that all department heads establish safety goals and objectives on an annual basis and discuss these goals with the Safety Committee.
- Convene and moderate annual Safety Committee meeting. The meeting will take place in the first week in June of each year where new safety goals and objectives will be discussed, as presented by the department heads.
- The Operations Manager will attend quarterly safety committee meetings.

## COMMITMENT STATEMENT

I have carefully read and understand my roles and responsibilities in the administration of the Eaton Drilling Co., Inc. Injury and Illness Prevention Program and by my signing below I agree to abide by and support it as specified above. I understand that failure to adhere to the policies and procedures could result in negative impact on the ability of Eaton's to provide an attainable and a sustainable positive safety culture.

I understand that I play an important role in helping to achieve the companies goals and fulfill our core values that make Eaton Drilling Co., Inc. a better place for employees to work, grow and for our customers to receive the highest quality water well services, pump services and products. I believe in and am committed to living this approach on a daily basis throughout my employment with Eaton Drilling Co, Inc.

---

EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



#### JEFF GERKEN – OPERATIONS MANAGER

- Communicate and implement the organization's IIPP and its requirements to employees, and contractors.
- Direct individuals under his supervision, including but not limited to supervisors, contractors, and other affected personnel to obtain any required IIPP-related training.
- Meet with all new hires to review the Eaton's commitment to safety message and employee participation policy.
- Facilitate and ensure the proper safety orientation of all new hires.
- Develop a process to maintain incident/illness prevention and health and safety programs.
- Develop a process to perform department safety inspections at least quarterly for Eaton operations.
- Determine that IIPP objectives and needs for operations are met.
- Incorporate IIPP requirements and responsibilities into each appropriate job description, and ensure that system requirements and expectations are communicated to each employee.
- Ensure that no new equipment and or process is released for operations until the company engineering and/ or available safety professional resources perform a risk assessment of any new processes and/ or equipment and confirm in writing that it is safe to deploy the new equipment or process.
- Set new safety goals and objectives on an annual basis for the Injury and Illness Prevention-Program and Provide these goals to the Safety Committee on an annual basis.
- Conduct at least quarterly health and safety audits (hazards, risks, and management systems) of work areas and/or facilities under his responsibilities. The Operations Manager upon com-



pletion will assess quarterly audits for the departments under his prevue. Finding of the audits that indicate safety deficiencies will be collaboratively reviewed in the Safety Committee. Recommendations provided through the Safety Committee are the responsibility of the Operations Manager for the departments under his review.

- Take ownership of any safety issue by proposing solutions to fix it.
- Support Operations / Pump Manager in the execution and implementation of Injury and Illness Prevention Program policies and safety objectives and goals. Communication of Management with field operations makes the Operations Manager a key component in the success of our program. Prioritizing regulatory employee safety training, both initial and recurring, requires the Operations Manager to communicate, and facilitate interaction between administration which maintains the training data base and the Sales Department that has the responsibility to schedule work and client commitments. Monitor field operations having an awareness; and report “near miss” conditions as they become known in the field to both the Operations / Pump Manager and all field personnel.
- It is the responsibility of the Operations Manager to implement and execute procedural and equipment modifications mitigating hazardous field conditions as they become identified and directed by management.
- Accident investigations will be the responsibility of the Operations Manager. Investigation triggers are, the completion and filing of either the State of California Employer’s Report of Occupational Injury and Illness form, and/ or State of California Worker’s Compensation Claim Form (DWC 1). Both documents are prepared and filed by the IIPP Administration Supervisor. Awareness and communication of this event is the joint responsibility of the Operations Manager and the IIPP Administration Supervisor.

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EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



#### CATHERINE BROOKS – IIPP ADMINISTRATION SUPERVISOR

- Maintain records of regulatory compliance of field operations' personnel. This is to be accomplished by procuring and learning the implementation of software programs selected and directed by the Operations / Pump Manager. Regulatory recordkeeping and presentation of the company Injury and Illness Prevention Program are the responsibility of the IIPP Administration Supervisor. A monthly report of recurring training requirements will be presented to the Sales Department and the Operations Manager to facilitate program currency.
- IIPP Administration Supervisor is to cooperate and support the Equipment Manager / Logistics in the California Driver's license information, medical information and company training for special vehicle operations. It is recognized that overlap of regulatory agencies exist and each agency has unique Record-keeping requirements and these tasks are to be recognized and executed at the direction of the Operations / Pump Manager -
- Collect and maintain records the Inspections and Corrections of Hazard Section of this document. Documents are to be completed by the Fabrication, Machine Shop Operations supervisors', and as directed by the Equipment Manager / Logistics
- Communicate with jobsite supervisors and field personnel concerning accidents and worker's compensations claims are the responsibility of the IIPP Administration Supervisor, this includes, but is not limited to completions of claim forms and filing with appropriate agencies. These forms include but are not limited to the State of California Employer's Report of Occupational Injury or Illness form, and or State of California Worker's Compensation Claim Form (DWC 1).

- Notification of the Operations Manager is viewed as part of the process of completing either of the State of California Employer's Report of Occupational Injury or Illness form, and/or State of California Worker's Compensation Claim Form (DWC 1).
- Communicate and support the implementation of the organization's IIPP and workers Compensation requirements through the development of policies and/or processes for employees, visitors, and contractors.
- Conduct in-processing of all new hires and review safety and workers compensation policies and protocols as appropriate.
- Review and provide a copy of the general code of safe practices for Eaton operations prior to release to department assignment.
- Oversee the development of staff under their control in workers compensation claims handling and reporting.
- Help identify proper modified duties for employees with restrictions.
- Develop a process to manage loss time claims in collaboration with managers and/or supervisors.
- Develop a process to manage return to work alternative duties in collaboration with department managers and/or supervisors. If employer is unable to provide accommodation that the referral is made to Transitional Work Solutions to locate within a non-profit facility.
- Maintain claims and training records on available systems in support of operations in a localized area.
- Provide periodic reports to managers as needed to ensure that all employees keep current on company training requirements.
- Determine that workers compensation objectives and needs for units/departments are met.
- Incorporate IIPP and workers compensation requirements and responsibilities into each appropriate job description, and ensure that system requirements and expectations are communicated to each employee.
- Recommend programs and actions for HIPPA / workers compensation compliance and risk reduction.
- Provide training and materials assistance to ensure a safe and healthful work place.
- Assess and treat employees with reported symptoms.
- Track incidents and ensure that proper post injury policies and protocols are followed.
- Take ownership of any safety issues by proposing solutions to fix it.

#### SPECIAL PROJECTS COORDINATOR:

- Maintain and improve emergency action and disaster preparedness plans that provide clear roles and responsibilities for all personnel, in order to ensure familiarity and coordination between facility personnel and emergency responders.



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---

EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



#### MARK NEWMAN – EQUIPMENT MANAGER / LOGISTICS

- Facilitate equipment modifications identified and directed by the Operations Manager. Equipment and procedures evolve and are refined as field personnel identify and report conditions and equipment that pose risks and conditions that expose unreasonable risk.
- Maintain equipment inspection records, including standard Department of Transportation records, California Highway Patrol, communicate and be aware of driver license deficiencies of heavy truck drivers and all company drivers with the IIPP Administration Supervisor
- Track and report driver's hours requirements of commercial drivers with the California Highway Patrol and the Department of Transportation
- Maintain records of crane Inspections
- Develop, delegate and maintain a program monitoring the condition and appropriate use of rigging equipment for all operations. This program will be facilitating communication with the Sales Department, Operations Manager and Equipment Manager. This line of communication is a fundamental component of the Injury and Illness Prevent Program regarding inspected, and appropriate rigging equipment is provided to field operations.
- Institution, monitoring and reporting of the California Highway Patrol B.I.T. Program
- Facilitate modifications of the shop facility and office environments that are identified and directed corrected by Management and the Operations Manager.
- Assess the health and safety impact of new processes and equipment, and incorporate appropriate safety controls.

- Participate in solution development and cost benefit analysis of solutions.
- Apply ergonomic guidelines in new designs, equipment and workplace changes.
- Take ownership of any safety issues by proposing solutions to fix it.
- Ensure that the department specific code of safe work practices are updated whenever there are any changes to processes as a result to engineering upgrades.
- Keep up to data on all OSHA regulations regarding machine guarding and validate the safety of all protection guards on Eaton equipment.
- Set new safety goals and objectives on an annual basis for the Injury and Illness Prevention Program and provide these goals to the Safety Committee on an annual basis.

#### PROCUREMENT:

- Include IIPP risk impact when evaluating and selecting suppliers and contractors.
- Ensure that no new equipment, new material selected for drilling processes are released for operations until the company engineering and or available safety professional resources perform a risk assessment of any new processes and or equipment and confirm in writing that it is safe to deploy the new equipment or process.
- Maintain and improve programs for occupational health, hazardous materials management, radiation safety, general safety, incident/fire prevention, and biological safety when procuring new material or equipment.
- Take ownership of any safety issues by proposing solutions to fix it.
- Ensure that Personal Protective Equipment, and other safety devices are available on request from departments. Purchase and maintain safety equipment.

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---

EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



### BEN ALEXANDER – MACHINE SHOP OPERATION

- Monitor and correct procedure and conditions that present unreasonable health and safety risks
- Monitor employee moral, identify and make Operations Manager aware of employee attitudes that are not congruent with the intent and goals of management, and the Injury and Illness Prevention Program. Inspect work area and facilities in accordance with the General Shop Area Check list provided in the Inspections and Corrections of Hazards section of this document.
- Monitor Industry and be aware of mandate welding procedures.
- Support, administrate and enforce the policies and code of safe work practices of the Occupational Health and Safety Management System (IIPP) and all other organizational safety practices and programs under your supervision or control.
- Require all staff members under your direction to successfully complete required safety and IIPP training.
- Collect, recommend, and implement IIPP improvements.
- Meet with all new hires to reinforce the Eaton commitment to safety message and employee participation policy.
- Review department specific code of safe work practices with all department employees and obtain signatures.
- Ensure that all employees are appropriately trained in all facets of operations as applicable prior to approving them to work independently.



- Ensure that there is a process in place to maintain workplaces and equipment under your direction that are safe, well kept, and in compliance with the Health and Safety Policy.
- Ensure that procedures are developed for the safe use of hazardous chemical and physical, substances.
- Conduct or arrange for quarterly formal documented safety inspections.
- Conduct incident investigations for all injuries or near miss events.
- Meet all health and safety needs for units/departments (e.g., engineering controls, training, personal protective equipment, and corrective measures including non-compliance items identified in health and safety inspections).
- Notify department manager or person assigned to safety duties when the code of safe practices needs to be updated.
- Take ownership of any safety issues by proposing solutions to fix it.
- Set new safety goals and objectives on an annual basis for the Injury and Illness Prevention Program and provide these goals to the Safety Committee on an annual basis.

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---

EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



### BEN ALEXANDER – FABRICATION SHOP OPERATION

- Monitor and correct procedure and conditions that present unreasonable health and safety risks
- Monitor employee moral, identify and make Operations Manager aware of employee attitudes that are not congruent with the intent and goals of management, and the Injury and Illness Prevention Program. Inspect work area and facilities in accordance with the General Shop Area Check list provided in the Inspections and Corrections of Hazards section of this document.
- Monitor Industry and be aware of mandate welding procedures.
- Support, administrate and enforce the policies and code of safe work practices of the Occupational Health and Safety Management System (IIPP) and all other organizational safety practices and programs under your supervision or control.
- Require all staff members under your direction to successfully complete required safety and IIPP training.
- Collect, recommend, and implement IIPP improvements.
- Meet with all new hires to reinforce the Eaton commitment to safety message and employee participation policy.
- Review department specific code of safe work practices with all department employees and obtain signatures.
- Ensure that all employees are appropriately trained in all facets of operations as applicable prior to approving them to work independently.

- Ensure that there is a process in place to maintain workplaces and equipment under your direction that are safe, well kept, and in compliance with the Health and Safety Policy.
- Ensure that procedures are developed for the safe use of hazardous chemical and physical, substances.
- Conduct or arrange for quarterly formal documented safety inspections.
- Conduct incident investigations for all injuries or near miss events.
- Meet all health and safety needs for units/departments (e.g., engineering controls, training, personal protective equipment, and corrective measures including non-compliance items identified in health and safety inspections).
- Notify department manager or person assigned to safety duties when the code of safe practices needs to be updated.
- Take ownership of any safety issues by proposing solutions to fix it.
- Set new safety goals and objectives on an annual basis for the Injury and Illness Prevention Program and provide these goals to the Safety Committee on an annual basis.

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## COMMITMENT STATEMENT

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EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



### **MAHLON BARKLOW – REVERSE DRILLING SUPERVISOR**

- Monitor and correct procedure and conditions that present unreasonable health and safety risks with regard to reverse drilling operations. Support Operations Manager monitoring employee morale, identify and make Operations Manager aware of employee attitudes that are not congruent with the intent and goals of management, and the Injury and Illness Prevention Program.
- Inspect work area and facilities in accordance with the Job Site Assessment Forms provided in the Job Site Hazard Assessment section of this document.
- Conduct tailgate safety meeting and coordinate with Sales Department in completions of documents provided in the job packet, monitoring the flow of documents from Jobs to Administration.
- Monitor and be aware of the use of mud drilling products, and they are used in accordance with label instructions.
- Support, administrate and enforce the policies and code of safe work practices of the Occupational Health and Safety Management System (IIPP) and all other organizational safety practices and programs under your supervision or control.
- Require all staff members under your direction to successfully complete required safety and IIPP training.
- Collect, recommend, and implement IIPP improvements.
- Meet with all new hires to reinforce the Eaton commitment to safety message and employee participation policy.



- Review department specific code of safe work practices with all department employees and obtain signatures.
- Ensure that all employees are appropriately trained in all facets of operations as applicable prior to approving them to work independently.
- Ensure that there is a process in place to maintain workplaces and equipment under your direction that are safe, well kept, and in compliance with the Health and Safety Policy.
- Ensure that procedures are developed for the safe use of hazardous chemical and physical substances.
- Conduct or arrange for quarterly formal documented safety inspections.
- Conduct incident investigations for all injuries or near miss events.
- Meet all health and safety needs for units/departments (e.g., engineering controls, training, personal protective equipment, and corrective measures including non-compliance items identified in health and safety inspections).
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EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



### RONNIE STEWART – MUD DRILLING SUPERVISOR

- Monitor and correct procedure conditions that present unreasonable health and safety risks with regard to mud drilling operations. Support Operations Manager monitoring employee morale, identify and make Operations Manager aware of employee attitudes that are not congruent with the intent and goals of management, and the Injury and Illness Prevention Program.
- Inspect work area and facilities in accordance with the Job Site Assessment Forms provided in the Job Site Hazard Assessment section of this document.
- Conduct tailgate safety meeting and coordinate with Sales Department in completions of documents provided in the job packet, monitoring the flow of documents from Jobs to Administration.
- Monitor and be aware of use of mud drilling products, and they are used in accordance with label instructions.
- Support, administrate and enforce the policies and code of safe work practices of the Occupational Health and Safety Management System (IIPP) and all other organizational safety practices and programs under your supervision or control.
- Require all staff members under your direction to successfully complete required safety and IIPP training.
- Collect, recommend, and implement IIPP improvements.
- Meet with all new hires to reinforce the Eaton commitment to safety message and employee

participation policy.

- Review department specific code of safe work practices with all department employees and obtain signatures.
- Ensure that all employees are appropriately trained in all facets of operations as applicable prior to approving them to work independently.
- Ensure that there is a process in place to maintain workplaces and equipment under your direction that are safe, well kept, and in compliance with the Health and Safety Policy.
- Ensure that procedures are developed for the safe use of hazardous chemical, and physical substances.
- Conduct or arrange for quarterly formal documented safety inspections.
- Conduct incident investigations for all injuries or near miss events.
- Meet all health and safety needs for units/departments (e.g., engineering controls, training, personal protective equipment, and corrective measures including non-compliance items identified in health and safety inspections).
- Notify department manager or person assigned to safety duties when the code of safe practices needs to be updated.
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---

EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



#### SCOTT IRBY – PUMPS SUPERVISOR / PUMPS LOGISTICS

- Monitor and correct procedures and conditions that present unreasonable health and safety risks with regard to pump removal, installation and service operations.
- Support Operations Manager monitoring employee morale, identify and make Operations Manager aware of employee attitudes that are not congruent with the intent and goals of management, and the Injury and Illness Prevention Program.
- Inspect work area and facilities in accordance with the Job Site Assessment Forms provided in the Job Site Hazard Assessment section of this document.
- Conduct tailgate safety meeting and coordinate with Sales Department in completions of documents provided in the job packet, monitoring the flow of documents from Jobs to Administration.
- Monitor and be aware of use of well rehabilitation products, and that they are used in accordance with label instructions.
- Support, administrate and enforce the policies and code of safe work practices of the Occupational Health and Safety Management System (IIPP) and all other organizational safety practices and programs under your supervision or control.
- Require all staff members under your direction to successfully complete required safety and IIPP training.
- Collect, recommend, and implement IIPP improvements.
- Meet with all new hires to reinforce the Eaton commitment to safety message and employee



participation policy.

- Review department specific code of safe work practices with all department employees and obtain signatures.
- Ensure that all employees are appropriately trained in all facets of operations as applicable prior to approving them to work independently.
- Ensure that there is a process in place to maintain workplaces and equipment under your direction that are safe, well kept, and in compliance with the Health and Safety Policy.
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- Conduct or arrange for quarterly formal documented safety inspections.
- Conduct incident investigations for all injuries or near miss events.
- Meet all health and safety needs for units/departments (e.g., engineering controls, training, personal protective equipment, and corrective measures including non-compliance items identified in health and safety inspections).
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---

EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



#### MATT HUNT – MANAGER / SALES DEPARTMENT

- Institute and delegate a system providing job packet with appropriate maps and information for each off-shop site operation to Job Site Supervisors and crews.
- Make Operations Manager aware of special job site conditions that are relayed by the client.
- Coordinate with Administration and Operations Manager for schedule of recurrent training.
- Support the organization's IIPP policy and sets the example for IIPP culture through executive action and policy decisions.
- Support Operations / Pump Manager in his responsibility for the implementation and oversight of Eaton's Health and Safety Policy and Occupational Health and Safety Management Systems (IIPP) in all departments or facilities under their control.
- Support that necessary resources are provided to effectively administrate the IIPP.
- Provide visible guidance and operational leadership for implementing the culture and IIPP policies and protocols during operational processes.
- Set new safety goals and objectives on an annual basis for the Injury and Illness Prevention Program and provide these goals to the Safety Committee on an annual basis.

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EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



#### JUSTIN QUAM – EATON EXCAVATION MANAGER

- Institute and delegate a system providing job packets with appropriate maps and information for each field site operation to Job Site Supervisors and crews.
- Make Operations Manager aware of special job site conditions that are relayed by the client.
- Coordinate with Administration and Operations Manager for schedule of recurrent training.
- Support the organization's IIPP policy and sets the example for IIPP culture through executive action and policy decisions.
- Support Operations / Pump Manager in his responsibility for the implementation and oversight Eaton's Health and Safety Policy and Occupational Health and Safety Management Systems (IIPP) in all departments or facilities under their control.
- Support that necessary resources are provided to effectively administrate the IIPP.
- Provide visible guidance and operational leadership for implementing the culture and IIPP policies and protocols during operational processes.
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EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



#### **TOM EATON – GRAPHIC SUPPORT / PRESIDENT**

- Provide in house support of the Eaton Injury and Illness Prevention Program, including but not limited to graphic support. At the direction of the Operations / Pump manager to update the printed and digital version of the formal Injury and Illness Prevention Document. Using photographic and text to depict appropriate procedures of labor tasks. Support the execution of the Injury and Illness Prevention Program at the direction of the Operations / Pump Manager by attending Captive Insurance board meeting and recommending two safety workshops per year and attending same with identified employees.
- Support the organization's IIPP policy and sets the example for IIPP culture through executive action and policy decisions.
- Support Operations / Pump Manager in his responsibility for the implementation and oversight of Eaton's Health and Safety Policy and Occupational Health and Safety Management Systems (IIPP) in all departments or facilities under their control.
- Support that necessary resources are provided to effectively administrate the IIPP.
- Provide visible guidance and operational leadership for implementing the culture and IIPP policies and protocols during operational processes.
- Advise management and employees about responsibilities regarding the IIPP.
- Develop a process that prepares documents and guidelines for programs to ensure individual and organizational compliance with relevant health and safety laws, regulations, policies, and guidelines.

- Recommend programs and actions for OSHA compliance and risk reduction.
- Develop effective programs for occupational health, hazardous materials management, radiation safety, general safety, accident and fire prevention, biological safety, and disaster preparedness and emergency response.
- Provide guidance and technical assistance to supervisors and managers in departments and other work units in identifying, evaluating, and correcting health and safety hazards.
- Provide guidance and assistance in performing risk assessments and safety inspections.
- Provide training and materials assistance to ensure a safe and healthful work place.
- Conduct analyses of occupational incidents and injuries.
- Analyze injury and illness and monitoring data for trends.
- Monitor compliance with the IIPP including health and safety statutes and regulations and organizational health and safety policies, programs code of safe practices execution, and guidelines.
- Develop as necessary with collaboration with department head and supervisors code of safe practices as needed to address operational risks.

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EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



#### RYAN EATON – VIDEO SURVEY / ELECTRIC LOGGING/SIEVE ANALYSIS

- Monitor and correct procedure conditions that present unreasonable health and safety risks. Monitor employee morale, identify and make Operations Manager aware of employee attitudes that are not congruent with the intent and goals of management, and the Injury and Illness Prevention Program. Inspect work area and facilities in accordance with the General Shop Area Check list provided in the Inspections and Corrections of Hazards section of this document.
- Monitor Industry and be aware of mandated on site procedures regarding the tasks of water well video inspections and electric logging tasks.
- Support, administrate and enforce the policies and code of safe work practices of the Occupational Health and Safety Management System (IIPP) and all other organizational safety practices and programs under your supervision or control.
- Require all staff members under your direction to successfully complete required safety and IIPP training.
- Collect, recommend, and implement IIPP improvements.
- Meet with all new hires to reinforce the Eaton commitment to safety message and employee participation policy with regard to assigned tasks under pervue.
- Review department specific code of safe work practices with all department employees and obtain signatures.
- Ensure that all employees are appropriately trained in all facets of operations as applicable prior to approving them to work independently.

- Ensure that there is a process in place to maintain workplaces and equipment under your direction that are safe, well kept, and in compliance with the Health and Safety Policy.
- Ensure that procedures are developed for the safe use of hazardous chemical and physical substances.
- Conduct or arrange for quarterly formal documented safety inspections.
- Conduct incident investigations for all injuries or near miss events.
- Meet all health and safety needs for units/departments (e.g., engineering controls, training, personal protective equipment, and corrective measures including non-compliance items identified in health and safety inspections).
- Notify department manager or person assigned to safety duties when the code of safe practices needs to be updated.
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EMPLOYEE NAME (PRINT) & SIGNATURE

DATE





#### DAN MORRIS – WELL SWAGE

- Monitor and correct procedures and conditions that present unreasonable health and safety risks. Monitor employee morale, identify and make Operations Manager aware of employee attitudes that are not congruent with the intent and goals of management, and the Injury and Illness Prevention Program. Inspect work area and facilities in accordance with the General Shop Area Check list provided in the Inspections and Corrections of Hazards section of this document.
- Monitor Industry and be aware of mandated on site procedures regarding the tasks of water well video inspections and electric logging tasks.
- Support, administrate and enforce the policies and code of safe work practices of the Occupational Health and Safety Management System (IIPP) and all other organizational safety practices and programs under your supervision or control.
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---

EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



#### ERIC VINCENT – WATER WELL REHABILITATION

- Monitor and correct procedures and conditions that present unreasonable health and safety risks with regard to water well rehabilitations and treatment chemistry. Support Operations Manager monitoring employee morale, identify and make Operations Manager aware of employee attitudes that are not congruent with the intent and goals of management, and the Injury and Illness Prevention Program.
- Inspect work area and facilities in accordance with the Job Site Assessment Forms provided in the Job Site Hazard Assessment section of this document.
- Conduct tailgate safety meeting and coordinate with Sales Department in completions of documents provided in the Job Envelopes, monitoring the flow of documents from Jobs to Administration.
- Monitor and be aware of use of well rehabilitation products, and their use in accordance with label instructions.
- Support, administrate and enforce the policies and code of safe work practices of the Occupational Health and Safety Management System (IIPP) and all other organizational safety practices and programs under your supervision or control.
- Require all staff members under your direction to successfully complete required safety and IIPP training.

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EMPLOYEE NAME (PRINT) & SIGNATURE

DATE



# Injury and Illness Prevention Program

## SAFETY COMMITTEE





## SAFETY COMMITTEE

The Eaton Safety Committee will accept, review, and act on the results of quarterly safety audits submitted from the department managers. The safety committee will empower procurement of additional safety equipment and discern the recommendations of department managers, and modify and implement procedural changes that promote increased work site safety in all Eaton operations.

- The Safety Committee is chaired and moderated by the Pump Manager / Operations.
  - The Safety Committee is comprised of the Pump Manager / Operations Manager, Equipment Manager, IIPP Graphics Support / President, Manager / Sales, and Administration, Excavating and Grading Manager.
  - The Committee will meet on a quarterly basis.
  - Annually in June of each year the committee will review the safety goals and objectives submitted by department supervisors of Fabrication, Machine Shop, Reverse Drilling, Mud Drilling, Pumps, and the Equipment Manager / Logistics.
  - The Safety Committee will also address and discuss all Workers' Compensations claims both open and closed.
  - The Safety Committee is responsible to be aware of all "near-miss incidents" that are reported from field operations and encourage an atmosphere of safety awareness.
-

# Injury and Illness Prevention Program

## TRAINING



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## TRAINING

### EMPLOYEE SAFETY TRAINING POLICY

- A. Kevin Bottimore (Safety coordinator) shall assure that supervisors receive training to familiarize them with the safety and health hazards to which employees under their immediate direction and control may be exposed.
- B. Supervisors are responsible to see that those under their direction receive training on general workplace safety as well as specific instructions with regard to hazards unique to any job assignment.

When a supervisor is unable to provide the required training, s/he should notify the assigned person and request that such training be given to the employee by others.

- C. To insure that all employees receive appropriate training, all company employees will participate in:
  - Scheduled safety meetings
  - Additional training as job duties or work assignments are expanded or changed.
  - Defensive driving when company vehicles are to be used.
  - Other training programs as appropriate.

Further training will be provided whenever employees are exposed to new processes, machinery, chemicals, and/or previously unrecognized hazards. Records of all of the above training will be kept by:

CATHERINE BROOKS (ADMINISTRATION) EMPLOYEE SAFETY TRAINING RECORD AT EATON DRILLING COMPANY, INC. (20 WEST KENTUCKY) WOODLAND, CA

## EMPLOYEE SAFETY TRAINING POLICY

THIS REPORT IS TO BE COMPLETED BY THE SUPERVISOR AND THE NEW EMPLOYEE WITHIN 30 DAYS AFTER EMPLOYMENT (OR REASSIGNMENT) AND FILED WITH CATHERINE BROOKS – IIPP ADMINISTRATION SUPERVISOR.

### Employee

Date Employed (Or Reassigned)	Record Date (Completed)	First	Middle (Print name)	Last
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Rig/Area Assigned: \_\_\_\_\_ Type of Work: \_\_\_\_\_

Outline employee's past work experience: \_\_\_\_\_

Ask employee: "Can you perform this job with or without reasonable accommodation?  
If a reasonable accommodation is necessary, please describe the type of accommodation needed."

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Rig/Area Assigned: \_\_\_\_\_ Type of Work: \_\_\_\_\_

Outline employee's past work experience:

Ask employee: "Can you perform this job with or without reasonable accommodation? If a reasonable accommodation is necessary, please describe the type of accommodation needed."

Did employee have a pre-placement physical? ☐ Yes ☐ No

If yes, any work restrictions indicated? \_\_\_\_\_

The supervisor and the new employee are to review the following safety concerns, check and discuss those which apply:

## CHECK OFF

## DISCUSS WHERE APPROPRIATE

- ☐ 1. Applicable Company, State, and Federal safety policies and programs
- ☐ 2. Applicable Company, State, and Federal safety rules, both general and specific to the job assignment
- ☐ 3. Company safety rule enforcement procedures
- ☐ 4. Use of tools and equipment
- ☐ 5. Proper guarding of equipment
- ☐ 6. Proper work shoes and other personal protective equipment, as needed
- ☐ 7. Handling of product
- ☐ 8. Use of specific lifting equipment
- ☐ 9. How, when and where to report injuries
- ☐ 10. Importance of good housekeeping
- ☐ 11. Special hazards of job
- ☐ 12. When and where to report unsafe conditions and near miss occurrences
- ☐ 13. Emergency procedures
- ☐ 14. Employee responsibility
- ☐ 15. The law that only work related injuries are covered
- ☐ 16. Training on any toxic material employee might be exposed to
- ☐ 17. Fire Safety
- ☐ 18. Safe operation of vehicles

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CHECK OFF

DISCUSS WHERE APPROPRIATE

☐ 19. Company policy on medical treatment for work related injuries

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☐ 20. Employee is to receive special additional instruction and guidance from

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☐ 21. Supervisor will adequately and frequently review performance of new employees. Superior behavior will be rewarded and substandard behavior will be corrected

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☐ 22. Probationary period is from

---

☐ 23. Supervisor will formally review employee's performance on

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☐ 24. Employee agrees to fully cooperate with the safety efforts of the employer, follow all safety rules and use good judgment concerning safe work behavior

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☐ 25. Add other items that apply to your specific operations or other Cal/OSHA required training

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Supervisor

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Date

---

Employee

---

Date

## INDIVIDUAL EMPLOYEE TRAINING RECORD

Safety Training must be provided for employees in the performance of their duties. Use this form to document any and all employee training.

Name

Rig/Area

[illegible]

# Injury and Illness Prevention Program

## ASSIGNMENT EMPLOYEE COMPLIANCE



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## ASSIGNMENT EMPLOYEE COMPLIANCE

### CODE OF SAFE PRACTICES

It is our policy that everything possible will be done to protect employees, customers and visitors from injury. Safety is a cooperative undertaking requiring participation of every employee. Failure by any employee to comply with safety rules will be grounds for corrective discipline. Supervisors shall insist that employees observe all applicable Company, State, and Federal safety rules and practices and take action as is necessary to obtain compliance. To carry out this policy employees shall follow these safety rules and practices:

1. Report all unsafe conditions and equipment to your supervisor or safety coordinator as soon as possible.
2. Report all incidents, injuries / “near-miss occurrences” and illnesses to your supervisor or safety coordinator immediately.
3. Anyone known to be under the influence of intoxicating liquor or drugs, can be a candidate for immediate termination. By the employees actions of ingesting substances it is agreed there has been a behavior contrary to company policy. The companies management can use any and all information to determine the action that is in the company’s best interest.
4. Horseplay, scuffling, and other acts which tend to have an adverse influence on the safety or well-being of the employees, are prohibited.
5. Means of egress shall be kept unblocked, well-lighted and unlocked during work hours.
6. In the event of fire, sound alarm and evacuate.
7. Upon hearing fire alarm, stop work and proceed to the nearest clear exit. Gather at the designated location.
8. Only trained workers may attempt to respond to a fire or other emergency.
9. Exit doors must comply with fire safety regulations during business hours.
10. Stairways should be kept clear of items that can be tripped over, and all areas under stairways that are egress routes should not be used to store combustibles.
11. Materials and equipment will not be stored against doors or exits, fire ladders or fire extinguisher stations.
12. Aisles must be kept clear at all times.

13. Work areas should be maintained in a neat, orderly manner. Trash and refuse are to be thrown in proper waste containers.
14. All spills shall be wiped up promptly.
15. Always use the proper lifting technique. Never attempt to lift, push, pull, or carry an object that is too heavy. You must contact your supervisor when help is needed to move a heavy object.
16. Never stack material precariously on top of lockers, file cabinets or other relatively high places.
17. When carrying material, caution should be exercised in watching for and avoiding obstructions, loose material, etc.
18. Do not stack material in an unstable manner.
19. Report exposed wiring and cords that are frayed or have deteriorated insulation so that they can be repaired promptly.
20. Aluminum Ladders will NOT be used.
21. Maintain sufficient access and working space around all electrical equipment to permit ready and safe operations and maintenance and use Lock Out /Tag Out procedures on all electrical equipment under repair.
22. Do not use any portable electrical tools or equipment that are not grounded or double-insulated.
23. All electrical equipment should be plugged into appropriate wall receptacles or into an extension of only one cord of similar size and capacity. Three-pronged plugs should be used to ensure continuity of ground.
24. All cords running through walking surfaces must be taped down or inserted through rubber protectors to preclude them from becoming tripping hazards.
25. Inspect motorized vehicles and other mechanized equipment daily or prior to use.
26. Shut off engine, set brakes and block wheels prior to loading or unloading vehicles.
27. Inspect pallets and their loads for integrity and stability before loading or moving.
28. Do not use compressed air for cleaning off clothing.
29. Do not store compressed gas cylinders in areas which are exposed to heat sources, electric arcs or high temperature lines.
30. Identify contents of pipelines prior to initiating any work that affects the integrity of the pipe.
31. Wear hearing protection in all areas identified as having high noise exposure.
32. Goggles or face shields must be worn when grinding.



33. Do not use any faulty or worn hand tools.
34. Guard floor openings by a cover, guardrail, or equivalent.
35. Employees shall not enter manholes, underground vaults, chambers, tanks, silos, or similar places that could be construed as meeting the criteria as a confined space working environment. These conditions are detailed in the chapter of this manual titled "Confined Space."
36. Always keep flammable or toxic chemicals in closed containers when not in use.
37. Do not eat or drink in areas where hazardous chemicals are present.
38. Be aware of the potential hazards involving various chemicals stored or used in the workplace.
39. Cleaning supplies should be stored away from edible items on kitchen shelves.
40. Cleaning solvents and flammable liquids should be stored in appropriate containers.
41. Solutions that may be poisonous or not intended for consumption should be kept in well labeled containers.
42. Operate metal cutting equipment only after effective training.
43. Individual heaters at work areas should be kept clear of combustible materials, such as drapes, or waste from waste baskets. Newer heaters that are equipped with tip-over switches should be used.
44. Appliances, such as coffee pots and microwaves, should be kept in good working condition and inspected for signs of wear, burned or fraying of cords.
45. Fans used in work areas should be guarded. Guards must not allow fingers to be inserted through the mesh. Newer fans are equipped with proper guards.

## CODE OF SAFE PRACTICES – FIELD OPERATIONS

Our companies conduct most of our operations away from our shop and office. These operations entail exposing our employees to adverse weather and physical conditions, and hazards that are unique to the specific site where work is being completed. Our company wide code of safe practices will provide employees with a safe working environment in controlled conditions. By including additional sections the safe working environment can be enhanced by training for adverse conditions familiarization with equipment and procedures peculiar to water well drilling, mechanical and pump service and in dealing with high voltage electrical service. None of these tasks can be viewed as completely safe but by diligently adhering to the code of safe practices these hazards can be greatly reduced.

1. All persons shall follow these safe practices rules, render every possible aid to safe operations, and report all unsafe conditions or practices to their supervisor or safety coordinator.
2. Supervisors shall insist on employees observing and obeying every applicable Company, State or Federal regulation and order as is necessary to the safe conduct of the work, and shall take action as necessary to obtain compliance.
3. All employees shall attend safety tailgate meetings. Tailgate meetings shall be attended at least once every 7 (Seven) working days. At each tailgate meeting employees will note their attendance on the provided roll sheet, with topic noted and return to the office via job packet.
4. Anyone known to be under the influence of intoxicating liquor or drugs, can be a candidate for immediate termination. By the employees actions of injecting substances it is agreed there has been a behavior contrary to company policy. The companies management can use any and all information to determine the action that is in the company's best interest.
5. Horseplay, scuffling, and other acts which tend to have an adverse influence on the safety or well-being of the employees, shall be prohibited.
6. Work shall be well planned and supervised to prevent injuries in the handling of materials and in working together with equipment.
7. No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness or other causes, that they unnecessarily expose the employee and others to risk or injury.
8. Employees shall not enter manholes, underground vaults, chambers, tanks, silos, or similar places that could be construed as meeting the criteria as a confined space working environment. These conditions are detailed in the chapter of this manual the titled "Confined Space."
9. Employees shall be instructed to ensure that all guards and other protective devices are in

proper places and adjusted, and shall report deficiencies promptly to the drilling supervisor and or/safety coordinator.

10. Workers shall not handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received instructions for trained personnel.
11. All injuries shall be reported promptly to the drilling supervisor so that arrangements can be made for medical or first aid treatment.
12. When lifting heavy objects, the large muscles of the leg, instead of the smaller muscles of the back shall be used.
13. Inappropriate footwear or shoes with thin or badly worn soles must not be worn.
14. Hand protection such as gloves, shall be worn when there is excessive exposure to cuts, burns, or other material that could cause injury (except where there is danger of the hand protection becoming entangled in moving machinery).
15. Hard hats shall be worn at all times.
16. Safety glasses, goggles, or other suitable eye protection shall be worn when there is hazard to unprotected eyes (e.g., when using a grinding wheel, etc.)
17. Employees shall cleanse themselves thoroughly after handling hazardous substances and follow special instructions from authorized sources.
18. Gasoline shall not be used for cleaning purposes.
19. No burning, welding, or source of ignition shall be applied to any enclosed tank or vessel, even if there are openings, until it has first been determined that no possibility of explosion exists and authority for the work is obtained from supervisor .
20. Any damaged scaffolds, false-work, or other supporting structures shall be immediately reported to the supervisor and repaired before use.
21. Personal fall arrest systems or restraints shall be worn when working over 6 feet above the ground or surface which does not provide protected sides, edges or openings (e.g. no guard-rails, etc.)

## TOOLS AND EQUIPMENT

There are few accidents that resulted in an injury that did not involve tools and equipment. Accident investigations will often determine that ineffective training, ill-conceived procedures, and machinery are at the root cause of painful accidents. Company operations in non-standard conditions are an additional factor making the following code of safe practices a integral part of our Injury and Illness Prevention Program.

1. All tools and equipment shall be maintain in good condition.
2. Damaged tools or equipment shall be removed from service and tagged “DEFECTIVE”.
3. Pipe or Stillson wrenches shall not be used as a substitute for other wrenches or tools.
4. Only appropriate tools shall be used for a specific job.
5. Wrenches shall not be altered by addition of handle-extensions or “cheaters”.
6. Files will be equipped with punch or pry handles.
7. A screwdriver shall not be used as a chisel.
8. Wheelbarrows shall not be pushed with handles in an upright position.
9. Portable electric tools shall not be lifted or lowered by means of the power cord. Ropes shall be used.
10. Electric cords shall not be exposed to damage from vehicles.
11. In locations where the use of a portable power tool is difficult, the tool shall be supported by means of a rope or similar support of adequate strength.

## MACHINERY AND VEHICLES

Only authorized persons shall operate machinery or equipment.

1. Loose or frayed clothing, long hair, dangling ties, or jewelry, etc., shall not be worn around moving machinery or other areas where they may become entangled.
2. Machinery shall not be serviced, repaired, or adjusted while in operation, nor shall oiling of moving parts be attempted, except on equipment that is designed or fitted with safeguards to protect the person performing the work.
3. Where appropriate, lock-out/tag out procedures shall be used.
4. Employees shall not work under vehicles supported by jacks or chain hoists without protective blocking that will prevent injury if jacks or hoists should fail.
5. Air hoses shall not be disconnected at compressors until the hose line has been bled.
6. All excavations shall be visually inspected before backfilling to ensure that it is safe to back-fill.
7. Excavating equipment shall not be operated near tops of cuts, banks, or cliffs, if employees are working below.
8. Tractors, bulldozers, scrapers and carryalls shall not operate where there is a possibility of overturning in dangerous areas like edges of deep fills, cut banks, and steep slopes.
9. When loading where there is a probability of dangerous slides or movement of material, the wheels or treads of loading equipment, other than that riding on rails, should be turned in the direction which will facilitate escape in case of danger, except in a situation where this position of the wheels or treads would cause a greater operational hazard.
10. When backing vehicles use a spotter. Rehearse hand signals so you are sure to understand your spotter. Have the spotter stand on the driver's side and be sure that both of you know that you need to be able to watch the spotter and the spotter can see you.
11. Before moving the equipment on the road, be sure that all loose gravel and mud has been removed from the trailer beds. Check the back of the rig to see that there is no residual gravel pack material that will fly off and strike other vehicles.
12. Check for slabs of mud, and/or cobble rocks that can become wedged between dual driver tires or trailer tires. Remove before going on the road.
13. When using chain binders, pull on the tightening lever, do not push.



14. Never work under a suspended load.
15. Never place fingers between metal pieces. For example, tongs or bottom break out wrenches.
16. Exercise caution when using booster cables. Goggles are required to prevent eye injury.
17. Only legally authorized containers will be used to transport gasoline.
18. Safety harness will be used at all times when climbing structures.
19. Do not allow oil to come in contact with oxygen or acetylene bottles.
20. All mud and air hoses will be properly chained to ensure safety.
21. Supervisors are reminded that it is their responsibility to discharge or excuse any employee who, in the supervisor's opinion, may cause a safety threat to themselves or others.

# Injury and Illness Prevention Program

## ASBESTOS EXPOSURE SAFETY PROGRAM

### ASBESTOS EXPOSURE SAFETY PROGRAM

#### REFERENCE STANDARD

Safety and Health Regulations for Construction:  
OSHA: 29 CFR 1926.1101, Subpart Z Asbestos

#### PURPOSE

This program establishes minimum requirements and guidelines for employee interaction with materials in the workplace that contain asbestos in order to minimize harmful exposure.

#### SCOPE

This procedure applies to all company employees, contractors and vendors performing work on company property and all other individuals who are visiting or have business with Eaton Drilling.

#### RESPONSIBILITIES

Management is responsible for the development and periodic review of this program as well as appropriate employee training.

- Management and supervisors are responsible for enforcement of this program.
- Employees must comply with all procedures outlined in this policy.
- Contractors and vendors must comply with all procedures outlined in this policy.

#### DEFINITIONS

**Asbestos** - Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that has been chemically treated and/or altered. For purposes of this standard, asbestos also includes PACM, as defined below.

**Asbestos containing material (ACM)** - Any material containing more than 1 percent asbestos.

**Aggressive method** - Means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles or disintegrates intact ACM.

**Competent person** - One who is capable of identifying existing asbestos hazards in the workplace, selecting the appropriate control strategy for asbestos exposure and who has the authority to take prompt corrective measures to eliminate them.

**Class I asbestos work** - Activities involving the removal of TSI and surfacing ACM and PACM.

**Class II asbestos work** - Activities involving the removal of ACM that is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wall-board, floor tile, sheeting, roofing, siding shingles and construction mastics.

**Class III asbestos work** - Activities involving repair and maintenance operations where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.

**Class IV asbestos work** - Activities involving maintenance and custodial activities during which employees contact but do not disturb ACM or PACM as well as activities to clean up dust, waste and debris resulting from Class I, II and III activities.

**Disturbance** - Activities that disrupt the matrix of ACM/PACM, crumble or pulverize ACM/PACM or generate visible debris from ACM/PACM. Disturbance includes cutting away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard-sized glove bag or waste bag in order to access a building component. In no event may the amount of disturbed ACM or PACM exceed that which can be contained in one glove bag or waste bag, which may not exceed 60 inches in length and width.

**Excursion limit** - Activities that requires that the employer ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of 30 minutes.

**Glovebag** - Means not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

**Presumed Asbestos Containing Material (PACM)** - Activities involving thermal system insulation and surfacing material found in buildings constructed no later than 1980.

**Regulated area** - Activities involving an area established by the employer where Class I, II and III asbestos work is conducted as well as any adjoining area where debris and waste from such asbestos work accumulate. Also includes a work area within which airborne concentrations of asbestos exceed, or may be reasonably expected to exceed, the permissible exposure limit.

**Surfacing material** - Activities involving material that is sprayed, troweled-on or otherwise applied to surfaces, including acoustical plaster on ceilings and fireproofing materials on structural members or other materials on surfaces for acoustical, fireproofing and other purposes.

**Surfacing ACM** - Activities involving surfacing material that contains more than 1 percent asbestos.

**Time-weighted average limit (TWA)** - Requires that the employer ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an 8-hour time-weighted average (TWA).

**Thermal system insulation (TSI)** - Activities involving ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.  
Thermal system insulation ACM is thermal system insulation that contains more than 1 percent asbestos.

## PROCEDURES

This program will be applicable to all incidences in which employees interact with asbestos in any form, except when it is contained in asphalt roof coatings, cements and mastics.

## INITIAL EXPOSURE ASSESSMENT

Before the start of any operation that will entail dealing with asbestos, Eaton Drilling will ensure that a **competent person** conducts an exposure assessment to ascertain expected exposures levels. The assessment must be completed in time to comply with the requirements that are triggered by exposure data and to provide information necessary to assure that all control systems planned are appropriate for that operation and will work properly. Representative eight-hour TWA employee exposure must be determined on the basis of one or more samples representing full-shift exposure for employees in each work area. Representative 30-minute short-term employee exposures must be determined on the basis of one or more samples representing 30-minute exposures associated with operations that are most likely to produce exposures above the excursion limit for employees in each work area.

## PERIODIC MONITORING

During Class I or II operations, Eaton Drilling Co will monitor daily the exposure levels of each employee who is assigned to work in a regulated area. Eaton Drilling Co will then provide the results to each affected employee within five days, either individually, in writing or by posting the results in an appropriate location accessible to employees. The only exception to this daily monitoring standard is if employees are equipped every day with supplied-air respirators operated in the pressure demand mode or other positive pressure mode respirators.

## METHODS OF COMPLIANCE

Regardless of the level of exposure, when dealing with asbestos, the following engineering controls and work practices must be used:

- Vacuum cleaners equipped with HEPA filters to collect all debris and dust containing ACM and-PACM;
- Wet methods, or wetting agents, to control employee exposures during asbestos handling,

mixing, removal, cutting, application and cleanup, except where employer demonstrated that the use of wet methods is infeasible due to, for example, the creation of electrical hazards, equipment malfunction and in roofing operations; and

- Prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers.

**The following control methods must be used to keep the TWA at a permissible limit:**

- Local exhaust ventilation equipped with HEPA filter dust collection systems;
- Enclosure or isolation of processes producing asbestos dust; and
- Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter.

## PROHIBITED METHODS

The following work practices may never be used in asbestos-related work:

- High-speed, abrasive disc saws that are not equipped with point-of-cut ventilator or enclosures with HEPA-filtered exhaust air;
- Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air;
- Dry sweeping, shoveling or other dry clean-up of dust and debris containing ACM or PACM; or
- Employee rotation as a means of reducing employee exposure to asbestos.

## CLASS I REQUIREMENTS

In addition to the aforementioned methods of compliance, while doing Class I asbestos work, the following guidelines must be followed:

- All Class I work, including the installation and operation of the control system, must be supervised by a **competent person**;

For all Class I work involving the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material, or when employees are working in areas adjacent to the regulated area while the Class I work is being performed, the employer must use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:

- Critical barriers placed over all the openings to the regulated area, except where activities are performed outdoors and another barrier or isolation method that pre



vents the migration of airborne asbestos from the regulated area, as verified by perimeter-area surveillance during each work shift at each boundary of the regulated area, that shows no visible asbestos dust;

- HVAC systems must be isolated in the regulated area by sealing them with a double layer of six mil plastic or the equivalent;
- Impermeable drop cloths must be placed on surfaces beneath all removal activity;
- All objects within the regulated area must be covered with impermeable drop cloths or plastic sheeting that is secured by duct tape or an equivalent;
- Where Eaton Drilling cannot produce a negative exposure assessment, or where exposure monitoring shows that a PEL is exceeded, the regulated area will be ventilated to move contaminated air away from the breathing zone of employees and toward a HEPA filtration or collection device;

In addition, Class I asbestos work will be performed using one or more of the following control methods pursuant to the limitations stated below:

- Negative Pressure Enclosure (NPE) systems: NPE systems may be used where the configuration of the work area does not make the erection of the enclosure infeasible;
- Glove bag systems may be used to remove PACM and/or ACM from straight runs of piping, elbows and other connections; and
- A water spray process system may be used for removal of ACM and PACM from cold-line piping if employees carrying out such process have completed a 40-hour separate training course in its use in addition to training required for employees performing Class I work.

## CLASS II REQUIREMENTS

In addition to the methods of compliance mentioned above, while doing Class II asbestos work, the following guidelines will be followed:

- All Class II work, including the installation and operation of the control system, will be supervised by a competent person;

For all indoor Class II jobs where changed conditions indicate there may be exposure above the PEL or where the employer does not remove the ACM in a substantially intact state, Eaton Drilling will use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:

- Critical barriers placed over all openings to the regulated area;
- Or another barrier or isolation method that prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area monitoring or clearance monitoring;

- Impermeable drop cloths must be placed on surfaces beneath all removal activity;

When removing vinyl and asphalt flooring materials that contain ACM or in buildings constructed before 1980 where the employer has not verified the absence of ACM, Eaton Drilling will ensure that employees comply with the following work practices:

- Flooring or its backing may not be sanded;
- Vacuums equipped with HEPA filter, disposable dust bag and metal floor tool (no brush) must be used to clean floors;
- All scraping of residual adhesive and/or backing must be performed using wet methods;
- Cutting machines must be continuously misted during use unless a competent person determines that misting substantially decreases worker safety;
- The material must be removed in an intact state unless Eaton Drilling demonstrates that intact removal is not possible;
- Cutting, abrading or breaking materials is prohibited unless approved by Eaton Drilling because methods less likely to result in asbestos fiber release are not feasible; and
- Asbestos-containing material removed must be immediately bagged, wrapped or kept wetted until transferred to a closed receptacle, but no later than the end of the work shift.

### CLASS III REQUIREMENTS

Class III asbestos work must be conducted using engineering and work practice controls that minimize the exposure of bystanders and employees performing the asbestos work.

- The work must be performed using wet methods;
- To the extent feasible, the work must be performed using local exhaust ventilation;
- Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking or sawing of thermal system insulation or surfacing material, employees must use impermeable drop cloths and isolate the operation using mini-enclosures or glove bag systems;
- Where monitoring results show the PEL has been exceeded, Eaton Drilling Co will either contain the area using impermeable drop cloths and plastic barriers or their equivalent or isolate the operation using a control system;
- Employees performing Class III jobs that involve the disturbance of thermal system insulation or surfacing material, or where monitoring results show a PEL has been exceeded, are required to wear respirators.

## CLASS IV REQUIREMENTS

Class IV asbestos jobs must be conducted by employees trained pursuant to the asbestos awareness program. These jobs must be conducted using wet methods and HEPA vacuums, followed by a prompt clean-up of debris containing ACM or PACM.

- Employees cleaning up debris and waste in a regulated area where respirators are required must wear respirators; and
- Employees who clean up waste and debris in areas where friable thermal system insulation or surfacing material is accessible must assume that such waste and debris contain asbestos and follow applicable Eaton Drilling procedures.

## RESPIRATORY PROTECTION

Respirators must be used during:

- Class I asbestos work;
- Class II asbestos work when ACM is not removed in a substantially intact state;
- Class II and III asbestos work that is not performed using wet methods, except for removal of ACM from sloped roofs when a negative-exposure assessment has been conducted and ACM is removed in an intact state;
- Class II and III asbestos work for which a negative-exposure assessment has not been conducted;
- Class III asbestos work when TSI, surfacing ACM or PACM is being disturbed.
- Class IV asbestos work performed within regulated areas where employees who are performing other work are required to use respirators;
- Work operations for which employees are exposed above the TWA or excursion limit; and Emergencies.

**Eaton Drilling will provide employees with:**

- HEPA filters for powered- and non-powered air-purifying respirators;
- A tight-fitting, powered air-purifying respirator (PAPR) instead of a negative-pressure respirator when the employee chooses to use it and it is deemed to provide adequate protection; and an air-purifying half-mask respirator, other than a filtering facepiece respirator, whenever employees perform:
  - Class II or Class III asbestos work for which no negative exposure assessment is available;
  - Class III asbestos work involving disturbance of TSI or surfacing ACM or PACM.

## PROTECTIVE CLOTHING

Eaton Drilling Co will provide, and require the use of, protective clothing—including coveralls and similar whole-body clothing, head coverings, gloves and foot coverings—for any employee exposed to airborne concentrations of asbestos that exceed the TWA and/or excursion limit or for any employee performing Class I operations that involve the removal of more than 25 linear or 10 square feet of TSI or surfacing ACM/PACM.

## EMPLOYEE INFORMATION AND TRAINING

Each employee who is likely to be exposed in excess of a PEL, and each employee who performs Class I through IV asbestos operations, will receive training prior to, or at the time of, initial assignment and at least annually thereafter. The training will be conducted at no cost to the employee. Eaton Drilling will institute, and employees will participate in, a training program that includes:

- Ways to recognize asbestos;
- Adverse health effects of asbestos exposure;
- Relationship between smoking and asbestos in causing lung cancer;
- Operations that could result in asbestos exposure and the importance of protective controls to minimize exposure;
- Purpose, proper use, fitting instruction and limitations of respirators;
- Appropriate work practices for performing asbestos jobs;
- Medical surveillance program requirements;
- Contents of the standard; and
- Sign and label requirements and the meaning of their legends.

## REVISING HISTORY RECORD

REVISION NUMBER	SECTION	REVISED BY	DESCRIPTION
0	N/A	N/A	Original Document.



# Important things to Remember!



## ASBESTOS EXPOSURE

YOU HAVE A RIGHT TO KNOW ABOUT:

- OUR WRITTEN PROGRAM
- YOUR EXPOSURE LEVELS
- OUR RESPONSIBILITY TO YOU

To ensure your own safety, make sure you always follow the established guidelines for dealing with asbestos. If you are unsure if something contains asbestos or are not certain what procedures need to be followed, don't hesitate to talk to your supervisor.

### Dangers of Asbestos Exposure:

Asbestos fibers enter the body when a person inhales or ingests airborne particles that become embedded in the tissues of the respiratory or digestive systems. Exposure to asbestos can cause:

- Asbestosis, an emphysema-like condition
- Lung cancer
- Mesothelioma, a cancerous tumor that spreads rapidly in the cells of membranes covering the lungs and body organs
- Gastrointestinal cancer

### Possibilities for Exposure:

- In the construction industry, there are many situations in which you may interact with asbestos, such as:
- Demolishing or salvaging structures where asbestos is present.
- Removing or encapsulating asbestos-containing material (ACM).
- Constructing, altering, repairing, maintaining or renovating asbestos-containing structures or substrates.
- Installing asbestos-containing products.
- Cleaning up asbestos spills/emergencies.
- Transporting, disposing, storing, containing and housekeeping involving asbestos or asbestos-containing products.

## INSTRUCTOR NOTES

The following provides a useful preparation outline for use by trainers presenting the asbestos exposure presentation to employees.

### TRAINING OBJECTIVES

- Review the asbestos exposure program.
- Train students how to handle asbestos safely when the situation arises.

### BEFORE TRAINING

- Read the OSHA standard and the model asbestos exposure program
- Be aware of the differences between Class I, II, III and IV asbestos work.

### INTRODUCTION FOR TRAINING

- Begin by stressing the overall importance of safety in your facility.
- Give examples of where asbestos-containing materials may have been used in the facility and how the employees' job(s) will be impacted.
- Review the serious health dangers that asbestos inhalation can present to workers.
- As an ice breaker, you can ask employees if they have had any past dealings with asbestos.

### GENERAL GUIDELINES

- Stress the importance of the bullet points on these slides.
- Stress the importance of the individual employee being committed to his/her own safety.
- Be sure to be open to questions or comments.

### TRAINING NOTES

- Review the process of dealing with asbestos from the initial exposure assessment to clean up.
- Make sure employees know who to go to when they have questions about dealing with asbestos or materials that may contain asbestos.
- Review the different classes of asbestos work and the distinct safety requirements of each.

### CONCLUSION

- Reiterate that asbestos exposure can be very harmful and that employees must make sure they exercise proper caution in dealing with it.

### EMPLOYEE EXERCISE

At the conclusion of the training, the following activities will demonstrate the employees' understanding of the topic:

1. Have employees identify proper protective equipment that should be used when dealing with asbestos.
2. Demonstrate the correct use of the appropriate respirator.
3. Demonstrate the correct use of a glovebag.

## QUIZ

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_

**Place a checkmark next to the best answer for each of the 10 questions:**

1. ACM stands for:  
a. ☐ Asbestos Control and Management  
b. ☐ Asbestos Containing Material
2. The primary risk of asbestos exposure is through:  
a. ☐ Skin contact  
b. ☐ Inhalation
3. If you are equipped with supplied-air respirators operated in the pressure demand mode, or other positive pressure mode respirators daily, exposure monitoring is not needed.  
a. ☐ True  
b. ☐ False
4. In this program, a “competent person” is:  
a. ☐ Anyone who has common sense and can make good decisions.  
b. ☐ A person specially trained in identifying and handling asbestos hazards.
5. Before starting any project dealing with asbestos, a competent person must:  
a. ☐ Review the potential levels of asbestos exposure the project may cause.  
b. ☐ Seal off the area where asbestos might be.
6. Class I asbestos work:  
a. ☐ Always requires the use of a respirator.  
b. ☐ Never requires the use of a respirator.
7. When removing asbestos containing material, it is best to:  
a. ☐ Keep it as intact as possible.  
b. ☐ Break it into smaller pieces for easy handling.
8. Wetting asbestos containing material is always a bad idea.  
a. ☐ True  
b. ☐ False
9. When working with asbestos, you should:  
a. ☐ Always change your procedure so you do not get bored  
b. ☐ Always perform the job the way you were trained
10. If you have a question regarding chemical safety, you should ask:  
a. ☐ Someone who has more experience in the facility than you do  
b. ☐ Your supervisor or the program administrator

## QUIZ ANSWERS

1. B
2. B
3. A
4. B
5. A
6. A
7. A
8. B
9. B
10. B

# EATON DRILLING'S SAFETY LOG

<b>SUBJECT: Asbestos Exposure Safety</b>	<b>DATE:</b>	<b>INSTRUCTOR:</b>	<b>LOCATION:</b>
The employees listed below have satisfactorily participated in and completed all requirements of the above training.			
<b>NAME (Print)</b>	<b>DEPARTMENT</b>	<b>NAME (Signature)</b>	<b>Date</b>



NAME (Print)	DEPARTMENT	NAME (Signature)	Date

# Injury and Illness Prevention Program

PPE - PERSONAL PROTECTIVE EQUIPMENT



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## PPE - PERSONAL PROTECTIVE EQUIPMENT

A. Protection where modified by the words head, eye, body, hand, and foot, as required by the orders in this article means the safeguarding obtained by means of safety devices and safeguards of the proper type for the exposure and of such design, strength and quality as to eliminate, preclude or mitigate the hazard.

B. Protective equipment shall be distinctly marked so as to facilitate identification of the manufacturer.

C. The employer shall assure that the employee is instructed and uses protective equipment in accordance with the manufacturer's instructions.

D. The employer shall assure that all personal protective equipment, whether employer-provided or employee-provided, complies with the applicable Title 8 standards for the equipment. The employer shall assure this equipment is maintained in a safe, sanitary condition.

E. Protectors shall be of such design, fit and durability as to provide adequate protection against the hazards for which they are designed. They shall be reasonably comfortable and shall not unduly encumber the employee's movements necessary to perform his work.

F. Hazard assessment and equipment selection.



1. The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

**(a) Select, and have each affected employee use the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;**

**(b) Communicate selection decisions to each affected employee; and,**

**(c) Select PPE that properly fits each affected employee.**

2. The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

3. Defective and damaged equipment. Defective or damaged personal protective equipment shall not be used.

4. The employer shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:

**(a) When PPE is necessary;**

**(b) What PPE is necessary;**

**(c) How to properly don, doff, adjust, and wear PPE;**

**(d) The limitations of the PPE; and,**

**(e) The proper care, maintenance, useful life and disposal of the PPE.**

5. Each affected employee shall demonstrate an understanding of the training specified in subsection (f)(4) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

6. When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by subsection (f)(5) of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

**(a) Changes in the workplace render previous training obsolete; or**

**(b) Changes in the types of PPE to be used render previous training obsolete; or**

**(c) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.**



7. The employer shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training, and that identifies the subject of the certification.
8. Subsections (f)(1) and (2) and (f)(4) through (7) of this section apply only to Sections 3381, 3382, 3384 and 3385 of these Orders. Subsections (f)(1) and (2) and (f)(4) through (7) of this section do not apply to Section 5144 of these Orders and Section 2940.6 of the High Voltage Electrical Safety Orders. Subsection (f) does not apply to workplace operations regulated by the Construction Safety Orders or the Mine Safety Orders.







## PPE PROGRAM OBJECTIVES

Eaton Drilling Co., Inc. operations has done an assessment of all work areas of the company to evaluate workplace hazards and to assign appropriate Personal Protective Equipment (PPE) to address those hazards. Reevaluation is a continual process and is done as well whenever new equipment or procedures are adopted.

### Employees will be trained

- When PPE is necessary
- What PPE is necessary
- How to properly don, doff, adjust, and wear PPE
- Limitations of PPE
- The proper care, maintenance, useful life and disposal of PPE

Each affected employee must demonstrate that they understand the training, and that they have the ability to use PPE properly, before being allowed to perform work requiring PPE. Employees should properly care for and be responsible for all personal protective equipment. If an employee's PPE equipment becomes defective, they are instructed to report the defect to their supervisor immediately, and have it replaced. PPE must be worn properly as per the following criteria:

**1) Eye Protection:** Safety glasses required of all employees and guests who enter shop areas or field operations.

**2) Foot Protection:** Steel-toe boots are required of Production and shop employees.

**3) Ear Protection:** Earplugs are required of all employees who are in high noise areas.

**5) Respiratory Protection:** Is required in conditions where criteria is met the require its use. Respirators require personal fitting.

**6) Hand Protection:** Welding gloves, mechanics and latex gloves are required as necessary.

EATON CONSOLIDATED OPERATIONS WILL DOCUMENT BOTH THE PPE HAZARD ASSESSMENT AND THE PPE TRAINING AS REQUIRED IN SECTION 3380 OF THE GENERAL INDUSTRY SAFETY ORDERS.

**Eaton Consolidated Operations**

Certification of a Personal Protective Equipment Hazard Assessment

Date Assessment Done \_\_\_\_\_ Assessor Name \_\_\_\_\_ Task Assessed \_\_\_\_\_

Hazard Source Equipment or Process	Hazardous Task	Assessment of Nature Of the Hazard	Body Parts at Risk	PPE Selected	Date Provided



# Injury and Illness Prevention Program

## ERGONOMICS PROGRAM







## ERGONOMICS PROGRAM

### GENERAL COMPANY POLICY

The purpose of this program is to inform interested persons, including employees, that Eaton Drilling Co., Inc. is committed to improve our employees' comfort and well-being by identifying and correcting ergonomic risk factors on the job. This program applies to all work operations, both field operations and in the office and shop areas, coordinates all safety and health programs for Eaton Drilling Co., Inc. reviews the Ergonomics Program and provides guidance, as needed.

Eaton Drilling Co., Inc. has implemented this ergonomics program at all our field operation sites to address the problem of musculoskeletal disorders (MSD). MSD have become an issue of increasing concern because they continue to rise in occurrence, especially at construction and field operation sites.

Under this program, a team of our employees will evaluate jobs, and identify "problem areas" and develop and implement solutions to reduce job-related worker injury and illness.

Our goal through this Ergonomics Program is to prevent the occurrence of work-related musculoskeletal disorders by controlling or eliminating the risk factors which cause them. This program ensures that all employees are aware of job-related risk factors and provides information and solutions to elevate them. Eaton Drilling Co., Inc. promotes continuous improvement for the efficiency, comfort, and well being of all employees through a team effort of management and employee involvement.

If, after reading this program, you find that improvements can be made, please contact Jeff Gerken. We encourage all suggestions because we are committed to the success of our Ergonomics Program. We strive for clear understanding, safe and efficient work practices, and involvement in the program from every level of the company.

### ERGONOMICS TEAM

Kevin Bottimore is responsible for our Ergonomics Program. Designated safety program coordinators have developed objectives for ergonomic improvements within our company and methods for identifying and resolving these problem areas. The written plan for these goals, objectives, and solutions may be obtained from Jeff Gerken

Our Ergonomics Team is comprised of a cross section of employee representatives from various departments/areas and staff levels in our company. Eaton Drilling Co., Inc.'s management Team is committed to the success of this program by providing resources and the staff time necessary to identify and correct problem jobs. The members of our Ergonomics Team are:

Kevin Bottimore – Pump Manager / Operations

Jeff Gerken – Operations Manager

Catherine Brooks - Administration

Mark Newman – Equipment Manager / Logistics

### INJURY/MEDICAL MANAGEMENT



Dignity Health Care Occupational Medicine is the health care provider we have chosen to provide medical treatment for our employees with injuries or illnesses relating to ergonomic factors.

We encourage all employees to immediately report any symptoms of discomfort that may be associated with their job duties. In most cases, employees are to report to their immediate supervisor. Those supervisors are responsible to recommend alternative work or medical evaluation for injured or ill employees.

Supervisors record and file written reports from the first observation of illness or injury through all subsequent follow-up activities. They are also responsible to forward information about the worker injury or illness for recording on the OSHA 300 Injury and Illness Form. The supervisor may recommend that the job receive an evaluation from the Ergonomics Team.

Our procedures for entering an MSD-related injury/illness on OSHA Form 300 include: The entrance of all information mandatory. Any information will then be forwarded to be included in our “near miss” and tailgate safety topics.

Every work procedure that causes a worker injury or illness will be investigated and reported. This documentation provides vital information for the identification of job related risk factors so that the problems can be corrected before other injuries occur.

After an injured employee has been treated by the health care provider, the following procedures are used to monitor the recovery process and their return to work.

A job analysis is will be discussed with the Eaton Drilling Co., Inc. Safety Committee, with a transitional duty position (if available) offered.

The Operations Manager will assess on an as needed basis and present a list of light and restricted duty jobs, which have low musculoskeletal risks. This option is a valuable resource for assigning duties to recovering employees until they can resume their normal job functions.

The operations manager awareness of tasks from our extended operations is a primary component in developing a plan to return employees to work during the recovery period from all our operations. It is Eaton Drilling Co., Inc.’s policy that recovering employees that have skills and willingness to complete an identified task; be presented the option to return to work as soon as practical.

After verification of an employee’s job-related injury or illness, and the Ergonomics Team will review this plan and re-evaluate a task to determine if additional practices, procedures, or redesign are required and present options that could be implemented to prevent similar injuries.

## IDENTIFYING PROBLEM JOBS

There are several methods used to identify problem jobs which are most likely to result in ergonomic disorders. The Ergonomics Team initially reviewed and periodically monitors Eaton Drilling Co., Inc. injury and illness records such as the OSHA 300 form and workers’ compensation data to identify patterns of ergonomic-related injuries and illnesses.

In addition, jobs are evaluated for the following risk factors:

- Rate and number of repetitions: performance of the same motion or motion patterns every few seconds for more than two hours at a time.
- Postures and limb positions: fixed or awkward work postures such as overhead work, twisted or bent back, bent wrist, stooping, or squatting, for more than a total of two hours.
- Vibration: use of vibrating or impact tools or equipment for more than a total of two hours.
- Loads/lifted: lifting, lowering, or carrying of anything weighing more than 25 pounds (11.34 kg) more than once during the work shift.
- Loads/static: holding a fixed or awkward position with arms or neck for more than ten seconds.
- Muscle forces: continually pulling or pushing objects.
- Work pace: piece rate or machine paced work for more than four hours at a time (legally required breaks cannot be included when totaling the four hour limit).

Ergonomics Team members participate in evaluating new equipment and processes for potential risk factors. They also evaluate hand tools to determine if the designs are ergonomically suitable for the intended use and appropriate for the workers who use them.

## SOLUTIONS

Through an evaluation, problems are identified for correction and supervisors and employees in the affected areas are notified. The Ergonomics Team, in conjunction with those affected employees, will develop possible solutions, and choose the most appropriate. Implement the changes, and follow up to determine the effectiveness.

## CONTROLLING ERGONOMIC HAZARDS

Eaton Drilling Co., Inc. will take steps to identify ergonomic risk factors and reduce hazards by using a three-tier hierarchy of control (in order of preference):

1. Engineering controls. The most desirable and reliable means to reduce workplace exposure to potentially harmful effects. This is achieved by focusing on the physical modifications of jobs, workstations, tools, equipment or processes.
2. Administrative controls. This means controlling or preventing workplace exposure to potentially harmful effects by implementing administrative changes such as job rotation, job enlargement, rest/recovery breaks, work pace adjustment, redesign of methods and worker education.
3. Personal protective equipment (PPE). Although not recognized as an effective means of controlling ergonomic hazards and does not take the place of engineering or administrative controls; however-

er, there are forms of PPE which can make employees more comfortable, e.g., kneepads, anti-vibration gloves, etc.

## EMPLOYEE TRAINING

Eaton Drilling Co., Inc. ergonomics program is included as a component of its IIPP program and the company's policy statement regarding ergonomics in our workplace. Eaton Drilling Co., Inc. includes in its training how an employee can reduce exposure to specific risk factors and each employee in a job where a work-related musculoskeletal disorder has been recorded.

These are the ergonomic elements we teach to all employees:

- How to recognize workplace risk factors associated with work-related musculoskeletal disorders and the ways to reduce exposure to those risk factors.
- The signs and symptoms of work related musculoskeletal disorders, the importance of early reporting, and medical management procedures.
- Reporting procedures and the person to whom the employee is to report workplace risk factors and work-related musculoskeletal disorders.
- The process Eaton Drilling Co., Inc. has implemented is to address and control workplace risk factors, each employee's role in the process, and how to participate in the process.
- Opportunity to practice and demonstrate proper use of implemented control measures and safe work methods which apply to the job.
- Each employee is encouraged to be involved in job analysis process, and be willing to be trained in job analysis methods, especially as they relate to identifying workplace risk factors, and evaluation and implementation of control measures.

This company will not implement any policy or practice which discourages reporting or which results in discrimination or reprisal against any employee who makes a report.

## QUESTIONS

Questions about the ergonomics plan should be directed to the Operations Manager's representative responsible for the program.

# Injury and Illness Prevention Program

## HEAT ILLNESS PREVENTION

### HEAT ILLNESS PREVENTION

#### (I) HEAT ILLNESS PREVENTION PLAN

The employer shall establish, implement and maintain, as effective Heat Illness prevention plan. The plan shall be in English and languages understood by the majority of the employees and shall be made available at the worksite to employee's and to representatives of the Division upon request. The Heat Illness prevention plan may be included as part of the employer's illness and injury prevention program required by section 3201, and shall, at a minimum, contain:

- (1) Procedures for the Provision of water and access to shade.
- (2) The high heat procedures referred to in subsection (e).
- (3) Emergency Response Procedures in accordance with subsection (f).
- (4) Acclimatization methods and procedures in accordance with subsection (g).

#### OVERVIEW AND OBJECTIVES

Employees who work in outdoor environments or on job tasks in other areas at those times when the environmental risk factors for heat illness are present, are at risk for developing heat illnesses if they do not protect themselves appropriately. The objective of this program is employee awareness regarding heat illness symptoms, ways to prevent heat illness, and what to do if symptoms occur.

This written program is based on the California Code of Regulations Proposed State Standard, Title 8, Chapter 4, Section 3395.

#### SCOPE

The Eaton Drilling Co., Inc. Heat Illness Prevention Program applies to the control of risk of occurrence of heat illness and applies to all outdoor places of employment at those times when the environmental risk factors for heat illness are present.

#### POLICY

It is the policy of Eaton Drilling Co., Inc. that any employee participating in job tasks when environmental risk factors for heat illness are present will comply with the procedures in this document and in the Injury and Illness Prevention Program.

## PURPOSE

To ensure that all employees of Eaton Drilling Co., Inc. are protected from heat illness while working on job tasks where environmental risk factors for heat illness are present and to establish the minimum requirements for working in this environment.

## DEFINITIONS

The term “acclimatization” means temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for about two hours per day in the heat. “Environmental risk factors for heat illness” means working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

The term “heat illness” means a serious medical condition resulting from the body’s inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope, and heat stroke.

“Personal risk factors for heat illness” means factors such as an individual’s age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body’s water retention or other physiological responses to heat.

“Preventative recovery period” means a period of time to recover from the heat in order to prevent heat illness.

The term “shade” means blockage of direct sunlight. Canopies, umbrellas, and other temporary structures or devices may be used to provide shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.

## RESPONSIBILITIES

### A. **The Management for Eaton Drilling Co., Inc. is responsible for:**

1. Preparing and maintaining a written program, which complies with the requirements of applicable Cal/OSHA requirements.
2. Assisting with providing training to all potentially impacted employees and their supervisors on the risks and prevention of heat illness, including how to recognize symptoms and respond when they appear.

**B. Managers, and Supervisors are responsible for:**

1. Identifying all employees who are required to work outdoors where potential heat illness could occur and identifying the supervisor of the employees.
2. Assuring that adequate water and shade are available at a job site when the environmental risk factors for heat illness are present.
3. Ensuring that all affected employees have received proper training on heat illness and prevention.
4. Ensuring that the requirements in this document are followed.
5. Job site supervisors are assigned by management for the implementation of Heat Illness Prevention Standards

**AFFECTED EMPLOYEES ARE RESPONSIBLE FOR:**

1. Complying with the provisions of the Heat Illness Prevention Program, as described in this document and in the training sessions they attend.
2. Ensuring they have drinking water available at all times when the environmental risk factors for heat illness are present.
3. Ensuring they have access to a shaded area to prevent or recover from heat related
4. symptoms. Reporting heat related illness symptoms to the supervisor.

**BASIC REQUIREMENTS**

The following basic requirements apply to all employees while working where environmental risk factors for heat illness are present.

1. Training shall be provided for all potentially impacted employees working where environmental risk factors for heat illness are present and their supervisors. Training information shall include but not be limited to the topics listed in the training section of this written program. All potentially impacted employees and supervisors who supervise these employees must be trained on the risks and prevention of heat illness, including how to recognize symptoms and respond when they appear.
2. Drinking water in the quantity of 1 quart per hour shall be available at all times for employees who work outdoors in the heat.
3. Employees must have access to a shaded area to prevent or recover from heat illness symptoms.
4. All employees must be identified who are required to work where environmental factors for heat illness are present.



## TRAINING

Training shall be provided for employees working on job tasks where environmental risk factors for heat illness are present, and training for their respective supervisors.

- (A) The employer's procedures for complying with the requirements for this standard, including but are not limited to, the employer's responsibility to provide water, shade, cool-down rests, and access to first aid as well as the employee's right to exercise their rights under this standard without retaliation.
- (B) The concept, importance, and methods of acclimation, pursuant to the employer's procedures under subsection (i)(4).
- (C) The different types of heat illness, the common signs and symptoms, and appropriate first aid and/ or emergency responses to the different types of heat illness, and in addition, that heat illness may progress quickly from mild symptoms and signs to serious and life threatening illness.

## EMPLOYEES

All employees working on job tasks where environmental risk factors for heat illness are present shall receive instruction before being assigned to work tasks. Training topics shall include the following:

- a. Environmental and personal risk factors for heat illness.
- b. Procedures for identifying, evaluating, and controlling exposures to the environmental and personal risk factors for heat illness.
- c. Importance of frequent consumption of small quantities of water, up to 4 cups per hour under extreme conditions of work and heat.
- d. Importance of acclimatization.
- e. Different types, signs, and symptoms of heat illness.
- f. Importance of immediately reporting symptoms or signs of heat illness in themselves or if coworkers to their supervisor.
- g. Procedures for responding to symptoms of possible heat illness, including how emergency medical services will be contracted and provided, should they become necessary.

## SUPERVISORS OF AFFECTED EMPLOYEES

Supervisors, or their designates, are required to provide training on the following topics:

- a. Information as detailed above in employee training requirements.
- b. Procedures the supervisor shall follow to implement the provisions of this program.

- c. Procedures the supervisor shall follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

## PROGRAM AUDIT

**RESPONSIBILITY** - Audits of the Heat Illness Prevention Program shall be performed by Supervisor and Management of Eaton Drilling Company, Inc.

**FREQUENCY** - Audits of the Heat Illness Prevention Program shall be performed annually.

## CONTENTS

- a. The audit shall review the program to ensure that heat illness prevention procedures are in place and are being properly followed.
- b. The audit process and findings shall be certified in writing.

## RECORDS

- a. All training, audit, and other records prepared in association with the Heat Illness Prevention Program shall be managed in accordance with the requirements of Eaton Drilling Company, Inc. Injury and Illness Prevention Program.



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These procedures are not intended to supersede or replace the application of any other Title 8 regulation, particularly T8 3203 Injury and Illness Prevention Program (IIPP). Title 8 CCR 3203 requires an employer to establish, implement, and maintain an effective IIPP. The measures listed here may be integrated into the Employer's Injury and Illness Prevention Program.

#### PROCEDURES FOR PROVISION OF WATER

- ☐ Drinking water containers (of five to 10 gallons each) will be brought to the site, so that at least two quarts per employee are available at the start of the shift. All workers whether working individually or in smaller crews, will have access to drinking water.
- ☐ Paper cone rims or bags of disposable cups and the necessary cup dispensers will be made available to workers and will be kept clean until used.
- ☐ As part of the Effective Replenishment Procedures, the water level of all containers will be checked periodically (e.g. every hour, every 30 min), and more frequently when the temperature rises. Water containers will be refilled with cool water, when the water level within a container drops below 50 percent. Additional water containers (e.g. five gallon bottles) will be carried, to replace water as needed.
- ☐ Ice will be carried in separate containers, so that when necessary, it will be added to the drinking water to keep it cool.
- ☐ Water containers will be placed as close as possible to the workers (given the working conditions and layout of the work site), to encourage the frequent drinking of water. If field terrain prevents the water from being placed as close as possible to the workers, bottled water or personal water containers will be made available, so that workers can have drinking water readily accessible.
- ☐ Water containers will be relocated to follow along with the crew, so drinking water will remain readily accessible.
- ☐ Water containers will be kept in sanitary condition.
- ☐ Daily, workers will be reminded of the location of the water coolers and of the importance of drinking water frequently. When the temperature exceeds or is expected to exceed 80 degrees Fahrenheit, brief 'tailgate' meetings will be held each morning to review with employees the importance of drinking water, the number and schedule of water and rest breaks and the signs and symptoms of heat illness.



- ☐ When the temperature equals or exceeds 95 degrees Fahrenheit or during a heat wave, the number of water breaks will be increased, and workers will be reminded throughout the work shift to drink water.
- ☐ During employee training and tailgate meetings, the importance of frequent drinking of water will be stressed.

## PROCEDURES FOR ACCESS TO SHADE

***Note: Follow the general guidance provided above, under the Provisions for Water (identify the person assigned the task and list the specific tasks that have to be carried out).***

- ☐ Shade structures will be opened and placed as close as practical to the workers, when the temperature equals or exceeds 80 degrees Fahrenheit. When the temperature is below 80 degrees Fahrenheit, access to shade will be provided promptly, when requested by an employee. Note: The interior of a vehicle may not be used to provide shade unless the vehicle is air-conditioned and the air conditioner is on.
- ☐ Enough shade structures will be available at the site, to accommodate 100% of everyone that is on the worksite during a break.
- ☐ Daily, workers will be informed of the location of the shade structures and will be encouraged to take a five minute cool-down rest in the shade.
- ☐ Shade structures will be relocated to follow along with the crew and they will be placed as close as practical to the employees, so that access to shade is provided at all times.
- ☐ In situations where trees or other vegetation are used to provide shade (such as in orchards), the thickness and shape of the shaded area will be evaluated, before assuming that sufficient shadow is being cast to protect employees.
- ☐ In situations where it is not safe or feasible to provide access to shade (e.g., during high winds), a note will be made of these unsafe or unfeasible conditions, and of the steps that will be taken to provide shade upon request.
- ☐ **For non-agricultural employers,** In situations where it is not safe or feasible to provide shade, a note will be made of these unsafe or unfeasible conditions, and of the steps that will be taken to provide alternative cooling measures but with equivalent protection as shade.

## PROCEDURES FOR MONITORING THE WEATHER

The supervisor will be trained and instructed to check in advance the extended weather forecast. Weather forecasts can be checked with the aid of the Internet (<http://www.nws.noaa.gov/>), or by calling the National Weather Service phone numbers (see CA numbers below) or by checking the Weather Channel TV Network. The work schedule will be planned in advance, taking into consideration whether high temperatures or a heat wave is expected. This type of advance planning should take place all summer long.

### CALIFORNIA DIAL-A-FORECAST

Eureka 707-443-7062

Hanford 559-584-8047

Los Angeles 805-988-6610 (#1)

Sacramento 916-979-3051

San Diego 619-297-2107 (#1)

San Francisco 831-656-1725 (#1)

- ☐ Prior to each workday, the forecast temperature and humidity for the work site will be reviewed and will be compared against the National Weather Service Heat Index to evaluate the risk level for heat illness. Determination will be made of whether or not workers will be exposed at a temperature and humidity characterized as either “extreme caution” or “extreme danger” for heat illnesses. It is important to note that the temperature at which these warnings occur must be lowered as much as 15 degrees if the workers under consideration are in direct sunlight.
- ☐ Prior to each workday, the supervisor will monitor the weather (using <http://www.nws.noaa.gov/> or with the aid of a simple thermometer, available at most hardware stores) at the work site. This critical weather information will be taken into consideration, to determine, when it will be necessary to make modifications to the work schedule (such as stopping work early, rescheduling the job, working at night or during the cooler hours of the day, increasing the number of water and rest breaks).
- ☐ A thermometer will be used at the job site to monitor for sudden increases in temperature, and to ensure that once the temperature exceeds 80 degrees Fahrenheit, shade structures will be opened and made available to the workers. In addition, when the temperature equals or exceeds 95 degrees Fahrenheit, additional preventive measures such as the High Heat Procedures will be implemented.



## HANDLING A HEAT WAVE

- ☐ During a heat wave or heat spike, the work day will be cut short or rescheduled (example conducted at night or during cooler hours).
- ☐ During a heat wave or heat spike, and before starting work, tailgate meetings will be held, to review the company heat illness prevention procedures, the weather forecast and emergency response. In addition, if schedule modifications are not possible, workers will be provided with an increased number of water and rest breaks and will be observed closely for signs and symptoms of heat illness.
- ☐ Each employee will be assigned a “buddy” to be on the lookout for signs and symptoms of heat illness and to ensure that emergency procedures are initiated when someone displays possible signs or symptoms of heat illness.

## HIGH HEAT PROCEDURES

The employer shall implement high heat procedures as additional preventive measures that this company will use when the temperature equals or exceeds 95 degrees Fahrenheit.

Observing employees for alertness and signs or symptoms of heat illness. The employer shall ensure effective observation/monitoring by implementing one or more of the following:  
Supervisor or designee observation of 20 or fewer employees, or (B) Mandatory buddy system, or (C) Regular communication with sole employee such as by radio or cellular phone (must be checked at least once an hour), or (D) Other effective means of observation.

(3) Designating one or more employees on each worksite as authorized to call for emergency medical services, and allowing other employees to call for emergency services when no designated employee is available.

(4) Reminding employees throughout the work shift to drink plenty of water

- ☐ Effective communication by voice, observation, or electronic means will be maintained so that employees at the work site can contact a supervisor when necessary. If the supervisor is unable to be near the workers (to observe them or communicate with them), then an electronic device, such as a cell phone or text messaging device, may be used for this purpose if reception in the area is reliable.
- ☐ Frequent communication will be maintained with employees working by themselves or in smaller groups (keep tabs on them via phone or two-way radio), to be on the lookout for possible symptoms of heat illness.
- ☐ Employees will be observed for alertness and signs and symptoms of heat illness. When the supervisor is not available, an alternate responsible person may be assigned, to look for signs and symptoms of heat illness. Such a designated observer will be trained and know what steps to take if heat illness occurs.

- ☐ Employees will be reminded throughout the work shift to drink plenty of water.
- ☐ New employees will be closely supervised, or assigned a “buddy” or more experienced coworker for the first 14 days of employment (unless the employee indicates at the time of hire that he or she has been doing similar outdoor work for at least 10 of the past 30 days for four or more hours per day).

## PROCEDURES FOR ACCLIMATIZATION

Acclimatization is the temporary and gradual physiological change in the body that occurs when the environmentally induced heat load to which the body is accustomed is significantly and suddenly exceeded by sudden environmental changes. In more common terms, the body needs time to adapt when temperatures rise suddenly, and an employees risks of heat illness by not taking it easy when a heat wave strikes or when starting a new job that exposes the employee to heat to which the employee’s body hasn’t yet adjusted. Inadequate acclimatization can be significantly more perilous in conditions of high heat and physical stress.

Employers are responsible for the working conditions of their employees, and they must act effectively when conditions result in sudden exposure to heat their employees are not used to.

- ☐ All employees shall be closely observed by a supervisor or designee during a “heatwave” (means any day in which the predicted high temperature for the day will be at least 80 degrees Fahrenheit and at least ten degrees Fahrenheit higher than the average high daily temperature in the preceding five days).
- ☐ The weather will be monitored daily. The supervisor will be on the lookout for sudden heat wave(s), or increases in temperatures to which employees haven’t been exposed to for several weeks or longer.
- ☐ During a heat wave or heat spike, the work day will be cut short (example 12 p.m.), will be rescheduled (example conducted at night or during cooler hours) or if at all possible cease for the day.
- ☐ For new employees, the intensity of the work will be lessened during a two-week break-in period (such as scheduling slower paced, less physically demanding work during the hot parts of the day and the heaviest work activities during the cooler parts of the day (early-morning or evening). Steps taken to lessen the intensity of the workload for new employees will be documented.
- ☐ The supervisor will be extra-vigilant with new employees and stay alert to the presence of heat related symptoms.
- ☐ New employees will be assigned a “buddy” or experienced coworker to watch each other closely for discomfort or symptoms of heat illness.
- ☐ A new employee who has been newly assigned to a high heat area shall be closely observed by a supervisor or designee for the first 14 days of the employee’s employment.

- ☐ During a heat wave, all employees will be observed closely (or maintain frequent communication via phone or radio), to be on the look out for possible symptoms of heat illness.
- ☐ Employees and supervisors will be trained on the importance of acclimatization, how it is developed and how these company procedures address it.

## PROCEDURES FOR EMERGENCY RESPONSE

Prior to assigning a crew to a particular work site, workers and the foreman will be provided a map of the site, along with clear and precise directions (such as streets or road names, distinguishing features and distances to major roads), to avoid a delay of emergency medical services.

## EMERGENCY RESPONSE PROCEDURE

The Employer shall implement effective emergency response procedures including:

Ensuring that effective communication by voice, observation or electronic means is maintained so that employees at the work site can contact a supervisor or emergency medical services when necessary. An electronic device, such as a cell phone or text message device, may be used for this purpose only if reception in the area is reliable. If an electronic device will not furnish reliable communication in the work area, employer will ensure a means of summoning emergency medical services.

1. Responding to signs and symptoms of possible heat illness, including but not limited to first aid measures and how emergency medical services will be provided.
2. If a supervisor observes, or any employee reports, any signs or symptoms of heat illness in any employee, the supervisor shall take immediate action to commensurate with the severity of the illness.
3. If the signs or symptoms are indications of severe heat illness (such as, but not limited to, decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior or convulsions), the employer must implement emergency response procedures.
4. An employee exhibiting signs or symptoms of heat illness shall be monitored and shall not be left alone or sent home without being offered on site first aid and / or being provided with emergency medical services in accordance with the employer's procedures.

- ☐ Prior to assigning a crew to a particular work site, efforts will be made to ensure that a qualified and appropriately trained and equipped person is available at the site to render first aid if necessary.
- ☐ Prior to the start of the shift, a determination will be made of whether or not a language barrier is present at the site and steps will be taken (such as assigning the responsibility to call emergency medical services to the foreman or an English speaking worker) to ensure that emergency medical services can be immediately called in the event of an emergency.

- ☐ All foremen and supervisors will carry cell phones or other means of communication, to ensure that emergency medical services can be called. Checks will be made to ensure that these electronic devices are functional prior to each shift.
- ☐ When an employee is showing symptoms of possible heat illness, steps will be taken immediately to keep the stricken employee cool and comfortable once emergency service responders have been called (to reduce the progression to more serious illness).
- ☐ At remote locations such as rural farms, lots or undeveloped areas, the supervisor will designate an employee or employees to physically go to the nearest road or highway where emergency responders can see them. If daylight is diminished, the designated employee(s) shall be given reflective vest or flashlights in order to direct emergency personnel to the location of the work site, which may not be visible from the road or highway.
- ☐ During a heat wave or hot temperatures, workers will be reminded and encouraged to immediately report to their supervisor any signs or symptoms they are experiencing.
- ☐ Employee and supervisor training will include every detail of these written emergency procedures.

#### HANDLING A SICK EMPLOYEE

- ☐ When an employee displays possible signs or symptoms of heat illness, a trained first aid worker or supervisor will check the sick employee and determine whether resting in the shade and drinking cool water will suffice or if emergency service providers will need to be called. A sick worker will not be left alone in the shade, as he or she can take a turn or the worse!
- ☐ When an employee displays possible signs or symptoms of heat illness and no trained first aid worker or supervisor is available at the site, emergency service providers will be called.
- ☐ Emergency service providers will be called immediately if an employee displays signs or symptoms of heat illness (loss of consciousness, incoherent speech, convulsions, red and hot face), does not look OK or does not get better after drinking cool water and resting in the shade. While the ambulance is in route, first aid will be initiated (cool the worker: place the worker in the shade, remove excess layers of clothing, place ice pack in the armpits and groin area and fan the victim).
- ☐ Do not let a sick worker leave the site, as they can get lost or die before reaching a hospital!
- ☐ If an employee does not look OK and displays signs or symptoms of severe heat illness (loss of consciousness, incoherent speech, convulsions, red and hot face), and the work site is located more than 20 minutes away from a hospital, call emergency service providers, communicate the signs and symptoms of the victim and request Air Ambulance.

## PROCEDURES FOR EMPLOYEE AND SUPERVISORY TRAINING

- ☐ Supervisors will be trained prior to being assigned to supervise other workers. Training will include this company's written procedures and the steps supervisors will follow when employees exhibit symptoms consistent with heat illness.
- ☐ Supervisors will be trained on how to track the weather at the job site (by monitoring predicted temperature highs and periodically using a thermometer). Supervisors will be instructed on, how weather information will be used to modify work schedules, to increase number of water and rest breaks or cease work early if necessary.
- ☐ All employees and supervisors will be trained prior to working outside. Training will include the company's written prevention procedures.
- ☐ Employees will be trained on the steps that will be followed for contacting emergency medical services, including how they are to proceed when there are non-English speaking workers, how clear and precise directions to the site will be provided and the importance of making visual contact with emergency responders at the nearest road or landmark to direct them to their work site.
- ☐ When the temperature exceeds 80 degrees Fahrenheit, short 'tailgate' meetings will be held to review the weather report, to reinforce heat illness prevention with all workers, to provide reminders to drink water frequently, to inform them that shade can be made available upon request and to remind them to be on the lookout for signs and symptoms of heat illness.
- ☐ New employees will be assigned a "buddy" or experienced coworker to ensure that they understand the training and follow company procedures.



# Injury and Illness Prevention Program

## MOTOR VEHICLE OPERATIONS



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## MOTOR VEHICLE OPERATIONS

*CHP Presentation and Q & A with Officer Gibbons*

### A COMMERCIAL VEHICLE

(A) If a vehicle being towed has a gross vehicle weight rating of more than 10,000 pounds.

(B) A single vehicle with three or more axles, except any three-axle vehicle weighing less than 6,000 pounds

### ANY VEHICLES OVER 10,001 MUST FOLLOW HOURS OF SERVICE

#### **34601.**

(a) As used in this division, “motor carrier of property” means any person who operates any commercial motor vehicle as defined in subdivision (c). “Motor carrier of property” does not include a household goods carrier, as defined in Section 5109 of the Public Utilities Code, a household goods carrier transporting used office, store, and institution furniture and fixtures under its household goods carrier permit pursuant to Section 5137 of the Public Utilities Code, persons providing only transportation of passengers, or a passenger stage corporation transporting baggage and express upon a passenger vehicle incidental to the transportation of passengers. (2) As used in this division, “commercial motor vehicle” does not include any of the following) As used in this division, “for-hire motor carrier of property” means a motor carrier of property as defined in subdivision (a) who transports property for compensation.

(e) Pickup trucks as defined in Section 471, if the conditions in subparagraphs (A) and (B) are also meet 471. A “pickup truck” is a motor truck with a manufacturer’s gross vehicle weight rating of less than 11,500 pounds, an unladen weight of less than 8,001 pounds, and which is equipped with an open box-type bed not exceeding 9 feet in length. “Pickup truck” does not include a motor vehicle otherwise meeting the above definition that is equipped with a bed-mounted storage compartment unit commonly called a “utility body.”CVC 471 so met.

#### **Hours of Service**

80 hours on duty in 8 days

16 hour work day, 12 hours driving time with commercial license

34 hours off resets all clocks to zero

**You Must have 10 hours off duty between shifts**

## LOGBOOKS

### Logbook must be in possession

Required information. The following information must be included on the form in addition to the grid:

- (1) Date;
- (2) Total miles driving today;
- (3) Truck or tractor, and trailer number;
- (4) Name of carrier;
- (5) Driver's signature/certification;
- (6) 24-hour period starting time (e.g., midnight, 9:00 a.m., noon, 3:00 p.m.);
- (7) Main office address

**(a); Hotels can be used as HOME terminal**

- (8) Remarks
- (9) Name of co-driver;
- (10) Total hours (far right edge of grid);
- (11) Shipping document number(s), or name of shipper and commodity;

**(f) Incomplete or false records.** No motor carrier shall allow or require, and no driver shall prepare or submit, a record of duty status which is not true and accurate. Failure to complete the record of duty activities of this section or Section 1213.2, failure to preserve a record of such duty activities, or making of false reports in connection with such duty activities shall make the driver and/or the carrier liable to prosecution.

**(g) Driver responsibility.** The driver's activities shall be recorded in accordance with the following provisions:

- (1) Entries to be current. Drivers shall keep their record of duty status current to the time shown for the last change of duty status.
- (2) Entries made by driver only. All entries relating to driver's duty status must be legible and in the driver's own handwriting.
- (3) Date. The month, day and year for the beginning of each 24-hour period shall be shown on the form containing the driver's duty status record.

- (4) Total mileage driven. Total mileage driven during the 24-hour period shall be recorded on the form containing the driver's duty status record.
- (5) Vehicle identification. The carrier's vehicle number or State and license number of each bus, truck, truck tractor and trailer operated during that 24-hour period shall be shown on the form containing the driver's duty status record.

**(e) 100 air-mile radius driver. A driver is exempt from the requirements of Section 1213 if:**

1213; Graphing part of log book

### 1213. DRIVER'S RECORD OF DUTY STATUS

(a) Carrier responsibility. **Except** as provided in subsection (b), every motor carrier shall require every driver used by the motor carrier to record his/her duty status for each 24-hour period using the methods prescribed in either paragraphs (a)(1) or (2) of this section

(b) Exceptions. A driver's record of duty status is not required for drivers of the following vehicles, provided documentation of their total days worked and time of reporting on and off duty each day, is maintained by the motor carrier for six months.

- (1) The driver operates within a 100 air-mile radius of the normal work reporting location;
- (2) The driver, except a driver salesperson, returns to the work reporting location and is released from work within 12 consecutive hours;
- (3) The driver of a school bus, school pupil activity bus, youth bus, or farm labor vehicle returns to the work reporting location and is released from work before the end of the 16th hour after coming on duty;
- (4) At least eight consecutive hours off duty for bus drivers and ten consecutive hours off duty for truck drivers, separate each 12 hours on duty; and
- (5) The motor carrier that employs the driver maintains and retains for a period of six months accurate and true time records showing :

- (A) The time the driver reports for duty each day;
- (B) The total number of hours the driver is on duty each day;
- (C) The time the driver is released from duty each day; and
- (D) The total time for the preceding seven days in accordance with Section 1213(k)(2) for drivers used for the first time or intermittently

If you have not had to log but maintained use of Timecards and are now out of the 100 mile Radius, you only need the current day log page and must tell the officer that your time cards are at the office

OVER 12 WORK DAY YOU MUST LOG & GRAPH

If you drive over 15 min (even when moving stuff around the yard and to the back lot, on private property, etc.), you must log it. Make sure your load is secure. Only clear water, feathers from a live bird or hay may fall out of vehicle.

(b) Adverse driving conditions.

(1) A driver who encounters adverse driving conditions, as defined in Section 1201, and cannot, because of those conditions, safely complete the run within the maximum driving time permitted by Section 1212.5 may drive and be permitted or required to drive for not more than 2 additional hours in order to complete that run or to reach a place offering safety for vehicle occupants and security for the vehicle and its cargo. However, that driver may not drive or be permitted to drive:

(2) Emergency conditions. In the event of a traffic accident, medical emergency, or disaster, a driver may complete his/her run without being in violation of the provisions of these regulations, if such run reasonably could have been completed absent the emergency.

(\*\*No extra time for flat tires or delays due to farmers not letting you in, unforeseen is defined as a bad accident, emergency, etc.)



**Log Book/Time Card/Pretrip** (3 sections), must be filled out daily and signed.  
Hours on duty portion of Log Book must match hours on Time Card portion.  
No more than 12 hours of driving in a 16 hour work day. No driving after 16<sup>th</sup> hour!  
Must have 10 consecutive hours off before driving.  
No driving after 80 hours in 8 days.  
Add the last 7 days worth of on duty hours to get your total of available hours for 8<sup>th</sup> day.  
After 34 hours off duty (2 shifts of 1 AM to 5 AM) do not add up the last 7 days but keep copies in drivers possession.  
Must log on duty or off duty for Saturday and Sunday.  
Keep the last 7 days in position.  
Keep a running total of the 7 days so as not to exceed 80 hours on day 8.

Last 7 days	Total
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

FORM MCS-15-Prescribed by the U.S. DEPARTMENT OF TRANSPORTATION Federal Highway Administration Rev. '71	<b>DRIVER'S DAILY LOG</b> (One Calendar Day=24 Hours)	Form approved, National Bureau No. 34-21011 (Section A)-Fits each day in home journal DUPLICATE!—Write entries in left column for 1 month
<u>MAY</u> (Month)	<u>1</u> (Day)	<u>1967</u> (Year)
<u>440</u> (Total mileage today)		
<u>Tractor #12 - Trailer #12A</u> Vehicle number(s)—(Show each unit)		
I certify these entries are true and correct: <u>John E. Doe</u> (Driver's signature in full) <u>W. R. SMITH</u> (Name of Co.-Owner?) <u>RICHMOND, VA.</u> (Home Address)		
<u>X.Y.Z. TRANSPORTATION CO.</u> (Name of carrier or company) <u>WASHINGTON, D.C.</u> (Main Office Address)		
<u>270</u> (Total miles driving today)		
REMARKS 1. OFF DUTY 2. SLEEPING 3. DRIVING 4. ON DUTY (not sleeping)		
HOURS 1 2 3 4 5 6 7 8 9 10 11 noon 1 2 3 4 5 6 7 8 9 10 11 PM Total Hours		
REMARKS TRIP MANIFEST 1675 1674		
FROM <u>RICHMOND, VA.</u> TO <u>BOSTON, MASS.</u> (Starting Point or Place) (Destination or Last Reported point or place)		
USE TIME STANDARD AT HOME TERMINAL		

Name John Smith Date 12/25/10

Rig No. 2 Job No. 8500

Code Listing
 

1 New Pump	6 Shop Time	
2 Rebuild	7 Administrative	
3 Replace	8 Training	
4 Travel	9	
5 Equipment Repair	10	

Travel to site  
 Set up  
 Drill  
 + travel

IN	10:00
OUT	12:30
IN	1:00
OUT	10:00

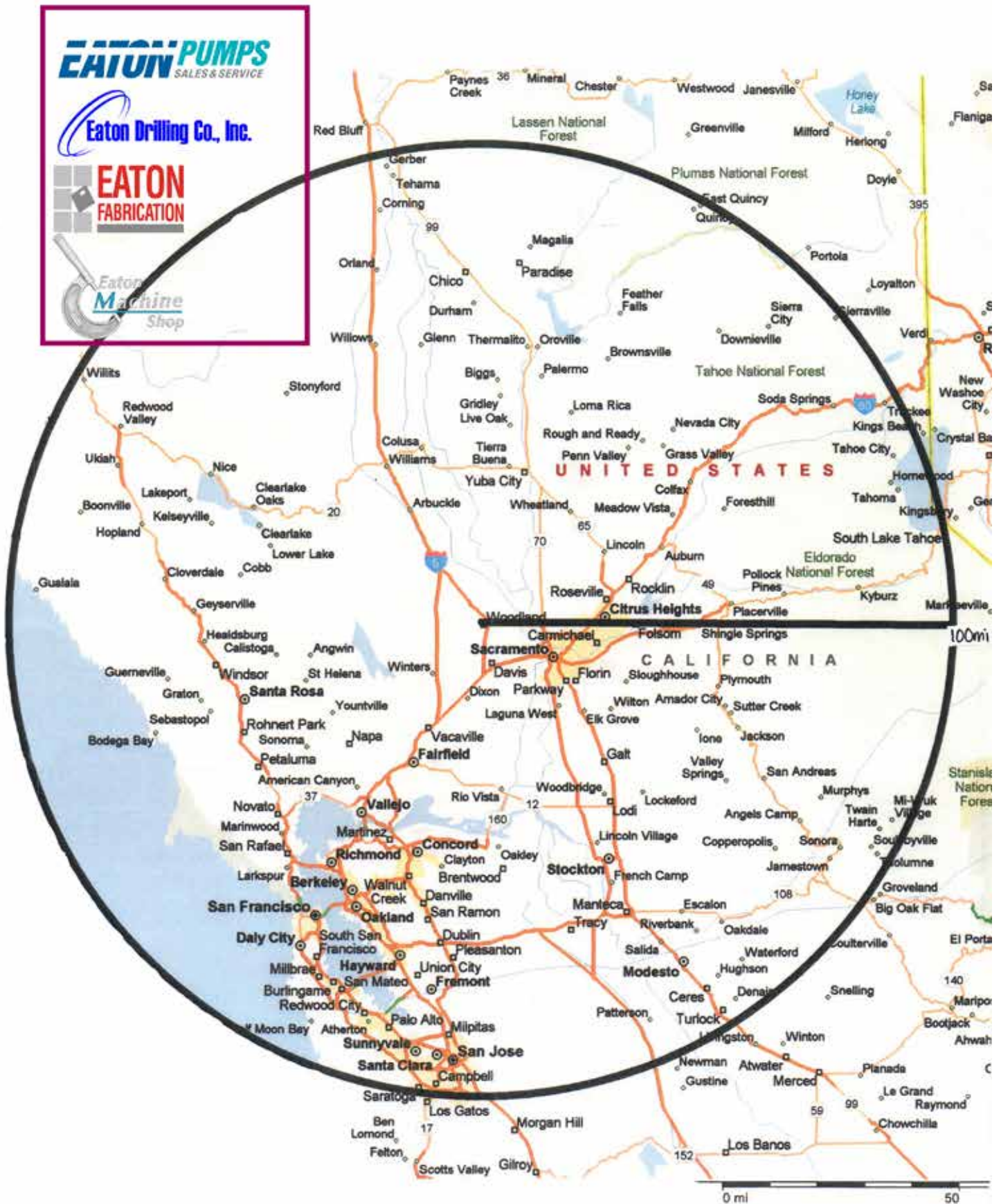
Job # 10100 Code 5

10100 5

Travel  
 Moving & Set-up  
 Drilling  
 Development  
 Maintenance  
 Other  
 Other  
 Waste & Breaks

A.M. HOURS P.M. HOURS

## RADIUS MAP



Air Miles Radius Map - From Eaton Terminal- Basis of Log Book Requirements

# Injury and Illness Prevention Program

## MEDICAL INFORMATION CARD

### MEDICAL INFORMATION CARD

Knowledge of each employee's unique physical conditions is an integral component of an effective Injury and Illness Prevention Program. In addition to the company standard form for a medical information card that each employee is encouraged to carry on their person, it is imperative that appropriate individuals are appraised of any condition that would have the employee in a position to be unresponsive.

These conditions include low blood pressure that allows the worker to go into shock easily, bee stings, allergies to peanuts or other foods that put the worker in the state of anaphylactic shock.

The immediate supervisor, work teammates, and the office need to know of these conditions. Adherence to this standard protects not only the affected worker but also those who work in close proximity.

As we all know water well drilling and working with pumping equipment, and heavy machinery is inherently dangerous. In the case that you are unresponsive when first responders arrive after an accident, a thorough knowledge of what medications are in your system could have a component in your survival.

Please take this component of the Injury and Illness Prevention Program to be as important as we who administer it take it to be.

IT IS THE POLICY OF THE EATON DRILLING CO., INC., EATON PUMPS, AND EATON FABRICATION THAT INJURY AND ILLNESS PREVENTION SHALL BE CONSIDERED OF PRIMARY IMPORTANCE IN PHASES OF OPERATIONS AND ADMINISTRATION.



## PERSONAL MEDICAL INFORMATION

1. The company will at your request provide you with a laminated medical card. If you chose, this card will be filled out by you and contain all medications that you would like medical first responders to have in the event illness or injury prevents you from answering their questions concerning allergies, medications, or other conditions. In addition, if you provide this information it will be placed in your employee file and shared in the event you are incapacitated.



NAME OF MEDICATION Rx NUMBER	STRENGTH	DAILY DOSE

## PERSONAL MEDICATION CARD

Name \_\_\_\_\_ Date \_\_\_\_\_

Medical Number/Provider \_\_\_\_\_

Allergies \_\_\_\_\_

Please use this card to keep track of your medicines. List all medicines you are now taking: both prescription and non-prescription. Add new medicines as you receive them and cross off those that are discontinued. Show this card to your doctor each time you are in for a visit.





# Injury and Illness Prevention Program

## EMPLOYEE ACKNOWLEDGEMENT





## EMPLOYEE ACKNOWLEDGEMENT

### ACKNOWLEDGEMENT OF RECEIPT & REVIEW OF EATON'S CODE OF SAFE PRACTICES

#### **To All Employees:**

Attached is a copy of the code of safe practices. These guidelines are provided for your safety.

It is the responsibility of Kevin Bottimore to administer a program that provides a review of this code with each employee. It is the employee's responsibility to read and comply with the code.

The attached copy of the code of safe practices is for you to keep and review on an on going basis, communication with the IIPP program administrator where ever, and when ever IIPP program deficiencies are noted. Please sign and return only this page to Kevin Bottimore (Safety Coordinator).

#### **I have read and understand the Code of Safe Practices**

\_\_\_\_\_  
Date

\_\_\_\_\_  
Employee Signature

## NOTICE OF SAFETY INFRACTION

We consider the safety of our employees to be very important. Therefore, to prevent accidents, it is our policy to strictly enforce company safety rules. Infractions of safety rules may result in the following actions depending on the severity dismissal could result immediately:

**1ST INFRACTION** – WRITTEN/VERBAL WARNING

**2ND INFRACTION** – WRITTEN WARNING

**3RD INFRACTION** – 3 TO 5 DAY SUSPENSION

**4TH INFRACTION** – DISMISSAL

\_\_\_\_\_, you have been observed working in the following  
(Name)

unsafe manner, contrary to company safety rules:

This is your:

- ☐ First Infraction
- ☐ Second Infraction
- ☐ Third Infraction
- ☐ Fourth Infraction

Action taken, therefore is:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Supervisor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Employee

\_\_\_\_\_  
Date

## INCENTIVE PROGRAM

As part of the Eaton Drilling Co., Inc.'s Injury and Illness Prevention Program a company wide barbeque will be held to acknowledge adherence to our program. Each member of Eaton Drilling Co., Inc. will be brought up to date on new information gathered as part of our program to report "near misses" compiled from tailgate reports. The company barbeque will be scheduled by management and held at a frequency that is required to present safety updates and support a healthy work environment.

Crews members that take an active roll in accident prevention will be recognized. Each quarter the safety coordinator will select a group of five individuals that have shown the most active participation in the tailgate program and provide each of those individuals Home Depot gift cards. Each year that the experience modification rate drops below 95 percent, the company will sponsor a day long fishing trip in the San Francisco Bay for the entire organization and close family members.

In addition, the use of the Safety Suggestion Box can be used to provide ideas of activities and/or other benefits the company can provide for recognizing of groups and individuals that are making our work environment safer.





# Injury and Illness Prevention Program

## EMPLOYEE COMMUNICATION



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## EMPLOYEE COMMUNICATION

### SAFETY COMMUNICATION POLICY

**Eaton Drilling Co., Inc.** policy maintains open communication between management and operations on matters pertaining to safety. Your thoughts regarding safety are imperative in the development and implementation of a functional Injury and Illness Prevention Program, and we rely on active participation in our program.

Expressing your safety concerns or suggestions during safety meetings, individually to your supervisor, or in writing on the safety suggestion form is foundational to maintaining an Injury and Illness Prevention Program that is up to date. This will allow you to remain anonymous if you so desire; however, this will make it difficult to provide you special recognition if your suggestion is put into action. Be assured that all safety suggestions will be given serious consideration, and that each will receive a response. The safety suggestion mail box is placed in the sieve room with forms provided.

In turn, the company will provide current safety news and activities, safety reading materials, signs, posters, and a bulletin board with easy access to them all.

Also, regular safety meetings will be held providing an appropriate forum for all employees to have an opportunity to receive safety training and voice personal opinions regarding safety. Information and safety topics will be provided for tailgate meetings to be held on a weekly basis or no less than once every ten days.

It is each and everyone's responsibility to include any near-miss incidents so this information can be shared with the company as a preventative measure in accident prevention.

Tom Eaton

President

August 26, 2014



## SAFETY COMMUNICATION MECHANISMS

- ☐ Employee orientations, conducted at the time of hire, will stress the importance of safety at Eaton Drilling Co., Inc. / Eaton Fabrication / Eaton Pumps and will encourage all workers to report all hazards to a supervisor or to Kevin Bottimore (Safety Coordinator) without fear of reprisal.
- ☐ Regular safety meetings will be held to keep employees informed of safety and health matters. Time will be provided to allow employees to state their safety concerns without fear of reprisal.
- ☐ A bulletin board will be maintained to inform employees on matters of worker safety and health and will include a poster encouraging employees to report unsafe conditions or occupational health concerns.
- ☐ An anonymous suggestion box will be provided to facilitate employee safety and health communication. All suggestions will be reviewed by Kevin Bottimore (Safety Coordinator) who will determine if any corrective action is necessary.
- ☐ Some safety and health information may be disseminated through corporate memoranda or pay envelope inserts.

## INJURY REPORTING

In case of an injury or accident, you must report the injury to management safety director the same day. Forms are kept in the office and must be filled out immediately. Obviously, in the case of an emergency, this requirement is postponed for 24hrs.

It is important to note all injuries eligible to be reported must be work related. Injuries incurred at home or elsewhere should be reported to your health insurance carrier. If it is brought to the attention of management that an employee has filed a false claim with our compensation carrier, a report will be filed with our compensation carrier and an investigation made. Workers' compensation fraud is a crime and can be prosecuted. Vehicle or pedestrians, a drug screen test is mandatory.

INCIDENT REPORT.

12/6/2016 Revision date



## Incident Report

Incident Type:

☐

Near  
Miss

☐

Non  
Injury

☐

Minor  
Injury

☐

Time  
Loss

Description of Incident:

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Causes or Other Contributing Factors:

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What Could Have Been Done to Prevent the Incident:

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Did You Report the Incident to Your Supervisor ☐ YES ☐ NO

Employee:

\_\_\_\_\_

Print

\_\_\_\_\_

Sign

\_\_\_\_\_

Date

\_\_\_\_\_

Dept.

**ACTION (FOR OFFICE USE ONLY)**

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---

---

\_\_\_\_\_

Sign

\_\_\_\_\_

Title

## EMPLOYEE SAFETY INFORMATION FORM

This form can be used by employees who wish to provide a safety suggestion, or report an unsafe workplace condition or practice.

**Description of Unsafe Condition or Practice:**

**Causes or Other Contributing Factors:**

**Employee's Suggestion for Improving Safety:**

Has this matter been reported to the area supervisor? ☐ Yes ☐ No

Employee Name (Optional): \_\_\_\_\_

\_\_\_\_\_  
Department

\_\_\_\_\_  
Date

Action (For Office use)				
<input type="checkbox"/>	Accepted Date		Proposed Completion Date	
<input type="checkbox"/>	Denied Date		Actual Completion Date	
Reason(s)				

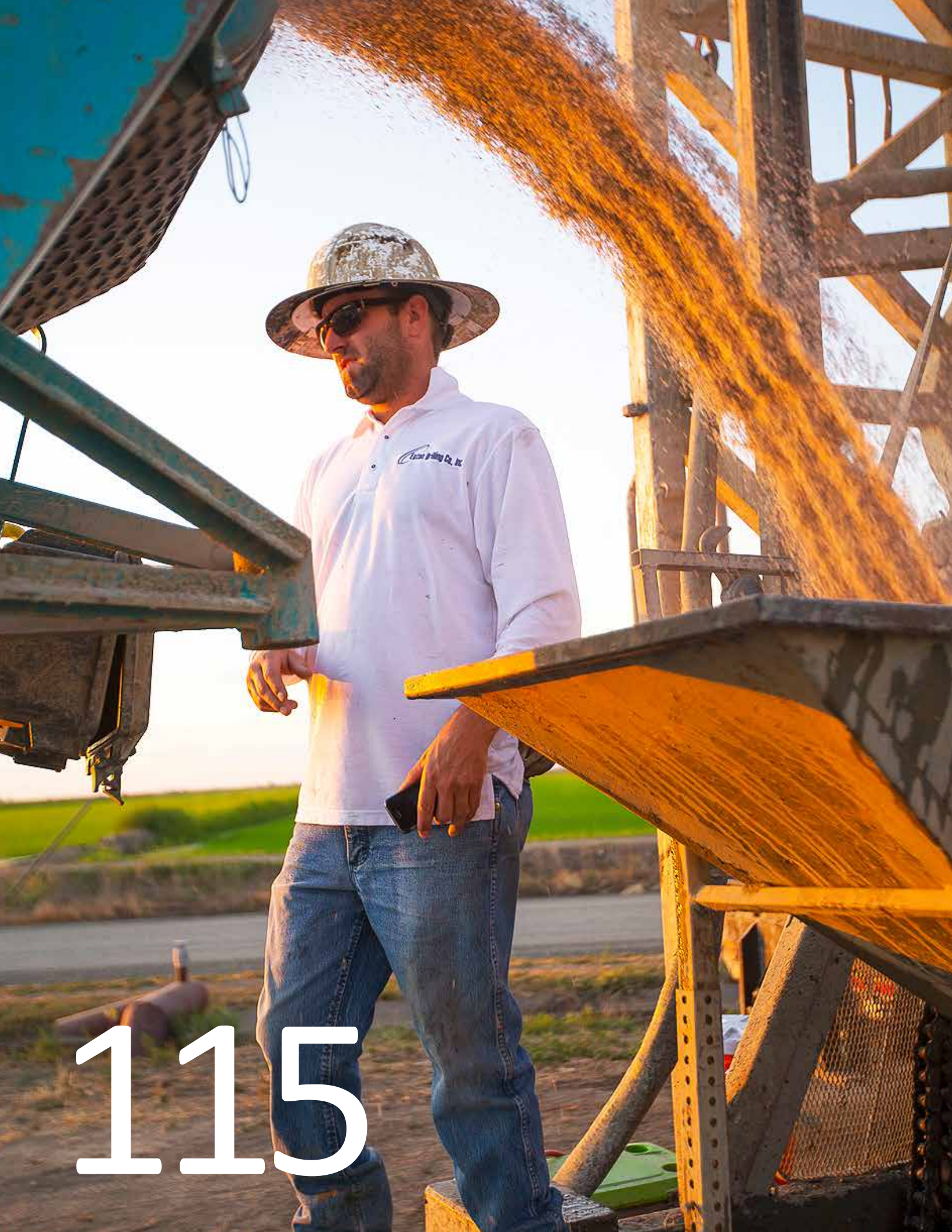
Signature

Title

\_\_\_\_\_  
Employees are advised that the use of this form or other reports of unsafe conditions or practices are protected by law. It would be illegal for the employer to take any action against an employee in reprisal for exercising rights to participate in communications involving safety.

The employer will investigate any report as required by the Injury and Illness Protection Program Standard (8 CCR §3202) and advise the employee who provided the information or the workers in the area of the employer's response.





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REPORT OF SAFETY MEETING																																											
<b>Eaton Companies</b>																																											
Quarterly Safety Meeting	Date																																										
<div style="background-color: #e0e0e0; padding: 2px; border: 1px solid black;">Incident/Injury or Illness Reviewed</div> <div style="height: 150px; border: 1px solid black;"></div> <div style="background-color: #e0e0e0; padding: 2px; border: 1px solid black;">Subjects Discussed</div> <div style="height: 150px; border: 1px solid black;"></div> <div style="background-color: #e0e0e0; padding: 2px; border: 1px solid black;">Suggestions</div> <div style="height: 150px; border: 1px solid black;"></div> <div style="background-color: #e0e0e0; padding: 2px; border: 1px solid black;">Action Taken/Supervisor's Comments</div> <div style="height: 150px; border: 1px solid black;"></div>	<div style="background-color: #e0e0e0; padding: 2px; border: 1px solid black;">Employee's Name/Signature</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 10%; text-align: center;">1</td><td></td></tr> <tr><td style="text-align: center;">2</td><td></td></tr> <tr><td style="text-align: center;">3</td><td></td></tr> <tr><td style="text-align: center;">4</td><td></td></tr> <tr><td style="text-align: center;">5</td><td></td></tr> <tr><td style="text-align: center;">6</td><td></td></tr> <tr><td style="text-align: center;">7</td><td></td></tr> <tr><td style="text-align: center;">8</td><td></td></tr> <tr><td style="text-align: center;">9</td><td></td></tr> <tr><td style="text-align: center;">10</td><td></td></tr> <tr><td style="text-align: center;">11</td><td></td></tr> <tr><td style="text-align: center;">12</td><td></td></tr> <tr><td style="text-align: center;">13</td><td></td></tr> <tr><td style="text-align: center;">14</td><td></td></tr> <tr><td style="text-align: center;">15</td><td></td></tr> <tr><td style="text-align: center;">16</td><td></td></tr> <tr><td style="text-align: center;">17</td><td></td></tr> <tr><td style="text-align: center;">18</td><td></td></tr> <tr><td style="text-align: center;">19</td><td></td></tr> <tr><td style="text-align: center;">20</td><td></td></tr> <tr><td style="text-align: center;">21</td><td></td></tr> </table>	1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21	
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Safety Coordinator																																											



# Injury and Illness Prevention Program

## INSPECTIONS & CORRECTIONS OF HAZARDS



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## INSPECTION & CORRECTIONS OF HAZARDS

### FACILITY INSPECTIONS

- Quarterly inspections are to be conducted prior to each meeting.
- Each operating drilling rig supervisor / area supervisor
- Results of inspections will be reviewed by Kevin Bottimore (Safety Coordinator) and addressed according to priority.
- Problems identified by each inspection will be corrected immediately, or by a Rig / Area supervisor.
- Also, quarterly inspection results will be discussed during company safety meetings.
- Employees are encouraged to discuss and bring forward their ideas and thoughts regarding any safety items mentioned or of concern to them.



All company vehicles and individual power machinery will be inspected daily by their operators. Inspection forms are available from Kevin Bottimore (Safety Coordinator) or documenting inspections of all company vehicles and equipment groups operated during each yearly quarter. Equipment inspections are documented on specific forms provided by the company.

## SHOP AREA

HAZARD	SATISFACTORY	NEEDS ATTENTION	TARGET DATE FOR ATTENTION	DATE COMPLETED
GENERAL SHOP AREA CHECK LIST				
Fire extinguisher areas are kept clear at all times.				
Means of egress are kept unblocked, well-lighted and unlocked during work hours.				
Excessive combustibles (paper) are not stored in work areas.				
Electrical machinery in good condition and properly grounded.				
Electric cords and phone cables secured to prevent tipping hazards.				
Aisles and hallways are kept clear at all times.				
Stairways equipped with non-slip tread and handrails.				
Designated employees are trained to respond fire & emergency.				
Hot plates, coffee makers, and portable heaters are properly wired and turned off when not in use.				

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

## CLERICAL/ ADMINISTRATIVE

HAZARD	SATISFACTORY	NEEDS ATTENTION	TARGET DATE FOR ATTENTION	DATE COMPLETED
CLERICAL/ADMINISTRATIVE CHECK LIST				
For video display terminal workstations, background and screen lighting are compatible and adjustable.				
Video display terminal screen positions, chairs, and keyboards are adjustable				
Workplaces are kept free of debris, floor storage and electrical cords.				
Employee training on preventing problems associated with VDT use.				
Adequate aisle space is maintained.				
Electric cords and phone cables secured to prevent tipping hazards.				
File cabinet drawers are anchored to prevent tipping and are opened one at a time and closed when work is finished.				
Heaviest material stored in bottom drawers of file cabinets.				
Designated employees are trained to respond to fire & emergencies				
Hot plates, coffee makers, and portable heaters are properly wired and turned off when not in use.				
Proper lifting techniques are used by employees to avoid overexertion and strain when lifting and carrying loads.				

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 Name

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 Date



## LOGISTICS/ TRUCKING CHECK LIST

HAZARD	SATISFACTORY	NEEDS ATTENTION	TARGET DATE FOR ATTENTION	DATE COMPLETED
<b>LOGISTICS / TRUCKING CHECK LIST</b>				
Fire extinguisher is accessible at all times.				
Defensive driving is practiced by employees and seat belts and shoulder harnesses are worn at all times.				
No alcohol or any intoxicating substance prior to or during work.				
Vehicles are parked in legal spaces and do not obstruct traffic.				
Vehicles are locked when unattended to avoid criminal misconduct.				
The speed limit that is safe for conditions is not exceeded.				
Employees park their vehicles in well-lit areas and/or near entrances to avoid criminal misconduct.				

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date

# Injury and Illness Prevention Program

## RECORDKEEPING



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## RECORDKEEPING

### GUIDELINES FOR RECORD KEEPING

RECORDS WILL BE KEPT OF ALL SAFETY PROGRAM ACTIVITIES, AND MAY INCLUDE:

- Initial orientation training
- Job descriptions and/or job analysis
- Safety Meetings
- Training schedule for each employee
- Injury or illness investigation
- Employee and employer claim forms
- Cal/OSHA required records [Form 300, medical exposure records, injury reports (Form 301 which is in the same as SCIF Form 3067)]
- Inspections performed, in-house, and any performed by outside agencies
- Disciplinary actions
- Vehicle inspection forms
- DMV driving records
- CPR/First Aid training

At least one copy of all the above records will be maintained and filed by Catherine Brooks (Administration) at the main office, 20 West Kentucky Ave. In conclusion, Eaton Drilling Company Inc. values the safety of all company employees, and it is our intent to maintain the high standards of safety that will insure the good health and well being of all those we employ.

THANK YOU FOR YOUR COOPERATION!

*Kevin Bottimore – Manager/Safety*

*5-18-15*

## INJURY AND ILLNESS PREVENTION PROGRAM MAINTENANCE

CRITERIA INDICATING EFFECTIVENESS	SATISFACTORY	NEEDS ATTENTION	TARGET DATE FOR ATTENTION	DATE COMPLETED
<b>CHECK LIST</b>				
Do you have a written, effective Injury and Illness Prevention Program?				
Do you have a person who is responsible and has authority for overall activities of the Injury and Illness Prevention Program?				
Do you have a system for identifying and evaluating your workplace hazards?				
Do you systematically correct these hazards in a timely manner?				
Do you provide training in both general and specific safe work practices?				
Do you encourage employee participation in health and safety matters?				
Do you maintain an ongoing safety training program?				
Do you have a system in place that ensures employees will be recognized for safe and healthful work practices?				
On construction sites, is a Code of Safe Practices posted?				
Are "toolbox" Safety meetings conducted every 10 days, or sooner if appropriate?				

\_\_\_\_\_  
Name

\_\_\_\_\_  
Date





# Injury and Illness Prevention Program

## CONFINED SPACES



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## CONFINED SPACES

Entering a confined work space can be deadly if you do not take appropriate precautions. A knowledge of confined work spaces is necessary to determine that the conditions do not exist to allow safe access to the workspace. Situations do exist where employees are necessitated to work in confined spaces. Even if you don't ever work in a confined work space, you should understand the hazards your coworkers face and know how to help them if they run into trouble.

Before entering into any pump house, lift station, tank, pit, vault, or other enclosed area you must determine if that area is a confined space. OSHA defines a confined space as an enclosed area that can be described by all three of the following characteristics:

- It is large enough for someone to go into and perform work
- It has limited openings to get into and out of
- It is not designed for a person to stay in continuously, for long periods of time.

If the area you plan to enter meets the description of a confined space, the next step is determining whether or not the area is a permit required confined space.

### **OSHA DEFINES A PERMIT-REQUIRED CONFINED SPACE THAT:**

- Is known to have a hazardous atmosphere
- Contains materials that could make someone who enters nauseous, dizzy, or unconscious
- Is designed inside, in a way that could trap or suffocate someone who enters.

Employees must familiarize themselves with OSHA's definition of "confined spaces," as follows:

§1926.21 Safety training and education from OSHA's Construction Safety and Health Regulations(b)(6)(i) All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.

(ii) For purposes of paragraph (b)(6)(i) of this section, "confined or enclosed space" means any space having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels pipelines, and open top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels.

At any point in time on a site where an employee of Eaton is working in a confined space, there must be a least three people involved: entrant(s), attendant(s), a supervisor, and/ or one additional employ-

ee who shall be within sight or call of the attendant. The entrants are workers who enter the confined space. Entrants are responsible for knowing space hazards prior to entry, using proper safety procedures while working in the confined space, performing only the assigned job, communicating with attendants while within the confined space, and evacuating immediately if hazardous conditions arise. The attendants are workers who do not enter the confined space. Attendants are prepared to do a non-entry rescue or to call for a rescue team if one is needed; they are focused on possible behavioral changes of entrants in the confined space. They continue to monitor the confined space and entrants until the entrants exit the confined space or until they are relieved by another attendant. If hazardous conditions arise, attendants order evacuation of the job site.

During any work on a job site involving confined spaces, atmospheric tests must be taken in the confined space. The results of the test must be written and maintained at the work site and available for employees to review. Eaton Drilling Co,inc will make its employees are aware of hazards involved in specific confined spaces and safety tips and precautions to minimize the chance of any accident occurring.

### **CONFINED SPACE ENTRY PERMIT (CESP)**

Before you enter a permit-required confined space, you must get a Confined Space Entry Permit (CSEP) from you supervisor or designated site supervisor. The Confined Space Entry Permit is a form that asks for the following information about the site:

- Identification of the confined space
- Purpose of entry
- Date and expected duration of entry
- Known hazards
- Necessary Personal Protective Equipment (PPE) safety equipment
- Descriptions of the atmosphere testing done and the results obtained
- Personnel involved

The Confined Space Entry Permit must be filled out completely by an authorized person before anyone enters the confined space. See sample form in the Job Site Assessment Chapter. Standard procedures for per-entry into Confined Space environments include:

- Caution tape
- Saw horse, or other appropriate barriers. A means of keeping unauthorized persons from entering the work area.
- Someone stationed at the entrance to be sure an unauthorized person doesn't enter by mistake.
- Lock out tag out all motors, switches and other mechanical parts in the confined space, including electrical, pneumatic, mechanical and hydraulic machinery
- Lock out any machine that has more than one power source by putting the lock on the breaker closest to that machine.
- Cap, block or disconnect all lines coming into the confined space that might be dangerous if broken, such and chemical and electric lines

### **TEST ATMOSPHERE:**

- Test a confined space for flammability, toxicity and oxygen content
- Immediately after opening it
- After purging and entering

## TEST THESE LEVELS BECAUSE SOME GASES ARE LIGHTER OR HEAVIER THAN OTHERS:

- Low - 1 foot above the lowest work area or 1 foot above the presence of water
- Middle - the center and sides of the space
- Top - 1 foot below the top of the space.

## CONFINED SPACE TEST EQUIPMENT

- Always test the air from the outside the confined space before you go in.
- Use a combustible gas indicator (CGI), BACARACH, PhD2, or similar instrument to test the oxygen levels
- Never enter the area if the oxygen content is less than 19.5% or more than 23.5%, or if a flammable or combustible gas registers over 10% of its lowest explosive limit.
- Any amount of combustible gas is considered dangerous. If a combustible gas is present, ventilate the area immediately and completely.

## REMOVE CONTENTS

If testing shows that chemical or other materials may still be in the confined space from the previous storage or use, flush or rinse the space without entering. That will neutralize any harmful contents the area may have held. After rinsing, retest the confined space before entering.

Never purge gases into a confined space where flames or a heater might ignite them without testing the atmosphere first.

Continuously ventilate any confined space that contains dangerous fumes or chemicals because the air becomes hazardous as soon as ventilation stops. Use a Combustible Gas Indicator to make sure that the air intake drawing fresh air only.

## WEAR PROPER GEAR PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Always wear an extractor safety harness (a climbing harness is acceptable) and a safety line attached to a tripod recovery system.
- SEHS is available to help you and your coworkers determine which respirator, if any is the right one to use in a confined space.
- Plug all electrical tools into a ground fault interrupter.
- Wear a dust mask when removing rust or scale.
- Never eat, drink, or smoke in a confined space.

## STAND-BY

Keep at least one person stationed outside the entrance of the confined space. This person must be in constant contact with coworkers in the space and be ready to remove a coworker from the space in an emergency.



## TRAINING

If you work on sites where you are required to enter confined spaces, you must be trained once a year on entry and testing procedures. Training should also include information on equipment usage and instrument care. If you have not been trained let your supervisor know.

## INSTRUMENT CARE

- Follow all manufacturer guidelines for oxygen and combustion sensor replacement
- Record meter calibrations before each use and at least semi-annually.
- Test and record battery charge before use and at least monthly
- Adjust zero and adjust meters in the same temperature as the air that's being tested. Allow 15 minutes for the meter to adapt to the operating temperature.

ACTION LEVEL TABLE			
Hazard	Monitoring Equipment	Action Level	Protective Measures
Organic Vapors	photoionization detector (PID)	>0	Evacuate area and reassess.
Oxygen	O2/ Explosive Meter	19.5-23.5%	Continue work
		>23.5%	Evacuate area
Explosive Vapors	O2/ Explosive Meter	<10% LEL	Continue work
		>10% LEL	Evacuate area



CONFINED SPACE ENTRY PERMIT					
Site Location			Job Number		
Purpose of Entry					
Supervisors	Phone Numbers		Type of Crew (Welding, Pump Testing, Well Rehabilitation)		
Permit Duration					
Communication Procedures (Including Equipment)					
Rescue Procedures					
Requirements Completed N/A Item Does Not Apply	Date	Time	Requirements Completed N/A Item Does Not Apply	Date	Time
Lockout/De-energized/Tag out			Supplied Air Repirator(N/A if alternate entry)		
Line(s) Broken-Capped-Blank			Respirator(s) (Air Purifying)		
Purge-flush and Vent			Protective Clothing		
Secure Area (Post and Flag)			Full Body Harness w/"D" ring		
Ventilation			Emergency Escape Retrieval Equipment		
Lighting (Explosive Proof)			Lifelines		
Hot Work Permit			Standby Safety Personnel (N/A if alternate entry)		
Fire Extinguishers			Resuscitator-Inhalator (N/A if alternate entry)		
Add other specific information, if needed or attach additional instructions or requirements. See the following examples					
Lines to be bled/blanked:					
Ventilation Equipment:					
Personal Protective Equipment (PPE):					
Respirator(s):					
Emergency retrieval equipment:					

CONFINED SPACE ENTRY PERMIT							
<b>Air Monitoring</b>							
Substance Monitoring		Monitoring Results					
Time monitored (put time)							
Percent Oxygen							
LELE/LFL							
Toxic 1:	___ PEL	___ STEL					
Toxic 2:	___ PEL	___ STEL					
Toxic 3:	___ PEL	___ STEL					
Toxic 4:	___ PEL	___ STEL					
Remarks:							
Air Tester Name	ID#	Instrument Used (ex. Oxygen Meter-Combustible Gas Indicator)		Model# or Type		Serial #	
<b>Attendants and Entrants</b>							
Attendant (s)	ID#	Confined Space Entrants (s)				ID#	
Remarks							
Supervisors Authorization - All Conditions Satisfied							
Supervisors Phone Number							
Emergency Contact Phone Numbers							
Ambulance	Fire	Hospital Emergency		Other			

# Injury and Illness Prevention Program

LOCK OUT/ TAG OUT



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When it's time for maintenance, repairs, or machine set-up, simply unplugging the machine being worked on is not enough. Many serious accidents happen when someone thought the machine or electricity was safely "off." Following Lockout/Tagout procedures will help protect you and your fellow workers. This safety practice provides step-by-step procedures to follow to ensure that machines and electricity remain temporarily "off." Lockout/Tagout procedures are required by OSHA and must be followed by all Eaton Drilling Co, Inc employees. Listed below are steps to follow when completing Lockout/Tag-out procedures.

## 7-STEPS FOR LOCKOUT/TAG-OUT

- **PLAN AHEAD**

Prepare for the shutdown by determining the hazard and how to control it. Think through the entire process. Identify all parts of the system to be shut down. Decide which switches, equipment, and people will be involved.

- **COMMUNICATE**

Notify affected employees that a lockout/tag-out procedure is taking place. Inform them of the equipment involved and when the equipment will be shut down and locked out.

- **IDENTIFY ALL POWER SOURCES**

Power sources would include electrical circuits, hydraulic and pneumatic systems, spring energy, and gravity systems near or far from the job site.

- **NEUTRALIZE APPROPRIATE POWER SOURCES**

If the equipment is operating, shut it down. Control any stored energy by grounding circuits and parts. Disconnect electricity. Block movable parts. Release or block spring energy. Drain or bleed hydraulic and pneumatic lines. Lower suspended parts to rest positions.

- **LOCKOUT ALL POWER SOURCES**

Lockout the energy source(s) with assigned individual locks.

- **TAG-OUT POWER SOURCES AND MACHINES**

Tags should explain the reason for the lockout, your name, the date and time of tagging.

- **CHECK THE LOCKOUT**

Double check the above steps. Make sure no personnel are exposed. Check the lockout by attempting to restart the equipment. Push start buttons, test circuits and operate valves. Return operating controls to neutral or "off" position after verifying the lockout. The machine or equipment is now locked out and ready to be serviced.

## RESTORING EQUIPMENT TO SERVICE

When the servicing or maintenance is complete, the following steps should be followed when returning the machine or equipment to normal operating condition.

- Check the machine or equipment and the immediate area and ensure that nonessential items have been removed. Make sure the machine or equipment's components are operationally intact.
- Check the work area to ensure all employees are safely positioned or removed from the area.
- Verify the controls are in the neutral or "off" position.
- Remove the lockout devices and restore power to the machine or equipment.

## REMEMBER!

**\*\*Only the person who applied the lockout or tag-out device may remove it. Even if it has been De-energized, always assume any part not locked out or tagged is still live. The removal of some forms of blocking may require the machine to be re-energized before safe removal.\*\***





# Injury and Illness Prevention Program

## ARC FLASH PROTECTION PLAN

REVISION: 3

### ARC FLASH PROTECTION PLAN

#### PURPOSE

- The purpose of this program is to establish the minimum protection requirements for Eaton Drilling Co, Inc affiliated entities employees and any other personnel who may be exposed to the release of hazardous energy when working near energized equipment. This program is to be used as a supplement to Eaton Drilling Co, Inc and affiliated entities Electrical Safety Program located in the Injury and Illness Prevention Plan (IIPP) document. This section covers Eaton Drilling Co, Inc affiliated entities policy related to all work near energized equipment and the Personal Protective Equipment (PPE) requirements for such work. The intent of this policy is to provide Eaton Drilling Co, Inc affiliated entities employees with an understanding of their responsibilities and simple, clear, easily implemented procedures thus enabling employees to protect themselves and others from the unexpected release of hazardous energy. Only employees qualified in this program may conduct adjustment, repair or replacement of electrical components or equipment.

#### SCOPE

- Eaton Drilling Co, Inc and affiliated entities Arc Flash Protection Plan shall be used by all company operations, both in business units and project operations.

#### REGULATORY REFERENCES

- This Arc Flash Protection Plan is primarily intended to satisfy the following requirements:
  - 3.1.1. 29 CFR 1910.331 to 1910.339
  - 3.1.2. NFPA 70E, Electrical Safety Requirements for Employee Workplaces.

## POLICY

- **Stop the Work** - All employees are authorized to stop the work and immediately inform their supervisor if they believe an operation is unsafe or presents hazards that have not been identified in the daily Job Site Hazard Assessment process.
- **Employee Training** - All employees shall receive Arc Flash Protection training at the awareness level at a minimum. All authorized employees shall receive Arc Flash Protection training for qualified employees.
- **Disciplinary action** - Any employee that knowingly violates the Arc Flash Protection Plan shall be terminated.
- **Qualified employees** - Only trained, qualified employees shall work on electric equipment, circuits or systems.
- **Un-qualified employees** - Un-qualified employees shall be trained to recognize the potential hazards of electrical systems they may encounter and the minimum approach distances for un-qualified employees.
- **Safe work practices** - shall be employed to prevent electric shock or other injuries resulting for either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized. All work sites shall provide safe access to where work is to be performed.
- **Safe work procedures and High Hazard Electrical Work Permits** - A Safe work procedure and a High Hazard Electrical Work Permit shall be developed and followed to prevent and protect employees from electric shock and electric arc flash due to working in close proximity to energized equipment.
- **General Clearances from Energized Overhead Conductors** - Refer to Table 3 (page 143) for mandatory clearance requirements from energized overhead lines. Clearances pertain to all aerial lifting equipment, crane and hoisting equipment, operation and handling of machinery equipment, structure and scaffolding.
- **Warning Sign for Energized Overhead Lines** - A legible warning sign shall be installed at 12 feet "Unlawful to Operate Within 10 feet of High Voltage lines of 50,000 Volts or Less.

## DEFINITIONS

- **Accessible** - Admitting close approach; not guarded by locked doors, elevation or other effective means.
- **Affected** - An affected employee or affected personnel is any Eaton Drilling Co, Inc affiliated entities or non-Eaton Drilling Co, Inc affiliated entities employee who operate, maintain, service, work near or are present in an area where the release of hazardous energy may occur.

- **Authorized** - An authorized employee or personnel is any qualified Eaton Drilling Co, Inc affiliated entities or non-Eaton Drilling Co, Inc affiliated entities personnel who have been assigned to perform a specific task at a specific location by a supervisor responsible for giving work assignments.
- **Barricade** - A physical obstruction such as tape, cones, or A-frame type wood or metal structures intended to provide a warning about and to limit access to a hazardous area.
- **De-energized** - Free from any electrical connection to a source of potential difference and from electrical charge; not having a potential different from that of the earth.
- **Energized** - Electrically connected to or having a source of voltage.
- **Flame Resistant (FR)** - The property of a material whereby combustion is prevented, terminated, or inhibited following the application of a flaming or non-flaming source of ignition, with or without subsequent removal of the ignition source.
- **Flash Hazard** - a dangerous condition associated with the release of energy caused by an electric arc.
- **Flash Hazard Analysis** - A study investigating a workers potential exposure to arc-flash energy.
- **Flash Protection Boundary** - an approach limit at a distance from exposed live parts from which a person could receive a second-degree burn if an electrical arc flash were to occur.
- **Limited Approach Boundary** - An approach limit at a distance from an exposed live part from which a shock hazard exists.
- **Prohibited Approach Boundary** - An approach limit at a distance from an exposed live part from which work is considered the same as making contact with the live part.
- **Qualified Worker** - One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved.
- **Restricted Approach Boundary** - An approach limit at a distance from an exposed live part from which there is an increased risk of shock, due to electrical arc combined with an inadvertent movement, for personnel working in close proximity to the live part.
- **Unqualified** - Employees who have not been trained or authorized to conduct electrical work.
- **Working Near Live Parts** - Any activity inside a Limited Approach Boundary.
- **Working on Live Parts** - Coming into contact with any part of the body, with tools, probes, or with test equipment, regardless of the personal protective equipment.

## RESPONSIBILITY

### Management

- Ensure that the Eaton Drilling Co, Inc and affiliated entities IIPP includes an Arc Flash Protection Plan and that the program is reviewed annually and revised as necessary.
- Provide Arc Flash Protection training for all qualified employees.
- Ensure that Arc Flash Protection training at the awareness level is given to all Eaton Drilling Co, Inc affiliated entities employees.
- Ensure that safe work practices and procedures are written, followed and revised as necessary.
- Provide leadership and support for employees in communicating their responsibility to stop the work when unsafe situations are discovered or suspected due to hazardous energy.
- Provide resources to address and correct any electrical hazard issues as they arise.
- Maintain all documentation required by this program.

### Supervision

- Understand and enforce this Arc Flash Protection Program
- Ensure a documented job briefing is held before starting each job and will include all employees involved. The briefing will cover hazards associated with the job, work procedures involved, special precautions, energy source controls and PPE requirements
- Ensure that only qualified employees work on electrical equipment, circuits or systems.
- Implement **LockOut/TagOut (LOTO)** and other safe work procedures when appropriate.
- Ensure that the High Hazard Electrical Work Permit has been completed and is posted at the jobsite when appropriate.
- Immediately inform management of any LOTO violations or any other unsafe electrical work practice or situation.
- Ensure that all Arc Flash Protection training is recorded in the Eaton Drilling Co, Inc affiliated entities Employee Information Base.
- Conduct inspections to identify deficiencies.
- Guard and correct all deficiencies immediately.

## Employees

### Understand and follow the requirements of this Arc Flash Protection Plan.

- Report all electrical deficiencies immediately.
- Do not work on any electrical equipment unless properly trained and authorized.
- Do not work on any energized equipment.
- Ensure that the High Hazard Electrical Work Permit has been completed and is posted at the jobsite.
- **STOP THE WORK** and immediately inform your supervisor if you believe an operation is unsafe or presents hazards that have not been identified in the daily Job Site Hazard Assessment (JSHA).
- Follow all the safety rules regarding the Arc Flash Protection Plan
- Participate in daily Job Site Hazard Assessment and hazardous energy recognition activities. Make every effort to identify hazardous energy paths during Job Site Hazard Assessment's
- Wear all appropriate PPE - Personal Protective Equipment.

## PROCEDURE

Inform your supervisor of concerns regarding electrical hazards in the workplace. Immediately inform management of any LOTO violations or any other unsafe electrical work practice or situation. Ensure that all Arc Flash Protection training is recorded in the Eaton Drilling Co, Inc affiliated entities Employee Information Base Conduct inspections to identify deficiencies guard and correct all deficiencies immediately.

- Identify Electrical Hazard- Before commencing work, the supervisor that is responsible for assigning the work must determine if the task will require employees to work on or near energized electrical systems. This will include any system that has an operating voltage greater than 50 volts ac and is energized or has the potential to become energized. The Eaton Drilling Co, Inc affiliated entities supervisor will advise the client of any unique hazard inherent in the planned task, any unanticipated hazard identified through the course of the work and steps to take to mitigate those hazards.
- Justification for work- Live parts to which an employee might be exposed shall be de-energized or put into an electrically safe work condition before an employee works on or near them, unless the employer can demonstrate that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations. If it is deemed necessary to have an employee work on or near energized parts, a written justification must be attached to the High Hazard Electrical Work Permit and must be signed by an Eaton Drilling Co, Inc affiliated entities manager.



- **High Hazard Electrical Work Permit-** If live parts cannot be placed in an electrically safe work condition, work to be performed shall be considered energized electrical work and shall be performed by written permit only (see attachment 001-sample, actual permit is available from Eaton Drilling Co, Inc affiliated entities District Office)
- **Shock Hazard Analysis-** A qualified supervisor or an authorized qualified electrician shall perform a Shock Hazard Analysis prior to any work on or near live parts. The analysis shall determine the voltage to which personnel will be exposed, boundary requirements, and the personal protective equipment necessary in order to minimize the possibility of electric shock to personnel. (see attachment 001-sample, actual permit is available from Eaton Drilling Co, Inc affiliated entities District Office).
- **Flash Hazard Analysis-** A qualified supervisor or an authorized qualified electrician shall perform a Flash Hazard Analysis prior to the start of any work on or near live parts. This shall be done to protect all affected personnel from the possibility of arc flash. The analysis shall determine the Flash Protection Boundary and the PPE required for work within the boundary. (see attachment 001-sample, actual permit is available from Eaton Drilling Co, Inc affiliated entities District Office)
- **Personal Protective Equipment-** All personnel working inside of the boundary limits shall wear the same level of PPE as the person performing the work.
- **Approach by Unqualified Personnel-** Unqualified persons shall not be permitted to enter spaces that are required to be accessible to qualified employees only, unless the electric conductors and equipment involved are placed in an electrically safe work condition .
- **Barricades-** Once the approach boundaries have been established a barricade shall be placed completely closing the affected area to all unqualified personnel. Warning signs shall be placed on the barricade with the High Hazard Electrical Work Permit and the Job Site Hazard Assessment warning of the work hazards identified within the barricaded area. All non-qualified personnel must be advised to stay outside of the barricaded area.
- **Safety Watch-** A safety watch currently trained in First Aid and CPR shall be standing by at the jobsite in the event of an emergency . The individual must have a basic understanding of the work to be performed, the hazards involved and measures to safely assist the workers in the event of an emergency. If the safety watch is positioned inside the boundary limits, he/ she shall use the same level of PPE as the employees performing the work .

## SAFE WORK PRACTICES

Only qualified electrical workers shall work beyond the boundaries as described below and on energized conductors or equipment connected to energized systems.

- The Limited Approach Boundary is the distance from an exposed live part within which a shock hazard exists. (See Table 1&2 on page 145 and 146)
- Prior to any work being done within the Limited Approach Boundary a hazard risk analysis shall be performed. The analysis shall contain event severity, frequency, probability and avoidance to determine the level of safe practices employed.
- Safe Work Practices for Working within the **Limited Approach Boundary**.
- All electrical parts will be considered energized until proven otherwise.
- All Qualified Persons who will be working within the limited approach boundary will be trained as described in the employees safety training policy.
- If work is to be performed beyond the restricted approach boundary or the prohibited approach boundary then the additional requirements as described in Figure 1.1 & 1.2 of this section.
- The **Restricted Approach Boundary** is the closest distance to exposed live parts a qualified person can approach with without proper PPE and tools. Inside this boundary, accidental movement can put a part of the body or conductive tools in contact with live parts or inside the prohibited approach boundary. To cross the restricted approach boundary, the qualified person must:
  1. Have an energized work permit that is approved by the supervisor or manager responsible for the safety plan.
  2. Use PPE suitable for work ing near exposed lived parts and rated for the voltage and energy level involved.
  3. Be certain that no part of the body enters the prohibited space.
  4. Minimize the risk from unintended movement, by keeping as much of the body as possible out of the restricted space; body parts in the restricted space should be protected.
- The **Prohibited Approach Boundary** is the minimum approach distance to exposed live parts to prevent flashover or arcing. Approaching any closer is comparable to making direct contact with a live part. To cross the prohibited approach boundary, the qualified person must:

1. Have specific training to work on exposed live parts.
  2. Have a permit with proper written work procedures and justifying the need to work that close.
  3. Do a risk analysis.
  4. Have appropriate forms approved by the appropriate supervisor.
  5. Use PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved.
- The **Flash Protection Boundary** is the approach limit at a distance from exposed live parts from which a person could receive a second degree burn if an electrical arc flash were to occur.
  - Use PPE appropriate for working near exposed live parts and rated for the voltage and energy level involved.
  - For systems of 600 volts or less, the flash protection boundary is 4 feet, based on an available bolted fault current of 50 kA and a clearing time of 6 cycles for the circuit breaker to act, or any combination of fault currents and clearing times not exceeding 300 kA cycles.
  - When working on de-energized parts inside the **flash protection boundary** for nearby live exposed parts - If the parts cannot be de-energized, use barriers such as insulated blankets to protect against accidental contact or wear proper PPE.
  - When working on de-energized parts, but still inside the **flash protection boundary** for nearby live exposed parts the qualified person must:
    1. If the parts cannot be de-energized, barriers such as insulated blankets must be used to protect against accidental contact or PPE must be worn.
    2. Employees shall not reach blindly into areas that might contain exposed live parts.
    3. Employees shall not enter spaces containing live parts unless illumination is provided that allows the work to be performed safely.
    4. Conductive articles of jewelry and clothing (such as watchbands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, metal head gear, or metal frame glasses) shall not be worn where they present an electrical contact hazard with exposed live parts.
    5. Conductive materials, tools, and equipment that are in contact with any part of an employee's body shall be handled in a manner that prevents accidental contact with live parts. Such materials and equipment include, but are not limited to long conductive objects such as ducts, pipes, tubes, conductive hose and rope, metal-lined rules and scales, steel tapes, pulling lines, metal scaffold parts, structural members, and chains.

6. When an employee works in a confined space or enclosed spaces (such as a manhole or vault) that contains exposed live parts, the employee shall use protective shields, barriers or insulating materials as necessary to avoid contact with these parts. Doors, hinged panels, and the like shall be secured to prevent them from swinging into employees. Refer to the confined space entry program.

## EQUIPMENT

- All test instruments, safety devices, tools, or equipment shall be provided by Eaton Drilling Co, Inc affiliated entities and designed for the voltage levels to be encountered. These items shall be inspected prior to each use and if found defective will not be used.
- Test instruments , equipment, and their accessories shall meet the requirements of ANSI/ISA-61010-1-Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use Part 1 General Requirements, for rating and design requirements for voltage measurement and test instruments intended for use on electrical systems 1000 Volts and below.
- When test instruments are used for the testing for the absence of voltage on conductors or circuit parts operating at 50 volts or more, the operation of the test instrument shall be verified before and after an absence of voltage test is performed.

## PERSONAL PROTECTIVE EQUIPMENT

- All required safety devices and safeguards will be utilized in the performance of the work.
- All insulating PPE must be inspected before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection.
- Maximum test intervals as per ASTM F 496-97 for rubber insulating personal protective equipment shall be as follows:
  1. Blankets-before first issue/every 12 months thereafter
  2. Gloves-before first issue and every 6 months there after
  3. Sleeves-before first issue and every 12 months there after
  4. Covers and line hose shall be tested if insulating value is suspect
  5. Refer to Table 4 of this document for additional requirements
  6. Any Insulating equipment found or suspected as defective shall be removed for service immediately and permanently tagged as "Out of Service"
  7. All insulating equipment shall be marked indicating the date tested or the date the next test is due.

## LIGHTING

- Employees shall not enter spaces containing electrical hazards unless illumination is provided that enables the employees to perform the work safely. Where lack of illumination or an obstruction precludes observation of the work to be performed employees shall not perform any task within the Limited Approach Boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.

## HIGH VOLTAGE LINES

- No work will take place in proximity of energized high voltage lines unless and until danger from accidental contact with those lines has been effectively guarded against.
- Safe clearances shall be maintained at all times during the operation, erection, or dismantling of any crane, boom type lifting or hoisting equipment (see Table 130.4(C) (a) & (b) in this document).
- Prior to operating any crane, boom-type lifting or hoisting equipment in the proximity of high voltage lines legible, durable warning signs reading “ Unlawful To Operate Equipment Within 10 feet of High Voltage Lines of 50,000 Volts Or Less” shall be placed in view of the operator and 12 feet from the high voltage line. For voltages above 50,000 volts the 10 foot distance shall be revised as per Table 130.4(C) (a) & (b) of this document. The verbiage on the sign and the placement distance from the high voltage line will be adjusted accordingly.

## TRAINING

- Employees are trained to understand the specific hazards associated with electrical energy. Employees shall be trained in safety-related work practices and procedural requirements as necessary to provide protection from the electrical hazards associated with their respective jobs. Employees shall be trained to identify and understand the relationship between electrical hazards and possible injury.
- Employees shall be trained in the skills and techniques to distinguish exposed energized electrical conductors and circuit parts from other parts of electrical equipment, to determine the nominal voltage of exposed energized electrical conductors and circuit parts, the approach distances specified in Table 130.4(C) (a) for Alternating Current (AC) voltages and Table 130.4(C) (b) for Direct Current (DC) voltages (below), and the decision making process necessary to determine the degree and extent of the hazard and the personal protective equipment and job planning necessary to perform the task safely.



NFPA 2012 TABLE 130.4 ( C )(A)

Approach Boundaries to Energized Electrical Conductors or Circuit Parts for Shock Protection for Alternating-Current Systems (All dimensions are distance from energized electrical conductor.)

1	2	3	4	5
			Restricted	
	Limited Approach Boundary		Approach	
			Boundary	Prohibited Approach
			b	Boundary b
		Exposed	Includes	
<b>Nominal System Voltage Range Phase</b>	Exposed Movable	Fixed	Inadvertent	
to-Phase •	Conductor c	Circuit	Movement	
		Part	Adder	
0-50	Not specified	Not specified	Not specified	Not specified
51-300	10 ft. 0 in.	3 ft. 6 in.	Avoid contact	Avoid contact
301-750	10 ft. 0 in.	3 ft. 6 in.	1 n. 0 in	0 ft. 1 in.
75 1-15kV	10 11. 0 in.	5 ft. 0 in.	2 ft. 2 in.	0 ft. 7 in.
15.1 kV to 36kV	10 ft. 0 in.	6 ft. 0 in.	2 ft. 7 in.	0 ft. 10 in.
36.1 kV to 46kV	10 ft. 0 in.	8 n. 0 in.	2 ft. 9 in.	1 ft. 5 in.
46.1kV to 72.5kV	10 ft. 0 in.	8 ft. 0 in	3 ft. 3 in	2 ft. 2 in.
72.6kV to 121kV	10 ft. 8 in	8 ft. 0 in	3 ft. 4 in	2 ft. 9 in.
138kV to 145kV	11 ft. 0 in	10 ft. 0 in	3 ft. 4 in	3 ft. 4 in.
161kV to 169kV	11 ft. 8 in	11 ft. 8 in	4 ft. 3 in	3 ft. 9 in.
230kV to 242kV	13 ft. 0 in	13 n. 0 in	5 n. 8 in	5 ft. 2 in.
345kV to 362kV	15 ft. 4 in	15 ft. 4 in	9 ft. 2 in	8 n. 8 in.
500kV to 550kV	19 ft. 0 in	19 ft. 0 in	11 ft. 10 in	11 ft. 4 in.
765kV to 800kV	23 ft. 9 in	23 ft. 9 in	15 ft. 11 in	15 n. 5 in.
NOTE: FOR ARC FLASH BOUNDARY, SEE 130.5(A).				

- For single-phase systems, select the range that is equal to the system's maximum phase -to-ground voltage multiplied by 1.732.
- See definition in Article 100 and text in 130.4(0)(2) and Annex C for elaboration.
- This term describes a condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported bypoles.

#### NFPA 2012 TABLE 130.4 ( C )(B)

Approach Boundaries" to Energized Electrical Conductors or Circuit Parts for Shock Protection Direct Current Voltage Systems

1	2	3	4	5
Nominal Potential Difference	Limited Approach Boundary		Restricted Approach Boundary	Prohibited Approach Boundary
	Exposed Movable Conductor	Exposed Fixed Circuit Part	Includes Inadvertent Movement Adder	
< 100 V	Not specified	Not specified	Not specified	Not specified
100-300 V	10 ft. 0 in.	3 ft. 6 in.	Avoid contact	Avoid contact
301 V - 1 kV	10 ft. 0 in.	3 ft. 6 in.	1 ft. 0 in.	0 ft. 1 in.
1.1 kV - 5 kV	10 ft. 0 in.	5 ft. 0 in.	1 ft. 5 in.	0 ft. 4 in.
5.1 kV - 15kV	10 ft. 0 in.	5 ft. 0 in.	2 ft. 2 in.	0 ft. 7 in.
15.1 kV - 45kV	10 ft. 0 in.	8 ft. 0 in.	2 ft. 9 in.	1 ft. 5 in.
45.1 kV - 75 kV	10 ft. 0 in.	8 ft. 0 in.	3 ft. 2 in.	2 ft. 1 in.
75.1 kV - 150kV	10 ft. 8 in.	10 ft. 0 in.	4 ft. 0 in.	3 ft. 2 in.
150.1 kV - 250 kV	11 ft. 8 in.	11 ft. 8 in.	5 ft. 3 in.	5 ft. 0 in.
250.1 kV - 500 kV	20 ft. 0 in.	20 ft. 0 in.	11 ft. 6 in.	10 ft. 10 in.
500.1 kV - 800 kV	26 ft. 0 in.	26 ft. 0 in.	16 ft. 5 in.	16 ft. 5 in.

- All dimensions are distance from exposed energized electrical conductors or circuit parts to worker.
- This term describes a condition in which the distance between the conductor and a person is not under the control of the person. This term is normally applied to overhead line conductors supported bypoles.

- Employees shall be trained in safety related work practices that pertain to their respective job assignments
- Training shall be documented and maintained for the duration of the employee's employment.
- Documentation shall be made when the employee demonstrates proficiency, be maintained for the duration of the employee's employment, and contain each employee's name and date of training

## HIGH HAZARD ELECTRICAL WORK PERMIT

NFPA-70E 130.1 (A) (1)

Job No.: \_\_\_\_\_

Work Order No.: \_\_\_\_\_

### ATTENTION!

All lines on this permit must be completed before any work near energized equipment can proceed.

#### I. Equipment Information

Equipment Description: \_\_\_\_\_

Equipment location: \_\_\_\_\_

Electrical Source: \_\_\_\_\_

One Line Drawing No: \_\_\_\_\_

Source Location: \_\_\_\_\_

Source Disconnect: \_\_\_\_\_

#### II. Work Description

Describe work to be performed: \_\_\_\_\_

\_\_\_\_\_

#### III. Justification

Explain why work must be performed in a high hazard condition: \_\_\_\_\_

\_\_\_\_\_

Supervisor Initial

#### IV. Safe Work Practices

Describe the safe work practices that will be employed: ☐ LOTO ☐ Safety Watch ☐ Two Workers

☐ Job Site Hazard Assessment ☐ Notify Affected Workers ☐ Barricade/ Close Affected Work Area

List additional safe work practices: \_\_\_\_\_

Supervisor Initial

#### V. Shock Hazard Analysis

What is the maximum voltage phase to phase that employees can be exposed to? Volts: \_\_\_\_\_

Shock protection boundary: ☐ LIMITED ☐ RESTRICTED ☐ PROHIBITED

Hazard/ Risk Category: : ☐ -1 ☐ 1 ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4

NOTE\* Risk category level 2 and above requires notification of management.

List all required PPE for risk category listed: ☐ FR Clothing ☐ Arc Rated Face Shield ☐ Hazard Hat

☐ Leather Work Shoes ☐ Safety Glasses ☐ Ear Plugs ☐ Flash Suite Jacket ☐ Flash Suite Pants

☐ Flash Suite Hood ☐ FR Hard Hat Liner ☐ Voltage Rated Tools

Supervisor Initial

Flash protection Boundry:      Feet: \_\_\_\_\_      **NOTE:** Within 10' Requires calculation by EE

☐ Leather Work Shoes    ☐ Safety Glasses    ☐ Ear Plugs    ☐ Flash Suite Jacket    ☐ Flash Suite Pants

List method of restriction for **un-qualified** personnel: \_\_\_\_\_

## VII. Authorization for High Hazard Electrical Work

Permit Expires: \_\_\_\_\_ | \_\_\_\_\_  
Date Time

---

**Print Name**

\_\_\_\_\_ Date: \_\_\_\_\_  
Print Name

Customer Representative:

---

**Print Name**

\_\_\_\_\_ Date: \_\_\_\_\_  
Print Name



## DISTANCE LIMIT OF APPROACH

Figure 1.1

### Low-Voltage (Less than or equal to 600 Volts) Limits of Approach

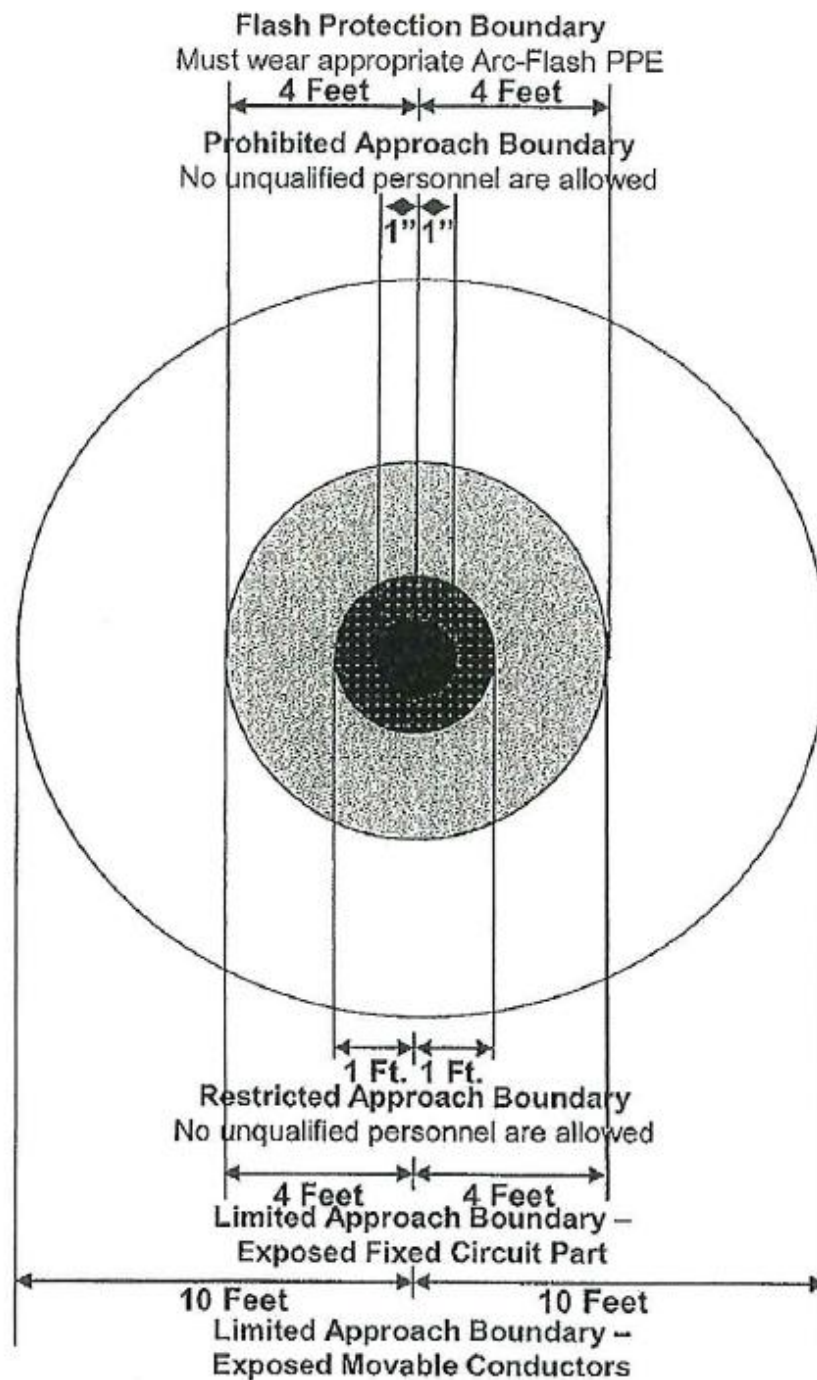
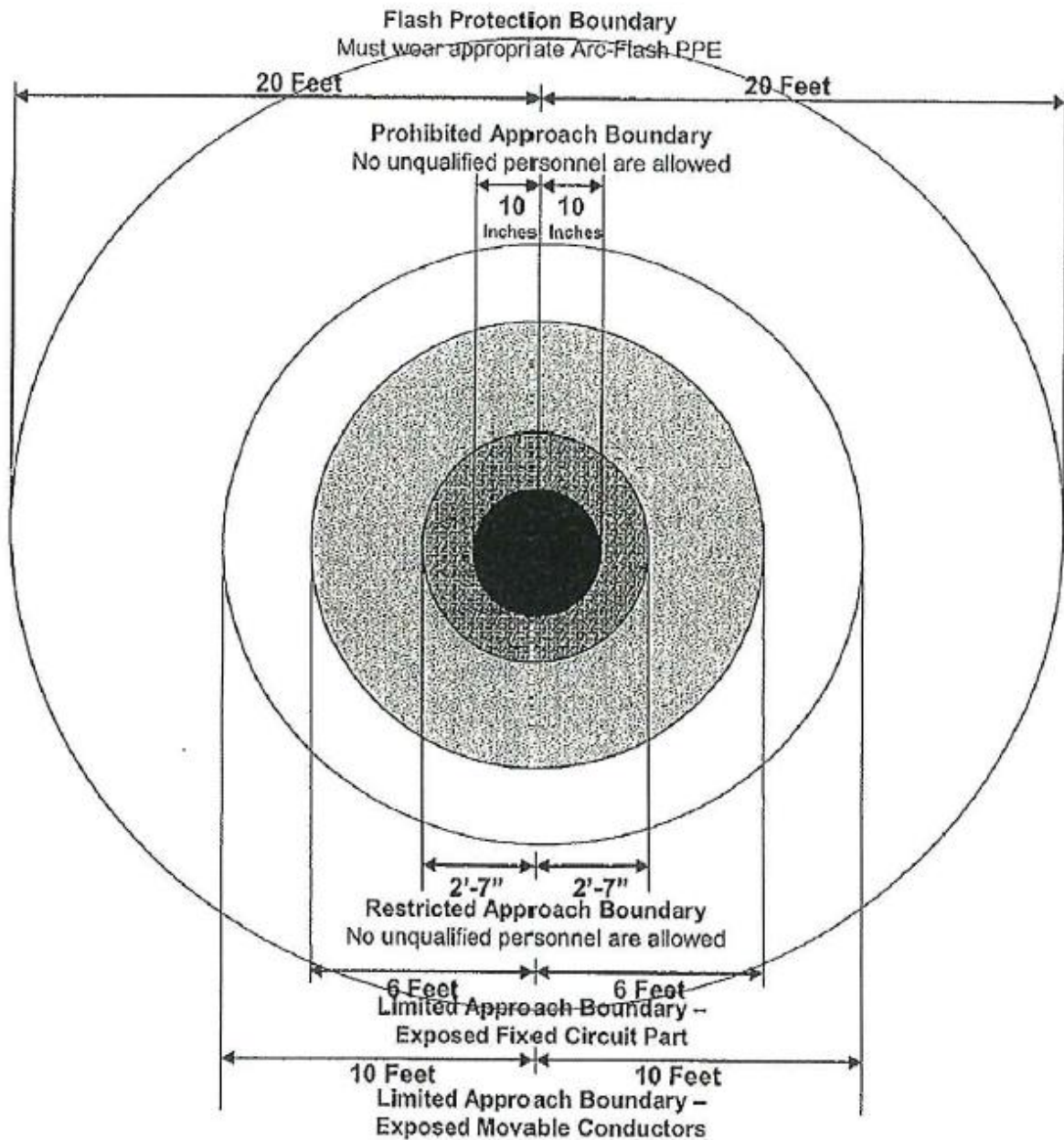


Figure 1.2

### High-Voltage (Greater than 600 Volts) Limits of Approach



## REQUIRED CLEARANCES FROM ENERGIZED OVERHEAD

### HIGH-VOLTAGE CONDUCTORS

Range No.	Nominal Voltage Pase to Phase		Minimum Clearance (feet)
1	>600	=< 50,000	6
2	>50,000	=< 345,000	10
3	>345,000	=< 750,000	16
4	>750,000	=< 1,000,000	20

## TOOLS AND PROTECTIVE EQUIPMENT

### TESTING INTERVALS

ASTM Standard	Period
Standard Specification for in-service care of insulating gloves.	*6 Months
Standard Specification for in-service care of insulating gloves.	*12 Months
Insulating Blankets.	12 Months
Standard Specification for in-service care of Insulating Line Hose and Cover-Ups.	When found damaged or defective

Gloves, sleeves, and blankets that have been electronically tested but not issued for service shall not be placed into service unless they have been electronically tested within the previous twelve months.

**Hazard/Risk Category Classifications and Use of Rubber Insulating Gloves and Insulated and Insulating Hand Tools-  
Alternating Current Equipment \*NFPA 70E 2012, Table 130.7(C)(15)(a)**

Tasks Performed on Energized Equipment	Hazard Risk Category	Rubber Insulating Gloves	Insulated & Insulating Hand Tools
<b>Panelboards or other equipment rated 240 V and below</b>	<b>19 in</b>		
<i>Parameters: Maximum of 25 kA short circuit current available; maximum of 0.03 seconds (2 cycle) fault clearing time; min 18 in. working distance. Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:</i>			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	0	NO	NO
Circuit breaker (CB) or fused switch operation with covers on	0	NO	NO
CB or fused switch operation with covers off	0	NO	NO
Work on energized electrical conductors and circuit parts, including voltage testing	1	YES	YES
Remove/install CBs or fused switches	1	YES	YES
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	1	NO	NO
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	0	NO	NO
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panelboard	1	YES	YES
<b>Panelboards or other equipment rated &gt; 240 V and up to 600 V</b>	<b>30 in</b>		
<i>Parameters: Maximum of 25 kA short circuit current available; maximum of 0.03 sec (2 cycle) fault clearing time; minimum 18 in. working distance. Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:</i>			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	1	NO	NO
Circuit breaker (CB) or fused switch operation with covers on	0	NO	NO
CB or fused switch operation with covers off	1	YES	YES
Work on energized electrical conductors and circuit parts, including voltage testing	2	YES	YES
Remove/install CBs or fused switches	2	YES	YES
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	1	NO	NO
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	0	NO	NO
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the panelboard	2	YES	YES
<b>600 V class motor control centers (MCCs)</b>	<b>53 in</b>		
<i>Parameters: Maximum of 65 kA short circuit current available; maximum of 0.03 sec (2 cycle) fault clearing time; minimum 18 in. working distance. Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:</i>			
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	1	NO	NO
CB or fused switch or starter operation with enclosure doors closed	0	NO	NO
Reading a panel meter while operating a meter switch	0	NO	NO
CB or fused switch or starter operation with enclosure doors open	1	NO	NO
Work on energized electrical conductors and circuit parts, including voltage testing	2	YES	YES
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	0	YES	YES
Work on control circuits with energized electrical conductors and circuit parts >120 V exposed	2	YES	YES
Application of temporary protective grounding equipment, after voltage test	2	YES	YES
Work on energized electrical conductors and circuit parts of utilization equipment fed directly by a branch circuit of the motor control center	2	YES	YES
<b>600 V class motor control centers (MCCs)</b>	<b>165 in</b>		
<i>Parameters: Maximum of 42 kA short circuit current available; maximum of 0.33 sec (20 cycle) fault clearing time; minimum 18 in. working distance. Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:</i>			
Insertion or removal of individual starter "buckets" from MCC	4	YES	NO
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	NO	NO
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	1	NO	NO



600 V class switchgear (with power circuit breakers or fused switches) and 600 V class switchboards		233 in		
Parameters: Maximum of 35 kA short circuit current available; maximum of up to 0.5 sec (30 cycle) fault clearing time; minimum 18 in. working distance Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:				
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	2	NO	NO	
CB or fused switch operation with enclosure doors closed	0	NO	NO	
Reading a panel meter while operating a meter switch	0	NO	NO	
CB or fused switch operation with enclosure doors open	1	NO	NO	
Work on energized electrical conductors and circuit parts, including voltage testing	2	YES	YES	
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	0	YES	YES	
Work on control circuits with energized electrical conductors and circuit parts >120 V, exposed	2	YES	YES	
Insertion or removal (racking) of CBs from cubicles, doors open or closed	4	NO	NO	
Application of temporary protective grounding equipment after voltage test	2	YES	NO	
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	NO	NO	
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	2	NO	NO	
Other 600 V class (277 V through 600 V, nominal) equipment		53 in		
Parameters: Maximum of 65 kA short circuit current available; maximum of 0.03 sec (2 cycle) fault clearing time; minimum 18 in. working distance (except as indicated) Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:				
Lighting or small power transformers (600 V, maximum)				
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	2	NO	NO	
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	1	NO	NO	
Work on energized electrical conductors and circuit parts, including voltage testing	2	YES	YES	
Application of temporary protective grounding equipment, after voltage test	2	YES	NO	
Revenue meters (kW-hour, at primary voltage and current) — insertion or removal	2	YES	NO	
Cable trough or tray cover removal or installation	1	NO	NO	
Miscellaneous equipment cover removal or installation	1	NO	NO	
Work on energized electrical conductors and circuit parts, including voltage testing	2	YES	YES	
Application of temporary protective grounding equipment, after voltage test	2	YES	NO	
Insertion or removal of plug-in devices into or from busways	2	YES	NO	
NEMA E2 (fused contactor) motor starters, 2.3 kV through 7.2 kV		422 in		
Parameters: Maximum of 35 kA short circuit current available; maximum of up to 0.2 sec (12 cycle) fault clearing time; minimum 36 in. working distance. Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:				
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	3	NO	NO	
Contactor operation with enclosure doors closed	0	NO	NO	
Reading a panel meter while operating a meter switch	0	NO	NO	
Contactor operation with enclosure doors open	0	NO	NO	
Work on energized electrical conductors and circuit parts, including voltage testing	4	YES	YES	
Work on control circuits with energized electrical conductors and circuit parts 120V or below, exposed	0	YES	YES	
Work on control circuits with energized electrical conductors and circuit parts >120 V, exposed	3	YES	YES	
Insertion or removal (racking) of starters from cubicles, doors open or closed	4	NO	NO	
Application of temporary protective grounding equipment, after voltage test	3	YES	NO	
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	NO	NO	
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	3	NO	NO	
Insertion or removal (racking) of starters from cubicles of arc-resistant construction, tested in accordance with IEEE C37.20.7, doors closed only	0	NO	NO	



Metal clad switchgear, 1 kV through 38 kV		422 in		
<i>Parameters: Maximum of 35 kA short circuit current available; maximum of up to 0.2 sec (12 cycle) fault clearing time; minimum 36 in. working distance. Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:</i>				
Perform infrared thermography and other non-contact inspections outside the restricted approach boundary	3	NO	NO	
CB operation with enclosure doors closed	2	NO	NO	
Reading a panel meter while operating a meter switch	0	NO	NO	
CB operation with enclosure doors open	4	NO	NO	
Work on energized electrical conductors and circuit parts, including voltage testing	4	YES	YES	
Work on control circuits with energized electrical conductors and circuit parts 120V or below, exposed	2	YES	YES	
Work on control circuits with energized electrical conductors and circuit parts >120 V, exposed	4	YES	YES	
Insertion or removal (racking) of CBs from cubicles, doors open or closed	4	NO	NO	
Application of temporary protective grounding equipment, after voltage test	4	YES	NO	
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	NO	NO	
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	3	NO	NO	
Opening voltage transformer or control power transformer compartments	4	NO	NO	
Arc-resistant switchgear Type 1 or 2 (for clearing times of < 0.5 sec with a prospective fault current not to exceed the arc-resistant rating of the equipment)		422 in		
<i>Parameters: Maximum of 35 kA short circuit current available; maximum of up to 0.2 sec (12 cycle) fault clearing time; minimum 36 in. working distance. Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:</i>				
CB operation with enclosure door closed	0	NO	NO	
Insertion or removal (racking) of CBs from cubicles, doors closed	0	NO	NO	
Insertion or removal of CBs from cubicles with door open	4	NO	NO	
Work on control circuits with energized electrical conductors and circuit parts 120 V or below, exposed	0	NO	NO	
Insertion or removal (racking) of ground and test device with door closed	0	NO	NO	
Insertion or removal (racking) of voltage transformers on or off the bus door closed	0	NO	NO	
Other equipment 1 kV through 38 kV		422 in		
<i>Parameters: Maximum of 35 kA short circuit current available; maximum of up to 0.2 sec (12 cycle) fault clearing time; minimum 36 in. working distance. Potential arc flash boundary with exposed energized conductors or circuit parts using above parameters:</i>				
Metal-enclosed interrupter switchgear, fused or unfused				
Switch operation of arc-resistant-type construction, tested in accordance with IEEE C37.20.7, doors closed only	0	NO	NO	
Switch operation, doors closed	2	NO	NO	
Work on energized electrical conductors and circuit parts, including voltage testing	4	YES	YES	
Removal of bolted covers (to expose bare, energized electrical conductors and circuit parts)	4	NO	NO	
Opening hinged covers (to expose bare, energized electrical conductors and circuit parts)	3	NO	NO	
Outdoor disconnect switch operation (hookstick operated)	3	YES	YES	
Outdoor disconnect switch operation (gang-operated, from grade)	2	YES	YES	
Insulated cable examination, in manhole or other confined space	4	YES	NO	
Insulated cable examination, in open area	2	YES	NO	

**Notes:**

- (1) Rubber Insulating gloves are gloves rated for the maximum line-to-line voltage upon which work will be done.
- (2) Insulated and insulating hand tools are tools rated and tested for the maximum line-to-line voltage upon which work will be done, and are manufactured and tested in Specification for Insulated and Insulating Hand Tools, accordance with ASTM F 1505, Standard
- (3) The use of "N" does not indicate that rubber Insulating gloves and insulated and insulating hand tools are not required in all cases. Rubber insulating gloves and insulated and insulating hand tools may be required by 130.4, 130.8 (C) (7), and 130.8(D).
- (4) For equipment protected by upstream current limiting fuses with arcing fault current in their current limiting range (1/2 cycle fault clearing time or less), the hazard/risk category required may be reduced by one number.
- (5) For power systems up to 600 V the arc flash boundary was determined by using the following information: When 0.03 second trip time was used, that indicated MCC or panelboard equipment protected by a molded-case circuit breaker. Working distance used was 18 in. (455 mm). Arc gap used was 32 mm for switchgear and 25 mm for MCC and protective device type 0 for all. When 0.33 or 0.5 second trip time was used, that indicated a LVPCB (drawout circuit breaker) in switchgear. Working distance was 24 in. (610 mm). Arc gap used was 32 mm and protective device type 0 for all. All numbers were rounded up or down depending on closest multiple of 5.
- (6) For power systems from 1 kV to 38 kV the arc flash boundary was determined by using the following information: No maximum values were given in the 2009 edition of NFPA 70E for short-circuit current or operating time. Two sets of equations were performed: 35 kA AIC and 0.2 second operating time and 26 kA AIC and 0.2 second operating time. 0.2 seconds was used by adding the typical maximum total clearing time of the circuit breaker to an estimated value for relay operation. This coincides with the IEEE 1584 values of 0.18 second operating time and 0.08 tripping time rounded off. A short-circuit current of 35 kA was used as a maximum (HRC-4 @ ~ 40 cal/cm<sup>2</sup>) and 26 kA was used to compare the effects of lowering the short circuit current (HRC-4 @ ~ 30 cal/cm<sup>2</sup>). Working distance used was 36 in. (909 mm), arc gap was 6 in. (152 mm), and protective device type 0 for all.

**Hazard/Risk Category Classifications and Use of Rubber Insulating Gloves and Insulated and Insulating Hand Tools**  
**Direct Current Equipment \*NFPA 70E 2012, Table 130.7(C)(15)(b)**

Tasks Performed on Energized Equipment	Hazard Risk Category (note a)	Rubber Insulating Gloves (note b)	Insulated & Insulating Hand Tools
<b>Storage batteries, direct-current switchboards and other direct-current supply sources</b> <b>&gt;100 V &lt;250 V</b>			
<i>Parameters: Voltage: 250 V. Maximum arc duration and working distance: 2 sec @ 18 in.</i>			
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 1$ kA and $< 4$ kA Potential arc flash boundary using above parameters at 4 kA: <b>36 in.</b>	<b>1</b>	<b>YES</b>	<b>YES</b>
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 4$ kA and $< 7$ kA Potential arc flash boundary using above parameters at 7 kA: <b>48 in.</b>	<b>2</b>	<b>YES</b>	<b>YES</b>
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 7$ kA and $< 15$ kA Potential arc flash boundary using above parameters at 15 kA: <b>72 in.</b>	<b>3</b>	<b>YES</b>	<b>YES</b>
<b>Storage batteries, direct-current switchboards and other direct-current supply sources</b> <b><math>\geq 250</math> V <math>\leq 600</math> V</b>			
<i>Parameters: Voltage: 600 V. Maximum arc duration and working distance: 2 sec @ 18 in.</i>			
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 1$ kA and $< 1.5$ kA Potential arc flash boundary using above parameters at 1.5 kA: <b>36 in.</b>	<b>1</b>	<b>YES</b>	<b>YES</b>
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 1.5$ kA and $< 3$ kA Potential arc flash boundary using above parameters at 3 kA: <b>48 in.</b>	<b>2</b>	<b>YES</b>	<b>YES</b>
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 3$ kA and $< 7$ kA Potential arc flash boundary using above parameters at 7 kA: <b>72 in.</b>	<b>3</b>	<b>YES</b>	<b>YES</b>
Work on energized electrical conductors and circuit parts, including voltage testing where arcing current is $\geq 7$ kA and $< 10$ kA Potential arc flash boundary using above parameters at 10 kA: <b>96 in.</b>	<b>4</b>	<b>YES</b>	<b>YES</b>

**note a-** If acid exposure is possible, the clothing is required to be protected from acid and arc rated to the hazard according to ASTM F 1891 or equivalent and evaluated by

**note b-** In clean rooms or other electrical installations, that do not permit leather protectors for arc flash exposure, ASTM F 496 is required to be followed for use of rubber



## Protective Clothing and Personal Protective Equipment (PPE)

NFPA 70E 2012 Table 130.7(C)(16)

SR = Selection required

AR = As required

AN = As needed (optional)

**Arc-rated clothing, minimum arc rating of 4 cal/cm<sup>2</sup> (see note 3)**

- Arc-rated long-sleeve shirt and pants or arc-rated coverall
- Arc-rated face shield (See Note 2.) or arc flash suit hood
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

**Protective Equipment:**

- Hard Hat
- Safety glasses or safety goggles (SR)
- Hearing protection (ear canal inserts)
- Heavy duty leather gloves (See Note 1.)
- Leather work shoes (AN)

**Arc-rated clothing, minimum arc rating of 8 cal/cm<sup>2</sup> (see note 3)**

- Arc-rated long-sleeve shirt and pants or arc-rated coverall
- Arc-rated flash suit hood or arc-rated face shield (See Note 2.) and arc-rated balaclava
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

**Protective Equipment:**

- Hard Hat
- Safety glasses or safety goggles (SR)
- Hearing protection (ear canal inserts)
- Heavy duty leather gloves (See Note 1.)
- Leather work shoes

**Arc-rated clothing, minimum arc rating of 25 cal/cm<sup>2</sup> (see note 3)**

- Arc-rated long-sleeve shirt (AR)
- Arc-rated pants (AR)
- Arc-rated coverall (AR)
- Arc-rated arc flash jacket (AR)
- Arc-rated arc flash pants (AR)
- Arc-rated arc flash suit hood
- Arc-rated gloves (See Note 1.)
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

**Protective Equipment:**

- Hard Hat
- Safety glasses or safety goggles (SR)
- Hearing protection (ear canal inserts)
- Leather work shoes

**Arc-rated clothing, minimum arc rating of 40 cal/cm<sup>2</sup> (see note 3)**

- Arc-rated long-sleeve shirt (AR)
- Arc-rated pants (AR)
- Arc-rated coverall (AR)
- Arc-rated arc flash suit pants (AR)
- Arc-rated arc flash suit jacket (AR)
- Arc-rated arc flash suit hood
- Arc-rated gloves (See Note 1.)
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

**Protective Equipment:**

- Hard Hat
- Safety glasses or safety goggles (SR)
- Hearing protection (ear canal inserts)
- Leather work shoes

**Note 1.** If rubber insulating gloves with leather protectors are required by Table 130.7(C) (15) (a) or 130.7(C) (15) (b), additional leather or arc flash gloves are not required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement. **Note 2.** Face shields are to have wrap-around guarding to protect not only the face but also the forehead, ears, and neck or, alternatively, an arc-rated arc flash suit hood is required to be worn. **Note 3.** Arc rating is defined in Article 100 and can be either ATPV or EBT.

## HIGH HAZARD ELECTRICAL WORK PERMIT

NFPA-70E 130.2 (B) (1)

Job No.: \_\_\_\_\_

Work Order No.: \_\_\_\_\_

### ATTENTION!

Evidence of a pre-job briefing must be attached to this permit. All lines of this permit must be complete before any work within the limited approach boundary or the flash protection boundary of any exposed, energized electrical circuit part is permitted.

#### I. Equipment Information

Circuit/ Equipment Description: \_\_\_\_\_ Circuit/Equipment location: \_\_\_\_\_

Electrical Source: \_\_\_\_\_ Source Location: \_\_\_\_\_

Source Disconnect: \_\_\_\_\_ One Line Drawing No.: \_\_\_\_\_

#### II. Work Description

Describe work to be performed: \_\_\_\_\_

\_\_\_\_\_

#### III. Justification [NPA 70E 2012]

Explain why work must performed in a high hazard condition: \_\_\_\_\_

\_\_\_\_\_

#### IV. Safe Work Practices

Describe the safe work practices that will be employed: ☐ LOTO ☐ Safety Watch ☐ Two Workers

☐ Job Site Hazard Assessment ☐ Notify Affected Workers ☐ Barricade/ Close Affected Work Area

List additional safe work practices: \_\_\_\_\_

#### V. Shock hazard Analysis

What is the maximum voltage phase to phase that employees can be exposed to? Volts: \_\_\_\_\_

Shock protection boundry: [ ] LIMITED [ ] RESTRICTED [ ] PROHIBITED

Hazard/ Risk Category: [ ] -1 [ ] 1 [ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4

List all required PPE for risk category listed: ☐ FR Clothing ☐ Arc Rated Face Shield ☐ Hazard Hat

☐ Leather Work Shoes ☐ Safety Glasses ☐ Ear Plugs ☐ Flash Suite Jacket ☐ Flash Suite Pants

☐ Flash Suite Hood ☐ FR Hard Hat Liner ☐ Voltage Rated Tools

## VI. Flash hazard Analysis

Flash protection Boundry:      Feet: \_\_\_\_\_

**NOTE:** Within 10' Requires calculation by EE

List all required PPE for risk category listed:   ☐ FR Clothing   ☐ Arc Rated Face Shield   ☐ Hazard Hat

☐ Leather Work Shoes   ☐ Safety Glasses   ☐ Ear Plugs   ☐ Flash Suite Jacket   ☐ Flash Suite Pants

☐ Flash Suite Hood   ☐ FR Hard Hat Liner   ☐ Voltage Rated Tools

List method of restriction for **un-qualified** personnel: \_\_\_\_\_

## VII. Authorization for High Hazard Electrical Work

Work scheduled to begin: \_\_\_\_\_ | \_\_\_\_\_

Permit Expires: \_\_\_\_\_ | \_\_\_\_\_

Authorization Personnel:

\_\_\_\_\_  
Print name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Date: \_\_\_\_\_

Eaton Drilling Co, Inc affiliated entities Supervisor:

Customer Representative:

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Date: \_\_\_\_\_





**////EATON** EXCAVATING  
& GRADING







# Injury and Illness Prevention Program

## HEARING PROTECTION



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## HEARING PROTECTION

How often do you find yourself asking, “What did you say?” because you couldn’t hear someone talking? Not often if you are lucky. To protect your eardrums and your sense of hearing you must know when and how to use hearing protection. This safety practice was written to help you and your co-workers use hearing protection equipment properly.

### WHEN TO USE HEARING PROTECTION

Noise is measured in decibels (dB). Any noise over 90 dBA could damage your eardrum and your hearing. Therefore, hearing protection is required for any operations where noise exceeds this level.

You, your coworkers, and all visitors on a job site must wear hearing protection when you are within a 50’ radius of any drilling rig in operation. You do not have to wear hearing protection around a working pump rig, but it is highly recommended.

### WHAT HEARING PROTECTION TO WEAR

#### FOAM EAR PLUGS

These fit inside your ear canal to block out noise. To put them in, roll the plug into tight, thin cylinder. Use your opposite hand reaching around the back of your head to pull back on the upper part of your ear and put the plug in. It will expand to fill the opening. Throw away your ear plugs at the end of each day. Replace them during the day if they get dirty. To make sure the plugs fit properly, cup your hands over your ears once you have them in. If you have them in right, you won’t notice how much difference in the noise level with your hands over your ears as with your hands away from your ears.

#### MUFFS

These attach to your hard hat and also block noise from your ear drums. Muffs can get uncomfortable in warm weather and may be difficult to fit properly if you are wearing glasses.

Muffs should fit as close to your head as possible. If you loosen their spring to make them more comfortable, they will not protect your eardrums from noise. If the springs become loose, replace them.

#### TESTING

You will get a hearing test when you are hired and once each year thereafter upon request. The results of your first test become your baseline audiogram. Each set of test results after the first will be compared to your baseline audiogram. If your hearing changes in either ear you will need to wear hearing protection within 50’ of any mobile machinery on a job site, including generators and compressors.

You will need to be retested in 30 days to be sure the change wasn't temporary.

Eaton's Injury and Illness Protection program includes this chapter to help you and your coworkers protect yourselves from hearing loss. Both the levels of noise and the length of time you are exposed will determine if hearing protection is necessary. If you are ever in doubt as to whether or not you need hearing protection on or off the job, use it. Your hearing will never be damaged by "underexposure" to noise.



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## NOISE REGULATIONS

Per California's Code of Regulations Title 8 Article 105 section 5096, must limit the sound levels on a job site per the chart found below. If the noise levels cannot be lowered (either by altering the administrative or engineering controls) after the permitted duration of dBA/hour(s) then employees must wear personal protective equipment to reduce the sound levels reaching them. Eaton Drilling Co, Inc provides ear protection for all employees.

PERMISSIBLE NOISE EXPOSURE					
Sound Level (dBA)	Permitted Duration Per Workday (hrs-min)	Hours	Sound Level (dBA)	Permitted Duration Per Workday (hrs-min)	Hours
90	8-0	8.00	103	1-19	1.32
91	6-58	6.96	104	1-9	1.15
92	6-4	6.06	105	1-0	1.00
93	5-17	5.28	106	0-52	0.86
94	4-36	4.60	107	0-46	0.76
95	4-0	4.00	108	0-40	0.66
96	3-29	3.48	109	0-34	0.56
97	3-2	3.03	110	0-30	0.50
98	2-38	2.63	111	0-26	0.43
99	2-18	2.30	112	0-23	0.38
100	2-0	2.00	113	0-20	0.33
101	1-44	1.73	114	0-17	0.28
102	1-31	1.52	115	0-15	0.25

# Injury and Illness Prevention Program

## HAZARD COMMUNICATION



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## HAZARD COMMUNICATION

### OBJECTIVE

The objective of the Eaton Pumps Sales and Service to be known as; Eaton Pump Hazard Communication Program is to comply with the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard, 29 CFR 1910.1200, to ensure information about the dangers of all hazardous chemicals used by Eaton Pumps is known by all affected employees and to ensure safe handling procedures and measures are used to protect employees from these chemicals.

This program applies to all work operations in our company where you may be exposed to hazardous chemicals under normal working conditions or during an emergency situation. Every department and employee will participate in the Hazard Communication Program. Copies of the Hazard Communication Program are available in the Main Office located at 20 West Kentucky Ave Woodland, CA 95695 for review by any interested employee.

### ASSIGNMENT OF RESPONSIBILITIES

#### PROGRAM ADMINISTRATOR

Eric Vincent and or Mark Newman will manage the Hazard Communication Program for Eaton Pump, maintain all records pertaining to the plan, including reviewing and updating this plan as necessary and facilitate training.

#### MANAGEMENT

Eaton Pump will ensure each employee understands and follows the Hazard Communication Program through employee orientation, training, job performance reviews and disciplinary action Eaton Pump will provide all necessary information, equipment and personnel to comply with this program.

#### SUPERVISORS

Supervisors should ensure their employees are trained in and use proper work practices, chemical labels, SDSs, personal protective equipment, and proper cleanup procedures regarding leaks and spills.

#### EMPLOYEES

Employees are responsible for employing proper work practices, using personal protective equipment, understanding chemical labels and Safety Data Sheets (SDS), and cleanup/disposal procedures as described in this plan. Employees are also responsible for reporting all exposure, leak and spill incidents to Jeff Gerken immediately or as soon as possible.

#### CONTRACTORS

Contracted employees will be responsible for complying with this plan and will be responsible for providing the training described herein.

## CONTAINER LABELING

Mike Wright purchasing agent will verify that all containers of classified hazardous chemicals in the workplace are clearly and prominently labeled, in English, with the following information:

- Product Identifier or name;
- Signal Word to indicate the level of severity of hazard and alert the reader to a potential hazard;
- Hazard Statement which describes the nature of the hazard(s) of the chemical;
- A Pictogram, conveying in a graphic element, specific information about the hazards of the chemical;
- Precautionary Statement(s) which describe recommended measures to take to prevent adverse effects resulting from exposure or improper storage or handling;
- The name, address and telephone number of the chemical manufacturer, importer or other responsible party.
- On the following individual stationary process containers, we are using the hazardous materials stick on label system to convey the required information: DOT Style Plastic Containers; 1, 5 and 53 gallon portions.
- Eric Vincent will review the company labeling procedures every 90-Days and will update procedures as well as labels as required.

## HAZARDOUS CHEMICALS LIST

- The hazardous chemical inventory list is compiled and maintained by Mark Newman.
- The list of all known hazardous chemicals used by our employees or, stored in this facility, is kept in at 20 west Kentucky Avenue, Woodland main office. This list includes the name of the chemical, the manufacturer, the work area in which the chemical is used, dates of use, and quantity used.
- When new chemicals are received, this list must be updated (including date the chemicals were introduced). To ensure any new chemical is added in a timely manner, the following procedures should be followed:
  1. Eric Vincent or Mark Newman must be notified of all chemicals ordered in every department of Eaton Pump. Date order was placed, name of the chemical, the manufacturer, the work area in which the chemical will be used, dates of expected use, quantity to be used and expected ship date must be conveyed to him.
  2. When shipment arrives, receiving department must notify Eric Vincent immediately and deliver to him the new SDS and any additional information on the chemical provided with shipment.

3. Eric Vincent must then add new chemical to list with all required information. An updated copy must then be attached to this plan and the old list destroyed.

#### SAFETY DATA SHEETS

- Mark Newman is responsible for establishing and monitoring the company SDS program. He will ensure procedures are followed to obtain the necessary SDSs and will review incoming SDSs for new or significant health and safety information. Eric Vincent or Mark Newman will see any new information is communicated to affected employees. He will keep a master file of all SDSs with this plan in the main office. The procedure below will be followed when an SDS is not received at the time of initial shipment:
  1. Receiving department should notify Eric Vincent or Mark Newman immediately upon arrival of shipment without SDS included.
  2. Eric Vincent or Mark Newman must contact the chemical manufacturer, distributor or shipper and request the SDS be emailed or faxed immediately.
  3. If unable to obtain SDS via the manufacturer, distributor or shipper, Eric Vincent or Mark Newman should search online for a current SDS on the chemical(s) in question. (The University of Vermont has a web site that contains SDSs on almost every known chemical. Go to <http://hazard.com/msds/> )
  4. Paper copies of SDSs for all hazardous chemicals to which employees are exposed or are potentially exposed will be kept in the following location(s): SDS Designated Location main office. (Note: If an alternative to paper copies of SDSs is used, describe the format and how employees can access the SDSs.)
  5. SDSs will be readily available to all employees during each work shift. If an SDS is not available, contact Eric Vincent or Mark Newman.
- When revised SDSs are received, the following procedures will be followed to replace old SDSs:
  1. Eric Vincent or Mark Newman should review new SDS master and compare to SDS master being replaced. Changes should be noted on separate sheet and attached to old SDS master. File old master SDSs with noted changes. If changes are significant enough to warrant new training, Eric Vincent or Mark Newman should provide training as outlined in this manual.
  2. Eric Vincent or Mark Newman should make necessary copies for all SDS locations.
  3. Eric Vincent or Mark Newman should replace old SDSs with new SDSs at all SDS locations. Old SDSs should be destroyed.



## EMPLOYEE TRAINING AND INFORMATION

Jeff Gerkan is responsible for the Hazard Communication Program and will ensure all program elements and training are carried out. Everyone who works with or is potentially exposed to hazardous chemicals will receive initial training on the hazard communication standard and this plan before starting work. Each new employee will attend a health and safety orientation on the hazard communication standard and this plan. All training will be interactive and will include the following:

1. An overview of the OSHA hazard communication standard;
2. The hazardous chemicals present at his/her work area;
3. The physical and health risks of the hazardous chemicals;
4. Symptoms of overexposure;
5. How to determine the presence or release of hazardous chemicals in the work area;
6. How to reduce or prevent exposure to hazardous chemicals through use of control procedures, work practices and personal protective equipment;
7. Steps Eaton Pumps has taken to reduce or prevent exposure to hazardous chemicals;
8. Procedures to follow if employees are overexposed to hazardous chemicals;
9. How to read labels and SDSs to obtain hazard information; and Location of the SDS file and written Hazard Communication program.
10. Prior to introducing a new chemical hazard into any department or area of Eaton Pumps, each employee in that section will be given information and training as outlined above (section VI subsection A) for the new chemical hazard.

## HAZARDOUS NON-ROUTINE TASKS

Periodically, employees are required to perform non-routine tasks which are hazardous. Examples of non-routine tasks are: confined space entry, tank cleaning, and painting reactor vessels. Prior to starting work on such projects, each affected employee will be given information by Eric Vincent or Mark Newman about the hazardous chemicals he or she may encounter during such activity. This information will include specific chemical hazards, protective and safety measures the employee should use, and steps Eaton Pumps is taking to reduce the hazards, including ventilation, respirators, the presence of another employee (buddy systems), and emergency procedures.

## OTHER EMPLOYER/CONTRACTORS

- Any time an outside contractor brings a hazardous substance into Eaton Pumps Job Location, an SDS and any additional information for the substance must be received by Eric Vincent or Mark Newman. Similarly, a SDS and any additional information for all hazardous substances in the area in which the contractor will be working must be provided to the contractor. This exchange will be coordinated by Eric Vincent or Mark Newman
- Service contractors whose work or materials pose a health hazard to Eaton Pump employees will be responsible for the training and education requirements outlined under the training section of this program. Eric Vincent or Mark Newman must attend training sessions and ensure Eaton Pump employees are properly trained.

- In addition to providing copies of SDSs to other contractors, other contractors will be informed of necessary precautionary measures to protect their employees exposed to operations performed by Eaton Pump. Outside contractors will be responsible for training their employees.
- Also, contractor's employees will be informed of the hazard chemicals used by Eaton Pumps.
- Outside contractors must comply with all provisions of the hazard communication standard while working for Eaton Pumps.
- All training must be documented and kept on file with the Hazard Communication Program File.

#### CHEMICALS IN UNLABELED PIPES

Work activities are sometimes performed by employees in areas where chemicals are transferred through unlabeled pipes. Prior to starting work in these areas, the employee should contact Project Manager for information regarding:

- The chemical in the pipes;
- Potential hazards; and
- Required safety precautions.
- Include here the chemical list developed during the inventory. Arrange this list so that you are able to cross-reference it with your SDS file and the labels on your containers. Additional useful information, such as the manufacturer's telephone number, an emergency number, scientific name, CAS number, the associated task, etc., can be included.

#### PROGRAM AVAILABILITY

A copy of this program will be made available, upon request, to employees and their representatives.



## WELL REHABILITATION PROCEDURES

The following data is a general procedure for the chemical/mechanical rehabilitation of wells. Every well has a unique combination of water chemistry, type of deposition, degree of clogging, pumping condition, etc. Therefore, the rehabilitation procedure will vary from well to well. The following guidelines can be used as a starting point when designing a rehabilitation procedure.

Typically the need for rehabilitation is determined by the loss of the well specific capacity\* and by visual inspection based on a well video survey.

Having access to the water and deposition chemistry is very helpful. Water chemistry can be obtained from the owner's monthly records or from a discharge sample. Deposition samples can be obtained from the pump column pipe or by utilizing Sonar Jet with a catch basket.

Eaton Rehabilitation Services is associated with Water Systems Engineering. We are able to utilize their laboratory for analyzing water/deposition samples. They are also available for consulting to determine chemistry and procedures when desired.

### WATER SYSTEM ENGINEERING

P. O. BOX 700

3201 LABETTE TERRACE

OTTAWA KS. 66067

MIKE SCHNIEDERS

785-242-5853 #01

\*Specific Capacity is the basic measurement of a wells capacity and is expressed as the gallons per minute produced per foot of draw-down after 24 hours of continuous pumping.

Example: Static water level is 80'. After pumping at a constant rate of 1,600 GPM for 24 hours, the pumping level is 240'. The pumping level of 240' minus the 80' static level results in 160' of draw-down.

$$\text{Specific Capacity} = \frac{\text{GPM}}{\text{Draw-down}} = \frac{1600}{160} = 10 \text{ GPM per foot}$$

When the well capacity is described simply as a 1000 GPM or 1600 GPM well, it is more a statement of the pump capacity than well capacity. The well might be able to produce a much higher capacity with a larger pump or it could be in a condition of over drafting the aquifer and not being able to sustain that capacity over a longer period of time.

## DETERMINING THE WELL CASING VOLUME

The total water volume is calculated by determining the water volume of the casing and then doubling the casing volume to allow for the bore hole volume. Therefore the total water volume is three times the casing volume. The following information is needed to determine total volume.

Casing diameter: \_\_\_\_\_  
Well depth: \_\_\_\_\_  
Static water level: \_\_\_\_\_  
Static water height \_\_\_\_\_ (well depth – static level)

Casing water volume for various size casings is as follows

10"	4 GALLONS/FT
12"	6 GALLONS/FT
14"	8 GALLONS/FT
16"	10 GALLONS/FT
18"	13 GALLONS/FT
20"	16 GALLONS/FT
24"	23 GALLONS/FT

EXAMPLE: CASING DIAMETER 16"

Well depth 531'  
Static water level 150'  
Static water height 381' (531' -150' = 381')

Therefore: 381' x 10.5 gallons/foot x 3 volumes = 12,000 gallons. Formulated chemistry is usually calculated in 1,000 gallons batches, so this well would require twelve/1000 batches.

### TYPICAL PROCEDURE FOR WELL REHABILITATION WHERE THE DEPOSITION IS PRIMARILY CORROSION/CHEMICAL DEPOSITION

Standard batch mix is 1000 gallons water, 100 gallons acid\* and 15 gallons NuWell 320 equal to 1 casing volume \*Hydrochloric 31 Baume

EXAMPLE: CASING DIAMETER 16"

Well depth 531'  
Static water level 150'  
Static water height 381'

Therefore: 381' x 10.5 gallons/foot = 4000 gallons = 4/1000gallon batches consisting of:

Water 885 gallons  
Acid 100 gallons  
NuWell 320 15 gallons

**TOTAL BATCH 1000 GALLONS**



## PROCEDURE

1. Remove any fill.
2. Pre-clean with wire brush.\*\* Ballpark time is ½ hour per 100' of casing.
3. Install wire brush and inject ½ the chemistry into the perforated sections while running the tooling to the bottom. Allow a minimum of 12 hours contact time.
4. Brush\*\*\* from the bottom up while adding the other ½ of the chemistry. Ballpark time is 20' per hour.
5. Install double disc swab tooling and airlift swab to the bottom.
6. Continue airlifting until the water is neutral pH
7. Premix one casing volume of water with 2 gallons of Aqua-Clear PDF per 1000 gallons. Inject into the well and agitate with the swab every 2 hours, if possible, for a total of 24 hours.
8. Airlift swab until the solids are less than 1 part per 1000 as measured with an Imhoff cone.
9. Bail off an accumulated fill.
10. Inject 12% sodium hypochlorite to 200 PPM based 1 casing volume and agitate for 2 hours. 200 PPM of 12% CL/2 = 1.5 gallons per 1000 gallon batch.

## SEE ATTACHED NUWELL 320 BROCHURE

\*Hydrochloric acid can be purchased with a buffer premixed by the chemical company in which case no additional buffer is required. Best to use straight acid and add our special buffer.

\*\*Steel wire brush should not be used in wire wrap screen. Poly brush or swabs are ok.

\*\*\*Rotary brush louvered screen. Best to use a small diameter barrel so that the brush wires are at least 4" long. The longer wires are more flexible which allows the use of a larger diameter brush. Cycling the brush up and down as much as possible is best in that it causes the wires to "over center" more often.

**NEVER ADD WATER TO ACID. IT WILL EXPLODE. NEVER ADD OXIDIZERS/ CHLORINE TO WATER WITH P.H. BELOW 5.0 P.H. IT WILL FORM DEADLY GAS**

## TYPICAL PROCEDURE FOR WELL REHABILITATION WHERE THE DEPOSITION IS PRIMARILY BACTERIAL

Standard batch mix is 1000 gallons water, Nuwell 410 as required (about 4 gallons/per 1000 gallons), to obtain 5.0 pH before adding 2 gallons of 12% sodium hypochlorite equal to 3 casing volumes

Water	994 gallons
NuWell 410	4 gallons
Chlorine	2 gallons
<b>TOTAL BATCH</b>	<b>1000 GALLONS</b>

## OPTIONAL FOR HEAVY BACTERIA TREATMENT

If the well has a rotten egg odor or is discharging large amounts of biomass at start-up, but production remains, this is an option. Can also work for persistent coliform issues despite strong production

Water	978 gallons
NuWell	20 gallons
Chlorine (CL/2)	2 gallons
<b>TOTAL BATCH</b>	<b>1000 GALLONS</b>

## PROCEDURE

1. Remove any fill
2. Pre-clean with wire\* brush\*\*. Ballpark time is ½ hour per 100' of casing
3. Remove remaining fill and disrupted material. Be certain to evacuate the bottom of the well.
4. Install swab and inject ½ the chemistry into the perforated sections while running the tooling to the bottom. Allow a minimum of 12 hours contact time.
5. Swab while adding the other ½ of the chemistry. Add additional chemistry to maintain 200 PPM as required. Allow a minimum of 24 hours contact time
6. Install double disc swab tooling and airlift swab to the bottom. Discharge into containment tank and neutralize before disposing to approved site. Estimated time is 40' per hour

7. Continue airlifting until the water is neutral pH (about 6.5 to 7.5) Optional air lift swabbing
8. Premix one casing volume of water with 2 gallons of Aqua-Clear PDF per 1000 gallons. Inject into the well and agitate with the swab every 2 hours if possible for a total of 24 hours.
9. Air lift swab each perforated section until the solids are less than 1 part per 1000 as measured with an Imhoff Cone.
10. Bail off any accumulated fill.
11. Inject 12% sodium hypochlorite to 200 PPM based 1 casing volume and agitate for 2 hours. 200 PPM of 12% CL/2 = 1.5 gallons per 1000 gallons.

Note: If alkalinity is higher than 100 PPM and/or the pH is higher than 7, use 1 gallon of NuWell per 1000 gallons of batch per 100 PPM sodium hypochlorite (CL/2) to increase the biocide effects of chlorine

- Steel wire brush should not be used in wire wrap screen. Poly brush or swabs are ok.
- Rotary brush louvered screen. Best to use a small diameter barrel so that the brush wires are at least 4" long. The longer wires are more flexible which allows the use of a larger diameter brush. Cycling the brush up and down as much as possible is best in that it causes the wires to "over center" more often.

**NEVER ADD WATER TO ACID. IT WILL EXPLODE. NEVER ADD OXIDIZERS/ CHLORINE TO WATER WITH P.H. BELOW 5.0 P.H. IT WILL FORM DEADLY GAS**

TYPICAL PROCEDURE FOR WELL REHABILITATION WHERE THE DEPOSITION IS PRIMARILY SILTS AND CLAYS

Standard batch mix is 1000 gallons water with 3 gallons NuWell 220 in 2 casing volumes.

Water	997 gallons
NuWell 320	3 gallons
Total batch	1000 gallons

#### PROCEDURE

1. Remove any fill
2. Pre-clean with wire brush. Ballpark time is ½ hour per 100' of casing.
3. Remove the remaining fill and disrupted material. Be certain to evacuate the bottom of the well.
4. Premix 2 casing volumes of water with 2 gallons of NuWell 220 per 1000 batch and inject ½ the chemistry into the perforated sections while running the tooling to the bottom. Allow a minimum of 12 hours contact time.
5. Brush\* or swab from the bottom up while adding the other ½ of the chemistry. Ballpark time is 20' per hour.

6. Install double disc swab tooling and airlift swab to the bottom.
7. Air lift swab each perforated section until the solids are less than 1 part per 1000 as measured with an Imhoff Cone.
8. Bail off an accumulated fill.
9. Inject 12% sodium hypochlorite to 200 PPM based on 1 casing volume and agitate for 2 hours. 200 PPM of 12% CL/2 = 1.5 gallons per 1000 gallons.

#### SEE ATTACHED AQUA-CLEAR PDF BROCHURE

- Steel wire brush should not be used in wire wrap screen. Poly brush or swabs are ok.
- Rotary brush louvered screen. Best to use a small diameter barrel so that the brush wires are at least 4" long. The longer wires are more flexible which allows the use of a larger diameter brush. Cycling the brush up and down as much as possible is best in that it causes the wires to "over center" more often.

#### NEVER ADD WATER TO ACID. IT WILL EXPLODE. NEVER ADD OXIDIZERS/ CHLORINE TO WATER WITH P.H. BELOW 5.0 P.H. IT WILL FORM DEADLY GAS

#### CHEMISTRY TRAILER SAFETY INFORMATION

The chemistry trailer is a tool that Eaton Drilling Co., Inc. uses to clean perforated areas in wells. It uses chemistry involving acid and chlorine to rehabilitate wells. There is a 2" Honda pump, and caution should be used when near the trailer.

Employees must be aware of chemicals being transported or located in the chemistry trailer that are near each other and have the potential of accidentally mixing. For example, the chlorine solution used with the chemistry trailer, when combined with the primer for PVC cement, has the potential to create an explosion. Additionally, employees must take care to avoid water from coming into contact with the chlorine or acid; water plus either one of those chemicals has the potential to create an explosion. Employees who work with the chemistry trailer may wish to review the chemical chart located near the end of this packet.

If an accident were to occur where a chemical solution is spilled or comes into skin contact of an employee, the trailer is equipped with an eye-washing station as well as a full shower. Employees should check the chemistry trailer prior to use to see that the washing stations are fully functioning. Experienced personnel will show new workers how to operate these pieces of equipment in case of an emergency.

# Injury and Illness Prevention Program

INJURY & ILLNESS PREVENTION PROGRAM LAW



# 180



## IIPP LAW

In California every employer is required by law (Labor Code Section 6400) to provide a safe and healthful workplace for his/her employees. Title 8 (T8) of the California Code of Regulations (CCR) requires every California employer to have an effective injury and illness prevention program. Additional requirements in the following T8 CCR Safety Order Section address specific industries:

Construction—Section 1509  
Petroleum—Section 6507, 6508,  
6509, 6760, 6761, and 6762.  
Ship Building, Ship Repairing,  
Ship Breaking—Section 8350  
Tunnels—Section 8406

For your convenience, their contents follow the content of T8 CCR Section 3203.

Title 8, Section 3203, Injury and Illness Prevention Program.

(a) Effective July 1, 1991, every employer shall establish, implement and maintain an effective Injury and Illness Prevention Program. The Program shall be in writing and shall, at a minimum:

(1) Identify the person or persons with authority and responsibility for implementing the Program.

(2) Include a system for ensuring that employees comply with safe and healthy work practices. Substantial compliance with this provision shall include recognition of employees who follow safe and healthful work practices, training and retraining programs, disciplinary actions, or any other such means that ensure employee compliance with safe and healthful work practices.

(3) Include a system for communication with employees in a form readily understandable by all affected employees on matters relating to occupational safety and health, including provisions designed to encourage employees to inform the employer of hazards at the worksite

without fear of reprisal. Substantial compliance with this provision includes meetings, training programs, posting, written communications, a system of anonymous notification by employees about hazards, labor/management safety and health committees, or any other means that ensure communication with employees.

**EXCEPTION:** Employers having fewer than 10 employees shall be permitted to communicate to and instruct employees orally in general safe work practices with specific instructions with respect to hazards unique to the employees' job assignments, in compliance with subsection (a) (3).

4) Include procedures for identifying and evaluating workplace hazards including scheduled periodic inspections to identify unsafe conditions and work practices. Inspections shall be made to identify and evaluate hazards:

(A) When the Program is first established;-  
Exception: Those employers having in place on July 1, 1991, a written Injury Prevention Program complying with previously existing Section 3203.

(B) Whenever new substances, processes, procedures, or equipment are introduced to the workplace that represent a new occupational safety and health hazard: and

(C) Whenever the employer is made aware of a new or previously unrecognized hazard.

(5) Include a procedure to investigate occupational injury or occupational illness.

(6) Include methods and/or procedures for correction of unsafe or unhealthy conditions, work practices and work procedures in a timely manner based on the severity of the hazard:

(A) When observed or discovered; and

(B) When an imminent hazard exists which cannot be immediately abated without endangering employee(s) and/or property, remove all exposed personnel from the area except those

necessary to correct the existing condition. Employees necessary to correct the hazardous condition shall be provided the necessary safeguards.

(7) Provide training and instruction:

#### EXCEPTION

Employers having in place on July 1, 1991, a written Injury and Illness Prevention Program complying with the previously existing Accident Prevention Program in Section 3203.

(A) When the Program is first established;

(B) To all new employees;

(C) To all employees given new job assignments for which training has not previously been received;

(D) Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;

(E) Whenever the employer is made aware of a new or previously unrecognized hazard; and

(F) For supervisors to familiarize them with the safety and health hazards to which employees under their immediate direction and control may be exposed.

(b) Records of the steps taken to implement and maintain the Program shall include:

(1) Records of scheduled and periodic inspections required by subsection (a)(4) to identify unsafe conditions and work practices, including person(s) conducting the inspection, the unsafe conditions and work practices that have been identified and action taken to correct the identified unsafe conditions and work practices. These records shall be maintained for three (3) years; and Exception: Employers with fewer than 10 employees may elect to maintain the inspection records only until the hazard is corrected.

(2) Documentation of safety and health training required by subsection (a) (7) for each employee, including employee name or other identifier, training dates, type(s) of training, and training providers. This documentation shall be

maintained for three (3) years.

Exception No. 1: Employers with fewer than 10 employees can substantially comply with the documentation provision by maintaining a log of instructions provided to the employee with respect to the hazards unique to the employee's job assignment when first hired or assigned new duties.

Exception No. 2: Training records of employees who have worked for less than one (1) year for the employer need not be retained beyond the term of employment if they are provided to the employee upon termination of employment.

(c) Employers who elect to use a labor/management safety and health committee to comply with the communication requirements of subsection (a) (3) of this section shall be presumed to be in substantial compliance with subsection (a) (3) if the committee:

(1) Meets regularly, but not less than quarterly;

(2) Prepares and makes available to the affected employees, written records of the safety and health issues discussed at the committee meetings, and maintained for review by the Division upon request;

(3) Reviews results of the periodic, scheduled worksite inspections;

(4) Reviews investigations of occupational accidents and causes of incidents resulting in occupational injury, occupational illness, or exposure to hazardous substances and, where appropriate, submits suggestions to management for the prevention of future incidents;

(5) Reviews investigations of alleged hazardous conditions brought to the attention of any committee member. When determined necessary by the committee, the committee may conduct its own inspection and investigation to assist in remedial solutions;

(6) Submits recommendations to assist in the evaluation of employee safety suggestions; and

(7) Upon request from the Division, verifies abatement action taken by the employer to abate citations issued by the Division.

Title 8, Section 1509. Construction Injury and Illness Prevention Program.

(a) Every employer shall establish, implement and maintain an effective Injury and Illness Prevention Program in accordance with Section 3203 of the General Industry Safety Orders.

(b) Every employer shall adopt a written Code of Safe Practices which relates to the employer's operations. The Code shall contain language equivalent to the relevant parts of Plate A-3 of the Appendix.

(c) The Code of Safe Practices shall be posted at a conspicuous location at each job site of- fice or be provided to each supervisory employee who shall have it readily available.

(d) Periodic meetings of supervisory employ- ees shall be held under the direction of manage- ment for the discussion of safety problems and accidents that have occurred.

(e) Supervisory employees shall conduct "toolbox" or "tailgate" safety meetings, or equiv- alent, with their crew at least every 10 working days to emphasize safety.

Title 8, Article 3, Sections 6507, 6760. Petro- leum Injury and Illness Prevention Program. 6507.

The employer shall establish, implement and maintain an Injury and Illness Prevention Program in accordance with the requirements of Section 3203 of the General Industry Safety Orders.

6760. The employer shall establish, imple- ment and maintain an Injury and Illness Preven- tion Program in accordance with Section 3203 of the General Industry Safety Orders.

"Instruct employees in general safe work practices" means work practices that generally apply to most of the employees at the worksite. Examples of general work practices are: lifting procedures, use of personal protective equip- ment, knowledge of exits, medical and first aid procedures, housekeeping practices, fire protec- tion procedures, evacuation plans, or handling of flammables and toxic chemicals.

"Specific instruction with regard to hazards unique to any job assignment" means training on the hazards and safe work practices specific to any individual employee's work assignment. Examples of specific instruction are: training in the use of self-contained breathing apparatus, proper procedure for locking or blocking-out ma- chinery, proper use and adjustment of machine guards, or handling of hazardous substances.

"Scheduled periodic inspections, periodic scheduled and documented inspections" means inspections of the workplace at sufficient inter- vals to ensure that established safe work prac- tices are being followed and that unsafe condi- tions or procedures are identified and corrected promptly. Frequency of inspections should be affected by the type, expectation and magnitude of hazards involved; proficiency of employees; equipment or process changes; and injury/illness rates.



# Injury and Illness Prevention Program

## JOB SITE HAZARD ASSESSMENT









# JOB SITE FORM SIDE 1

# EATON JOB SITE HAZARD ASSESSMENT

Company

Assessed by	Date	Location	GPS Coordinates N _____ W _____	Customer
Job #	USA Ticket #	Exp. Date	Start Date	
First Aid Kit Location	Nearest Medical Facility	Emergency Agency/Phone #		


### Potential Hazards

1	Underground	9	Chemical	17	Air Quality	25	Fall	33
2	Overhead	10	Sound	18	Trenches	26	Airborne	34
3	Weather	11	Rigging & Hoisting	19	Water	27	Pressure	35
4	Traffic	12	Environmental	20	Animal	28	Tripping	36
5	Fire	13	PPE	21	Trucking	29	Pinch Points	37
6	Confined Spaces	14	Uneven Ground	22	Ladder	30	Employee	38
7	Electrical	15	Pedestrian	23	Tanks	31	Permits Needed	39
8	Equipment	16	Health	24	Light	32		40

[illegible]

## JOB SITE FORM SIDE 2

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# Injury and Illness Prevention Program

## FORKLIFT TRAINING



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## FORKLIFT TRAINING

### PPE - PERSONAL PROTECTIVE EQUIPMENT

1. At the beginning of the training session, the instructor and the trainees must fill out the appropriate sections of the attendance forms located in this manual.
2. Conduct a training session using the information found in the Types of Forklifts and Operating Forklifts Safety Training sections.
3. Show the forklift safety video and review what was seen. Open up the training to questions and discussion.
4. Conduct a hands on session with an actual forklift showing the employees where to find everything and giving them a demonstration on how things operate.
5. Administer the quiz form found in this manual.
6. Provide a copy of the training handout to each trainee so that they have information to reference.
7. Using the Operator Evaluation Forms, conduct a performance evaluation of each employee to verify that they exhibit an acceptable degree of proficiency of forklift operation and safety.
8. Sign and distribute Completion Certificates to those employees that successfully completed all phases of training and evaluation.
9. Fill in Course Completion Log to maintain records for Eaton Drilling Co.
10. Make sure to re-evaluate employees on an annual basis to verify that they are maintaining safe operating practices and retrain employees every three years or if circumstances change that requires a refresher course.
11. For additional materials, please see Personnel Concepts' California Forklift Certification Manual.



COURSE COMPLETION LOG

TRAINEE NAME	INSTRUCTOR SIGNATURE	DATE

# Injury and Illness Prevention Program

LOADER / BACKHOE TRAINING



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## LOADER/ BACKHOE TRAINING

### COMPONENT IDENTIFICATION

Eaton operations incorporate the use of Loader / Backhoes in many phase in our projects. Because of the versatile nature of this machine it is often a component in accidents. Vestility by its very design exposes the operator and the crew members working in adjacent area subject to risks.

Training and familiarity with backhoe operations are the most effective way to mitigate these risks. There are few tasks in our drilling operations that can be accomplished without the Loader / Backhoe, as well as incidental use of nearly every field operations compleated by our company. The basic component of the loader/backhoe is the tractor. Most tractors used in the loader/backhoes are now designed to be used in the conjunction with the loader attachment and the backhoe attachment.

The loader is attached to the front of the tractor and its arms are raised and lowered by hydraulic cylinders. A bucket is attached to the lifting arms which have a hydraulic cylinder for tipping the bucket forward and backward. The capacity of the bucket varies dependent on the size fo the tractor. Buckets can be fitted with teeth to increase the machine's digging ability.

The backhoe is attached to the rear of the tractor by the hinge arrangement which allows the boom and bucket assembly to swing to the right or left. Swinging this assembly is accomplished through the use of two hydralic cylinders which function in a pushing/ pulling manner. Also, boom, stick and bucket functions use hydraulic cylinders. Stablizers are attached to each side of the backhoe to provide stability when the boom is swung from one side to the other.



Backhoe

Tractor

Loader

## MACHINE STABILITY

A typical loader/backhoe used in our operations can weight from 12,000 to 16,000 pounds. Emphasize how heavy the machine is and because of its size how much potential it has for doing damage when not properly operated. Because of their weight, great care is required when removing or installing a loader and/or a backhoe. Always follow the manufacturer's guidelines and use proper equipment for handling these components.

As a backhoe is raised and extended, the center of gravity of the machine rises vertically and moves toward the rear of the machine. This vertical change in the center of gravity affects the machine's lateral or side to side stability. Also, when a backhoe is extended swung to the side, lateral stability decreases.

When the loader/backhoe is on level ground and the backhoe is located directly behind the machine, the machine's center of gravity is centered between the wheels as shown in *(Figure A illustration next page)*. As the traversed slope increases, the machine's stability decreases because the horizontal distance of the center of gravity relative to the wheels on the downhill side decreases as shown in *(Figure B illustration next page)*. If the slope is increased to where the center of gravity moves beyond wheel, the machine will tip-over.

Traveling fast over sloping ground that is rough can cause the machine to bounce and rock from side to side thus increasing the probability of a rollover.

When traversing a steep slope, the operator should first attempt to locate an alternate route. If none exists, then the machine stability can be increased by swinging the backhoe up slope. This will move the machine's center of gravity away from the downhill wheels, thus increasing stability. When performing this maneuver, the operator must be alert to avoid striking ground objects with the backhoe when traveling. Also, the boom should not be raised while traveling on the slope. This could result in shortening the distance from the center of gravity relative to the downhill wheel, resulting in a rollover.

The downhill stabilizer can be lowered to help stabilize the machine should a rollover begin, but again this needs to be done with great care. The lowered stabilizer could strike an unseen object, causing the operator to lose control of the machine.

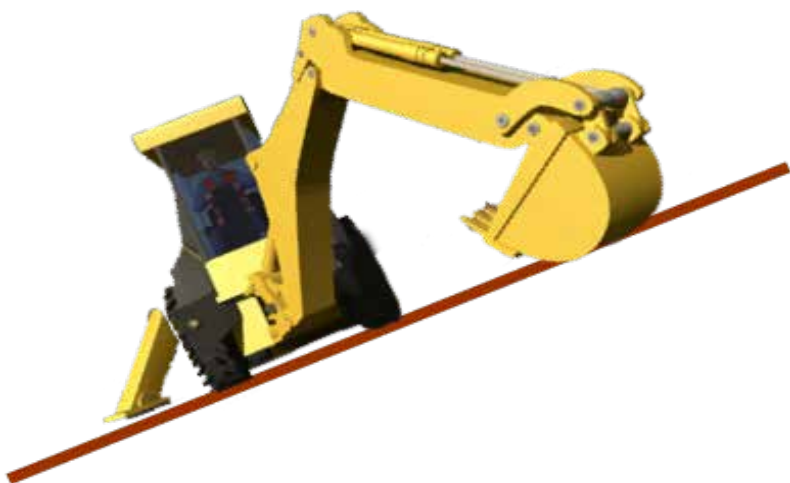
Always, traverse a slope SLOWLY!!



FIGURE A



FIGURE B



ADVERSE SLOPE



When a boom is swung to the side, the center of gravity of the whole machine shifts toward the side also. If the bucket is full of material or if a load is suspended from it, the center of gravity shifts even more to the side. If the combined center of gravity of the machine and load moves beyond the stabilizer, the machine will tip over.

As the bucket is swung to the side, the pressure the stabilizer pad imposes on the ground increases. If that pressure exceeds the soil bearing strength for the ground stabilizer will sink, thus increasing the potential for a tip-over. (*Ground Stability next page illustration*)

When leveling the machine on sloping ground, the stabilizer on the downhill side of the loader/backhoe has to rotate farther down to raise the side of the machine. Thus, the horizontal distance from the machine's center of gravity to the downhill stabilizer decreases. Shortening this distance decreases the machine's stability which in turn decreases the amount of weight the machine can safely lift. This condition is at its worst when the bucket is swung to the side. (*Stabilizer down hill side next page illustration*)

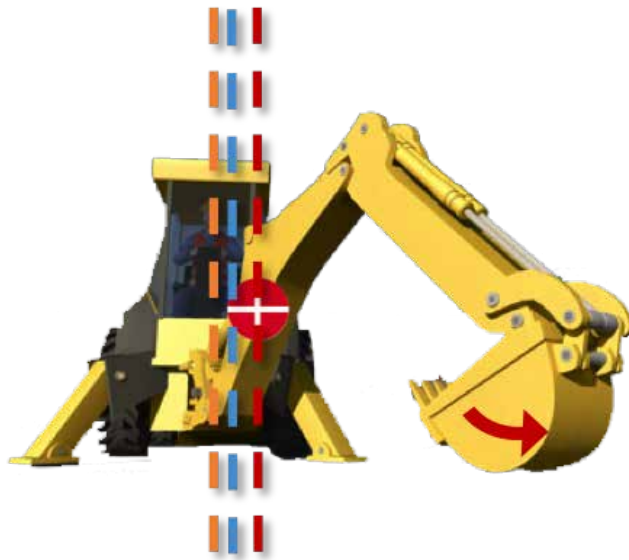
When a loader bucket is full and raised up, the total center of gravity of the machine rises vertically also. When the machine is on a slope and the load is raised as shown in the previous figure, the center of gravity moves toward the downhill side of the machine and if it moves past the downhill tires, the machine will tip over.

Loading trucks, including loading and unloading super sacks of sand on a slope as shown (next page) should be avoided. The truck needs to be positioned so that the machine is relatively level. (*Center of Gravity next page illustration*)

### NEVER LOAD, OR UNLOAD ON A SIDE SLOPE

It is often necessary to operate a loader/backhoe in a soil that may have been previously excavated. This condition can affect the machine's stability, especially when working on a slope. As the machine's rear wheels attempt to gain traction, they can dig into soft soil and cause the rear of the machine to swing downhill. As this occurs, the machine's stability decreases, which increases the likelihood of a tip-over. Also, as the operator attempts to prevent the rear of the machine from swinging downhill, the maneuvering of the machine can result in a tip-over.

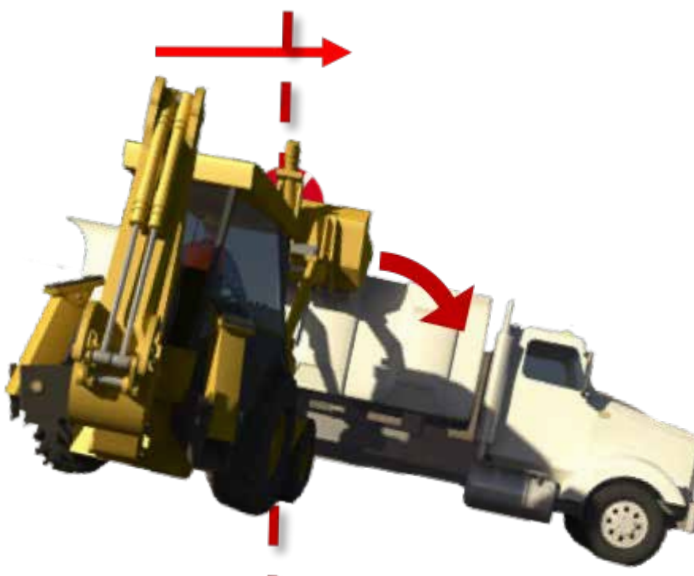
Before traversing soft, sloping ground, assess conditions to determine how soft the soil is and the amount of incline. If any doubt exists about moving the machine across such terrain, look for another route. If there is none, the loader/backhoe can be used to level the route somewhat to decrease the chances of lost stability.



GROUND PRESSURE



STABILIZER DN HILL



CENTER OF GRAVITY

## DRIVING

### **When driving forward, the forward driving torque transfers weight from the front wheels to the rear wheels.**

When a loader/backhoe is put into motion, various dynamic forces come into play. When forward power is applied to the rear wheels the machine attempts to rotate in the opposite direction, or backwards. How much the machine attempts to rotate backwards depends on how fast it is accelerated. When the machine is accelerated forward slowly, the amount of backwards rotation is small, and when the machine is rapidly accelerated forward, a great amount of backward rotation occurs.

As a result this backward rotation, a portion of the weight on the front wheels is transferred to the rear wheels. The amount of weight transfer depends on how rapidly the machine is accelerated. When the machine reaches a constant travel speed, the backwards rotation diminishes and the load which was transferred to the rear wheels returns to the front wheels. During the period that the weight on the front wheels is being transferred to the rear ones, the steering capacity of the machine decreases. With less weight on the front wheels, traction is reduced and therefore the front wheels lose ability to steer the machine. (*Machine In Motion illustration next page*)

When a loader/backhoe moves up an inclined slope, the horizontal distance between the machine's center of gravity and the rear wheels decreases. This change results in the machine becoming less stable in the rearward direction. The illustration shows how the stability of the machine is affected when it is accelerated in the forward direction. When these two effects are combined, the machine's rearward stability is greatly reduced.

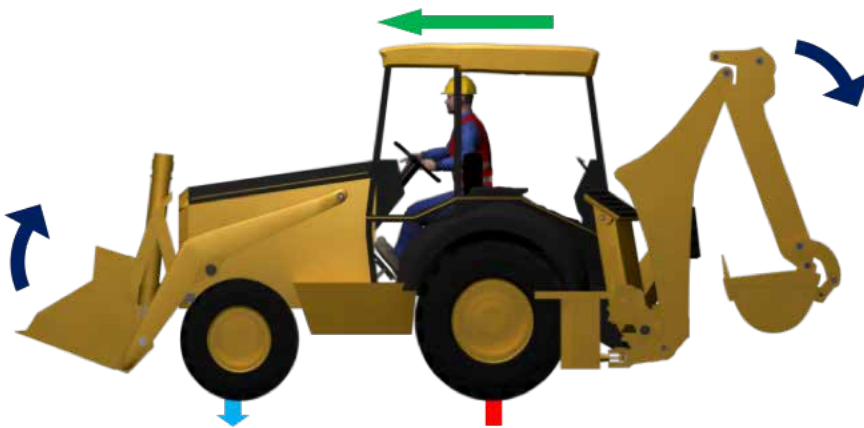
To maximize the stability of the machine in this situation, keep the backhoe retracted up the rear of the machine and accelerated as slowly as possible.

(*Up Inclined Slope illustration next page*)

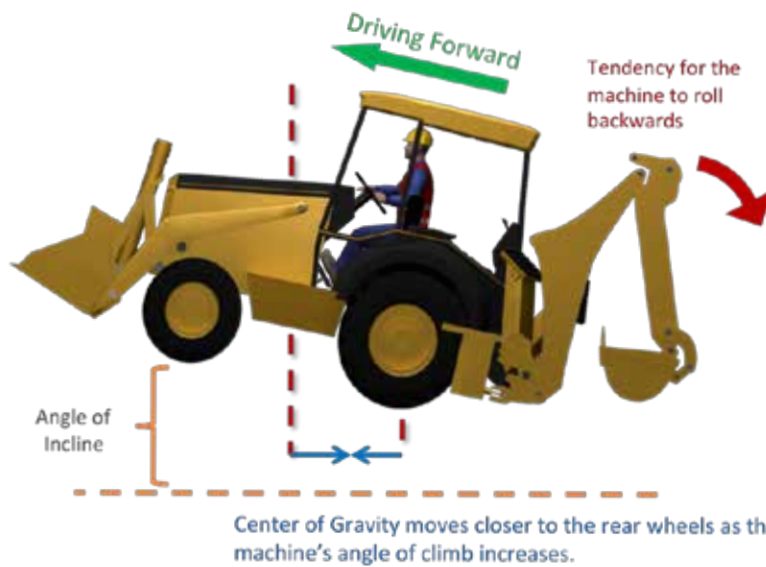
The (*Driving Backwards illustration next page*) shows how accelerating forwards transfers weight from the front wheels to rear wheels. When accelerating backwards, the opposite occurs. As the machine is accelerated in reverse, the center of gravity rotates toward the front. The amount of load transfer that occurs depends on how fast the machine accelerates. The load transfer when backing up is not nearly as noticeable as when the machine is moving forward.

The accompanying *illustration* shows as the angle of incline increases, the horizontal distance from the rear wheel's contact with the ground and the machine's center of gravity increases. Depending on the amount of incline, a portion of the weight carried by the rear wheels will be transferred to the front wheels. This decreased weight on the rear wheels results in a loss of traction and control due to sliding.

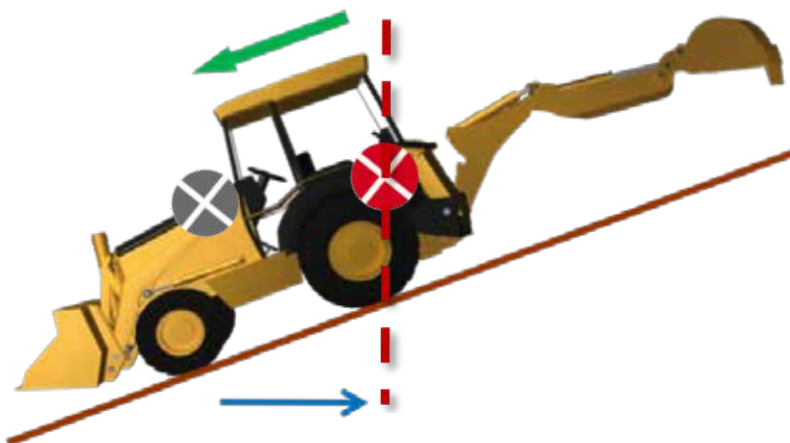
Center of gravity moves further from the rear wheels as the machine's angle of decline increase. This change results in loss of traction on the rear wheels allowing the machine to slide.



MACHINE IN MOTION



UP INCLINED SLOPE



DRIVING BACKWARDS

On occasion it may be desirable when backing up to increase the traction on the rear wheels. By lowering the loader bucket to the ground and raising the front wheels slightly, a certain amount of weight can be transferred from the rear wheels. When doing this maneuver, the bucket should be tilted slightly forward to prevent the rear of the bucket from dragging on the ground. (*Loader Bucket illustration this page*)





## OPERATOR AWARENESS FACTORS

Several factors can affect the operators ability to stay focused on operating the machine

- **Fatigue & Hunger:** Fatigue can result from working too many hours, lack of sleep, hunger or monotonous, repetitive work. When an operator shows signs of fatigue, he should be relieved to get rest or exercise to refresh his alertness.
- **Weather:** Many loader/backhoe are open to the elements. An operator needs to dress appropriately for the weather to prevent stress on his body.
- **Emotional Level:** Operators under emotional stress may not be able to stay focused. It may be necessary at times to remove such an operator from a machine until emotional equilibrium is restored.
- **Physical Heath:** Operators suffering from heath problems affecting their machine operating ability should not be allowed a machine. Even workers taking cold medication my have their alertness compromised.
- **Working Conditions:** Some worksites that have many activities occuring simultaneously can distract an operator. He must be able to block out such distractions while operating a machine.
- **Other People:** People should not attempt to talk or in any way distract an operator who is operating a machine. Wait until he is finished with an operation before approaching or talking to him.

## SEAT BELTS

Loaders/ Backhoes are equipped with seat belts which should be worn at all times. On rough terrain, a seat belt will keep the operator in his seat allowing him to maintain control of the machine. In the event of a rollover, a seat belt will keep the operator within the confines of the rollover structure. Before operating the machine each day as operator is to inspect the seat belt for damage and proper operation.





### CLIMBING ON & OFF MACHINE

When mounting points or dismounting a loader/backhoe, the operator should always face the machine and use the three point contact method. This method is simply keeping two hands and a foot or one hand and two feet in contact with the machine when climbing. By following this method many slips and falls can be prevented. Also, before climbing onto the machine, the operator should check his/ her feet for mud or grease which could cause him/ her to lose his/ her footing.

The machine should always be mounted using the provided steps and hand holds. Never attempt to mount the machine by climbing over the rear of it. When dismounting the machine, never jump off. Serious leg, foot and ankle injuries can result in doing so.

## ON JOB SAFETY

### EVERYONE IS RESPONSIBLE FOR HIMSELF AND THE OTHER PERSON

Job site safety is everyone's responsibility. When performing operations with a loader/backhoe, the operator of the machine and those assisting him on the ground need to work together as a team. Those on the ground need to notify the operator if they notice anything out of order with the machine. The operator needs to be aware of where workers are on the ground and stop operations when anyone comes within range of the machine. Everyone on the job site is responsible for himself and the other person.

### ALWAYS WORK FACING THE MACHINE

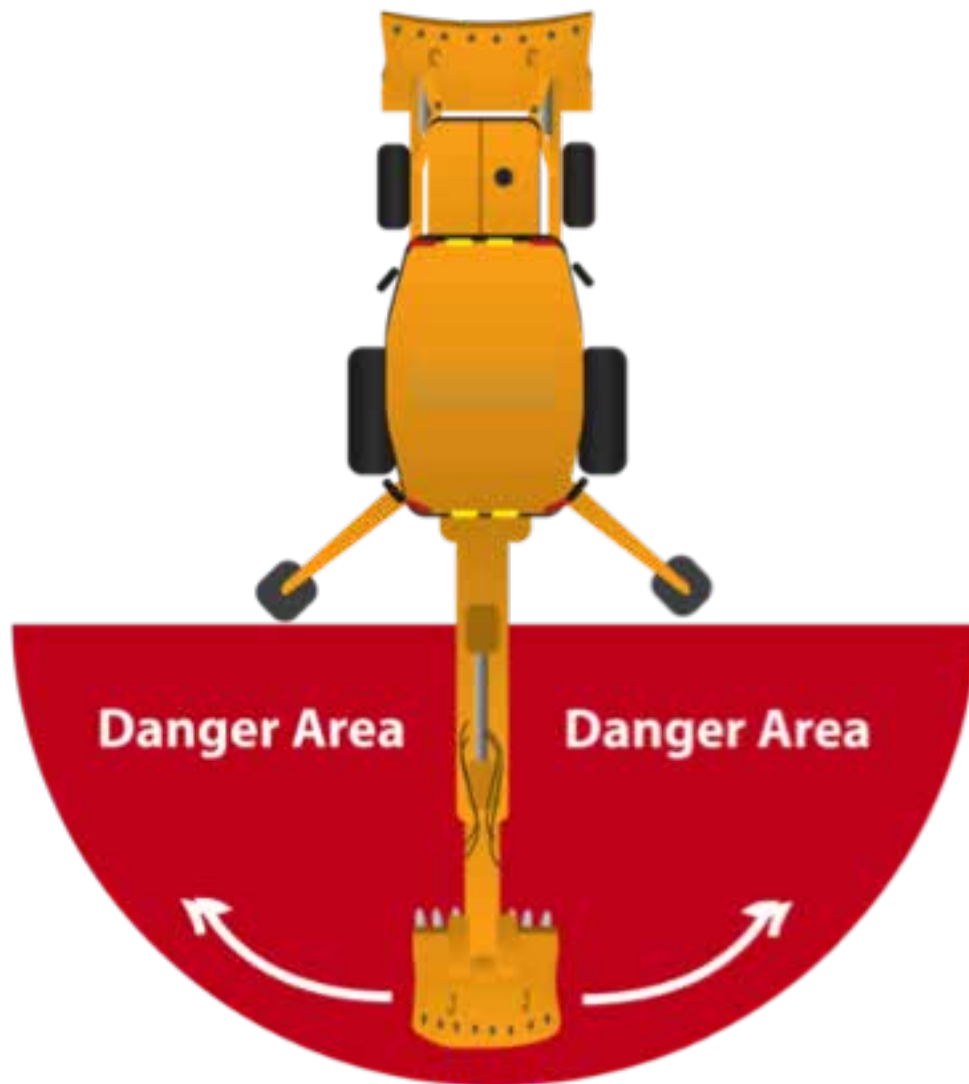


When working around loader/backhoe, the worker should always work facing the machine. He should consider the machine as a continuous threat to his safety and thus constantly keep an eye on its movements.

Before a worker enters the swing danger area, he must establish eye contact with the operator. The worker then must wait until the operator signals him that it is safe to enter this area. The operator should not move the backhoe until the worker has cleared the area.

When it is absolutely necessary for the worker to remain in the swing area while the operator performs an operation, extreme care must be exercised and the worker needs to remain in the operator view. When working around a loader/backhoe, the worker should always work facing the machine. He should consider the machine as a continuous threat to his safety and thus constantly keep an eye on its movements.

## DANGER AREAS



When the backhoe of the loader/backhoe is in operation, no one should enter the full swing area of the backhoe. The backhoe operator's vision on the area is not always clear and anyone entering may not be seen by the operator.



# WARNING!

STAY CLEAR OF  
MOVING  
STABILIZERS  
AND BUCKETS



WHEN THE BACKHOE IS BEING USED FOR EXCAVATING, THE MACHINE WILL OFTEN MOVE THE GROUND. WORKERS STANDING CLOSE TO THE STABILIZERS OR THE LOADER BUCKET COULD BE INJURED WHEN THE MACHINE BOUNCES

## EYE CONTACT

ESTABLISH EYE CONTACT WITH AN OPERATOR BEFORE ENTERING INTO THE DANGER AREA



Before a worker enters the swing danger area, he must establish eye contact with the operator. The worker then must wait until the operator signals him that it is safe to enter the area. The operator should not move the backhoe until the worker has cleared the area. When it is necessary for the worker to remain in this area while the operator performs an operation, extreme care must be exercised and the worker needs to remain in the operator's view.

## EXCAVATING HAZARDS

### BEFORE EXCAVATING DETERMINE THE LOCATION OF ALL UNDERGROUND UTILITIES AND OTHER HAZARDS

Before any excavation work begins, the location and the type of all buried hazards need to be determined. Eaton operations include notification by calling (811) or by internet ([usanorthmapping.com](http://usanorthmapping.com)) if there is doubt, verify notification has been completed as part of the pre-job planning.

Stabilizers of a backhoe need to be set far enough from the edge of a trench to avoid a cave in. Avoid placing the stabilizers closer than two feet from the edge. Depending on the soil structure, this may not be sufficient. Remember, when the backhoe is swung from side to side, the ground pressure from the stabilizer pad increases. The amount of pressure depends on the weight being swung to the side. When setting up the backhoe near a trench, confirm with the on-site 'designated competent individual responsible for establishing safety requirements for trenching to determine how close the machine can be to the trench edge. The rule of thumb for the setup in unstable soil is: The distance the stabilizer is from the trench edge is equal to the depth of the trench.



## GENERAL TRENCH PRECAUTIONS

Placing the stabilizer pads or traveling to close to the trench walls can result in a trench collapse. The machine may fall into the excavation. Trenches that are being excavated in previously filled areas are very susceptible to wall collapse. When traveling, keep the machine parallel to the trench and avoid traveling close to the edge.

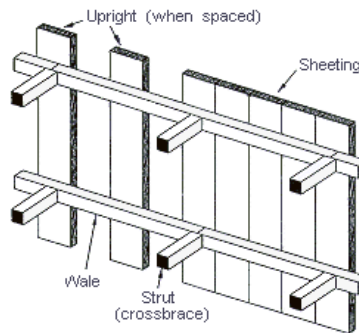
## EXCAVATED MATERIALS

Material excavated from a trench should be placed a minimum of two feet from the edge of the trench. This distance may need to be greater depending on soil type. The slope of the soil pile should be flat enough to prevent material from sliding into the trench.

## SHORING

Shoring is the provision of a support system for trench faces used to prevent movement of soil, underground utilities, roadways, and foundations. Shoring or shielding is used when the location or depth of the cut makes sloping back to the maximum allowable slope impractical. Shoring systems consist of posts, wales, struts, and sheeting. There are two basic types of shoring, timber and aluminum hydraulic.

### TIMBER SHORING



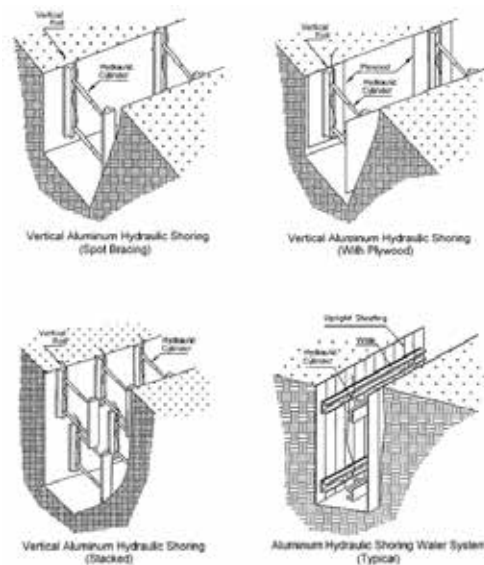
**TIMBER SHORING** - For problems with accessibility in using figures and illustrations in this document, please contact the Office of Science and Technology Assessment at (202) 693-2095.

**HYDRAULIC SHORING** - The trend today is toward the use of hydraulic shoring, a prefabricated strut and/or wale system manufactured of aluminum or steel. Hydraulic shoring provides a critical safety advantage over timber shoring because workers do not have to enter the trench to install or remove hydraulic shoring. Other advantages of most hydraulic systems are that they:

- Are light enough to be installed by one worker;
- Are gauge-regulated to ensure even distribution of pressure along the trench line;
- Can have their trench faces “preloaded” to use the soil’s natural cohesion to prevent movement; and can be adapted easily to various trench depths and widths.

All shoring should be installed from the top down and removed from the bottom up. Hydraulic shoring should be checked at least once per shift for leaking hoses and/or cylinders, broken connections, cracked nipples, bent bases, and any other damaged or defective parts.

## SHORING VARIATIONS: TYPICAL ALUMINUM HYDRAULIC SHORING INSTALLATIONS



Pneumatic shoring works in a manner similar to hydraulic shoring. The primary difference is that pneumatic shoring uses air pressure in place of hydraulic pressure. A disadvantage to the use of pneumatic shoring is that an air compressor must be on site.

**SCREW JACKS** - Screw jack systems differ from hydraulic and pneumatic systems in that the struts of a screw jack system must be adjusted manually. This creates a hazard because the worker is required to be in the trench in order to adjust the strut. In addition, uniform “preloading” cannot be achieved with screw jacks, and their weight creates handling difficulties.

**SINGLE** - Cylinder Hydraulic Shores. Shores of this type are generally used in a water system, as an assist to timber shoring systems, and in shallow trenches where face stability is required.

**UNDERPINNING** - This process involves stabilizing adjacent structures, foundations, and other intrusions that may have an impact on the excavation. As the term indicates, underpinning is a procedure in which the foundation is physically reinforced. Underpinning should be conducted only under the direction and with the approval of a registered professional engineer.



## SPECIAL HEALTH AND SAFETY CONSIDERATIONS

### COMPETENT PERSON

The designated competent person should have and be able to demonstrate the following:

Training, experience, and knowledge of:

- Soil analysis;
- Use of protective systems; and
- Requirements of 29 CFR Part 1926 Subpart P.

#### **Ability to Detect**

- Conditions that could result in cave-ins;
- Failures in protective systems;
- Hazardous atmospheres; and
- Other hazards including those associated with confined spaces.

Authority to take prompt corrective measures to eliminate existing and predictable hazards and to stop work when required.

Surface Crossing of Trenches. Surface crossing of trenches should be discouraged; however, if trenches must be crossed, such crossings are permitted only under the following conditions:

Vehicle crossings must be designed by and installed under the supervision of a registered professional engineer.

Walkways or bridges must be provided for foot traffic. These structures shall:

- Have a safety factor of 4;
- Have a minimum clear width of 20 in (0.51 m);
- Be fitted with standard rails; and
- Extend a minimum of 24 in (.61 m) past the surface edge of the trench.

Access to and exit from the trench require the following conditions:

- Trenches 4 ft or more in depth should be provided with a fixed means of egress.
- Spacing between ladders or other means of egress must be such that a worker will not have to travel more than 25 ft laterally to the nearest means of egress.
- Ladders must be secured and extend a minimum of 36 in (0.9 m) above the landing.
- Metal ladders should be used with caution, particularly when electric utilities are present.

## **Exposure to Vehicles**

Procedures to protect employees from being injured or killed by vehicle traffic include:

Providing employees with and requiring them to wear warning vests or other suitable garments marked with or made of reflectorized or high-visibility materials.

Requiring a designated, trained flagperson along with signs, signals, and barricades when necessary.

## **Exposure to Falling Loads**

Employees must be protected from loads or objects falling from lifting or digging equipment. Procedures designed to ensure their protection include:

- Employees are not permitted to work under raised loads.
- Employees are required to stand away from equipment that is being loaded or unloaded.
- Equipment operators or truck drivers may stay in their equipment during loading and unloading if the equipment is properly equipped with a cab shield or adequate canopy.

## **Warning Systems for Mobile Equipment**

The following steps should be taken to prevent vehicles from accidentally falling into the trench:

- Barricades must be installed where necessary.
- Hand or mechanical signals must be used as required.
- Stop logs must be installed if there is a danger of vehicles falling into the trench.
- Soil should be graded away from the excavation; this will assist in vehicle control and channeling of run-off water.

## **Hazardous Atmospheres and Confined Spaces**

Employees shall not be permitted to work in hazardous and/or toxic atmospheres. Such atmospheres include those with:

- Less than 19.5% or more than 23.5% oxygen;
- A combustible gas concentration greater than 20% of the lower flammable limit; and
- Concentrations of hazardous substances that exceed those specified in the Threshold Limit Values for Airborne Contaminants established by the ACGIH (American Conference of Governmental Industrial Hygienists).

All operations involving such atmospheres must be conducted in accordance with OSHA requirements for occupational health and environmental controls (see Subpart D of 29 CFR 1926) for personal protective equipment and for lifesaving equipment (see Subpart E of 29 CFR 1926). Engineering controls (e.g., ventilation) and respiratory protection may be required. When testing for atmospheric contaminants, the following should be considered:

- Testing should be conducted before employees enter the trench and should be done regularly to ensure that the trench remains safe.

- The frequency of testing should be increased if equipment is operating in the trench.
- Testing frequency should also be increased if welding, cutting, or burning is done in the trench.
- Employees required to wear respiratory protection must be trained, fit-tested, and enrolled in a respiratory protection program. Some trenches qualify as confined spaces. When this occurs, compliance with the Confined Space Standard is also required.

### **Emergency Rescue Equipment**

Emergency rescue equipment is required when a hazardous atmosphere exists or can reasonably be expected to exist. Requirements are as follows:

- Respirators must be of the type suitable for the exposure. Employees must be trained in their use and a respirator program must be instituted.
- Attended (at all times) lifelines must be provided when employees enter bell-bottom pier holes, deep confined spaces, or other similar hazards.
- Employees who enter confined spaces must be trained.

### **Standing Water and Water Accumulation**

Methods for controlling standing water and water accumulation must be provided and should consist of the following if employees are permitted to work in the excavation:

- Use of special support or shield systems approved by a registered professional engineer.
- Water removal equipment, i.e. well pointing, used and monitored by a competent person.
- Safety harnesses and lifelines used in conformance with 29 CFR 1926.104.
- Surface water diverted away from the trench.
- Employees removed from the trench during rainstorms.
- Trenches carefully inspected by a competent person after each rain and before employees are permitted to re-enter the trench.

### **Inspections**

Inspections shall be made by a competent person and should be documented. The following guide specifies the frequency and conditions requiring inspections:

- Daily and before the start of each shift;
- As dictated by the work being done in the trench;
- After every rainstorm;
- After other events that could increase hazards, e.g. snowstorm, windstorm, thaw, earthquake, etc.;
- When fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom, or other similar conditions occur;
- When there is a change in the size, location, or placement of the spoil pile; and
- When there is any indication of change or movement in adjacent structures.

## LIFTING LOADS

WHEN LIFTING A LOAD WITH THE BACKHOE REFER TO THE OPERATOR'S MANUAL FOR SPECIFIC LOAD RATINGS AT DIFFERENT RADII AND BOOM POSITIONS

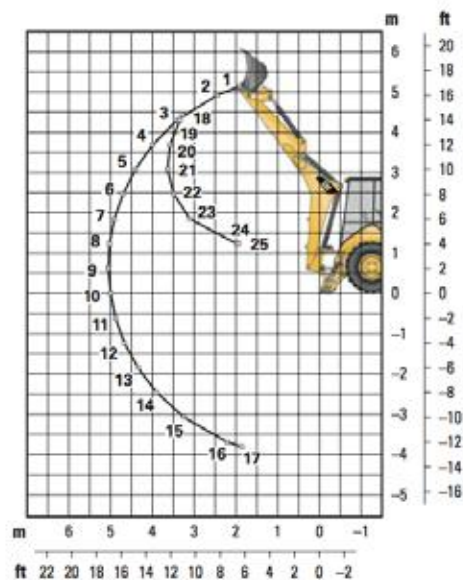
The operator's manual for each machine will include a section on lifting with the backhoe. This section includes information on lifting capacity for various radii of the operation and where and how the loads are attached to the backhoe.

### 430E/430E IT Specifications

#### Backhoe Lift Capacity

Cat 430E/430E IT Standard Stick

Boom Lifting	kg	lb
1	1469	3,232
2	1740	3,828
3	1906	4,193
4	1901	4,183
5	1857	4,086
6	1801	3,962
7	1715*	3,773*
8	1648*	3,626*
9	1619*	3,562*
10	1577	3,469
11	1530	3,365
12	1488	3,273
13	1452	3,195
14	1427	3,139
15	1423	3,130
16	1507	3,315
17	1587	3,492
Stick Lifting	kg	lb
18	2436	5,359
19	2615	5,754
20	2684	5,906
21	2629	5,783
22	2755	6,061
23	3139*	6,907*
24	5259*	11,571*
25	5368*	11,809*

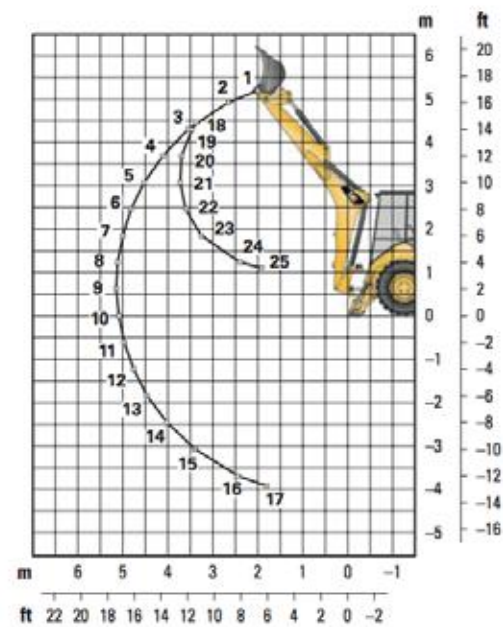


Lift Capacities are over-end values. Machine equipped with 4WD, OROPS, 1.00 m<sup>3</sup> (1.31 yd<sup>3</sup>) general purpose bucket, and 116 kg (255 lb) counterweight.

\*Indicates lift capacity is stability limited.

### Cat 430E/430E IT Extendible Stick – Retracted

Boom Lifting	kg	lb
1	1214	2,670
2	1505	3,311
3	1639	3,606
4	1635	3,598
5	1595	3,510
6	1543	3,395
7	1488	3,273
8	1433	3,152
9	1380	3,036
10	1330	2,927
11	1284	2,826
12	1243	2,735
13	1208	2,657
14	1181	2,598
15	1172	2,578
16	1224	2,693
17	1345	2,959
Stick Lifting	kg	lb
18	2142	4,711
19	2348	5,165
20	2400	5,280
21	2350	5,170
22	2457	5,406
23	2817	6,197
24	4270	9,394
25	5815*	12,793*

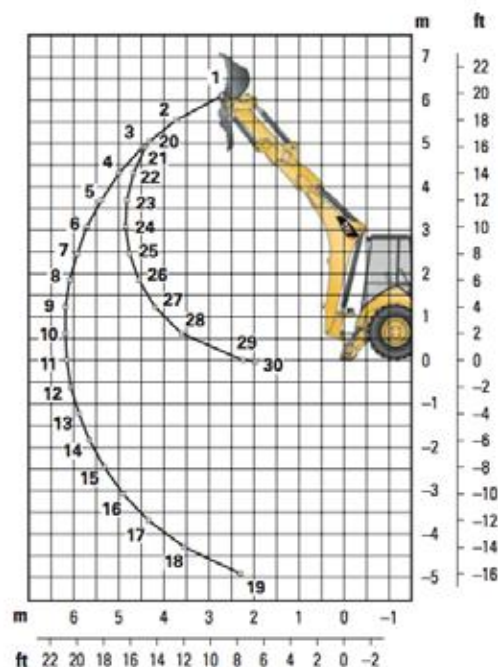


Lift Capacities are over-end values. Machine equipped with 4WD, OROPS, 1.00 m<sup>3</sup> (1.31 yd<sup>3</sup>) general purpose bucket, and 116 kg (255 lb) counterweight. Extendible stick includes 488 kg (1,075 lb) counterweight.

\*Indicates lift capacity is stability limited.

### Cat 430E/430E IT Extendible Stick – Extended

Boom Lifting	kg	lb
1	657	1,446
2	993	2,185
3	1106	2,433
4	1143	2,514
5	1148	2,525
6	1138	2,503
7	1120	2,464
8	1098	2,416
9	1075	2,364
10	1051	2,312
11	1028	2,261
12	1006	2,213
13	987	2,171
14	971	2,135
15	959	2,110
16	956	2,102
17	966	2,125
18	1011	2,223
19	1224	2,694
Stick Lifting	kg	lb
20	1187	2,612
21	1266	2,786
22	1553	3,416
23	1634	3,595
24	1615	3,553
25	1650	3,630
26	1752	3,854
27	1960	4,312
28	2419	5,322





## Loader Bucket Dimensions and Performance

	Single Tilt Loader							
	General Purpose (0.96 m <sup>3</sup> /1.25 yd <sup>3</sup> )		General Purpose (1.00 m <sup>3</sup> /1.31 yd <sup>3</sup> )		General Purpose (1.07 m <sup>3</sup> /1.40 yd <sup>3</sup> )		General Purpose (1.15 m <sup>3</sup> /1.50 yd <sup>3</sup> )	
Capacity (SAE rated)	0.96 m <sup>3</sup>	1.25 yd <sup>3</sup>	1.00 m <sup>3</sup>	1.31 yd <sup>3</sup>	1.07 m <sup>3</sup>	1.40 yd <sup>3</sup>	1.15 m <sup>3</sup>	1.50 yd <sup>3</sup>
Overall bucket width	2262 mm	7 ft 5 in	2406 mm	7 ft 11 in	2262 mm	7 ft 5 in	2406 mm	7 ft 11 in
Lift capacity at maximum height	2811 kg	6,197 lb	2937 kg	6,475 lb	2868 kg	6,323 lb	2849 kg	6,281 lb
Breakout force	44.3 kN	9,973 lb	46.3 kN	10,401 lb	45.1 kN	10,130 lb	44.9 kN	10,091 lb
(7) Maximum hinge pin height	3296 mm	10 ft 10 in	3296 mm	10 ft 10 in	3296 mm	10 ft 10 in	3296 mm	10 ft 10 in
(8) Dump angle at full height	44°		44°		44°		44°	
Dump height at maximum angle	2553 mm	8 ft 7 in	2604 mm	8 ft 7 in	2550 mm	8 ft 4 in	2550 mm	8 ft 4 in
(9) Dump reach at maximum angle	785 mm	2 ft 8 in	821 mm	2 ft 8 in	819 mm	2 ft 8 in	819 mm	2 ft 8 in
(10) Maximum bucket rollback at ground level	39°		39°		40°		40°	
(11) Digging depth	106 mm	4 in	106 mm	4 in	146 mm	6 in	146 mm	6 in
Maximum grading angle	108°		108°		108°		108°	
Width of dozer cutting edge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(12) Grill to bucket cutting edge, carry position	1508 mm	4 ft 11 in	1484 mm	4 ft 10 in	1551 mm	5 ft 1 in	1551 mm	5 ft 1 in
(13) Maximum operating height	4177 mm	13 ft 8 in	4193 mm	13 ft 9 in	4237 mm	13 ft 11 in	4237 mm	13 ft 11 in
Jaw opening maximum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bucket jaw clamping force	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Weight (does not include teeth or forks)	451 kg	994 lb	449 kg	989 lb	459 kg	1,012 lb	479 kg	1,056 lb

	Single Tilt Loader							
	Multi Purpose (0.96 m <sup>3</sup> /1.25 yd <sup>3</sup> )		Multi Purpose (1.03 m <sup>3</sup> /1.35 yd <sup>3</sup> )		Multi Purpose with Forks (1.00 m <sup>3</sup> /1.31 yd <sup>3</sup> )		Multi Purpose with Forks (1.07 m <sup>3</sup> /1.40 yd <sup>3</sup> )	
Capacity (SAE rated)	0.96 m <sup>3</sup>	1.25 yd <sup>3</sup>	1.03 m <sup>3</sup>	1.35 yd <sup>3</sup>	1.00 m <sup>3</sup>	1.31 yd <sup>3</sup>	1.07 m <sup>3</sup>	1.40 yd <sup>3</sup>
Overall bucket width	2279 mm	7 ft 6 in	2425 mm	7 ft 11 in	2279 mm	7 ft 6 in	2425 mm	7 ft 11 in
Lift capacity at maximum height	2615 kg	5,765 lb	2586 kg	5,701 lb	2499 kg	5,508 lb	2470 kg	5,445 lb
Breakout force	46.9 kN	10,547 lb	46.7 kN	10,514 lb	46.0 kN	10,341 lb	45.8 kN	10,308 lb
(7) Maximum hinge pin height	3296 mm	10 ft 10 in	3296 mm	10 ft 10 in	3296 mm	10 ft 10 in	3296 mm	10 ft 10 in
(8) Dump angle at full height	46°		46°		46°		46°	
Dump height at maximum angle	2607 mm	8 ft 7 in	2607 mm	8 ft 7 in	2607 mm	8 ft 7 in	2607 mm	8 ft 7 in
(9) Dump reach at maximum angle	694 mm	2 ft 3 in	694 mm	2 ft 3 in	694 mm	2 ft 3 in	694 mm	2 ft 3 in
(10) Maximum bucket rollback at ground level	40°		40°		40°		40°	
(11) Digging depth	133 mm	5 in	133 mm	5 in	133 mm	5 in	133 mm	5 in
Maximum grading angle	113°		113°		113°		113°	
Width of dozer cutting edge	2262 mm	7 ft 5 in	2406 mm	7 ft 11 in	2262 mm	7 ft 5 in	2406 mm	7 ft 11 in
(12) Grill to bucket cutting edge, carry position	1473 mm	4 ft 10 in	1473 mm	4 ft 10 in	1473 mm	4 ft 10 in	1473 mm	4 ft 10 in
(13) Maximum operating height	4226 mm	13 ft 10 in	4226 mm	13 ft 10 in	4700 mm	15 ft 5 in	4700 mm	15 ft 5 in
Jaw opening maximum	790 mm	2 ft 7 in	790 mm	2 ft 7 in	790 mm	2 ft 7 in	790 mm	2 ft 7 in
Bucket jaw clamping force	55.7 kN	12,521 lb	55.7 kN	12,521 lb	55.7 kN	12,521 lb	55.7 kN	12,521 lb
Weight (does not include teeth or forks)	745 kg	1,642 lb	774 kg	1,706 lb	915 kg	2,017 lb	936 kg	2,064 lb

Dimensions and performance specifications shown are for machines equipped with 12.5/80-18 SGL front tires, 19.5L-24 IT525 rear tires, ROPS canopy, standard stick with 610 mm (24 inch) standard duty bucket, and 0.96 m<sup>3</sup> (1.25 yd<sup>3</sup>) loader bucket and standard equipment unless otherwise specified.

## ATTACHING THE LOAD

FOR BUCKETS WITH LIFTING EYES LOCATED ON THE BACK OF THE BUCKET, USE A SHACKLE TO ATTACH THE SLINGS. BECAUSE OF THE SHAPE EDGES, CHAIN SLINGS SHOULD BE USED.



When determining where to attach the lifting sling(s) to the bucket the operator should first refer to the operator's manual. Most manufactures state where the load should be attached. Some manufactures have included a lifting eye attachment point on the bucket. Others have designated holes in the bucket linkage as suitable lifting points. Once a load is attached to a backhoe the bucket should not be manipulated. Doing so could foul or damage the rigging.



WHEN ATTACHING A CHAIN FOR LIFTING ON BUCKETS WITHOUT LIFTING EYES, THE CHAIN SHOULD BE ATTACHED AS SHOWN, AND BROUGHT OVER THE BACK OF THE BUCKET AS SHOWN. NEVER MAKE A LIFT WITH A CHAIN OR SLING ATTACHED SOLELY TO THE TEETH.

For buckets which do not have a designated lifting attachment points, a chain can be attached as shown in the previous figures. The backhoe bucket needs to be rotated outward so that the teeth point downward at all times during the full range of motion of the boom and the stick. The chain is attached to the bucket as shown. The chain bends over the back of the bucket as shown. Where the chain bends over the sharp edges, blocking between the edge and chain should be used to prevent damage to the chain. Such damage could result in chain failure.

#### ATTACHING THE LOAD TO THE LOADER

The operator's manual for each machine includes a section on load capacity for the loader bucket. On some machines, lifting capacity is limited by the capacity of the hydraulic system. Some buckets come with lifting eyes welded to the back side. Chain slings can be attached at these points and the chain runs over the front of the bucket. Blocking as some other form of protection should be used to prevent the chain from being damaged where it bends over sharp edges. Slings should not be attached to the lifting arms of the loader, or around any of the hydraulic lifting cylinders.

If the load is moved by the traveling machine, it should be kept as low to the ground as possible. This will help maintain control of the load while traveling and allow the load to be quickly lowered if it gets out of control. Always travel at the slowest speed when traveling with a suspended load.



## CHAINS



GRAVEL BAGS



CHAINING DOWN

Various lifting hardware has been manufactured to use for the different lifting applications. All hardware used for lifting must be load rated by the manufacturer and used according to their instructions. Prior to use, this hardware needs to be inspected by a competent individual. When not in use, the hardware should be stored to prevent damage and deterioration due to weather.

## TRANSPORTING THE MACHINE



When preparing to transport a loader/backhoe, consult the operators manual to identify any specific things to be done. Most backhoes have a boom swing locking pin that needs to be engaged. Also, the boom transport lock needs to be engaged.

When loading the machine onto a ramp truck or trailer, make sure the wheels are blocked. Clean off any mud from the ramps to prevent machine's slipping off of them. When driving the loader/backhoe up a steep ramp, remember that the front end of the machine will be light. Therefore, accelerate slowly to keep the front wheels on the deck. Once the machine is in position for traveling lower the loader bucket as necessary and chain off hydraulic cylinder and or other parts that could be damaged.

Tie-down chains should be installed in a cross configuration, both side to side and front to back. When unloading the machine, make sure all tie-down chains are removed and the transport wheels blocked. Carefully descend the ramps, keeping the loader bucket high enough to clear the deck.







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