JOB SAFETY ANALYSIS (JSA) FORM

Rev 1 Feb 24

Unit/Area:	Specific Location:	Work Authorizer (if applicable):	Supervisor / Work Lead:	Date:

Job Description for Tasks with High Potential Consequence (i.e., life-altering injuries or Consequence Level 1 process safety events including HC 1&2 events) (include Equipment Numbers as Practical):

Check LSRA(s) that apply and review Start Work Check(s). Complete Page 2 with any additional task steps with high potential consequence or if there is no applicable LSRA.

Confined Space Entry ☐

Obtain authorization before entering a confined space

1. I confirm energy sources are isolated
2. I confirm the atmosphere has been tested and is monitored
3. I check and use my breathing apparatus when required
4. I confirm there is an attendant standing by
5. I confirm a rescue plan is in place
6. I obtain authorization to enter

Bypassing Safety Controls ☐

Obtain authorization before overriding or disabling safety controls

1. I understand and use safety-critical equipment and procedures which apply to my task
2. I obtain authorization before:
   - Disabling or overriding safety equipment
   - Deviating from procedures
   - Crossing a barrier

Energy Isolation ☐

Verify isolation and zero energy before work begins

1. I have identified all energy sources
2. I confirm that hazardous energy sources have been isolated, locked, and tagged
3. I have checked there is zero energy and tested for residual or stored energy
4. I never remove or tamper with energy control devices without authorization
5. I confirm equipment is back to safe operating condition prior to re-energizing

Excavation ☐

Obtain authorization before digging or entering excavations

1. I obtain authorization prior to performing excavation / trenching / ground disturbance activities
2. I confirm underground utilities and structures are located, de-energized or protected
3. I confirm hazard controls and confined space entry as required
4. I monitor for changing conditions and exit as appropriate

Safe Mechanical Lifting ☐

Plan lifting operations and control the area

1. I confirm that the equipment and load have been inspected and are fit for purpose
2. I only operate equipment that I am qualified to use
3. I establish and obey barriers and exclusions zones
4. I never walk under a suspended load
5. I understand the lift plan prior to starting work and keep hands off load unless authorized
6. I establish and maintain communication with lifting and rigging personnel

Hot Work ☐

Control flammables and ignition sources

1. I identify and control ignition sources
2. Before starting any hot work:
   - I confirm flammable material has been removed or isolated
   - I obtain authorization
3. Before starting hot work in a hazardous area, I confirm:
   - A gas test has been completed
   - Gas will be monitored continually

Working Around Mobile Equipment ☐

See and be seen; maintain a safe distance

1. I plan work to separate workers and mobile equipment
2. I only operate mobile equipment if qualified and use spotters where required
3. I verify safety devices are functional on mobile equipment
4. I establish clear means of communication with equipment operator
5. I stay out of the equipment's exclusion zone while in operation
6. I confirm controls are in place to prevent unintentional movement of mobile equipment and/or loads

Working at Height ☐

Protect yourself against a fall when working at height

1. I inspect my fall protection equipment before use
2. I secure tools and work materials to prevent dropped objects
3. I tie-off 100% to approved anchor points while outside protected area
4. I have validated prompt rescue capability when wearing fall protection
5. I will follow safe work practices when climbing, descending or working from ladders

BreakingContainment/OPE ☐

Manage ignition sources and exposure to energy & hazardous substances

1. I verify opening/break location(s)
2. I confirm energy isolation is complete
3. I manage ignition sources and confirm gas testing is completed when required
4. I use appropriate PPE and defensive behaviors when opening process equipment

Driving ☐

Follow safe driving rules

1. I always wear a seatbelt
2. I do not exceed the speed limit, and reduce my speed for road conditions
3. I do not use phones or operate devices while driving
4. I am fit, rested and fully alert while driving
5. I follow journey management requirements

Work Authorization ☐

Work with a valid permit when required

1. I have confirmed if a permit is required
2. I am authorized to perform the work
3. I understand the permit
4. I have confirmed that hazards are controlled, and it is safe to start
5. I stop and reassess if conditions change

Line of Fire ☐

Keep yourself and others out of the line of fire

1. I position myself to avoid:
   - Moving objects
   - Vehicles
   - Pressure releases
   - Dropped objects
2. I establish and obey barriers and exclusion zones
3. I take action to secure loose objects and report potential dropped objects

Confirm these safeguards are in place and effective prior to starting work using the applicable SWC(s).
During the task, if safeguards are no longer in place or effective, STOP Work.

Are there any <u>additional</u> high potential consequence hazards present?

Electrical Energy	Moving Objects	Lighting & Visibility	Simultaneous Operations (SIMOPS) or Stacked Work
Stored Energy	Hazardous Substances	Noise & Vibration	
Thermal Energy	Radiation		

High Potential Consequence Task Steps (Description)	Check off to indicate Hold Point	POTENTIAL HAZARDS & CONSEQUENCES Include applicable Error Prone Situations and Triggers	SAFEGUARDS (Actions & Physical Safeguards) Eliminate or Mitigate the hazards
	Hold Point ☐		
	Hold Point ☐		
	Hold Point ☐		
	Hold Point ☐		
	Hold Point ☐		

Confirm these safeguards are in place and effective prior to starting work using this JSA.
During the task, if safeguards are no longer in place or effective, STOP Work.

Lessons Learned (as needed): What improvements should be made for future work? Discussion leader to provide feedback to update planning package.

LAI HAZARD ANALYSIS												
Project Number:		**Project Task:** Crane use					**Location:**					
Prepared By:			**Date:**				**Reviewed By:**				**Date:**	
Ref. Number	**High Potential Consequence Task Steps**	**POTENTIAL HAZARDS & CONSEQUENCES Include applicable Error Prone Situations and Triggers**	**Target** Check off to indicate Hold Point	**Preliminary Risk Assessment**			**Control Type**	**SAFEGUARDS (Actions & Physical Safeguards) Eliminate or Mitigate the hazards**	**Final Risk Assessment**		
				H	**M**	**L**			**H**	**M**	**L**
1	Overhead Material handling (Crane) within and around the GOLD project	Personnel exposure to falling objects from overhead work resulting in injury.	P ☐	X			D/E/S/W/A A A	Prior to starting a task, Evaluate the Lifesaving Rules and actions (LSRA) start work Checks (SWC) that may apply to that task review START/STOP work expectations and implement, Verify & Validate (V&V) the appropriate behaviors and or control Safeguards per the ExxonMobil PSMS and site HSE Procedures during the pre-task brief Ensure JSA for specific LAI tasks address proper hazard control methods Limit access to process unit to essential personnel only.		X	

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				H	**M**	**L**			**H**	**M**	**L**
							D/A S/ WA A A/S	If possible, position crane/swing radius to avoid lifting over occupied buildings, and/or remove personnel for duration of lift. Areas below overhead work areas will be barricaded to prevent personnel exposure. Barricades must be located so that the objects that could fall are contained within the barricade area. When possible, work shall be planned and coordinated to eliminate work by multiple crews in the same area. Personnel in the construction area are required to wear proper PPE.			

Target: **P**=Personnel, **F**=Facilities and equipment, **E**=Environment

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				H	**M**	**L**			**H**	**M**	**L**
							S A A	Tag lines shall be used when handling materials via crane. Ensure that the crane operator is trained and certified to operate equipment. Complete a Last Minute Risk Assessment (LMRA) prior to beginning each task			
2	Lifting material with crane	Rigging/Equipment failure Unbalanced load Pinch Points (i.e., grabbing pipe by the end with fingers inside, standing to close to outriggers as they are being deployed, etc.) Muscle Strain Machine Failure	P/F ☐		X		A/D A A	Inspect rigging/equipment before use. Do not use damaged rigging even for non-lifting purposes. The tendency is to grab it and use it when we are in a "hurry". Do not lift if we are unsure of the rigging configuration. "Coach and accept coaching". Do not put your body or any part of it between a moving object			X

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				H	**M**	**L**			**H**	**M**	**L**
		Fall potential while accessing and exiting the cab/ cleaning crane					A/D A/D	and a fixed one/Maintain eye contact with operator/Wear leather gloves when handling sharp objects/Use a tagline when lifting. Let the equipment do the work/Re-rig if necessary/Get help if it is heavy or awkward/Lift with your legs and not your back. Maintain three points of contact while accessing and exiting the cab of the crane. Use only designated access ladders and face ladders/steps while climbing			

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				H	**M**	**L**			**H**	**M**	**L**
							A/D /S	100% tie off required when cleaning/maintaining any part of the crane when there is a potential of a fall of 6 feet or grater. Tie off to suitable structural members of the crane. Use retractable lanyards (SRL's)			
3	Operation of tools, heavy equipment, and Mobil equipment, including crane operations and critical lifts within and around the GOLD project	Working in close proximity to large mobile equipment. Large equipment working in close proximity to live process systems. Working in close proximity to cranes making lifts overhead. Crush potential from counterweights and fixed objects i.e. permanent structures, near-by equipment, etc.	P/F ☐	X			A/S /D A/ W A/ W	Barricade or cone working area of heavy equipment. Area shall be barricaded whenever possible to restrict access to personnel. Personnel shall wear high visibility vest or reflective arm bands around mobile equipment and at night. Have spotter located to direct foot or vehicle traffic around equipment. Designated Flaggers/Spotters shall wear		X	

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				H	**M**	**L**			**H**	**M**	**L**
							W/ A A W/ A/S A/D /W/ S	high visibility vest day and night. When working in close proximity to live systems, use a spotter when moving, mobilizing, or positioning mobile equipment into place. Barricade off area where equipment will be swung over. Before load is lifted, have a spotter clear the area where the lift is being swung utilize whistles and horns. Barricade area around crane and counterweight swing radius do not get between crane and fixed objects			
4	Overhead	Equipment exposure to falling objects from	F/E		X		A	Utilize critical lift plan process to control lift.			**X**

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				H	**M**	**L**			**H**	**M**	**L**
	Material handling (Crane) within and around the GOLD project	overhead work resulting in damage to a live process.					A A A A A	Limit access to process unit to essential personnel only. Ensure that the crane operator is trained and certified to operate equipment. Ensure that crane has been inspected and in proper working condition. A spotter shall be used to assist when lifting over congested area or when material is being moved out of the operator's line of sight. When possible, work shall be planned and coordinated to eliminate work by multiple crews in the same area. Ensure information from regular coordination meetings			

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								with unit operators is communicated.			
5	Critical Lifts	A hoisting or lifting operation that the Worley, ExxonMobil, project management, or site manager judges to present an increased level of risk beyond normal lifting activities. Such increased risk may relate to personnel injury, damage to property, interruption of production, delays in schedule, release of hazards to the environment, etc.	P/F/E ☐	X			D/E /S/ W/A A A A	Prior to starting a task, Evaluate the Lifesaving Rules and actions (LSRA) start work Checks (SWC) that may apply to that task review START/STOP work expectations and implement, Verify & Validate (V&V) the appropriate behaviors and or control Safeguards per the ExxonMobil PSMS and site HSE Procedures during the pre-task brief Ensure JSA for specific LAI tasks address proper hazard control methods All critical lift operations require a complete analysis in order to select the most effective method to be used for the lift. Critical Lift Permit, and Required Critical Lift Attachments		X	

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				H	**M**	**L**			**H**	**M**	**L**
							A/E	Ground Stability Assessment			
							S	Proper rigging and tag lines			
							A	Equipment inspections (Crane and Rigging)			
							A/W	Barricade area allowing essential personnel only.			
							A	Only Qualified Rigger shall preform rigging operations.			
							A	Pre-Lift Meeting			
							A	Follow requirements of Worley MS-HS-STD-0069-Crane Lift Safety Standard			
							A	Complete a Last Minute Risk Assessment (LMRA) prior to beginning each task			

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				H	**M**	**L**			**H**	**M**	**L**
6	Crane Suspended Personnel Baskets within and around the GOLD project	Fall exposure to personnel. Note: The use of Crane Suspended Personnel Baskets is prohibited except when conventional or alternate means of reaching the job site are more hazardous. Special authorizations and a Lift Director are also required.	P X	X			D/E /S/ W/A A A A	Prior to starting a task, Evaluate the Lifesaving Rules and actions (LSRA) start work Checks (SWC) that may apply to that task review START/STOP work expectations and implement, Verify & Validate (V&V) the appropriate behaviors and or control Safeguards per the ExxonMobil PSMS and site HSE Procedures during the pre-task brief Ensure JSA for specific LAI tasks address proper hazard control methods Crane Suspended Personnel Basket Pre-Lift Checklist shall be used. The number of employees in the personnel basket must be no more than is required for the work to be done.		X	

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				H	**M**	**L**			**H**	**M**	**L**
							A/E S E/S /D E A	The personnel basket shall not be loaded in excess of its rated load capacity or maximum intended load. Personnel shall wear proper fall protection PPE (harness with double lanyard) Access gates, if installed shall not swing outward and must be equipped with a retaining device to prevent accidental opening. The basket itself, except the guardrail system and fall protection anchorages, must be capable of supporting its own weight and at least five (5) times the maximum intended load. Before personnel enter or exit a hoisted personnel basket that is not landed, the basket shall be secured to the structure where work is to be performed, unless doing so creates an unsafe situation.			

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				H	**M**	**L**			**H**	**M**	**L**
							A	Personnel shall keep all parts of the body inside the basket during hoisting, lowering, and positioning.			
							E	The suspension system must be designed to minimize tipping of the basket due to movement of personnel basket.			
							A	The crane operator shall remain at the controls at all times when the personnel basket is in use.			
							S	Tag lines shall be used unless their use creates an unsafe situation.			
							E	The personnel basket must have a guardrail system meeting OSHA requirement and shall be enclosed from the toe board to at least the mid rail with either solid material or expanded metal having openings no greater than one-half inch.			

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				H	**M**	**L**			**H**	**M**	**L**
7	Crane Suspended Personnel Baskets within and around the project	Personnel exposure to falling objects from overhead work resulting in injury.	P ☐	X			A S A A/S S	Limit access to process unit to essential personnel only. Areas below overhead work areas will be barricaded to prevent personnel exposure. Barricades must be located so that the objects that fall are contained within the barricade area. Work shall be planned and coordinated to eliminate work by multiple crews in the same area. Personnel in the construction area are required to wear proper PPE. Tools shall be tethered to minimize the potential for falling or being dropped. Utilize enclosed tool bags, netting to secure equipment, only take tools/equipment needed. follow project dropped object prevention requirements.		X	

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				H	**M**	**L**			**H**	**M**	**L**
							A A	Ensure that the crane operator is trained and certified to operate equipment. The crane operator shall remain at the controls at all times when the personnel basket is in use.			
8	Rigging Support Transport Crane to Job Site and Set up	Equipment Damage Pinch Points under outrigger pads- between counterweight and fixed object	P/E ☐	X			A/D A/D /W A/D	Use a flag-man (with a flag and vest) to guide the equipment into the unit. Assist NCCER operator with visual attention to the swing radius and potential interferences. barricade swing radius Place cones in the area where outriggers are to be set Use handles to install and set outrigger pads into place. Flag man/rigger to stand in front of crane in view of operator and outrigger landing. After verifying the landing area is clear, direct crane operator to deploy each outrigger one at a time.			X

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9	Rigging Support Set Load Using chokers, slings, shackles, hooks	Pinch points between chokers, slings, and shackles. Rigging failure from damaged equipment Rigging failure due to overload	P ☐		X		A A A/D	Control hand and body placement. Keep hands and body from between material and rigging equipment. Inspect all rigging prior to each use and ensure that proper color code is in place. (Have a certified rigger perform rigging tasks.) Utilize softeners on sharp edges to avoid sling damage. Use shackles when making choker hitches. Have a certified rigger check the weight capacity of all rigging being used before lift takes place. Shackles will be used when 2 or more slings are attached to a single hook or to prevent sling angle from being greater than 90°. *Avoid chain slings for lifting. Avoid side pull on shackles.			X

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				H	**M**	**L**			**H**	**M**	**L**
10	Rigging Support Lift Load	Crushing hazards from unbalanced load Electrocution from contact with power lines or temporary power supply cords Loss of control with Load	P ☐	X			A/D A/D A/D	Post hazard watch and/or set up a barricade around lift area. Use tagline to control load. Keep any traffic from under suspended load and do not allow load to be lifted over any personnel. Make sure load is securely slung and properly balanced to prevent shifting. Maintain 10' distance from power lines, if unable to do so a close-proximity permit will be used. Contact site electrical group to apply gutting, flagging, or reroute if needed. Use a tag-line or 2 tag-lines if necessary to control load throughout movement and placement.		X	
11	Rigging Support	Miscommunication between riggers and operators while swinging loads or relocating crane -crushing personnel, striking process equipment	P/F ☐		X		A/D	If signaling by hand, make sure operator has clear view of signalman. It tis the operator's responsibility to stop operations when the signalman is not in			X

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Ref. Number	**High Potential Consequence Task Steps**	**POTENTIAL HAZARDS & CONSEQUENCES Include applicable Error Prone Situations and Triggers**	**Target** Check off to indicate Hold Point	**Preliminary Risk Assessment**			**Control Type**	**SAFEGUARDS (Actions & Physical Safeguards) Eliminate or Mitigate the hazards**	**Final Risk Assessment**		
				H	**M**	**L**			**H**	**M**	**L**
							A/D /W S A/D /S	sight, or if two way radio communication is not continuous It is the signalman's responsibility to stop the operator if load or crane can make contact with structures, equipment, personnel, etc. Use fully charged radios (make sure batteries are fully charged) Use a dedicated frequency or separate radios to insure no interference. Signalmen must be NCCER certified and have a vest, horn/whistle			
12	Assemble and Disassemble Crane Components General crane support during	Crush, struck by suspended load from overhead lifting Crushing potential from counterweights and fixed objects, i.e. permanent	P/F ☐	X				Ensure no personnel are beneath suspended loads, use tag lines to control all loads Barricade area around crane on the outside of the outriggers, do not get in between crane and			X

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				H	**M**	**L**			**H**	**M**	**L**
	lifts, setting up and demobilization of crane being used	structures, near-by equipment, etc. Rigging failure from damaged rigging						fixed objects, honk horn when lifting and swinging, stay out from under loads. Check to ensure the counterweight swing radius has clearance and remains within the barricaded exclusion zone. Inspect rigging for defects before each use. A competent NCCER certified rigger will be used to inspect all rigging for defects, I.e. ripped or torn strands or casing in nylon chokers, or broke wires in steel chokers. All rigging must have certification tags and proof of current inspection; any defective rigging must be discarded. Sling softeners shall be utilized as needed.			

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				H	**M**	**L**			**H**	**M**	**L**	
13	Assemble and Disassemble Crane Components Hooking up to, or unhooking aux counterweights	Fall potential from elevated work, from on top of counterweights Struck by hammer while driving pins in or out Workers hands smashed while holding pins to be driven in or out with hammer.	P/F ☐		X			Maintain 100% tie off required when on any part of the crane when there is a potential of a fall of 6 feet or grater. Tie off to suitable structural members of the crane. Use retractable lanyards (SRL's) Do not position yourself or others in the strike zone of the hammer; stand to one side while hammer is being swung. When driving pins in, tap pins lightly until fully started, then remove hands and drive in with hammer. For removal of pins, drive pins through with hammer, and then lightly tap pin until it's fully out. Stay out of the strike zone of the hammer.			X

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				H	**M**	**L**			**H**	**M**	**L**	
14	Assemble and Disassemble Crane Components Stacking or un-stacking counterweights with assist crane	Rigging failure from damaged rigging Struck by uncontrolled load while swinging counterweights Pinch points and crushing hazards from removing or placing counterweights	P ☐		X		A/D A/D /W A	Inspect rigging for defects before each use. A competent NCCER certified rigger will be used to inspect all rigging for defects, i.e. ripped or torn strands or casing in nylon chokers, or broke wires in steel chokers. All rigging must have certification tags and proof of current inspection; any defective rigging must be discarded. Sling softeners shall be utilized as needed. Use tag lines on all loads to be lifted, sound horn when swinging to alert others. Do not position yourself in an aerial lift or on counterweights until load has been put in place. Once load is in place, then move in to set weight down. Do not place our body in between counterweights and a fixed object under any circumstance.			X

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15	Assisting with the assembly of rigging for special lifts	Struck by load from over head lifting from assist crane Back strains from lifting heavy chokers or shackles Defective rigging supplied from outside vendor Tripping potential from congested area/ rigging on ground	P ☐		X		A/W /S D/S A A/D	Barricade area and/or use hazard standby to keep others out of area. Do not get under loads. Honk horn when swinging load. Do not manually lift heavy chokers, shackles, and spreaders use mechanical assistance (crane/ forklift) to maneuver into place Inspect rigging for defects prior to each use. Keep all rigging organized and in order, maintain clear travel paths			X	
16	Operating forklift to remove or place timber mats or move associated equipment	Forklift failure due to mechanical failure. Potential for striking people or equipment while moving forklift around the area Crushing potential from moving timber mas or equipment with forklift	P/F/E ☐		X		A/D A/W A	Operator will follow all forklift operating requirements and complete a pre use inspection before use Utilize a spotter/flagger to escort forklift. Remian is sight of operator while flagging and out of the line of fire. If unable, stop operations. Do not			X	

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				H	**M**	**L**			**H**	**M**	**L**	
		Crushing hazard when staking mats					A/D	walk or work between load and fixed object or forklift. Keep feet and hands off of mats while placing mats. Do not stack mats higher that 6'. Do not place yourself on the backside of mats when stacking; mats could shift/ slide off unexpectedly. Stay in sight of operator while flagging.				

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