JOSOP – 500 Hydrogen Sulfide Program and Procedure

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1.0 Purpose, Objectives and Scope

Purpose

The purpose of this Joint Operations Safe Operating Procedure (JOSOP) is to comply with State of Kuwait regulatory requirements and Chevron Hydrogen Sulfide (H₂S) Occupational Exposure Standard in order to protect employees and contractors working in operations that can pose a potential for Hydrogen Sulfide (H₂S) exposure, and prevent harm to their health.

Objectives

The intent of this JOSOP is to:
(a) Establish a process to carry out and evaluate exposures to H₂S.
(b) Set up the mandatory requirements to protect employees and contractors from exposure to H₂S.
(c) Manage exposures to H₂S to prevent harm to employees and contractors’ health.

Scope

This JOSOPS covers work performed by JO employees and contractors within JO operational control.

2.0 Definitions

“Airline Respirator”: A device that uses a source of breathing air that is remote or separate from the contaminated atmosphere surrounding the wearer. The airline limits the wearer to a fixed distance from the air supply.

“Breathing Zone”: A hemisphere forward of the shoulders with a radius of 6 to 9 inches.

“Calibration”: The procedure used to adjust an instrument for proper accuracy, for example, zero level, span, alarm, and range.

“Certified”: Written confirmation for successful completion of a training class.

“Escape Respirators”: Respirators that are designed for use only to escape from hazardous atmospheres. These respirators include units such as the 5-minute egress bottle used with airline respirators or small SCBA. These respirators are not designed for rescue purposes.

“Hazardous Atmosphere”: Any atmosphere, either immediately dangerous to life or health or not, which is oxygen deficient, or that contains a toxic contaminant exceeding an established permissible exposure limit (PEL).

“Hydrogen Sulfide (H₂S)”: It is a colorless, flammable and extremely toxic gas with a “rotten egg” odor. It forms an extremely flammable mixture with air in range from 4.3% to 46%. It is soluble in water and oil. It forms a weak acid in water, which is corrosive to metals. It occurs naturally in crude petroleum and natural gas. In addition, H₂S is produced by bacterial breakdown of organic materials and human and animal waste (e.g., sewage). Industrial activities that can produce H₂S include petroleum/ natural gas drilling and refining, waste water treatment and coke ovens. H₂S is heavier
than air and collects in low-lying, enclosed and poorly ventilated areas such as basements, manholes, underground telephone vaults, and confined spaces.
The primary route of exposure is inhalation. Absorption through the skin is minimal. Detection of H₂S by odor is unreliable since it rapidly deadens the sense of smell and the exposed person loses his ability to smell the gas, while the exposure continues.

**“Health Effects of Hydrogen Sulfide (H₂S)”**: Causes irritation of eyes, nose, and respiratory system and chemical asphyxia. Severity of effect depends on concentration and duration of exposure. At low concentration, it causes irritation of eyes, nose, throat and respiratory system, resulting in burning and watering of eyes, cough, and asthmatic may experience difficulty in breathing. Repeated exposures to low concentration may cause redness of eye, headache, and fatigue. Exposure at moderate concentration can cause more severe eye and respiratory irritation including cough, difficulty in breathing, headache, dizziness, and vomiting. Exposure to high concentration can result in difficulty in breathing, unconsciousness, convulsions, and death. Effect can occur within a few breaths.

**“Immediately Dangerous to Life or Health (IDLH) Atmosphere”**: An atmospheric concentration of any toxic, corrosive, or asphyxiating substance that poses an immediate threat to life or that would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

**“Pressure-Demand Respirator”**: A respirator equipped with a full face-piece only. Positive pressure is maintained in the face-piece. The apparatus may have provision for the wearer to select the demand or pressure-demand mode of operation, in which case the demand mode should be used only when donning or removing the apparatus.

**“Purging (Ventilating)”**: The method by which gases, vapors, or other airborne impurities are displaced from a confined or enclosed space. Ventilating is the most commonly used method of purging or gas-freeing a tank/vessel or enclosed space.

**“Respirator”**: A device designed to protect the wearer from inhaling harmful atmospheres and has been approved by the National Institute for Occupational Safety and Health (NIOSH), the Mine Safety and Health Administration (MSHA), and/or other internationally recognized standards setting institutions. SCBAs and SAR units are the only respirators approved for confined space entry and working in an H₂S environment.

**“Self-Contained Breathing Apparatus (SCBA)”**: A device that is completely carried by the wearer and can provide breathing air to the wearer independent of any other source. The wearer is limited in usage time by the amount of air carried or the regenerative capability of the device.

**“Source”**: The atmosphere inside a container (tank, vessel line, etc.) that contains H₂S.

**“Standby Person Confined Space Entry (Entry watch)”**: A person who has been trained and designated by proper authority (qualified person in confined space entry) to remain on the outside of a confined space. He shall initiate an appropriate action to protect those persons inside a confined space, if any conditions should arise, either inside or outside, that may endanger their safety.

**“Tank Basin”**: The area including everything within a diked area (sometimes referred to as a firewall or bund wall) around tanks.

**“Threshold Limit Value (TLV)” or “Occupational Exposure Limit (OEL)” or “Permissible”**
Exposure Limit (PEL)”: Refers to airborne concentration of a chemical substance to which nearly all workers may be repeatedly exposed, day after day, over a working lifetime, without adverse health effect.

“Threshold Limit Value -Time Weighted Average (TLV-TWA)”: Average Airborne concentration of chemical substance for 8-hour workday and a 40-hour workweek to which nearly all workers may be repeatedly exposed, day after day, over a working lifetime, without adverse health effect.

“Threshold Limit Value-Short Term Exposure Limit (TLV- STEL)” : Average Airborne concentration for exposure to a chemical up to 15 minutes, no more than 4 times a day with a gap of one hour between two exposures a day, which causes no adverse health effect to workers.

3.0 Requirements

3.1.0 Occupational Exposure Limits in JO:
JO will follow Chevron Occupational Exposure standard for H2S, given below.

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<th>Type of Exposure Measure</th>
<th>JO and Chevron Exposure Standard</th>
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<tr>
<td>Threshold Limit Value-Time Weighted Average (TLV-TWA)</td>
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<td>Threshold Limit Value-Short Term Exposure Limit (TLV- STEL)</td>
<td>15 ppm</td>
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<tr>
<td>Immediately Dangerous to Life or Health</td>
<td>100 ppm</td>
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JO standard complies with Kuwait-EPA standard on H2S, as JO and Kuwait-EPA TLV- STEL and IDLH values are the same, and JO TLV-TWA value is lower than Kuwait-EPA TLV-TWA value of 10 ppm.

3.2.0 H2S Monitoring and Hazard Evaluation:
H2S monitoring and Hazard evaluation should be carried out whenever there is a product (e.g., crude, sour water, natural gas), process (e.g., drilling), or work task (e.g. process stream sampling, wellhead maintenance, top loading of tank trucks, manual tank gauging, tank cleaning and maintenance, draining flare knockout drums, draining pumps, breaking flanges, replacing pressure gauge on oil service, excavation) that could result in H2S release and create a potential for H2S exposure.

3. 2.1 Personal monitoring: Breathing zone monitoring of representative sample of employees to determine 8 hour Time Weighted Average (TWA) and 15 minute Short Term Exposures should be carried out by Industrial Hygienist/ EH&S specialist with following frequencies:
   a) Initially.
   b) Every 6 months: When the previous TWA exposures of employees are at or above 5 ppm or the STEL exposures are at or above 15 ppm.
   c) Every year: When the previous TWA exposures of employees are at or above 2 ppm but less than 5 ppm, and/ or the STEL exposures are at 7 ppm but less than 15 ppm.
   d) Additional monitoring is required as follows: (1) whenever there has been a change in the production, process, control equipment or work practice which may result in new or increased exposure, (2) after incident of spill or leak to ensure exposures return to level prior to the incident, and (3) when an employee concern or illness associated with hydrogen sulfide exposure is raised.
   Results of personal monitoring should be notified to affected employees in writing. Exposure
profile of employees should be updated every three years.

3.2.2 **Area monitoring:** Area monitoring and source measurements should be conducted on need basis, by line management. Instances might include, but are not limited to the following: (a) H₂S is suspected to be present in a work area which is normally free of H₂S, (b) tasks/situations that result in H₂S release, (c) whenever there has been a change in the production, process, control equipment or work practice which may result in new or increased exposure, (c) after incident of spill or leak to ensure exposures return to level prior to the incident. Persons engaged in doing area and source measurements using portable equipment must wear proper respiratory protection equipment (RPE) and other personal protection equipment (PPE).

Continuous area monitoring for H₂S using fixed (stationary) monitors is required in areas where potential for sudden H₂S release exists. Fixed monitors should be equipped with both audible and visual alarms set to minimum two levels (low and high) of H₂S concentration.

3.2.3 **IDLH Assessment:** IDLH assessment is required for a work zone (work area) when there is a possibility of air-borne H₂S concentration in the work area to exceed 100 ppm, like, (a) when the source of H₂S present is either in excess of 100 ppm in a gas stream that is going to be released in the work area, or (b) when H₂S may be released to the work area from a liquid containing hydrogen sulfide (e.g., crude, sour water, sludge deposits) by agitation, and/or increase in temperature or change in pH. Examples include a small leak from a sour gas stream greater than 1000 ppm or the agitation of sludge during a tank cleaning operation.

Assessment methods to determine potential IDLH levels in the work area atmosphere include, but are not limited to the following: (a) tank hatch measurements with direct reading instruments for tank battery walkways, (b) source dispersion modeling for production wells, piping leaks, or opening sample ports, and (c) fixed monitor data from the work area. Results from these assessments should be used to determine the likely IDLH zone for a given job task or work area. Persons engaged in carrying out H₂S measurements using portable equipment must wear proper respiratory protection equipment (RPE) and other personal protection equipment (PPE).

3.3.0 **Hazard Warning Signs**
Hazard warning signs shall be posted at the entrance to work areas, units, or facilities where H₂S is present or likely to be present. Hazard warning sign shall state the following:

```
CAUTION
HYDROGEN SULFIDE
H₂S
POISONOUS GAS (Include symbol)
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Warning sign posted at the entrance of area where employees must wear breathing apparatus shall state the following:

```
DANGER
HYDROGEN SULFIDE
H₂S
POISONOUS GAS (Include symbol)
```
Self Contained Breathing Apparatus
Or
Airline Respirator
REQUIRED

3.4.0 Engineering Controls
Where feasible, engineering control measures should be used to reduce and maintain employees exposures to below JO Occupational Exposure Standard. Engineering controls can include any of the following: (a) enclosed process, (b) remote automatic gauge lines, (c) hydrostatic fluid measurement device, (d) general ventilation (tank-top blower fans), (e) flare lines, (f) repair of leaks, (g) sealing of sewers, (h) gas blanketing of tanks, (i) pressurized control rooms.

3.5.0 Administrative Controls

3.5.1 Alarm monitors: Wearing of personal alarm monitor for H₂S gas is mandatory for every employee and contractor entering in JO field area, and in areas where the potential for H₂S gas leak/exposure exists. Personal alarm monitors should be set to give audible and flashing LED alarm at 10 ppm. In case of monitor with two alarms, the lower level alarm is set at 10 ppm and the higher level alarm should be set at 15 ppm.

Fixed (stationary) monitors with detection sensors should be installed for continuous monitoring in areas where potential for sudden H₂S release exists. Fixed monitors should be equipped with both audible and visual alarms set to minimum two levels (low and high) of H₂S concentration.

3.5.2 Work place controls: Prior to initiating work, presence of H₂S should be considered as part of Hazard Analysis, and appropriate control measures should be put in place. Wind direction should be verified using wind socks. If required, employees should perform work upwind from a source of H₂S.

3.6.0 Personal Protective Equipment for H₂S

3.6.1 Use of appropriate respiratory protective equipment, and personal protective equipment to prevent exposure to eyes is mandatory for employees and contractors working in areas where breathing zone concentration exceeds 5 ppm or when performing tasks that could result in H₂S release/exposure. Such tasks include, but are not limited to: (a) personal stream sampling, (b) manual tank gauging, (d) tank cleaning and maintenance, (e) wellhead maintenance, (f) draining flare knockout drums, (g) draining pumps, (h) breaking flanges, (i) replacing pressure gauge on oil service, (j) confined space entry.

3.6.2 Type of respirators: The only acceptable respirators are: (a) Full face piece pressure-demand Self Contained Breathing Apparatus (SCBA) with a service life of 30 minutes, and (b) Full face piece pressure-demand Supplied Air Respirator (SAR), with auxiliary self-contained air supply.
Work duration should be considered when making selection between these two respirators. It is recommended that full face piece pressure-demand Supplied Air Respirators (SAR) are used when working in areas where breathing zone H₂S concentration exceeds 5 ppm or when performing tasks that could result in H₂S release/exposure, and use of SCBA is restricted to rescue.

Regular work is not allowed in potential IDLH atmosphere (H₂S concentration 100 ppm or greater) even when donning full face piece pressure-demand SCBA or full face pressure-demand SAR. Only rescue work is allowed in IDLH atmosphere, and rescuer is required to wear SCBA. In addition, a standby person with SCBA and rescue equipment shall be present in a safe area.

Full face piece airline units equipped with a 5 minute escape (egress) bottle are donned by the affected persons to escape from the affected area containing H₂S to a safe area. Escape only respirators have a single function, i.e., to allow a person present in a normally safe environment sufficient time to escape from sudden release of H₂S. Hence they must not be donned to work in the affected area.

SCBA and Escape sets should be strategically distributed throughout the field for easy and rapid access.

3.6.3 Training in use of Respiratory Protective Equipment (RPE): All persons required to use RPE shall be trained in use, donning, and care of RPE. They should be medically evaluated and certified medically fit to wear respirator, and those declared medically fit should undergo Respirator Fit Test to ensure Face piece of Respirator fits well on the face of the wearer and there is no leak.

3.7.0 Immediate action at the time of H₂S release and to H₂S alarm
If personal or fixed alarm H₂S monitor goes off, persons present in the affected area should immediately withdraw from the affected area in a cross wind direction and move to a safe area. Employees on reaching a safe area should report the incident to the supervisor of the owning area. The supervisor should secure the affected area. Re-entry into the affected area is allowed only if deemed necessary, and the worker wears SCBA.

3.8.0 Protection against H₂S in special work tasks
Employees/contractors should take extra precautions when performing tasks where there is a possibility of H₂S release or exposure over 5 ppm. Such tasks include (a) personal stream sampling, (b) manual tank gauging, (d) tank cleaning and maintenance (e) wellhead maintenance, (f) draining flare knockout drums, (g) draining pumps, (h) breaking flanges, (i) replacing pressure gauge on oil service, (j) confined space entry. The precautions should include:

A. Minimize the potential H₂S release:
   - Ask the question: Do we need to do this job, or can we do it another safer way?
   - Ensure positive isolation.
   - Drain to a closed system.
   - Thoroughly clean out vessels prior to opening up.
   - Water flush equipment prior to draining.

B. Job planning and execution:
   - Perform Hazard Analysis.
• Work upwind side of potential release location.
• Wear personal alarm monitor for H₂S gas at all times.
• Use buddy system.
• Wear Full face piece pressure-demand SCBA with a service life of 30 minutes, or Full face piece pressure-demand Supplied Air Respirator (Airline), with auxiliary self-contained air supply.

Below given are measures to protect against H₂S in a few important special work tasks:

3.8.1 Tank Gauging Operations: Climbing the tank and/ or gauging the tank having H₂S concentration greater than 100 ppm shall require presence of standby person with SCBA and rescue equipment. Suitable rescue equipment consists of SCBA or airline respirator, safety harness, retrieval lines, and personal alarm monitor for H₂S gas.

3.8.2 Confined Space Entry: Work conducted in low-lying areas and confined spaces where H₂S gas may accumulate requires specific precautions. These conditions can be experienced during excavation, pipeline repair, or tank/vessel entry for maintenance or repair.

• Prior to any entry into the confined space, the atmosphere within the confined space must be thoroughly tested with a direct-reading H₂S monitor. The space must also be tested for oxygen content and potentially flammable/explosive atmospheres.

• H₂S gas measurements shall be recorded on the confined space entry permit.

• If gas measurements cannot be effectively made from outside the confined space, measurements must be collected inside the space. To do this, the person making the measurement must use SCBA or airline respirator.

• If H₂S gas concentrations in the confined space exceed 5 PPM, the tank must be ventilated prior to entry.

• If ventilation does not reduce H₂S gas concentrations below 5 PPM, entry is only permitted when the person entering the confined space uses an SCBA or airline respirator. No entry is allowed, even with SCBA or airline respirator, if H₂S concentration exceeds 100 ppm.

• A standby rescue person must be present, equipped with the appropriate rescue equipment, and must be in constant audio or visual communication with the worker(s) inside.

3.9.0 H₂S Monitoring Equipment

3.9.1 Types of equipment

Personal Alarm Monitor for H₂S gas: It has H₂S electro sensors, visual read out, and audible and LED alarm. It measures H₂S gas in the air around the wearer. The initial alarm is activated at 10 ppm and a second alarm is activated at 15 ppm. Personal alarm monitor should have the capability to measure H₂S from 0 to 100 ppm range, with resolution of 0.1 ppm

Equipment for personal exposure (TWA and STEL), and area monitoring:

Personal TWA and STEL exposure monitoring and area monitoring using portable equipment
should be carried out either using electrochemical devices equipped with H₂S sensors and data logging capabilities, or using sampling pumps and analytical method approved by NIOSH / OSHA. Detection and quantification limits, and accuracy of equipment should be checked before use. Other portable instrument such as multi-gas detectors with H₂S sensors or colorimetric tubes, may be used for preliminary or semi-quantitative assessment of H₂S in ambient air.

Fixed (stationary) monitors are used for continuous area monitoring of H₂S. Fixed monitors consist of a central control unit, sensors and alarm. The central control unit is installed in control room. Sensors are positioned throughout the unit. Alarm has both audible and visual component. Minimum two levels of alarm should be set, low- level alarm and high-level alarm. Fixed monitors should be installed in units where potential for sudden H₂S release exists.

3.9.2 Testing and Calibration of Equipment

Personal alarm monitors, electrochemical devices for personal monitoring, and fixed monitors should be initially factory calibrated. Subsequently, Personal alarm monitors are bump tested and calibrated as recommended by the manufacturer. Employees should check monitors before each use, and contact Sr. Equipment Technician in EH&S division for bump testing, calibration, and to resolve any problem related to maintenance of personal alarm monitors.

Electrochemical devices for personal exposure monitoring and area monitoring should be bump tested before each use, and calibrated at frequencies recommended by the manufacturer. Bump testing and calibration is carried out in Gas Test Station in EH&S division in JO.

Fixed alarm monitor sensors shall be inspected and calibrated as required by the manufacturer, by Electrical Maintenance Division (EMD)

3.10 Hazard Communication

Requirements of Hazard Communication (JOSOP 505) must be implemented whenever H₂S or mixtures containing H₂S are present in the workplace in storage tank, reaction vessel or other container, and exposure to H₂S is likely to occur. Hazard Communication requirements should include MSDS, chemical inventory, container labeling, warning system (e.g. warning signs, wind socks), and training.

3.11 Training Requirements

Employees required to work in areas that may contain hydrogen sulfide (including personnel transferred to new assignment) should receive training consistent with hazard communication program initially before beginning assignment. Refresher training should be given annually, and as needed when identified by verification, inspections, incidents and audits. At the minimum, the training should include:

- Properties and characteristics of hydrogen sulfide.
- Physical and health hazards of hydrogen sulfide.
- Symptoms of overexposure.
- Facility sources of H₂S. Methods to detect the presence or release of H₂S. Locations where H₂S monitors and respiratory protective equipment are required. Locations of H₂S alarms and respiratory protective equipment.
- Proper work practices and precautions to minimize exposure.
- Use of respiratory protective equipment.
- Emergency plan, Rescue and First aid procedures.
Training shall be conducted by qualified personnel. Initial training will be conducted by EH&S division as part of EHS Induction Training. Annual H₂S Training will be conducted by training cell in JO.

EH&S division will maintain records of EH&S Induction Training and the Training cell will maintain records of H₂S Training. The documentation will include: Lesson plan including audio-visual aids used, handout provided to trainees, name of instructor, name of contract training firm, if applicable, date of training, signed roster of attendees, ID badge number, and assigned division.

3.12 Emergency preparedness, Rescue and First aid:
Divisions with work area where potential for H₂S gas release or exposure exists, should develop a written contingency action plan to alert and rescue employees and contractors, provide first aid and emergency medical care, and deal with the unforeseen event of H₂S release. The plan shall include the following, at the minimum:
- All persons shall evacuate from the affected area in a cross wind direction to a safe area.
- Notify the incident to the Supervisor of the owning area.
- If any one notices a casualty or unconscious person in the affected, he should report incident to Dispatcher via phone.
- MSDS must be available for emergency responders at a place/s not affected by emergency.
- Emergency responders shall don SCBA to rescue casualties and affected persons. Rescue must be performed by trained rescue personnel, with stand by personnel present. Rescue must not be carried out without using SCBA or airline respirator.
- Emergency responders shall practice typical emergency scenarios periodically.
- Casualty will be provided first aid and/or CPR as appropriate and transported by paramedic in ambulance to appropriate medical care facility.

4.0 Hazard Communication to visitors
Host JO Division is responsible for safety of visitors and it will ensure that visitors:
- Are escorted
- Wear visitor’s badge and mandatory PPE including Personal Alarm Monitor for H₂S.
- Are briefed on H₂S hazard, H₂S alarm, response to H₂S and emergency alarm, and emergency evacuation procedure.
- Register in control room immediately upon arrival.
- Follow safety instructions displayed on signs fixed in various locations.
- Respond appropriately to H₂S and emergency alarm while escorted by the host.

5.0 Requirements for Contractors
This SOP is applicable to all JO contractors, whose employees are required to enter JO field area, or work in areas where the potential for H₂S gas leak/ exposure exists.
- Wearing of personal alarm monitor for H₂S gas is mandatory to all such contractor employees.
- Contract owner shall ensure that contractors are informed of potential H₂S hazards and provisions of this SOP before start of contract work.
- Contract owner must ensure that Safety Engineer and key contractor employees receive H₂S training provided by JO and thereafter, the contractor safety engineer and/or contractor supervisors provide H₂S training to their employees initially, and thereafter annually.
• Contractors shall perform their work according to accepted safety and health work practices and comply with the requirements of this SOP.

• It is the responsibility of the contractor to provide personal alarm monitors to all employees and provide Respiratory Protection Equipment in areas where potential for H₂S gas release or exposures exist.

• Contractor is responsible to train his employees required to use RPE in donning and care of RPE. Contractor employees should be medically evaluated and certified medically fit to wear respirator, and those declared medically fit should undergo Respirator Fit Test to ensure Face piece of Respirator fits well on the face of the wearer.

6.0 Record keeping
Personal exposure monitoring data shall be retained by EH&S Division, and records of area monitoring shall be retained by the concerned divisions.

Records of inspection, maintenance and calibration of portable alarm monitors and electrochemical devices used to carry out personal exposure and area monitoring will be maintained by EH&S division, and that of fixed alarm monitors will be maintained by EMD.

Records of EH&S Induction Training will be maintained by EH&S division. Training cell will maintain records of H₂S Training.

7.0 References
• Kuwait EPA Regulations Implemented under Law No. 21 of 1995 as amended by Law No. 16 of 1996 Regarding Environmental Requirements and Standards in the State of Kuwait.
• Chevron Hydrogen Sulfide Occupational Exposure Standard – 2007
• JOSOP 505 – Hazard Communication
• Hazard Communication Operational Excellence Process May 2010
• Occupational Hygiene Operational Excellence Process Feb 2010

8.0 Other Guidance Documents
• Managing Safe Work
• Contractor Health, Environment and Safety Management
• Risk Management
• Emergency Management
• Fitness for Duty
• Management of Change – Facilities (MOC)

9.0 Document Control
• JOSOP shall be reviewed/ endorsed by JO Operational Excellence Leadership Team (OELT) and approved by the General Manager.
• The latest approved version of this JOSOP shall be maintained on JO Intranet.
• If an employee does not have access to the JO Intranet, the supervisor is responsible for providing a hard copy of the latest revision of this document upon request by the employee.
• This document will be reviewed and revised every 3 years from the date of issue, or earlier if work conditions or regulatory requirements change.
• JOSOP validity can be extended for another term if work conditions or regulatory requirements have not changed within the validity period. The JOSOP shall be endorsed on the cover page.
Deviation from this document requirement must be authorized by the General Manager JO after consultation with Superintendent EH&S division and legal department. Deviations must be documented, and the documentation must include the relevant facts supporting the deviation decision. Deviation authorization must be reviewed periodically and no less frequently than every 3 years.

**Document Control Information**

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<td>EH&amp;S</td>
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