

### OPERATIONS SPECIFIC

### CHANGING & CLEANING SHAKER SCREENS

#### Hazards

High oil mist and vapor levels can occur in the shale shaker area when using oil based drilling muds (GS Oil-Based Mud) or when water-based muds (GS Water-Based Mud) become contaminated with hydrocarbons. Hydrogen sulfide and production gases may also be absorbed in the drilling mud and be released when brought to surface. Workers may be exposed to drilling fluids either by breathing in mists and vapors or by skin contact. Use of high pressure washers may cause mud particles and oil mist to become airborne.

In addition to the chemical hazards, the risk fire and explosion will increase with the flammability of the fluids used or produced (GS Flammable Materials) and the risk of slips and falls increase when surfaces get covered in drilling mud.

#### Access

Only allow access to the area by authorized staff that have been trained and equipped to work safely.

#### Equipment & Procedures

- » Before beginning work ensure shale shaker is locked out in the off position and tagged to warn others not to operate equipment (GS Lock-out/Tag-out System).
- » Consider if drilling mud may be contaminated with production fluids. If the oil or gas field has a history of producing hydrogen sulfide or volatile natural gas condensates, small amounts of contamination can quickly produce high concentrations in air above unenclosed or unventilated shakers.
- » Consider the need to position gas detection (e.g., hydrogen sulfide, explosive gases) equipment at shale shakers to detect contamination from production fluids.
- » Eliminate all ignition sources from area.
- » If using flammable drilling fluids monitor mud operating temperature to ensure it stays 10 degrees C below flash point of fluids used (GS Flashpoints).
- » Ventilation fans should be used when necessary to prevent the build-up of hydrocarbon vapors in enclosed or semi-enclosed areas. Fan motors should be explosion-proof, and fan blades should be made of a non-sparking material.
- » Every effort should be made to reduce the generation of airborne mist by spray or splash discharges, etc.
- » The use of a high-pressure wash gun with oil should be kept to a minimum and only oils with a high flashpoints and minimum light end components should be used. Mineral oil is recommended. The use of diesel fuel as a washing fluid in pressure wash guns is not recommended.
- » Wash guns should be equipped with triggers to minimize air contamination and wasted fluids when wash guns are unattended.
- » Undertake screen cleaning away from areas where others are working and in an area where waste materials can be contained.
- » Clean up and dispose of waste materials promptly.
- » Ensure walkways remain free of mud and debris to prevent creating a slipping hazard.

#### Personal Protective Equipment

Respiratory Protective Equipment:

- » Self-Contained Breathing Air: To be used when H<sub>2</sub>S may exceed 10 ppm (GS H<sub>2</sub>S and GS Respiratory Protective Equipment).
- » NIOSH approved P-95 (or P-99 or P-100) with combination organic vapor cartridge required for oil based mud systems while cleaning and changing screens, checking screens for wear and when using wash guns using hydrocarbon-based fluid.
- » NIOSH approved P-95 (or P-99 or P-100) with combination organic vapor cartridge required for work around unenclosed or unventilated shakers if contamination with production fluids is suspected until occupational hygiene monitoring demonstrates mist and vapor concentrations are less than 50% of occupational exposure limit.

Other Personal Protective Equipment:

- » Personal H<sub>2</sub>S Monitor: To be worn at all times (including truck drivers) (see GS H<sub>2</sub>S Gas Monitors).
- » Fire Retardant Coveralls: To be worn at all times (GS Flame Resistant Clothing).
- » Chemical resistant gloves, clothing, boots and eye protection (goggles) are required if direct contact with drilling fluids that contain hydrocarbons (GS Skin Contact and GS Gloves).

### Cleaning & Housekeeping

- » Keep all work areas neat and free from debris.
- » Clean up chemical spills promptly (GS Spill Response).

### Information Training and Supervision

Employer responsibilities:

- » Gather and provide safety data sheets on the chemicals that will be present at the workplace
- » Use the Controlling Chemical Hazards Guideline to define the required chemical management process for the work you wish completed.

Supervisor responsibilities:

- » Ensure the availability of the required Guidance Sheets for chemical management.
- » Ensure the availability and use of appropriate protective equipment.
- » Complete and review with workers the chemical management process and the applicable Safety Data Sheets.
- » Review safe work procedures with workers before they start work.

Worker responsibilities:

- » Wear appropriate personal protective equipment.
- » Follow safe work procedures.
- » Ensure spills and leaks are quickly cleaned up.
- » Wash contaminated clothing before reuse.

### PRECAUTIONS YOU SHOULD TAKE

- Ask your employer about the risks, what precautions to take and what to do in an emergency.
- Follow the safe working procedures laid down by your employer.
- Read and understand safety data sheets for all chemicals you will be working with.
- Use the personal protective equipment provided, i.e., respiratory protection and impervious clothing.
- Don't enter any area that may contain H<sub>2</sub>S before it has been tested.
- Report to your employer or safety representative any damaged or defective ventilation systems or protective equipment workplace.