

Reference Standards

ISO14001:2015 & ISO45001:2018

Clause 6.1: Actions to address vulnerabilities associated with threats and opportunities.

Clause 6.2: HSE objectives and planning to achieve them.

PSM (22 Elements) Model

Process Safety Information: It provides a foundation for identifying and understanding the hazards involved in the process. It ensures that PSM goals of HSE are achieved by providing process safety documentation. A PSI package shall be prepared for each process unit. Documents of the PSI package should be maintained up to date for the life of each process unit.

Risk Assessment and Process Hazard Analysis: A systematic and comprehensive study to identify and evaluate the significant hazards of the process and the safeguards associated with Highly Hazardous Processes (HHP) and Lower Hazard Operations (LHO). Process Hazard Analysis systematically identifies the safety hazards such as potential for fires, explosions and / or release of toxic materials, and is a well-defined program to remove or lower these hazards.

Goals, Objectives and Plans: The purpose of this element is to provide guidelines for establishing realistic, achievable and quantifiable safety goals and objectives. Managing safety, like managing other aspects of a business, includes setting of performance goals and objectives which should be Specific, Measurable, Attainable, Result Oriented, Time Bound (SMART) and within the sphere of influence of the person and group who is to be held accountable for achievement.

This Section's Objectives

- Develop processes and prepare plans to establish HSE System.
- Identify significant HSE vulnerabilities, threats, opportunities and associated Impact.
- Study HSE vulnerabilities, threats, opportunities and identify compliance obligations.
- Address HSE vulnerabilities, threats, opportunities and associated Impact in the light of human rights, operational controls and applicable laws & regulations
- Set SMART HSE objectives for all relevant areas to prevent incidents and pollution.

Associated Documents

- Risk Register
- Risk Card
- Job Vulnerability/ Hazard Analysis (JVA/ JHA)
- HSE Objectives
- Annual HSE Activity Plan

Applicable Documents

- Regulatory Requirement Matrix

Enterprise Risk Management
OGM/P-HSE-5.1

Job Vulnerability /Hazard Analysis
OGM/P-HSE-5.2

Legal & Other Requirements
OGM/P-HSE-5.3

HSE Objectives
OGM/P-HSE-5.4



Oil & Gas Development
Company Limited

CONFIDENTIAL



HQ

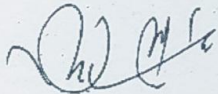
No. BoD/01-36/288/2610

December 31, 2025

Subject: ENTERPRISE RISK MANAGEMENT (ERM) FRAMEWORK

The Board in its 288th meeting held on 30.12.2025 resolved that, revised Enterprise Risk Management Framework of the Company (*Annexure A*) be and is hereby approved.

Forwarded for further necessary action at your end.



(Wasim Ahmad)
Company Secretary

GM (HSEQ)

Copy to: CSO to MD/CEO

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5.1 Enterprise Risk Management (ERM)

OGM/P-HSE-5.1 (9) Revision Number 9

Original Issue: June 25, 2007
This Issue: November 21, 2025

Updated By:

Muhammad Mubashir Abbas
Manager HSEQ-ERM/ CRO, OGDCL

Reviewed By:

Babar Iftikhar
General Manager HSEQ-Security, OGDCL

Approved By:

Ahmed Hayat Lak
Managing Director, OGDCL

Change/ Revision Log

#	Description of Change
1	Modified: <i>New Logo & Tag Line</i>
2	Modified: <i>Compliance of ISO 31000 Standard/ Guidelines</i>

Associated Documents Approval & Issue

Related Document/ Record	Initiated by	Reviewed by	Checked/ Verified / Approved by
OGF – HSE – 001 Risk Register (Template)	Secretary RMT	Members RMT	Chairman RMT
OGF – HSE – 002 Risk Card	Secretary RMT	Members RMT	Chairman RMT

5.1.1 Purpose and Scope

- The purpose of ERM framework is to assist all Directorates of the company in integrating risk management into “significant” activities and functions in a consistent and systematic manner across all levels of the organization
- Being a crucial element of Governance i.e. corporate decision-making and strategy-setting process, ERM framework is aligned with company's strategic objectives, such as ensuring energy security, operational efficiency, financial stability, and compliance to provide a system to manage following broad categories of enterprise risks:

External Influencing Factors	Internal Influencing Factors
- Strategic	- Infrastructure
- Reserves	- Process
- Country Risk – Geo/ Socio Political	- Social
- Financial / Economic	- Operational
- Laws, Rules, and Regulations/ Compliance	- Technology
- Natural Environment / Climate-change	- Internal Environment

- The enterprise risks shall be managed to as low as reasonably practicable (ALARP) by identifying the risks (identification phase), analyzing the risks (analysis phase), evaluating the risks (evaluation phase), implementing the effective controls/barriers (treatment phase), communicating the risks (communication phase), and reviewing the risks (review phase) for:
 - Investment opportunities and value chain
 - Business development & diversification initiatives
 - Field development & production sustainability
 - Exploratory projects
 - Production operations
- Whereas, the Locations' Risk Registers will be created at the commencement of financial year/ project execution for:
 - Seismic operations
 - Drilling operations
 - Production field operations
 - Brown/ green field projects (conventional/ unconventional)
 - Others (Base stores, etc.)
- This update of ERM framework has been influenced from oil and gas E&P industry best practices and standard titled ISO 31000 – Principles and Guidelines for Risk Management.

5.1.2 Definitions

ALARP (As Low As Reasonably Practicable)	Principle is that the residual risk be reduced as far as reasonably practicable as any additional cost involved in reducing the risk further would not be proportionate to the benefit gained.
Barrier	Functional grouping of safeguards or hazards or threats control hierarchy selected to prevent or limit the consequences.
Due Diligence	Process to identify, prevent, mitigate, and account for how the actual and potential negative risks are addressed.
Enterprise Risk Management (ERM)	Process effected by an entity's Board of Directors, Management and key personnel, applied in business planning, strategy setting, and designed to identify potential events that may affect entity, and manage risks to be within the Risk Appetite, in order to provide reasonable assurance regarding the achievement of organization's objectives.
ERM Charter	ERM charter is a formal document that outlines Board-Risk Management Committee's structure, responsibilities, authorities and functions.
External Risk	Risk associated with uncontrollable sources.
Hazard (Threat/ Cause)	Any process/operation/activity/ object/ substance/ body related event or gap in the protection efforts or source that could potentially trigger damage/ loss and/ or give opportunity for improvement.
Hazard Communication (HAZCOM)	Disseminating safety information about hazards in a workplace.
Hazards Control Hierarchy (Barriers) (Addendum-D)	<ul style="list-style-type: none"> ☒ Elimination is removal of hazard by eliminating a requirement to carry out a task, use of a particular equipment or use of a chemical. ☒ Substitution is replacement of the material; plant; equipment; process; or work practice with a less hazardous one. ☒ Engineering controls reduce the reliance of human factors; engineering controls can be redesign of equipment, redesign of process or increase of automation. Engineering controls also include change in layout, ventilation, guards, enclosures, firewalls etc.

	<ul style="list-style-type: none"> ⚠ Administrative controls are the procedural aspects, such as planned and preventive maintenance, awareness events, policies, Standard Operating Procedures (SOPs), work permit system, job hazards analysis, competence of personnel, etc. ⚠ Personal Protective Equipment (PPE) is the last and might be the least effective method (to counter OH&S hazards/ threats only) as it relies on human behavior.
Risk Assessment Matrix (RAM)	Visualization tool for the graphical presentation of the risks. Also known as Risk Dashboard, Risk Heat Map or Risk Heat Chart, it shows likelihood on the horizontal axis (X) and consequence on the vertical axis (Y).
Response Owner	An individual or entity who facilitates the Risk Owner in managing a risk.
Risk Management Team	Team of domain professionals (subject matter experts) trained on Hazard/ Threat Identification & Risk Assessment methodologies/ ESG framework.
Key Risk Indicators (KRIs)	A Key Risk Indicator (KRI) is a measurable metric used to monitor the potential risks, essentially acting as an early warning system to identify potential issues before they become major problems.
Residual Risk	Residual risk is the amount of risk that remains after controls are in place or accounted for.
Risk Mitigation	The mitigation of an "actual" negative risk refers to actions taken to <u>reduce the severity</u> of the negative impact that has occurred, with any residual impact needing remediation. Whereas the mitigation of a "potential" negative risk refers to actions taken to <u>reduce the likelihood</u> of the negative impact occurring.
Risk	The effect of uncertainty on objectives.
Risk (Rating)	Numerical value of a risk as combination of an incident-likelihood and consequence-severity within a 5x5 risk assessment matrix.
Positive Risk	An "opportunity" is considered a positive risk – an event which makes objectives easier than expected.
Negative Risk	Negative risk is that event which stops or hinders the achievement of objectives. These types of events are considered as "risks".
Risk Appetite	<p>Level of risk an organization is prepared to accept or tolerate in pursuit of its objectives, before action is deemed necessary to reduce the risk. In a risk appetite scale, these include as Risk seeking, Risk tolerant, risk neutral and risk averse.</p> <ul style="list-style-type: none"> • Risk seeking: Aggressive risk taking is required. • Risk tolerant: Greater than normal risk taking is tolerable due to controls. • Risk neutral: Risking taking is more balanced. • Risk averse : Risk must be avoided.
Risk Assessment	Overall process of estimating the magnitude of risk and deciding whether it is significant.
Risk Charter (Addendum-A)	It is a committee charter in a formal written document form outlining the intentions of the risk management committee, its authoritative powers, and its overall operating structure.
Risk Card (Addendum-F)	Document to describe elements of a significant risk (as recorded in the Risk Register) for the sake of mitigation.
Risk Criteria	Terms of reference which evaluates the significance of a risk as Low = 1-6; Medium = 7-12; High = 13-20; Intolerable = 21-25.
Risk Management	System to eliminate or mitigate the risks.
Risk Owner	An individual or entity accountable as well as authoritative to assess and manage a risk.
Risk Register (Addendum-B)	A comprehensive document used to scribe and rate potential risks along with existing and future controls.
Risk Source	Element which has potential to give rise to a risk.
Risk Treatment	Controlling, avoiding or transferring the risk.
Significant Risk	Intolerable or high risk.
Sustainable Development	Terms and Definitions: Addendum F
Threat Control (Addendum-E)	Methods used to reduce the overall impact of a threat. For example, hazards control hierarchy (barriers), training & induction, local development investments & stakeholder initiatives, customer management, recruitment retention & skilled labor, R&D projects, recovery/ emergency plan, automation/ digitalization, contract risk management (pre/post award), surveillance & intelligence (security), technological & operational improvements, asset integrity management, strengthening resources & tools, legal defense activities, portfolio management, partnerships for risk management, hedging & factoring, insurance & guarantees, transfer of risk liability contract, sale/ closure of assets, carbon offset, etc.

5.1.3 Enterprise Risk Management Policy

OGDCL recognizes that an effective system of risk management and internal control is critical for its success. Company is committed to managing risks, in a manner consistent with its businesses, so as to:

- Protect its people, communities, environment, its assets and reputation;
- Ensure good governance and legal compliance; &
- Enable it to realize opportunities and create long-term shareholder value.



OGDCL's Board of Directors oversee the risk management and control framework of the Company to ensure an appropriate control environment is established and maintained, spanning OGDCL's significant operations, financial reporting and compliance activities. The Audit and Risk Management Committees assist the Board in fulfilling its responsibilities in this regard by reviewing and monitoring financial and reporting matters, and the Company's risk management and internal control processes.

Management will be responsible for implementation of this policy through the following phases:

- Formulation of Risk Management Framework/ SOP and Risk Management Teams;
- Identification, analysis (quantification) and evaluation of risks using audit criteria;
- Compiling the enterprise-wide risks on pertinent risk registers;
- Treatment of the risks through action plans for the significant risks using risk cards; &
- Communication and review of the risks and controls (risk registers and risk cards).

Whereas the Risk Management Committee of the Board will be responsible for the following:

- Assessment of the significant risks using a risk dashboard; &
- Allocation of necessary and appropriate resources in support of risk management.

Identification and communication of vulnerabilities and changes to OGDCL's risk profile are an integral part of day-to-day management - all risk owners and response owners are encouraged to identify and manage risks in their areas of operation on a continual basis so as to develop a "risk aware" culture and an environment of continuous improvement.


Managing Director/ CEO

5.1.4 Structure of Enterprise Risk Management (ERM)

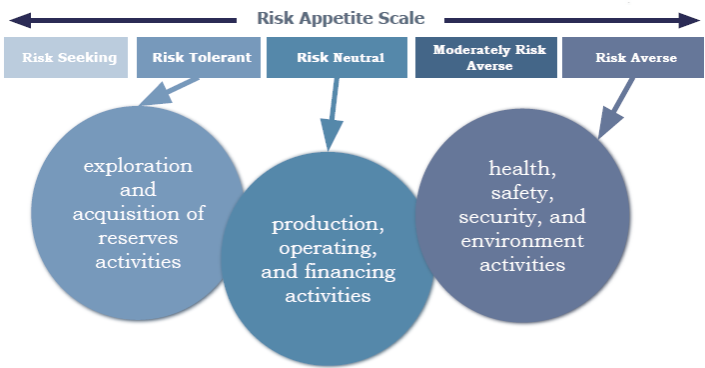
ERM Function shall operate through enterprise-wide RMTs constituted as follows:

Level I				
Team	Chairman	Secretary	Members	ERM Record
Corporate Risk Management Team (C-RMT)	MD/ CEO	As nominated (GM Level having ERM Background)	As nominated (EDs & GMs Level; however, CFO will be the mandatory member)	Corporate Risk Dashboard

- The role of Level-I Risk Management Team (RMT) shall be to a) ensure the effectiveness of ERM framework by monitoring the enterprise-risks and controls as well as risk appetite, b) ensure risk-taking by the "significant" functions/ activities aligns with the strategic objectives, and c) ensure the Corporate Risk Dashboard (risk profiles/ factors) are updated for presenting to Board's RMC.

5.1.4.1 Risk Appetite

- Based on the context, operational challenges and strategic outlook, OGDCL's Risk Appetite describes which risks need to be controlled more tightly and those for which there is greater appetite as exhibited:



- OGDCL's fundamental risk exposures shall be within the predefined risk boundaries as defined/ updated by Level-I Risk Management Team (RMT) at the commencement of financial year using the following areas of concern:



Area of concern	Risk Appetite Statement	Scale	KRI
Personnel Safety	Incident not to result in fatality or permanent disability	Risk averse	LTIF - Lost Time Injury Frequency
Net Reserves Replacement Ratio	Adding new reserves greater than those produced with the strategic objective in place regarding production growth, preferably through optimization efforts, unconventional extraction, etc.	Risk seeking	Net RRR
Net Production Target	Achieving oil, gas and LPG production targets provided forced curtailment, security, and force majeure situations are avoided	Risk tolerant	Net production
Project Estimation, Funding and Cost Overrun	Project cost not to exceed more than the allocated cost of any specific project as per the approved business plan	Risk neutral	Project cost
Discovery to First Production	First production from the undeveloped discoveries, which are economically viable, not to be delayed	Risk tolerant	First production in months
Supply Chain	Procurement cycle (excluding projects and seismic test line processing) from bid opening to award of contract or PO issuance to be optimized	Risk neutral	Material/ service procurement days
Cost of Production	Average cost to conventionally produce one barrel of oil equivalent (BOE)	Risk neutral	Operating cost USD per BOE
Spare Parts Availability	Availability of safety critical equipment's (SCE's) spare parts	Risk averse	%age of time the right parts are readily available when needed for repairs or scheduled maintenance
Credit Risk	Receipt of outstanding payments from the oil refineries and gas distribution companies not to exceed from the date of invoicing	Risk neutral	Debtor Turnover Days (normal debt)
			Debtor Turnover Years (circular debt)

- The areas of concern for which risk appetite should be within the predefined risk boundaries shall be as

 - Target Risk Appetite
 - Within Tolerance (Risk Appetite Range)
 - Intolerable

Level II				
Team	Chairman	Secretary	Members	ERM Record
Financial & Value Chain Risk Management Team (F&VC-RMT)	CFO	As nominated (Fin. Background)	Concerned GMs/ HODs & Area Managers (cross-functional)	Financial & Value Chain Risk Register
Business Development & Diversification Risk Management Team (BD-RMT)	HOD JV	As nominated (BD Background)		Business Development & Diversification Risk Register
Field Development & Production Sustainability Team (FD-RMT)	HOD RMD	As nominated (Reservoir Mgt. Background)		Field Development Risk Register
Exploration Risk Management Team (E-RMT)	HOD Exploration	As nominated (Expl. Background)		Exploration Risk Register
Drilling Risk Management Team (D-RMT)	HOD Petroserv	As nominated (Drilling Background)		Petroserv Risk Register
Production Risk Management Team (P-RMT)	HOD Production	As nominated (Prod. Background)		Production Risk Register

ERM Function shall be strengthened by enabling Secretaries from Level-II RMTs to be in close liaison with Secretary C-RMT (Level-I) on risk management matters: -



Level III				
Team	Chairman	Secretary	Members	ERM Record
Location's Risk Management Team (L-RMT)	Location InCharge (PC/ OM/ FM/ PM/ Incharge Base Store/ Project Manager, etc.)	As nominated (Technical Background)	All Sectional InCharges	Location's Risk Register

The roles of Level II & III Risk Management Teams (RMTs) are scribed as follows:

	Chairman	Secretary	Members
Identification	Constitute RMT and ensure provision of requisite resources for its training to enable carrying out risk identification, analysis and evaluation. <u>Probable Risk Owner(s) and Response Owner(s) to be collectively made Members of each RMT.</u>	Arrange training for the RMT based on TNA to carry out risk identification, analysis and evaluation, as & when required.	Participate in specific training to learn to carry out risk identification, analysis, evaluation and treatment. Team leads with the agreement of their respective heads to identify the risks at their respective functional, project or activity level.
Analysis & Evaluation	Ensure risk assessment is carried out by the RMT applying risk criterion. Endorsing the overall risks in the form of final Risk Register.	Document the risks after getting inputs from all stakeholders as result of risk assessment applying risk criterion with the aid of working papers / supporting documentation.	Participate in the risk assessment (analysis & evaluation) process applying risk criterion by focusing on risk sources. <u>Risk Owners to carry out risk assessment at the inherent as well as residual level.</u>
Treatment	Ensure timely creation of Risk Cards to mitigate the significant risks.	Assist Members in the creation of Risk Cards to mitigate the significant risks.	<u>Response Owners to identify/ recommend Controls and timelines.</u> Create Risk Cards to mitigate the significant risks accordingly.
	Ensure risk treatment is prioritized by RMT by controlling	Document the entire risk treatment process	Commit to treat risks by controlling (mitigating) the

	(mitigating/ minimizing) the HIGH risks through interim controls/ barriers and strategic decision making, whereas INTOLERABLE risks by stopping the activity until risks have been reduced or transferred through an outsourced service or shared through contracts.	with the aid of working papers / supporting documentation.	HIGH risks through interim controls/ barriers and strategic decision making, whereas INTOLERABLE risks by stopping the activity until risks have been reduced or transferred through an outsourced service or shared through contracts.
Communication	Ensure Risk Register along with Risk Cards are timely presented in the RMT meeting for approval.	Circulating agenda and delivering a presentation on draft Risk Register and Risk Cards in the RMT meeting. Compile/ update and circulate the final Risk Register.	Provide inputs on the draft Risk Register and Risk Cards during the RMT meeting to finalize the same, resultantly to enable Secretary RMT to timely communicate the approved risks & controls to all concerned.
	Ensure the approved risks & controls are timely communicated to all concerned.	Communicate the approved risks & controls through distribution of final Risk Register and Risk Cards to all concerned.	Follow up to confirm whether the Final Risk Register and Risk Cards have been distributed and communicated to all units'/ sub-unit's teams. Share feedback with Chairman on the mitigation on the Risk Cards as well as compliance status regarding Risk Appetite Statement.
Review	Ensure the compliance status regarding the Risk Appetite Statement is discussed. Ensure the approved risks and controls are reviewed and updated in the subsequent RMT meetings. Follow up the progress of mitigating significant risks on the Risk Cards.	Circulating agenda related to RMT meeting on the approved Risk Appetite Statement, risks and controls. Update and circulate the reviewed Risk Register & Risk Cards.	

5.1.5 Risk Management Process

- Risk management process shall comprise of six phases:

i. Risk Identification Phase

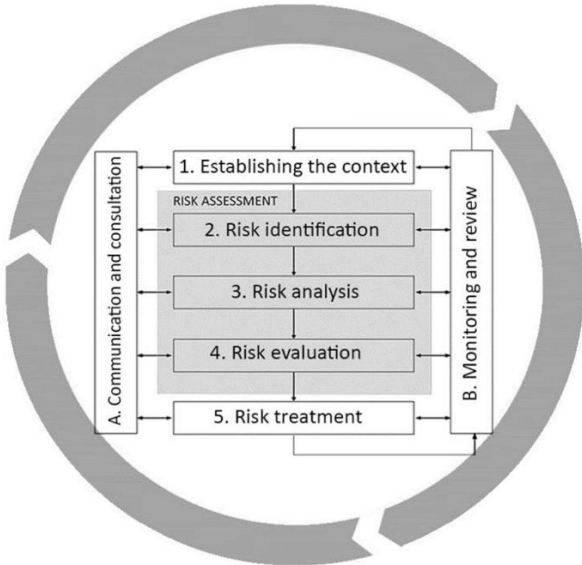
ii. Risk Analysis Phase

iii. Risk Evaluation Phase

iv. Risk Treatment Phase

v. Risk Monitoring & Review Phase

vi. Risk Communication & Consultation Phase



5.1.5.1 Risk Identification Phase

The enterprise risks shall be identified and assessed by the respective Level II RMT at the time of developing annual business plan (budget).

Whereas, locations' risks shall be identified and assessed by the respective Level III RMT at the time of commencement of financial year/ at the time of project execution.

For each risk event, respective RMT shall identify the risks by focusing on the following risk-sources (but not limited to):

Source	Detail
Context	vision, mission, strategic direction, objectives, etc.
Human	awareness, competence and experience of workforce, contractors, service companies, etc.
Machine	aging factors and integrity of infrastructure, design, equipment, tools, safeguards, etc.
Material	quality of chemicals, parts/spares, backup machines, etc.
Method	mechanism, processes, supply chain systems, practices, policies, operating procedures, work instructions, drawings, modelling, etc.
Technical Studies	g&g and other studies related to sedimentary basins source rock, reservoir, seal & trap, reservoirs porosity, permeability, & fluid

		<table><tr><td></td><td>saturations, reservoirs fluid flow, volume, temperature & pressure changes, diagnostic, etc.</td></tr><tr><td>Budget</td><td>income/expenditure estimates for a set period for business planning</td></tr><tr><td>Portfolio</td><td>sources of energy production, including renewable and non-renewable resources, strategically balanced to meet the energy demands while ensuring sustainability and reliability</td></tr><tr><td>HC Products</td><td>product's characteristics & quality with respect to lifecycle perspective, contractual obligations, etc.</td></tr><tr><td>Record</td><td>historical logs, audits/ inspections, STOP cards, permits, JHAs, shutdown/ breakdown/ accidents history or trend, maintenance history, risk registers of associated operations/ activities, etc.</td></tr><tr><td>Legal Framework</td><td>applicable laws, regulatory/other requirements, etc.</td></tr><tr><td>Social Factors</td><td>workload, working hours, working culture, leadership style, etc.</td></tr><tr><td>Ext. Environment</td><td>flora, fauna, protected areas, terrain, climatic region, aquifers, water bodies, neighboring industry, socio-economic & security conditions, ethnic values, etc.</td></tr><tr><td>Financial Environment</td><td>business firms, investors, and markets including banks, investment funds, insurance companies, etc.</td></tr><tr><td>IT</td><td>algorithms, software, hardware, networks, etc.</td></tr></table>		saturations, reservoirs fluid flow, volume, temperature & pressure changes, diagnostic, etc.	Budget	income/expenditure estimates for a set period for business planning	Portfolio	sources of energy production, including renewable and non-renewable resources, strategically balanced to meet the energy demands while ensuring sustainability and reliability	HC Products	product's characteristics & quality with respect to lifecycle perspective, contractual obligations, etc.	Record	historical logs, audits/ inspections, STOP cards, permits, JHAs, shutdown/ breakdown/ accidents history or trend, maintenance history, risk registers of associated operations/ activities, etc.	Legal Framework	applicable laws, regulatory/other requirements, etc.	Social Factors	workload, working hours, working culture, leadership style, etc.	Ext. Environment	flora, fauna, protected areas, terrain, climatic region, aquifers, water bodies, neighboring industry, socio-economic & security conditions, ethnic values, etc.	Financial Environment	business firms, investors, and markets including banks, investment funds, insurance companies, etc.	IT	algorithms, software, hardware, networks, etc.
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Financial Environment	business firms, investors, and markets including banks, investment funds, insurance companies, etc.																					
IT	algorithms, software, hardware, networks, etc.																					
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	<table><tr><td>Low (Negative) [1-6] ... (ALARP)</td><td>Nil</td><td>No action is required.</td></tr><tr><td>Medium (Negative) [7-12] ... (ALARP)</td><td>Not Mandatory</td><td>No additional controls/ barriers are required. Consideration may be given to a more cost-effective solution or improvement that imposes no additional costs. Monitoring is required to ensure that the desired controls are maintained.</td></tr><tr><td>High (Negative) [13-20]</td><td>Risk Mitigation</td><td>Urgent action should be taken, and considerable resources be allocated to reduce the risk to ALARP through <u>Management Program/ Action Plan</u> comprising interim controls/ barriers and strategic decision making/ objectives & targets to mitigate or minimize the risk. When considering interim controls/ barriers, Hazards/ Threats Control Hierarchy or Mitigation Measures shall apply.</td></tr><tr><td rowspan="4">Intolerable (Negative) [21-25]</td><td>Risk Removal</td><td>Removing the risk source.</td></tr><tr><td>Risk Avoidance</td><td>Any planned activity or decision should NOT be commenced or taken whereas an ongoing activity should be immediately STOPPED until the risk has been reduced. <u>The ultimate decision to RESUME the activity or TAKE the risk as an opportunity shall be conditional with the approval of top management.</u></td></tr><tr><td>Risk Sharing</td><td>Employing risk-sharing contracts to distribute potential financial losses and profits in a structured way.</td></tr><tr><td>Risk Transfer</td><td>The entire activity or process may be outsourced; OGDCL, however, to retain governance responsibility for the monitoring of such outsourcing arrangements to include the arrangements for risk management.</td></tr></table> <p>☐ Risk Card (template, Addendum-F) to be used to formulate and follow-up Management Program/ Action Plan to control the significant i.e. Intolerable & High risk rating (Negative) and Opportunity (Positive risk), which includes:</p> <ul style="list-style-type: none">▣ Influencing factor▣ Event category/ sub-category▣ Risk owner/ Response owners▣ Objective and targets to be achieved▣ Methods and means to achieve the objective▣ Timeframe for completing the program and/or its elements or phases <p>Note: More than one Risk Card may be used to control a significant risk.</p>	Low (Negative) [1-6] ... (ALARP)	Nil	No action is required.	Medium (Negative) [7-12] ... (ALARP)	Not Mandatory	No additional controls/ barriers are required. Consideration may be given to a more cost-effective solution or improvement that imposes no additional costs. Monitoring is required to ensure that the desired controls are maintained.	High (Negative) [13-20]	Risk Mitigation	Urgent action should be taken, and considerable resources be allocated to reduce the risk to ALARP through <u>Management Program/ Action Plan</u> comprising interim controls/ barriers and strategic decision making/ objectives & targets to mitigate or minimize the risk. When considering interim controls/ barriers, Hazards/ Threats Control Hierarchy or Mitigation Measures shall apply.	Intolerable (Negative) [21-25]	Risk Removal	Removing the risk source.	Risk Avoidance	Any planned activity or decision should NOT be commenced or taken whereas an ongoing activity should be immediately STOPPED until the risk has been reduced. <u>The ultimate decision to RESUME the activity or TAKE the risk as an opportunity shall be conditional with the approval of top management.</u>	Risk Sharing	Employing risk-sharing contracts to distribute potential financial losses and profits in a structured way.	Risk Transfer	The entire activity or process may be outsourced; OGDCL, however, to retain governance responsibility for the monitoring of such outsourcing arrangements to include the arrangements for risk management.
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5.1.5.5 Risk Monitoring & Review Phase	<p>☐ Risk Register & Controls shall be updated by respective Secretary RMT, deliberated/ examined by RMT members, and endorsed/ approved by Chairman RMT on biannual basis for any changes.</p> <p>☐ Secretaries of all <u>Level II</u> RMTs shall submit the approved Risk Registers along with Risk Cards (Management Programs/ Action Plans) to Secretary C-RMT who, further, will consolidate/ filter the risks in the Corporate Risk Dashboard.</p> <p>☐ However, Corporate Risk Dashboard shall include only those enterprise risk profiles/ factors (usually the top ten) which are mutually agreed in the <u>Level I</u> C-RMT Meeting or Workshop or as delegated to be discussed with the Secretaries of all RMTs.</p> <p>☐ During the normal course of action/ operations (other than the prescribed risk review frequency), a risk may escalate from High to Intolerable or Medium to High, unpredictably, when any of the following conditions (not exhaustive) are met:</p> <ul style="list-style-type: none">▣ Budget shortage/ expenditure curtailment relevant to risk control▣ Risk treatment requires expenditures that are beyond what the risk owner is authorized▣ Grievances from stakeholders to which the risk owner cannot impartially and/ or effectively respond▣ Event impacting personnel/ facilities/ environment requiring unplanned treatment measures <p>☐ When the escalation is urgent and requires transfer of risk owner, it shall be completed within 24 hours and communicated by updating the pertinent Risk Register(s); whereas the escalated risks shall be managed through regular reporting lines to the appropriate levels.</p> <p>☐ When the objective and associated targets are achieved, the reduction in risks shall be gauged and if found satisfactory, Management Program/ Action Plan shall be closed out on the Risk Card</p>																		

5.1.5.6 Risk Communication & Consultation	<ul style="list-style-type: none"> ☐ To gather different perspectives, additional insights and to align the above risk management efforts with the broader environment, further collaboration and consultation may take place where deemed appropriate as follows: <ul style="list-style-type: none"> ■ Input from internal stakeholders: Employees with different roles, responsibilities, and expertise. ■ External stakeholders' viewpoint & feedback: Consultants, regulators, customers, suppliers, and other relevant parties. ☐ Secretary of respective RMT shall be responsible for communicating the approved risks & controls to Directorates/ Departments/ Functions/ Locations/ Sections for timely mitigation on the management programs/ action plans to reduce significant risks. ☐ Concerned InCharges shall be responsible for the communication of the approved risks & controls further to the employees, contractors and service companies working within their areas of operations. ☐ Communication may be carried out through distribution of Risk Register/ Dashboard; meetings, toolbox talks; workshops/ training/ awareness sessions; bulletins; alerts; circulars; HazCom (signboard/poster/color-coding), etc. ☐ CFO shall be responsible to disclose/ communicate the enterprise risk profiles/ factors (usually the top ten) in the financial/ sustainability reports and to the BOD.
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5.1.6 Frequency of Risk Management Phases

	Board-RMC	C-RMT	F&VC-RMT; BD-RMT; FD-RMT; E-RMT; D-RMT; P-RMT	Location's L-RMT
		<u>Level I</u>	<u>Level II</u>	<u>Level III</u>
Risk Assessment	N/A	N/A	At the time of developing annual business plan (budget)	At the time of commencement of financial year/ project execution
Review Meetings	As required	Before the meeting of Board-RMC	Biannually (or as per requirement)	Biannually (or as per requirement)
Trainings	As required	As required – based on TNA		

- ☐ Secretary C-RMT shall be responsible for ensuring that Enterprise Risk Management (ERM) Procedure is reviewed for any changes every three years to remain up to date with the emerging trends (if any) as well as accessible and comprehensible to all concerned for compliance.

5.1.7 ERM Performance Audits

- ☐ ERM performance shall be checked after every three years as an independent or combined audit to determine whether the ERM framework conforms to the planned arrangements; has been properly implemented & is maintained; and is effective in meeting the ERM policy; and provide feedback to management of the results of such audits."
- ☐ Auditors selected to conduct ERM performance audits shall be trained, internally or externally, on ISO 31000 Guidelines to develop auditing expertise to add value to the internal auditing process.

Addendum A

Enterprise Risk Management (ERM) Charter

Objective

The objective of ERM Charter is to clearly articulate the Committee's role and responsibilities, composition, structure and membership requirements, authority, processes and procedures, as approved by the Board, ensuring an appropriate risk-aware culture has been embedded throughout the company. It is customized to the needs of the company as well as reflects sustainable energy industry practices and objectives. ERM Charter is to act as a governance tool to reinforce accountability, transparency, and alignment of risk management with corporate strategy.

Terms of Reference

- Review the risk identification & management process developed by management to confirm it is consistent with the Company's context and addresses business planning;
- Review management's assessment of risk profiles periodically and provide an update to the Board after inquiring of management and the independent auditors about the significant enterprise-wide risks and controls;
- Oversee & monitor management's documentation of the material risks that the Company is exposed to and update as events change and risks shift and assess the steps management has implemented to manage and mitigate the identified material risks;
- Review the following with management, with the objective of obtaining reasonable assurance that all risks are being effectively managed and controlled as low as reasonably possible:
 - management's appetite and tolerance for enterprise-wide risks,
 - management's assessment of significant risks the Company is exposed to,
 - the Company's policies, procedures, plans, processes and any proposed changes for controlling significant financial/ nonfinancial risks,
 - to review with the Company's counsel, legal matters which could have a material impact on the Company's public disclosure, including financial statements; and
 - Consider any other issue or matter as may be assigned by the Board of Directors.

Role and responsibilities

The Risk Management Committee assists the Board in carrying out its duties by providing independent and objective review, advice and assistance in developing Board's governance related policies and monitoring corporate activity within the scope of its concern and making recommendations to the Board for resolution. The Risk Management Committee, hence, assists the Board in the oversight of the company's risk management framework. The role of the Committee includes assisting the Board in the company's governance and exercising of due care, diligence and skill in relation to risk assessment, treatment strategies and monitoring. Consistent with the company's determined appetite for risk, it includes assisting the Board to understand risks, that may:

- impede the company from achieving its goals and objectives;
- impact on the company's business/ operational performance;
- affect the health, safety or welfare of employees and others in relation to the company's operations;
- threaten compliance with the company's regulatory and legal obligations;
- impact on the community and the environment in which the company operates;
- impact on the company's reputation and that of its people; and
- result in a liability for the company arising from the company's operations.

Additional responsibility

- To refer to and consider the applicability of industry-based disclosure topics in identifying climate-related risks & opportunities and ensure that the disclosure of information is made about where in the company's business model and value chain risks and opportunities are concentrated.

Authority

The Board authorizes the Risk Management Committee, through the Chair of Risk Management Committee, may decide to:

- hire/ retain independent risk/ actuarial/ insurance/ other Consultants to advise the Risk Management Committee or assist in the conduct of risk related issues; and
- seek any information it requires from the employees, who are directed to co-operate with the Risk Management Committee's requests, or from external parties.

Composition

The Risk Management Committee will consist of at least three, and usually no more than five, members of the Board. The Board, usually on the recommendation of its nomination Committee, will appoint Risk Management Committee members and the Chair of the Committee. Membership of the Risk Management Committee will be reviewed annually, and members are eligible for reappointment. Membership will be confirmed annually by the Board in alignment with the Annual General Meeting (AGM). The Risk Management Committee should comprise both nonexecutive and executive directors, although the majority should be non-executive independent directors. Members should be conversant with risk management principles and standards, with the majority of members having a sound understanding of the business, operations and affairs of the company and the industry in which it operates.

Important: - The Chair of the Committee must be non-executive & independent; and, also, not be the Chair of the Board.

Invitees

Non-members may attend meetings by invitation of the Risk Management Committee, including the:

- Managing Director/ Chief Executive Officer/ Chief Financial Officer.
- Executive Director(s).
- Secretary C-RMT.

Important: - These personnel may take part in the business of, and discussions at, the meeting but have no voting rights.

Meetings

The Risk Management Committee will meet a minimum once a year and, additionally, as the Committee considers necessary. A quorum will be more than half the members. In the Chair's absence from a meeting, the members present will select a Chair for that particular meeting. All Risk Committee members are expected to attend each meeting in-person, or through other approved means, such as teleconference or video conference. The Risk Management Committee may invite other personnel to attend as it deems appropriate and consult, or seek any information it considers necessary, to fulfil its responsibilities.

Important: - The notice & agenda of the meeting may include a) update on previous agenda, b) status of top 10 enterprise-wide risks & controls, c) actionable items, and/ or d) advisories along with relevant supporting papers (if any).

Voting

Any matters requiring decision will generally be decided by consensus, or if consensus is not achievable, then by a majority of votes of members present.

Secretariat duties

The Company Secretary/ IRO (or other appropriate designated person like Secretary C-RMT will act as Secretary to the Risk Management Committee. The Secretary will assist the Chair to develop and distribute agendas, papers, minutes and calendar.

Minutes

Minutes must be prepared by Company Secretary/ IRO (or other appropriate designated person like Secretary C-RMT, approved by the Chair of the Risk Management Committee and circulated to the members within two weeks of a meeting. They must be ratified and signed by the Chair, at the next meeting of the Committee.

Reporting to the Board

The Chair of the Risk Management Committee is to report to the Board following each Committee meeting. Such reporting may be by distribution of a copy of the minutes, supplemented by other necessary information, including recommendations requiring Board's action and/or approval. The Chair of the Risk Management Committee, in consultation with MD/ CEO/ CFO, will organize the supply of information regarding the Committee's proceedings to be included in the company's annual report.

Reviews

The Risk Management Committee will review its performance on an annual basis. The review may be conducted as a self-assessment and will be coordinated by the Chair of the Risk Management Committee. The assessment may seek input from anywhere the Chair deems appropriate. Training needs will be monitored by the Chair of the Risk Management Committee. The Risk Management Committee will review this Charter and its composition annually, to ensure that it remains consistent with the Board's objectives and responsibilities. The Board may consider the Committee's review and either approve or further review the Charter.

[illegible]

Addendum B
Risk Register (Template)



OGF/XXX-ERM-001(00)

Risk Register

- ☐ Financial & Value Chain Risk Register
- ☐ Field Development & Production Sustainability Risk Register
- ☐ Business Development & Diversification Risk Register
- ☐ Exploration Risk Register
- ☐ Drilling Risk Register
- ☐ Production Risk Register
- ☐ _____ Risk Register
(Location/ Project)

Risk Assessment Timeframe: _____

Risk Management Team (RMT)				
#	Name	Designation	Role	Directorate/ Department/ Section
			Chairman	
			Secretary	
			Memebr-1	
			Memebr-2	
			Memebr-3	
			Memebr-4	
			Memebr-5	
			Memebr-6	
			Memebr-7	
			Memebr-8	
			Memebr-9	

Summary of Risk Assessment					
Activity	Risk Rating				Total
	Low	Medium	High	Intolerant	
Total:					



Addendum C

Risk Event Categorization

Risks will be assigned into event categories and sub-categories. Following event categories list is a dynamic list and can be updated from time to time in response to changing internal and external business environment.

Influencing Factor: External	Influencing Factor: Internal
Category: Strategic Sub-Category: <ul style="list-style-type: none"> Acquisitions, Farm-in & Farm-out Evaluation of New Blocks Competitiveness Unconventional Projects Business Diversification/ Renewable Energy Investment Outsourcing Services 	Category: Infrastructure Sub-Category: <ul style="list-style-type: none"> Allocation of Capital (Budget, Trained Resources) Availability of Assets (Maintenance, Back-up) Capability of Assets
Category: Reserves Sub-Category: <ul style="list-style-type: none"> Availability Success Potential Commercialization Geological & Reserves Management 	Category: Process (Exploration / Production) Sub-Category: <ul style="list-style-type: none"> Feasibility/ Technical Studies Exploration/ Appraisal/ Development Engineering/ Design Procurement Construction/ Execution Testing/ Commissioning Controls/ Monitoring/ Measurability
Category: Country Risk – Geo/ Socio Political Sub-Category: <ul style="list-style-type: none"> Corporate Citizenship Local Constraints Security including Terrorism Sabotage Social Instability War, Insurgency or Armed Conflict Political/ Economic Instability Impact/ Interference of Investigation Agencies 	Category: Social Sub-Category: <ul style="list-style-type: none"> Human Resource Availability/ Attrition D-E-&-I/ Physical and Psychological Space Occupational Health/ Fitness Behavioural/ Operational/ Process Safety Corporate Social Responsibility Fraudulent Activity Reputation Damage
Category: Financial / Economic Sub-Category: <ul style="list-style-type: none"> Capital Availability Competition Financial Markets (including interest rates, exchange rates, commodity prices, etc.) Liquidity Macro-Economic Conditions Demand & Supply Mergers / Acquisition 	Category: Operational Sub-Category: <ul style="list-style-type: none"> Operation & Maintenance (O&M) Supply Chain & Contractual Obligations Ageing Oil & Gas Infrastructure/ Obsolescence Material & Inventory Management Petroleum Data Preservation Retrofitting/ Modification/ MOC
Category: Laws, Rules, and Regulations/ Compliance Sub-Category: <ul style="list-style-type: none"> Legal and Regulatory (Registrations, NOCs, Licences, etc.) Public Policies (HSE, Security, Anti-Corruption etc.) Reputation damage 	Category: Technology Sub-Category: <ul style="list-style-type: none"> Digitalization/ Data and System Availability Data Integrity Deployment Development Maintenance Emerging Technology/ System Selection Interruptions/ Cyberattacks/ Hardware-Software Failures Reputation Damage
Category: Natural Environment Sub-Category: <ul style="list-style-type: none"> Energy/ Emissions / Waste/ Water Management Natural Disaster/ Pandemic Climate Conditions/ Changes <ul style="list-style-type: none"> Transition (Policy & Legal/ Technology Adoption/ Reputation) Physical (Acute/ Chronic) Opportunities (Resource Efficiency/ Transition of Energy Source/ Markets Participating in low-carbon ventures/ Resilience) Reputation damage 	Category: Internal Environment Sub-Category: <ul style="list-style-type: none"> Culture Structure Management Style

Addendum D

List of Hazards/ Threats/ Causes

(Not exhaustive)

- ☠ Physical: Electrical (shock/ burn), hazardous/ stored energy, radiations (ionizing or non-ionizing), revolving or rotating entities, moving entities/ dynamic situation (on floor/ soil, in water or overhead), falling objects, ejection (flying pieces or parts), improper storing/ stacking (falling materials), improper floor or surface (tripping/ slipping), high pressure points, high temperature points/ surfaces/ fluids, extreme low temperature points/ surfaces/ fluids, explosion/ rupture/ boiling liquid expanding vapor explosion (BLEVE), work at heights (falls), confined space (toxic gases/ suffocation), obstructions/ collisions/ contacts/ impacts (sharp edges, low head-rooms), objects under tension/induced stress, objects under compression, vibration, noise (high level/ intrusive), natural hazard (storm/ lightning/ flood/ earthquake), terrain (swamps/ marshes/ morass/ slopes/ streams), etc.
- ☠ Chemical: Toxic, chemical and physical properties of the material e.g. explosion (explosive/ chemical/ fuel/ electric), fire (electric/ chemical/fuel), splash, asphyxiation (e.g. low oxygen atmospheres, excessive CO₂, drowning, excessive N₂, halon, smoke, etc.), combustible materials, flammable materials, oxidizing materials, corrosive/ irritating materials, carcinogenic materials, toxic materials (e.g. H₂S, exhaust fumes, SO₂, benzene, chlorine, welding fumes, tobacco smoke, CFCs), dust/ particles, fumes/ vapors/ steam, mist/ fog, frost bite, etc.
- ☠ Ergonomical: Poor organization and job design, Work planning issues, Improper work environment (temperature/ humidity), Improper light (glare/ poor light), Indoor climate (too hot/ cold/ dry/ humid, draughty), Heat stress (high ambient temperatures), Cold stress (low ambient temperatures), Improper ventilation, Manual lifting, handling or shifting, Repetitive movements, Poor Posture, Poor workplace design/ layout, Congested workplace, Stressful tasks, Long sittings/ duration of work, Improper work rest cycles, Mismatch of work to physical abilities, Assigning task to unskilled/ untrained person, etc.
- ☠ Biological: Unhygienic conditions, Food contamination/ food-borne bacteria (e.g. e. coli), Water-borne bacteria (e.g. legionella), Clinical waste, Infections (blood/needles), Contagious diseases, Bacteria/ viruses (endemic/ epidemic/ pandemic), Poisonous plant (e.g. poison ivy and oak, stinging nettles, nightshade), Animal/insect bite or sting, Algae or diseased plants, Disease-vectors (mosquitoes: dengue, malaria, yellow fever; ticks: lyme disease; fleas: plague), Parasitic insects (e.g. pin worms, bed bugs, lice, fleas), etc.
- ☠ Psychological: Post-traumatic stress, burnout/ fatigue, bullying/ harassment, motion/ sea sickness, travel sickness, height phobia, violence, stress, constant low-level noise, threats of danger, discrimination, public relations, intense workloads, shift work, etc.
- ☠ Security related: Violence/terrorism, Assault, Sabotage, Military action/civil disturbances, Pilferage/burglary, etc.
- ☠ Occupational Health: Acute coronary syndrome, Accidental trauma; Heat related disorders, Exposure to high noise; UV light; vibration; welding fumes; oil fumes; chemicals; extreme heat/ coldness; human blood; video screens; cleaning liquids, detergents and insecticide spray, Contaminated drinking water; infected sewage, Lifting of heavy weight; prolonged standing; shift work
- ☠ Safety: Equipment malfunctions, equipment breakdowns, inappropriate machine guarding, tripping and slipping hazards, etc.

Considerations while identifying social hazards/ threats

- ▣ Diversity, equality and inclusion in the workplace
- ▣ Fair pay, living wages and other labor practices
- ▣ Employee experience and engagement
- ▣ Fair treatment of customers and suppliers
- ▣ Oversight of practices at supply chain partners
- ▣ Responsible sourcing of supplies and materials
- ▣ Community engagement and involvement
- ▣ Charitable donations and funding of social programs
- ▣ Support for human rights and international labor standards

Addendum E

List of Controls (not exhaustive)

Controls	Description
1 - HAZARDS CONTROL HIERARCHY (BARRIERS)	Elimination, substitution, engineering controls, administrative controls, personal protective equipment (PPE) as defined in the Definitions Section.
2 - TRAINING AND INDUCTION	A process of knowledge and content transfer, aimed at generating learning, i.e. increasing awareness, knowledge, developing skills and abilities, modifying and/or improving behavior. It includes INDUCTION, a program designed to introduce new employees to the company, help them learn more about the company and quickly integrate with the culture, environment and colleagues and feel comfortable.
3 - CONTINUOUS TRAINING ON-THE-JOB AND KNOWLEDGE MANAGEMENT SYSTEMS	(i) TRAINING: technical and practical training on operational skills and abilities in relation to the use of devices and equipment, systems, etc., carried out on-the-job, in a laboratory or field area; ii) KNOWLEDGE MANAGEMENT: process of managing and sharing information and company knowledge (know-how, experience and lesson learned).
4 - PROJECTS OR DEDICATED WORKING GROUPS	Groups are established to cope with a specific problem and generate recommendations or work on a resolution. Such groups are generally temporary and will be dissolved when they achieve their objectives satisfactorily.
5 - ADHOC COMMUNICATION CAMPAIGNS	A set of communication activities carried out to achieve mitigation objectives with respect to a certain risk event.
6 - ASSESSMENT, MONITORING & FOLLOW UP	Complex of control activities (management, operational, economic, market, scenario...) aimed at i) collecting continuous and/or periodic detailed information ii) identifying the need for action and iii) verifying ex post its implementation iv) periodic audit/assessment and follow up.
7 - QUALITY CERTIFICATIONS/ ISO	External certification of compliance with requirements to meet quality assurance criteria as defined by industry standards.
8 - OPINIONS AND CONSULTANCY	Analysis and evaluation of specific issues to implement the best solution of the problems. Technical and professional consultancy.
9 - ADVOCACY, EXTERNAL RELATIONS AND COUNTERPARTY MANAGEMENT	Activities aimed at representing the company's point of view vis-à-vis various stakeholders (institutional players, society sectors, commercial counterparties) in order to reduce risk exposure.
10 - LOCAL DEVELOPMENT INVESTMENTS AND STAKEHOLDER INITIATIVES	Activity aimed at creating added value brought by OGDCL to the socio-economic conditions of a host territory through: (i) the participation of local people and businesses in OGDCL's industrial activities (ii) the transfer of skills and know-how (iv) Business investments in public services (e.g. schools, hospitals, etc.) (iii) building capacity in communities.
11 - CUSTOMER MANAGEMENT (E.G. LOYALTY, MICRO-PRICING, ...)	A set of systems, processes and initiatives aimed at improving customer portfolio management and relations with customers.
12 - INCENTIVES AND MBOs	Sharing of de-risking objectives into the management incentive system.
13 - RECRUITMENT RETENTION AND SKILLED LABOUR	A set of activities aimed at selecting, maintaining and developing the portfolio of skills consistent with the needs of the business. Includes trade union relations.
14 - R&D PROJECTS	Technological innovation, development of innovative skills and specialist know-how, for example through the use of proprietary technologies and innovative solutions, implementation of specific risk reduction-oriented R&D projects, R&D activities and links with international universities and partnerships also with other companies.
15 - RECOVERY / EMERGENCY PLAN	Risk/ impact containment plan that defines the trigger, the scheduled set of activities to be carried out and also the means to implement them. Plan contingencies are excluded.
16 - AUTOMATION / DIGITALIZATION	adoption of digital technologies to support and improve activities and processes.
17 - CONTRACT RISK MANAGEMENT (PRE/POST AWARD)	Use of relevant guidelines (Contract Risk Management rules) in contract negotiation and management.
18 - SURVEILLANCE AND INTELLIGENCE (SECURITY)	Physical measures both active/passive, business security or cyber intelligence.
19 - TECHNOLOGICAL AND OPERATIONAL IMPROVEMENTS AND ASSET INTEGRITY MANAGEMENT	Implementation of technological, structural and operational improvements to assets/plants or new projects in order to achieve more effective or more efficient risk containment. Including actions part of the Asset Integrity Management system and improvements aimed at reducing emissions.
20 - STRENGTHENING RESOURCES AND TOOLS	Strengthening of processes and operating methods aimed at better risk containment.
21 - LEGAL DEFENSE ACTIVITIES	Legal defense activity carried out by OGDCL professionals or entrusted to external Legal Offices.
22 - SECURITIZATION AND IN-KIND RECOVERY	Debt collection by means of contractually provided mechanisms, such as securitization and in-kind recovery.
23 - PORTFOLIO MANAGEMENT	Diversification of activities with the purpose of new assets, acquisitions, markets and procurement for de-risking purposes.
24 - PARTNERSHIPS FOR RISK MANAGEMENT	Collaboration relationship between two or more companies for the implementation of joint or complementary projects that allow the sharing / management of risk.
25 - HEDGING AND FACTORING	Insurance contracts in place at the time of evaluation. Letter of Credit, Parent Company Guarantee and other contractual guarantees that mitigate the risk wholly or partially.

26 - INSURANCE AND GUARANTEES	Hedging of the risk by financial instruments (derivatives or others) and/or assignment of receivables without recourse. Including the natural hedge.
27 - TRANSFER OF RISK LIABILITY CONTRACT	A contractual clause that, when a trigger occurs, allows the partial or total containment of the impact.
28 - SALE / CLOSURE OF ASSETS	Optimization of the portfolio of activities, assets, investments, etc. aimed at mitigating the probability of joint occurrence of related risk events.
29 - CARBON OFFSET	Carbon offsets include specific projects that either lower CO2 emissions, or "sequester" CO2, meaning they take some CO2 out of the atmosphere and store it. Some common examples of projects include reforestation, building renewable energy, carbon-storing agricultural practices, waste and landfill management, etc.

Addendum F

Risk Card

RISK EVENT

	CAUSES	CONSEQUENCES	EXISTING CONTROLS
	SEVERITY	PROBABILITY	RISK RATING (RISK LEVEL)
REF. ACTIVITY (RISK ASSESSMENT):			

CATEGORY

INFLUENCING FACTOR:	<input type="checkbox"/> INTERNAL <input type="checkbox"/> EXTERNAL
EVENT CATEGORY:	
EVENT SUB-CATEGORY:	
RISK OWNER:	
RESPONSE OWNERS:	

GENERAL

DURATION / TIME SPAN:	FROM (DATE):	TO (DATE):
OBJECTIVE:		
TARGET:		
CHAIRMAN RMT (SIGN):	MEMBERS RMT (SIGN):	SECRETARY RMT (SIGN)

MITIGATION PLAN

NO.	ELEMENT / ITEM	RESPONSE OWNER	RESOURCES REQUIRED	DATE		REMARKS
				DUE	ACTUAL	

REVIEW LOG

NO.	DATE OF REVIEW	REVIEW ELEMENT	EVIDENCE CHECKED	PROGRESS STATUS	SIGNATURE CHAIRMAN RMT

CLOSE OUT REVIEW

SEVERITY	PROBABILITY	RESIDUAL RISK RATING (RISK LEVEL)
Secretary RMT (SIGN):		Close Out Date



Table-A: Consequence Severity (C)

Potential Impact							
	Regulatory & Legal	Social/ Community	Environment	Safety	Security	Financial	Reputation
Catastrophic [Very Material] (5)	Breaches resulting in hefty penalties/ imprisonment/ revocation of registrations, licenses or permits	Widespread, visible complaints and involvement of NGOs, notables, national authorities and general public	Continuous excursions beyond allowable or regulatory limits Or widespread damage to multiple environmental attributes. Consequences of the event can either not be remediated or remediation requires significant resources and time [more than a year time frame).	Multiple Fatalities/ Disabilities	Extensive loss of life, widespread severe injuries, total loss of primary services, core processes or functions	Extreme impact of investment or risk-event Routine business >49.9 million US\$ Other/ Diversification > 99.9 million US\$	International concern affecting the company's ongoing business/ existence; Severe, long-lasting and irreversible deterioration of the reputation of the company, with reiterated long-term and strongly negative media impact
Critical [Material] (4)	Breaches resulting in significant penalties/ ceasing of operations	Major and repeated community & stakeholder concerns, involvement of notables, local entities	Intermittent excursions beyond allowable or regulatory limits Or extensive damage to the environment, consequences that can be rectified and remediated within a year's timeframe	Single Fatality/ Disability	Loss of life/ serious injuries, damage to the Company assets, impairment of core processes and functions for extended period	High impact of investment or risk-event Routine business 30 – 49.9 million US\$ Other/ Diversification 60 – 99.9 million US\$	Considerable negative publicity or damage to the company's reputation at national level with wide media coverage
Major [Consequential] (3)	Breaches resulting in warnings without penalties	No serious community or stakeholder concerns or negative social or other media coverage that causes temporary disruption to business operation	Occasional excursions beyond allowable or regulatory limits Or environmental damage with consequences that can be rectified and remediated within a month's timeframe	Serious injury(ies) resulting in Lost Time	Minor injuries, minor impairment of core functions and processes	Significant but containable impact of investment or risk-event Routine business 10 – 29.9 million US\$ Other/ Diversification 30 – 59.9 million US\$	Negative publicity or damage to the company's reputation at national/ provincial level covered by mainstream media
Marginal [Inconsequential] (2)	Breaches resulting in exposure to legal proceedings/ show cause notices	Low impact community issues, remedied after negotiations	Rare excursions beyond allowable or regulatory limits Or no significant environmental damage to the local environment, effects can be rectified and remediated immediately with some clean-up intervention within days	Injury (or injuries) requiring medical treatment	Small procession near location with slight damage/ threat to the assets/ personnel.	Minor impact of investment or risk-event Routine business 0.025 – 9.9 million US\$ Other/ Diversification 5 – 29.9 million US\$	Minor one-off (rare) negative local publicity or visible dissatisfaction by local stakeholder groups, resolved through table of negotiations
Negligible [Trivial] (1)	Rectifiable breaches with no consequence to the company	Low impact community issues, quickly remedied	Slight environmental damage within the premises of the facility	Slight injuries requiring First Aid only	Small procession near location with no damage/ threat to the assets/ personnel.	Not much significant impact of investment or risk-event Routine business < 0.025 million US\$ Other/ Diversification < 5 million US\$	Some attention from minor stakeholders, preemptively resolved by routine/ internal processes

Table-A1: Consequence Severity (C) for Climate-related Risks

Severity	Potential Impact									
	Policy and legal framework addressing methane emissions and flaring while exploring, producing and marketing/ selling oil & gas				Delay in technology adoption to adopt low carbon technologies				Reputation damage due to unable to adapt or deferral to adopt low carbon technologies	
	Short-term 1 – 5 years	Medium-term 5 – 10 years	Long-term + 10 years		Short-term 1 – 5 years	Medium-term 5 – 10 years	Long-term + 10 years		Short-term 1 – 5 years	Long-term + 10 years
Time horizons										
[Very Material] Catastrophic (5)			Taxes, emissions caps, carbon levy, penalties, and/ or trade embargoes strongly and routinely in place/ in-vogue			Erode competitiveness to a very high level; drastic changes in market demand; very large pool of stranded assets; unbearable cost of doing fossil fuels business; alarming reliability and compatibility issues				Complete non-fulfillment of partnerships/ commitments, severely affecting investor confidence, access to capital, and eligibility to attract requiring in long-lasting and irreversible deterioration of the reputation
[Critical] (4)		Taxes, emissions caps, carbon levy, penalties, and/ or trade embargoes largely in place/ in-vogue				Erode competitiveness to a high level; substantial changes in market demand; large pool of stranded assets; high cost of doing fossil fuels business; very considerable reliability and compatibility issues		Non-fulfillment of partnerships/ commitments to a greater extent, intricate to achieve multiple organizational objectives, highly affecting investor confidence, access to capital, and eligibility to attract requisite resources; further resulting in relevant and prolonged deterioration of the reputation		Assets, operations, workers or any infrastructure exposed to high climate conditions in disruption of business operations and/ or value chain system
[Consequential] Major (3)		Taxes, emissions caps, carbon levy, penalties, and/ or trade embargoes slightly in place/ in-vogue				Erode competitiveness to a moderate level; moderate changes in market demand; medium pool of stranded assets; mild cost of doing fossil fuels business; considerable reliability and compatibility issues		Partial fulfillment of partnerships/ commitments, challenging to achieve some organizational objectives, moderately affecting investor confidence, access to capital, and eligibility to attract requisite resources; further resulting in relevant and repeated deterioration of the reputation		Assets, operations, workers or any infrastructure exposed to moderate climate conditions and patterns resulting in disruption of value chain system
[Inconsequential] Marginal (2)	Regime regarding taxes, emissions caps, carbon levy, penalties, and/ or trade embargoes under development/ in the making			Erode competitiveness to a less moderate level; low changes in market demand; low pool of stranded assets; low cost of doing fossil fuels business; insignificant reliability and compatibility issues				Significant fulfillment of partnerships/ commitments, having few undesirable outcomes in the pursuit of organizational objectives; marginally affecting investor confidence, access to capital and eligibility to attract requisite resources; may result in slight deterioration of the reputation	Assets, operations, workers or any infrastructure exposed to low climate conditions and patterns resulting in slight disruption of value chain system	
[Trivial] Negligible (1)	No regime of taxes, emissions caps, carbon levy, penalties, and/ or trade embargoes presently exist			No competitiveness erosion; No changes in market demand; No stranded assets; normal cost of doing fossil fuels business; no reliability and compatibility issues				Fulfillment of partnerships/ commitments, having no noticeable impact on organizational objectives; not affecting investor confidence, access to capital and eligibility to attract requisite resources	Assets, operations, workers or any infrastructure exposed to normal climate conditions resulting in no noticeable disruption to value chain system	



Table-B: Event Probability (P) Likelihood That Exposure Would Result Into Loss

IN TERMS OF FREQUENCY		IN TERMS OF EFFECTIVENESS OF CONTROLS/ BARRIERS	
Highly Likely (5)	Incident/ event occurred THREE OR MORE TIMES DURING LAST TEN YEARS within E&P oil and gas industry, Pakistan	NO operational control/ barrier is in place	
Very Likely (4)	Incident/ event occurred TWO TIMES DURING LAST TEN YEARS within E&P oil and gas industry, Pakistan	INSUFFICIENT operational controls/ barriers are IN PLACE	
Likely (3)	Incident/ event occurred ONCE DURING LAST TEN YEARS within E&P oil and gas industry, Pakistan	Operational controls/ barriers are IN PLACE and are NOT ROUTINELY REVIEWED	
Unlikely (2)	Incident/ event occurred SELDOM/ RARELY DURING LAST TEN YEARS within E&P oil and gas industry, Pakistan	Operational controls/ barriers are IN PLACE and ARE REVIEWED as per plans	
Very Unlikely (1)	NEVER heard of DURING LAST TEN YEARS in E&P oil and gas industry, Pakistan	Operational controls/ barriers are EFFECTIVE to WITHSTAND their intended purpose	

Table-C: 5x5 Risk Assessment Matrix (Risk Heat Map/ Risk Heat Chart)

		Event Probability (P) (Chance of Happening)				
		Very Unlikely	Unlikely	Likely	Very Likely	Highly Likely
Severity (Impact) Consequence (C)	Catastrophic	5	10	15	20	25
	Critical	4	8	12	16	20
	Major	3	6	9	12	15
	Marginal	2	4	6	8	10
	Negligible	1	2	3	4	5



Example of Risk Register

Activity-I
Details of Risk Assessment

Activity:			Drilling Exploratory Well "Khuzdar North X-1" of TD=4250m @ Cost=40MM USD												
Area/ Location:			Khuzdar North Concession, District Khuzdar, Baluchistan												
Section/ Department:			Drilling Operations												
Directorate:			Petroserv												
Date of Risk Assessment:			May 2025												
Risk Assessment Team:			Name & Designation								Role in Risk Assessment				
#	Risk Event	Risk Event Category/ Sub-category	List of Hazards/ Threats (Causes)	Consequences	Existing Controls/ Barriers	Actual Risk Rating or Risk Level			ALARP (Yes/ No)	Further Controls/ Barriers	Residual Risk Rating or Risk Level			Risk Owner	Response Owner(s)
						C	P	RR			C	P	RR		
1	High H2S and CO2 content in the reservoir leading to high CAPEX and greater process hazards	Geological & Reserves Management Operations & Maintenance	- Presence of high H2S and CO2 in surrounding gas discoveries - Non prioritization of leads for well drilling	- Loss of well integrity - Higher CAPEX and OPEX - Greater process hazard	3D Basin Modelling Study carried out to understand the origin and distribution of H2S and CO2. However, the actual concentration to be known through MDT samples/ DST results	4	3	12	Yes	Prioritize the leads for well drilling with less probability of encountering high concentration of H2S and CO2 contents, based on reservoir depth	4	3	12	Exploration	Exploration
2	Higher risk prospects due to Stratigraphic plays	Geological & Reserves Management Operations & Maintenance	- Limited chance of identifying any undrilled structural trap - No de-risking exercise for stratigraphic plays based on seismic quantitative data	- High risk exploration wells - Limited chances of exploration success	High resolution 3D seismic data covering the whole block will be acquired after commercial discovery for seismic quantitative analysis	3	3	9	Yes	- Use seismic based quantitative approach to de-risk the identified stratigraphic traps - Data gathering during the planned exploration wells for nearby identified leads	3	3	9	Exploration	Exploration
3	Uncertainty regarding hydrocarbon volumes, Estimated Ultimate Recovery (EUR) & well productivity	Geological & Reserves Management Operations & Maintenance	- Uncertainties associated with gas-water contacts - Properties variation (facies, porosity, fractures etc.) - Poor understanding of velocity variation across the field and/ or reservoir - Thickness variation across reservoir	Investment loss	- Wells data (log + testing + VSP) - 3D seismic data; PSTM & PSDM velocity data	3	3	9	Yes	- Production at optimum choke size from wells to prevent early water breakthrough	3	3	9	Exploration	Production
4	Non-commercial discovery due to possible poor hydrocarbon quality, sub-commercial quantity or poor reservoir properties	Geological & Reserves Management Operations & Maintenance	- Hydrocarbon quality, sub-commercial quantity or poor reservoir properties	Investment loss	Marginal field development planning for dealing with the non-commercial discoveries and to accept any new concept for its development	4	3	12	Yes	- Future engagement for potential farm-in/out/ swap to divest the exploration risk - Develop the synergy to produce with other existing undeveloped	4	3	12	Exploration	Exploration

			- No synergy to produce HC with other existing undeveloped discoveries							discoveries and nearby production facilities					
5	Unavailability of funds or sustainable access to funds	Financial / Economic	- Delay in capital injection - Delay in budgetary/ regulatory approvals	- Insecure project financing - Delay in work program delivery	Overall availability of funds due to the company's good financial health (level of profitability)	5	2	10	Yes	- Explore other options to secure project financing, just in case - Expedite budgetary/ regulatory approvals	5	2	10	Petroserv	Finance/ Budget & Planning
6	Delayed completion of EIA Study and subsequent NOC	Laws, Rules, and Regulations	- Delay in provision of requisite information including well coordinates - Unavailability of Rig and equipment/ layout and specifications	- Delay in well spud dates - Delay in well completion	Consultant shortlisted and onboard to expedite EIA Study to the extent possible	3	3	9	Yes	Prioritize provision of required information and plans for exploratory wells incl. drilling plan, testing plan, location, composition etc.	3	3	9	Petroserv	Exploration, Drilling Planning, HSE
7	Inaccessible assets due to law & order situation/ protests/ demands	Country Risk - Socio Political	- Lack of infrastructure in remote areas	- Project delay - Human injury/ loss - Asset damage - Financial losses	Security cover through LEAs; IED jammer; Movement with convoy under FC escort; Restricting night travelling in vulnerable areas; A specific capital reserve for self insurance of rigs, buildings, wells, plants, pipelines, workmen compensation, inventory, terrorism, vehicle repair & losses for petroleum products in transit.	5	4	20	No	- Close liaison with LEAs for meaningful dialogue with local tribes - Surveillance with drone cameras - Training and awareness raising of remote employees encountering risks	5	4	20	Petroserv	Security/ CSR/ OGTI
8	Unsafe rig building/ rig up/ down	Operations & Maintenance	Certified 3 rd party transportation fleet, unsafe lifting slings, work at height, overhead crane operations, falls, trips, slips, striking by objects, failures of lifting gears/ slings, exceeding crane limits, electric shocks, failure/ breakage of bridle/ rig raising line, damaged bridle line, worn out wires/ link eyes of bridle line, uninspected lifting gears from the 3 rd party	- Project delay - Human injury/ loss - Asset damage - Financial losses	Mechanical lifting aids, mobile cranes, Use of tag line during heavyweight lifting, clearance of the movement area at rig site, toolbox talk, safety meeting, first aid/ ambulance with paramedic in advance party, PPE, inspection/ maintenance of draw-works before rig up/ rig down, preventive maintenance plans, energy isolation/ disconnection, presence of experienced driller, rig up/ down in daylight, clearance of all mast lines & electric wires, visual inspection of bridle line, insurance	3	2	6	Yes	- 3 rd party inspection & certification of lifting gears - Training on safe lifting/ crane signals & crane operations for signalmen/ floor-man/ rigman deputized with crane operations - Maintenance of machine guards on rotating catheads of draw work	3	2	6	Drilling Operations	Rig Maintenance , HSE, Medical

9	Challenges in mobilization of personnel and equipment during construction activities	Operations & Maintenance	<ul style="list-style-type: none">- Lack of Infrastructure in remote areas	<ul style="list-style-type: none">- Project delay- Human injury/loss- Asset damage- Financial losses	<ul style="list-style-type: none">- Journey Management Plan, Movements with LEA's escort. Close coordination with LEAs- Movement in bullet proof vehicles, Movement by Heli in case of security threat/ road blocks etc.- Prior approval of logistics movement plan from LEAs- Strict compliance of all SOPs, 3rd party certification of vehicular fitness, Adequate buffer (advance planning of movement) in movement plan- Insurance	3	2	6	Yes	Heli medical evacuation in case of emergency, Medical evacuation by medevac (with escort)	3	2	6	Drilling Operations	Rig Maintenance , HSE, Medical, Security
10	Wellbore Influx / Breach of Well Control	Operations & Maintenance	<ul style="list-style-type: none">- Human error in operational handling- Well Planning/ Well integrity design failure- Violation of SOP/ Faulty equipment- Well control equipment failure- Unexpected over pressured formation encountered	<ul style="list-style-type: none">- Project delay- Human injury/loss- Asset damage- Financial losses- Environment damage/ oil spills- Reputation damage	<ul style="list-style-type: none">- Inspection and testing of Well Control equipment- Appropriate Mud Weight selection based on offset well data- Well Control Contingency Planning and Services- PVT and flow sensors in-place, calibrated and function tested- Well Control drills- F&G System	4	3	12	Yes	<ul style="list-style-type: none">- Blowout contingency plan and relief well planning- Hiring well killing services for disaster management- Spill control/ clean-up services- IWCF certification for drilling crew (level 3/4)- Insurance coverage to address blowout scenario	4	3	12	Drilling Operations	Drilling Operations
11	Delays in construction of connecting pipeline for offtake by SSGC/ SNGPL	Infrastructure	<ul style="list-style-type: none">- Delay in installation of surface facilities- Directive by the GOP to expedite on fast track basis to connect gas to further contribute towards the energy needs of the country	<ul style="list-style-type: none">- Financial loss- Delay in work program delivery- Disruption of business	<ul style="list-style-type: none">- Coordination with SSGC/ SNGPL to apprise them of development plan and seek commitment for timely availability of additional capacity through pipeline- Negotiation with SSGC/ SNGPL for enhancement of existing pipeline capacity and timely communication with authorities.	3	3	9	Yes	Commercial agreement	3	3	9	Production	JV-BD/ Commercial
12	Condensate/ crude oil transportation risk	Infrastructure	<ul style="list-style-type: none">- Delay in finalizing Contract and selection of Contractor	<ul style="list-style-type: none">- Roadside incidents- Regulatory issues- Financial loss	<ul style="list-style-type: none">- Adequate protections and requirements to be built into the contract to limit legal exposure- Selection of Contractor based on stringent HSE requirements- Special monitoring mechanism to be put in place to ensure integrity of vehicles and	3	3	9	Yes	Follow-ups with concerned Departments	3	3	9	Production	Commercial/ Legal Services/ HSE

13	Land acquisition issues and complexity in community engagement	Laws, Rules, & Regulations	<ul style="list-style-type: none">- Market conditions- Internal policy issues- Lack of engagement with locals	<ul style="list-style-type: none">- Conflicts- Financial losses- Reputation damage	<ul style="list-style-type: none">- Expediting internal/external approval process- Proactive role by land section: Detailed procedures in place to deal with land acquisition- Active interaction/ coordination with the local community members for comprehensive CSR plan, Periodic meetings with land owners/ local community Reps. to resolve issues, where required- Active liaison with local authorities / LEAs, where required	3	3	9	Yes	<ul style="list-style-type: none">- Engagement of locals for small tasks, daily wagers to create their interest and avoid any unrest.- Appointment of single point responsibility to handle local community.- Engagement of local tribal leaders/ notables if so required.- Communicate to Rangers/ FC WING/ CSO, and engage with a few Representatives / Jirga through Military/ FC authorities of the protesters and note the demands. Identify the genuineness of their protest/demands.	3	3	9	Production	Land Management/ CSR/ Security
14	High staff attrition rate	Personnel	<ul style="list-style-type: none">- Market conditions- Internal policy issues- Lack of employee engagement	<ul style="list-style-type: none">- Delay in work program delivery	<ul style="list-style-type: none">- Performance appraisal system in place to reward high performers- Training & development system in place	3	3	9	Yes	<ul style="list-style-type: none">- Conduct Employee Engagement Survey- Develop staff Retention Policy- Implement Succession Planning	3	3	9	Petroserv	HR
15	Poor data quality, data loss or breach	Technology	<ul style="list-style-type: none">- Compromised QC- Unauthorized access policy- Cyber attack	<ul style="list-style-type: none">- Delay in work program delivery- Disruption of business	<ul style="list-style-type: none">- Trainings on document/ data control & QC- Use of cloud-based ERP/ SAP- IT infrastructure audits/ reviews	4	3	12	Yes	Implementation of action plan/ recommendations of IT audits/ reviews to protect unauthorized access/ cyberattack	3	3	9	Exploration Petroserv	System
16	Non-Compliance with Legal and Regulatory requirements	Laws, Rules, & Regulations	<ul style="list-style-type: none">- Lack of awareness	<ul style="list-style-type: none">- Litigation charges/fine- Negative publicity	<ul style="list-style-type: none">- Departmental level compliance system in place on Regulatory Requirements Matrix	3	3	9	Yes	Training on Regulatory Requirements Matrix	3	3	9	Petroserv	Drilling Operations, Services, HSE
17	Conflicts with locals regarding waste disposal/ pits/ site restoration	Laws, Rules, & Regulations	<ul style="list-style-type: none">- Not following conditions scribed at the time of hiring of land- Oil/ chemical spills- Seepage/ overflow from pits- Not involving locals (vendors) in waste management	<ul style="list-style-type: none">- Delay in work program delivery- Environment damage- Reputation loss	<ul style="list-style-type: none">- Roles defined for the Land Management & CSR Sections- Framework for site restoration and integrated waste management handbook available- Secondary containment in vogue- Contractor shortlisted and onboard to bioremediate OBM drill cuttings	4	2	8	Yes	Training on integrated waste management and related laws/ regulations	4	2	8	Drilling Operations	Drilling Services/ HSE

5.2 Job Vulnerability & Hazard Analysis

OGM/P-HSE-5.2(9) Revision Number 9

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Change/ Revision Log

#	Description of Change
1	Modified: New Logo & Tag Line

Associated Documents Approval & Issue

Related Document/ Record	Initiated by	Reviewed by	Checked/ Verified / Approved by
OGF – HSE – 003 Job Vulnerability/ Hazard Analysis (JVA/ JHA)	Department / Section ICs	Location HSE IC Permit Issuer	Location IC

5.2.1 Purpose of JVA/ JHA

- A JVA/ JHA shall be intended to provide a structured approach to identifying hazards and incorporating controls measures for those hazards related to tasks.
- JVA/ JHA shall be required for any task performed under a Permit to Work (PTW). However, there may be exceptions; In such cases, the rationale for not conducting a JVA/ JHA should be clearly stated on the PTW template.

5.2.2 Requirements for JVA/ JHA

- Jobs with the worst accident history shall have priority and should be analyzed first.
- JVA/ JHA will be based upon following factors:
 - ▣ **Frequency of Accidents:** a job has repeatedly caused near hits or accidents is a candidate for JVA / JHA.
 - ▣ **Rate of Disabling Injuries:** Every job that has caused disabling injuries should be given a JVA / JHA.
 - ▣ **Severity Potential:** Some jobs may not have a history of accidents but may have the potential for a severe injury (high impact ratings).
 - ▣ **New Jobs:** Analyses of new jobs and jobs where changes have been made in processes and procedures should follow.
 - ▣ **SIMOPS (Simultaneous Operations) Jobs:** Jobs that involve a number of functional groups or disciplines.
- JVAs / JHAs shall be attached to the corresponding work permits and discussed during the toolbox talks / safety meetings.
- The following list is designed to assist in determining the requirement for a JVA / JHA and contains jobs that are considered DO NOT require a JHA. This list is not exhaustive and be used as a guide only:

Production – Routine Operations:	Maintenance – Routine Operations:
⊕ Weekly line of sight gas detector cleaning	⊕ Housekeeping
⊕ Radiation surveys using the radiation survey meter	⊕ Test running emergency generator, fire & Foam pumps
⊕ Lube oil top offs	⊕ Test running standby machinery
⊕ Taking water/ oil samples (LP process)	⊕ Washing gas turbine compressors
⊕ Draining of sight glasses (to prove levels)	⊕ Starting/ stopping gas turbine
⊕ Laboratory work	⊕ Internal visual gas turbine inspections
⊕ Greasing LP pumps	⊕ Changing over equipment
⊕ Inventorying activities	⊕ Topping off of oil and water in machinery
⊕ Topping off tempered water tank	⊕ Boiler water tests
⊕ Compressor lubricator rate check	⊕ Use of Elec/Mech workshop machinery
⊕ Greasing production chokes	⊕ Use of hydraulic press
⊕ Draining liquids from compressors	⊕ Portable equipment testing in non-hazardous areas
⊕ Solenoid leakage checks	⊕ Charging of batteries
⊕ Housekeeping	⊕ Adding refrigerant
⊕ Testing export gas H2S levels	⊕ Routine checking of electric motors
⊕ Removal and installation of pressure gauges for calibration from block and bleeds	⊕ Foam system checks
⊕ Checking oil levels on chemical pumps and topping off	⊕ CO2 room checks not including opening release stations
⊕ Backflush process seawater strainers	⊕ Visual inspection of 440 volt MCC's prior to resetting overloads
⊕ Drills	⊕ Lube oil sampling
⊕ Filling of bowzer	⊕ Inspection of Slings, Shackles etc.

5.2.3 JVA/ JHA Development Team

- The Team shall constitute of the following members:
 - ▣ **Team Lead:** Representative from exploration, construction, seismic, production, maintenance or drilling (depending on the scope of work). This person should be experienced in the work and at least at supervisor level.
 - ▣ Representative(s) at the “hands on” level – ideally, the Job Supervisor who will directly oversee the execution of the Job
 - ▣ Technical specialists / engineers who can bring additional knowledge to the assessment (if required)
 - ▣ Location HSE Rep. (if required)
 - ▣ At a minimum one representative from every discipline or contractor involved in execution of job

5.2.4 JVA / JHA Responsibilities

- It shall be the responsibility of Job Supervisor to coordinate and conduct JVA / JHA prior to execution of the task.
 - Location HSE Representative shall communicate the requirements laid down in this procedure to all employees and contractor's management.
 - For activities to be carried out by projects personnel or any contractor inside plant boundary / live areas / process areas (i.e. Brown field), all risk assessments shall be reviewed and endorsed by Permit Issuer.
- In green field (development of new facility / construction sites / projects) outside of plant boundary; all JVAs/ JHAs shall be reviewed and endorsed by designated person as authorized by Location IC.

5.2.5 Modus Operandi: JVA/ JHA

Step 1 – Establish the Context

- Establish the context of the scope of work required by the JVA/ JHA:

Complete Section of the JVA / JHA Worksheet:	
Job Description	- What will be done? State the specific job to be performed that may have a history of potential for injury, incidents, safety critical, new jobs, jobs changed, new personnel performing job.
Location	- Where? Identify the location where the work will be conducted.
JHA Date	- When? Record the date that the JVA/ JHA is being recorded.
JHA Leader	- Who facilitated the JVA/ JHA? Record the name of the person who facilitated the JHA.
Review Team	- Who will be involved? Record details of the Department, responsible Job Supervisor for the work and the names of JVA/ JHA participants.
Hazard Checklist	- Identify applicable Hazards from list

Step 2 – Break the Job into Logical Steps

- Divide each job into simple steps. Number these and describe what is to be done and in what order. Ensure steps are not too complicated or too simple.

Complete Section of the JVA / JHA Worksheet:	
Step No.	How many steps can the job be broken into? Number the steps of the job, i.e. 1,2,3 etc.
Job Step	What shall be done at each step? Against each step number, briefly describe what is to be done in order of the work to be conducted.
Note: Consider these in each step Are there safer methods to achieve the same results? Are there alternative methods such as avoiding confined space entries via remote device, removing task from a hazardous area, shutting in the process (consider hierarchy of controls).	

Step 3 - Identify the Hazards for Each Job Step (Hazards)

- For each step of the job, identify all significant hazards associated with the work, whether they are part of the employee's task or part of the job surroundings. For each of these hazards, identify the potential incident that may occur. Also identify any potential control measures that may fail as a result of the activities conducted during the job.

Complete Section of the JVA / JHA Worksheet:	
Hazard	What can happen at each step? What are the potential incidents that could occur from each of the Job Steps? Are there any potential failures of existing controls that could occur as a result of the Job Step? Identify the hazard for each step of the job and the potential incident that may occur. Identify any existing control measures that may be impacted or compromised by the job.

Step 4 – Develop Hazard/ Risk Elimination or Reduction Measures

- Once the hazards have been identified, hazard / risk reduction or elimination measures shall be developed. When adopting measures to control a hazard, the following Hierarch of Controls should be followed.
- The Hazard Control Section of the JVA / JHA shall be completed by following the below given guidelines:

Complete Section of the JHA Worksheet:	
Hazard Controls	<p>What is or will be in place to manage or remove the hazards?</p> <p>For each step of the job, identify the controls in place to manage or remove the hazard. Use the hierarchy of control, i.e. elimination, substitution, redesign, separate, administrate, PPE</p> <p>Are the controls listed specific and complete?</p> <p>All of the controls shall be implemented before the job commences, complex controls may not be able to be implemented before commencement of the job – this will require further interim controls to be in place before commencing the job.</p> <p>Have all the hazards and controls been identified from previous times that this job was completed?</p> <p>Review any previous JHA Worksheet for this job, ensuring any relevant hazards and controls are included in this JHA worksheet</p>

Step 5 – Calculate the Risk and Determination of Tolerability

- The fifth and final step of risk assessment shall be to determine the risk associated with each step of the work tasks. Risk is defined as the product of the probability of occurrence (likelihood) and severity of loss (Consequence) from exposure to a hazard.

$$\text{Risk Rating (RR)} = \text{Consequence (C)} \times \text{Probability (P)}$$

- The Risk shall be calculated as per following 5x5 Risk Matrix (Risk Heat Map / Risk Heat Chart) while risk tolerability/treatment of each step shall be assessed as per the criteria as scribed in the Enterprise Risk Management (ERM) procedure.



Oil & Gas Development Company Limited

Location / Site: _____

JHA No. _____

Rev. No. _____

Issue Date: _____

OGFXXX – HSE – 003(04)

Job Vulnerability / Hazard Analysis (JVA / JHA)

DESCRIPTION OF JOB LOCATION		POTENTIAL VULNERABILITIES	IMPACT CONTROL MEASURES

JOB DESCRIPTION		DEPARTMENT	RESPONSIBLE PERSON	SUPERVISOR

#	ROLE	NAME	COMPANY / POSITION	SIGNATURE
1	Leader			
2	Rep. Permit Issuing Authority			
3	Rep. Permit Receiving Authority			
4	Rep. HSE			

HAZARD / RISK CHECKLIST				
<input type="checkbox"/> Slips, Trips and Falls	<input type="checkbox"/> Access / Egress	<input type="checkbox"/> Moving Machinery	<input type="checkbox"/> Manual Handling	<input type="checkbox"/> Stored Energy
<input type="checkbox"/> Lifting Operation	<input type="checkbox"/> Noise	<input type="checkbox"/> Illumination	<input type="checkbox"/> Waste Management	<input type="checkbox"/> Miscommunication
<input type="checkbox"/> Corrosive Substance	<input type="checkbox"/> Use of Oils / Chemicals	<input type="checkbox"/> SIMOPS	<input type="checkbox"/> Flaring / Venting	<input type="checkbox"/> Inadvertent unit / facility trip
<input type="checkbox"/> Flammable Materials	<input type="checkbox"/> Explosives	<input type="checkbox"/> Ignition Source	<input type="checkbox"/> Hydrocarbon Release	<input type="checkbox"/> Hydrogen Sulphide
<input type="checkbox"/> Dropped Object	<input type="checkbox"/> Working with Pressure	<input type="checkbox"/> Weather Conditions	<input type="checkbox"/> Electricity	<input type="checkbox"/> Working at Height
<input type="checkbox"/> Fatigue / Over Exertion	<input type="checkbox"/> Explosives	<input type="checkbox"/> Isolation	<input type="checkbox"/> Vehicle/Equip. Movement	<input type="checkbox"/> Confined Space
<input type="checkbox"/> Y <input type="checkbox"/> N Have alternatives been considered to achieving the job outcome?				

Ref. Section 05 (Planning) of OGDCL's Integrated HSE System Manual
Page 1 of 3

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[illegible]

Ref. Section 05 (Planning) of OGDCL's Integrated HSE System Manual
Page 2 of 3



Prepared by:	Reviewed by:	
Signature (Concerned Departmental/ Sectional In-Charge)		
	Signature (Permit Issuer)	Signature (Location In-Charge HSE)
Date:	Date:	
Remarks:		
Approved by:		
Signature (Location In-Charge)		
Date:		

5.3 Legal & Other Requirements

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Managing Director, OGDCL

Change/ Revision Log

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Associated Documents Approval & Issue

Related Document/ Record	Initiated by	Reviewed by	Checked/ Verified / Approved by
OGM/RR-HSE-001 HSE Regulatory Matrix (Preparation/ Updation)	Chief HSE	Manager HSE	GM HSE
OGM/RR-HSE-001 HSE Regulatory Matrix (Compliance Status)	Location HSE	Location HSE IC	Area Manager/ Location IC

5.3.1 General

- HSE Department shall be responsible for identifying the applicable regulatory and other requirements.
- HSE Regulatory Requirements shall include the national/ local regulations related to environment, occupational health & safety e.g.:
 - a) Directorate General Petroleum Concession (DGPC) Guidelines
 - b) Oil & Gas Safety Regulations (Mines Act)
 - c) IEE/EIA Regulations (Pakistan Environmental Protection Act)
 - d) Oil and Gas Regulatory Authority (OGRA) Rules & Regulations
 - e) Exploration and Production Rules (Petroleum Act)
 - f) National Environmental Quality Standards [NEQS] Rules[Pakistan Environment Act]
 - g) Electricity Rules [Electricity Act]
 - h) Wildlife Protection Ordinance [Federal/ Provincial]
 - i) Explosives Rules
 - j) Pakistan Nuclear Regulatory Authority (PNRA) Regulatory Guides
- All applicable laws, regulations and other requirements shall be listed in the **Regulatory Requirements Matrix**, which is maintained by the HSE Department.

- HSE Section / Department in consultation with all stakeholders shall seek, record to check compliance on all applicable laws, regulations, and other requirements and report on the Regulatory Requirement Matrix on biannual basis.

5.3.2 Access to Regulatory and Other Requirements

- Information related to regulatory and other requirements shall be obtained by contacting the regulatory bodies, browsing the official websites or through industrial associations.
- HSE Department shall track legislative and regulatory developments applicable to the oil & gas industry and area where the facility is located. The information shall be acquired from internal and external sources.
- HSE Department shall respond to the applicable changes by updating the Regulatory Requirements Matrix. The format of Regulatory Requirements Matrix is mentioned below:

Requirement	Regulation, Law, Recommended Practice	Authority/ Stakeholders	Applicable				Status of compliance with regulations/ Comments (or Action taken in case of non-compliance)
			Office Building	Seismic	Drilling	Production	

5.3.3 New & Modified Activities & Services

- Changes to, and development of new activities, processes and services may change OGDCL legal and regulatory obligations. Such changes include:
 - a) Changes in processes and technology, and introduction of new processes/ material substitution;
 - b) Increase, reduction, or modification of the point of sources of emissions and discharges;
 - c) Changes in the inventory of chemicals and other regulated substances;
 - d) Significant expansion or reduction in business activities;
 - e) Facilities addition or relocation;
 - f) Temporary projects, such as construction, installation of new equipment

- Departmental heads shall be responsible for identifying changes in activities, processes and services that may change the facility's legal and regulatory obligations, and to communicate the same to the HSE

Department/ Section.

- ☐ Relevant changes may also be identified by the Location HSE Management Review Committee (MRC) meetings or by internal or external audits of the HSE System.
- ☐ The HSE Department shall review the reported changes and determine their legal and regulatory impact and impact. When the change triggers new regulatory requirements, the Regulatory Requirements Matrix shall be updated accordingly.
- ☐ In addition, the Regulatory Requirements Matrix shall be reviewed at least once every year.
- ☐ Based on the changes / amendments in the legislative requirements, HSE Department / Section shall seek any change(s) in the Risk Register and any need to modify & implement relevant HSE Objectives and Management Programs in consultation with all stakeholders.

5.4 HSE Objectives

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#	Description of Change
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Associated Documents Approval & Issue

Related Document/ Record	Initiated by	Reviewed by	Checked/ Verified / Approved by

5.4.1 HSE Plan

- HSE Plan shall be the cornerstone of planning & goal setting. Development of HSE Plan shall be of strategic process because it involves the best way to respond to the circumstances of business environment whether or not these are known with any degree of certainty. Being strategic, means being clear about objectives, being aware of the organization's objectives and resources, and incorporating both to be able to respond to a dynamic environment.
- An Annual HSE Activity Plan (specimen attached at Appendix A) shall be rolled out on the start of each year and then subsequently every year. The Annual HSE Plan shall be developed by HSEQ Department; reviewed and agreed by concerned management team; approved by MD/ CEO/ concerned Executive Director; and updated annually & “rolled forward” to reflect improved knowledge

Note: Following Table provides “examples” that may be referred to while setting up HSE Plan based on the identified focus areas of Facilities, People, System & Procedure and Failures. The Table provides a glossary of Objectives, Goals & Targets to be considered where applicable.

FACILITIES	PEOPLE	SYSTEMS & PROCEDURES	FAILURES
Technical audits	Incentive schemes	Emergency response training (mock up) drills	Lost Time Injury Frequent Rate
Operational audits	Percent of workforce with approved HSE training completed	Management system audits	Number of near hits per month
Percent completion of maintenance programs	Percent of workers trained (operational) - actual versus plan	Project safety reviews and actions complete	Days off sick those are not caused by reported workplace incidents
Inspections of facilities	HSE awareness programs	ISO 14001/ 45001 Certification	Total Recordable Injury Rate Rate (=LTI+RWC+MTC)
Management safety behavior audits	Wellbeing programs	Percent completion of planned HSE meetings; Toolbox talks	Number of spills, leaks, fires, injuries as a percent of historical average
Number of toolbox meetings/quarter	Staff and contractor employee turnover	Percent of workforce undergoing health screening.	Hazard/unsafe behaviors reported
Project HSE plan compliance	Percent line managers/supervisors achieving 100% HSE competency	Percent complete of HSE action plans within a challenging timescale	Following an incident: identifying learning points and instigating actions to prevent recurrence
Written scheme of verification implemented	Number of hazards reported per month	Percent compliance with legal compliance register	Re-use/ Reduce/ Recycle/ Refurbish/ Repair Success
Safety equipment inspections	Senior management site visits	Percent completion of planned HSE audits	Energy efficiency/conservation
Calibrations	Percent attendance in HSE MRC meetings	Percent of job safety analyses performed	Emissions / Vent / Flare
Safe disposal of hazardous waste	Percent complete safety induction	Closeout from action tracking register	Bio-diversity

5.4.3 HSE Objectives

- All locations shall establish HSE Objectives based on Annual HSE Plan. As next level down from the Annual HSE Plan, the location HSE Plan shall be much more detailed with all Objectives further subdivided into actions and

responsibilities. Progress – actual versus planned – shall be monitored and discussed in HSE Management Review Committee (MRC) Meetings.

- ☐ Location HSE Plan shall be developed and rolled out within one month of the rollout of Annual HSE Plan.
- ☐ Also, based on the results of risk assessment, HSE Section in consultation with the Sectional ICs, shall set the Objectives using Risk Cards to control the Significant Risk Ratings.
- ☐ The HSE Plan shall be reviewed by the concerned Sectional IC and then discussed in the Location HSE MRC meetings for approval.
- ☐ The approved targets as per HSE Plan shall be kept with the HSE Department/ Section and displayed on notice boards, bulletin boards, and/ or electronic/ print media for easy access to employees and stakeholders.
- ☐ Progress to be reviewed by Location Management on fortnightly / monthly basis.

- ☐ When HSE performance falls below desirable level, or when there is a possibility of a non-compliance against a law or regulation, or in order to avail an opportunity for the sake of improvement, establishment of appropriate HSE Objectives shall be recommended as well.

5.4.4 Setting HSE Objectives

- ☐ The objectives shall define the goals to be achieved given in subjective terms and the target is the measurable and specific indicator related to objective. Overall following SMART approach shall be adopted:

S: Simple
M: Measurable
A: Attainable
R: Realistic
T: Time-bound
- ☐ While executing SMART approach, impact (risk) control hierarchy shall be used to fill the HSE variances (as appeared from the results of HSE Risk Assessment).
- ☐ While formulating objectives, the following table shall be consulted to assess the vulnerabilities and check the "effectiveness" of existing controls in a given situation, which is based on lifecycle perspective of Man-Machine-Material-Method.

MAN			
DESIGN STANDARDS	Systems or sub system elements are designed for a more severe duty than they experience	→ Scenarios, where targets and objectives to be defined →	The systems or sub system elements were constructed to standards lower than the current norm
SUPPLIER (CONTRACTOR / SUB-CONTRACTOR / SERVICE COMPANY) LEVEL OF COMPLIANCE	The suppliers are more conscious and never compromise on HSE		The suppliers are reluctant to implement and follow HSE e.g. to remain on the lower cost side
COMPETENCE OF OPERATOR	The operators are well-trained and skilled to operate the process systems or sub system element		The operators are untrained and unskilled to operate the process systems or sub system element
MATERIAL			
QUALITY OF COMPONENTS (MATERIAL)	The quality of components (material) is better than the industry norm	→ Scenarios, where targets and objectives to be defined →	Severe service conditions apply, e.g. highly corrosive
MACHINE			
RESERVOIR BEHAVIOR	New & viable reservoir fluid behavior and properties	→ Scenarios, where targets and objectives	Old & diminishing reservoir fluid behavior and properties
PROCESS AGE	The process systems or sub system element is new and known to		The process systems or sub system element is old and

	withstand design conditions	to be defined →	known to have severe fatigue
METHOD			
ACCEPTANCE CRITERION	OGDCL has a criterion to verify/ validate critical jobs and consignments to formally rule-out any potential faults and failures	→ Scenarios, where targets and objectives to be defined →	OGDCL has not set standardized criterion to verify/ validate critical jobs and consignments
PRODUCT CHARACTERISTICS	HSE features are intertwined in the product quality as per agreed specs & regulations before dispatch		HSE features are overlooked in the product quality as per agreed specs & regulations before dispatch

- Following factors shall be considered before finalizing the objectives:
- Financial constraints
 - Operational constraints
 - Business constraints

5.4.5 Review and Closeout

- HSE Department/ Section shall monitor the progress of HSE Plan on quarterly basis or as deem practical depending upon the nature of case and reports it to the management immediately or in the Location HSE Management Review Committee (MRC) meetings.

5.4.6 Amendment of HSE Plan

- Issues related to new developments or to new or modified activities, processes and services or changes due to lifecycle perspective shall be reported to the HSE Department/ Section. Such projects may include:
- a) Significant expansion, reduction or modification of facility;
 - b) New suppliers (contractors, sub-contractors, service companies);
 - c) Temporary project activities.
- Location HSE Management Review Committee (MRC) shall review the proposed changes and determine whether the HSE Plan needs to be amended or updated to address the change.

Appendix A

Annual HSE Activity Plan (Specimen)

#	TASK	DESCRIPTION OF TASK	RESPONSIBLE	STATUS
A.	Leadership & Commitment	1. Management System Certifications	Corporate HSEQ	
		2. HSE KPIs (related to facilities; people; systems & procedures; & failures)	Location InCharge → Corporate HSEQ	
		3. Management Walk Around (MWA)/ STOP Intervention Program	EDs/ HODs/ Area Managers	
		4. HSE Leadership & Commitment Training for All Sectional In-Charges/ Area Mangers	Corporate HSEQ	
		5. Regulatory (CIM/ EPA/ OGRA) Compliance	Location Management → Corporate HSEQ	
		6. Engineering Change Requests (ECR) Reviews	ECR Committee	
B.	Competence, Training and Development	7. HSE Training Need Assessment	Location InCharge/ Location HSE InCharge	
		8. Update of PPE Need Assessment Matrix	Respective Sectional InCharges/ Location HSE InCharge	
		9. Onsite HSE Training (Awareness) Planner and Execution	Location HSE InCharge/ HSE Development Facilitator (DF) and as assigned	
C.	Hazards Identification & Risk Assessment	10. Hazards Identification & Risk Assessment (HIRA) Plan and execution	Location InCharge → HIRA Team/ Location HSE InCharge	
		11. Development/ Updation of HSE Risk Register & Risk Dashboard	Sectional InCharges → Location InCharge	
		12. Hazards Communication (HazCom)	Sectional InCharges	
		13. Jobs' Hazard Analysis (JHAs)	Sectional InCharges	
D.	Emergency Preparedness & Response	14. Emergency Response Plan (ERP) & LMT Roster	Location HSE InCharge → Location InCharge	
		15. Management of Emergency Response Post	Location Management	
		16. Emergency Drill Planner	Location HSE InCharge → Location Management	
		17. Scenario-based (Mockup) Emergency Drills	Location Management/ Location HSE InCharge	
		18. Safety (Proactive) Monitoring Plan and execution	Sectional InCharges	
		19. Calibration of Safety Critical Equipment	Sectional InCharges	
E.	Contractor Safety Management	20. Submission of HSE Plans & Protocols Compliance (Risk Control Mechanism)	Reps. of Contractors/ Service Companies	
		21. Pre-Job Meetings with the Reps. of Contractors/ Service Companies	Sectional InCharges	
		22. PPE Compliance by Subcontractors & Local Labors	Sectional InCharges	
		23. Performance Gauging of Contractors (High Risk Jobs)	Location Management	
		24. Contractors HSE Awareness Activities/ Inductions (HSE Pledge Handbook For Contractors & Service Companies)	Location Management/ HSE InCharge	
F.	Road Safety Management	25. Journey Management & Safe Driving Instructions (Leaflet)	Location TPT InCharge	
		26. Onsite Awareness for Drivers (Defensive Driving)	Location HSE InCharge / External Trainer	
		27. Vehicular Inspections	TPT InCharge	
		28. Acknowledgment of Safe Drivers	Location Management	
G.	Measuring Performance	29. HSE Routine/ Daily Reporting	Location HSE InCharge	
		30. Analysis & Compliance of HSE Audit Observations	Location HSE MRC Members	
		31. Onsite HSE MRC Meetings	Location HSE MRC Members	
		32. HSE Performance Reports	Location HSE InCharge → Location InCharge → H.O.	
H.	HSE Campaigns/ Readiness	33. Toolbox (Safety Talks)	Sectional InCharges	
		34. STOP Intervention/ Observation Tours	Location Management/ Sectional InCharges	
		35. Hazard Hunt Program (HHP)	Hazard Hunt Teams	
		36. Celebration of HSE Events/ HSE Reward & Recognition	Location Management	
		37. Health Awareness, Campaigns & Wellness Initiatives	Location Medical InCharge → Medical Services H.O.	
		38. Maintenance of plants/ saplings	Location Admin. InCharge	
I.	Occupational Health (OH)	39. Health Monitoring Plan and execution	Location Medical InCharge/ Location HSE InCharge/ Location Admin InCharge	
		40. Occupational Health Assessment Plan & Trade-wise Assessment Tests of Employees	Location Medical InCharge	
		41. Occupational Health Trainings (First Aid; Respiratory Protection; Stress Management/; Seasonal Diseases & Hygiene)	Location Medical InCharge	
J.	Environment Monitoring	42. Environment Monitoring Plan and execution	Location Lab. InCharge/ Location HSE InCharge	

		43. Air Emissions Data Analysis	Location HSE InCharge → H.O.	
		44. Maintenance of Air Emitting Point Sources (Generators etc.)	Location Mechanical InCharge	
		45. Carbon Footprint Study	Carbon Footprint Study Team	
K.	Waste Management	46. Onsite Waste Management Plan	Location HSE InCharge	
		47. Waste Handling Awareness Sessions	Location HSE InCharge	
		48. Storage & Maintenance of Disposal Site/ Treated Waste	Location Material InCharge	
		49. Pre-&-Post Treatment QC of Waste/ Pits	Location InCharge/ Location Lab InCharge/ Outsourced (EPA Certified Env. Labs)	
		50. Safe Disposal of (Hazardous) Waste	Location InCharge/ Location Material InCharge	