

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 ☐ <ol style="list-style-type: none"> 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 ☐ <ol style="list-style-type: none"> 1. I understand and use safety-critical equipment and procedures which apply to my task 2. I obtain authorization before: <ul style="list-style-type: none"> • Disabling or overriding safety equipment • Deviating from procedures • Crossing a barrier 	 Energy Isolation Verify isolation and zero energy before work begins ☐ <ol style="list-style-type: none"> 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 ☐ <ol style="list-style-type: none"> 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 ☐ <ol style="list-style-type: none"> 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 ☐ <ol style="list-style-type: none"> 1. I identify and control ignition sources 2. Before starting any hot work: <ul style="list-style-type: none"> • I confirm flammable material has been removed or isolated • I obtain authorization 3. Before starting hot work in a hazardous area, I confirm: <ul style="list-style-type: none"> • A gas test has been completed • Gas will be monitored continually 	 Working Around Mobile Equipment See and be seen; maintain a safe distance ☐ <ol style="list-style-type: none"> 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 ☐ <ol style="list-style-type: none"> 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 		
 Breaking Containment/OPE Manage ignition sources and exposure to energy & hazardous substances ☐ <ol style="list-style-type: none"> 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 ☐ <ol style="list-style-type: none"> 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 ☐ <ol style="list-style-type: none"> 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 ☐ <ol style="list-style-type: none"> 1. I position myself to avoid: <ul style="list-style-type: none"> • 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 additional 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: Pipe Work				Location:					
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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
1	General work activities (housekeeping) within and around the GOLD project    	Slips, trips, and falls due to poor housekeeping resulting in personnel injury	P ☐		X		D/E /S/ W/A A A/D D	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. Shop work areas shall be set up and organized to minimize the buildup of materials and eliminate slip/trip hazards. Use pre-job stretching and flexing exercises.			X

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				H	M	L			H	M	L	
								<p>A/E</p> <p>A/D</p> <p>A/D /E</p> <p>A</p>	<p>Proper waste management receptacles shall be utilized to control trash, debris, and scrap material.</p> <p>Access/ egress points and walkways shall be kept clear at all times.</p> <p>Extension cords, welding leads, and other cables shall be routed overhead, when possible, in a manner that does not create a slip/trip hazard.</p> <p>Regular supervisor walkthroughs should identify and eliminate housekeeping hazards and ensure proper housekeeping methods are being implemented throughout the work shift.</p>			

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				H	M	L			H	M	L
							E/W A A/W/E A/D	All employees are to correct (or notify their supervisor) if they observe uneven walking/working surfaces. Care should be exercised, when surveying overhead areas. All holes/floor opening eliminated or protected with hard barricades Complete a Last Minute Risk Assessment (LMRA) prior to beginning each task			
2	Overhead work within and around the GOLD project 	Personnel exposure to falling objects from overhead work resulting in injury	P ☐	X			D/E/S/W/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		X	

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				H	M	L			H	M	L
	 						A S A/S A A S	Ensure JSA for specific LAI tasks address proper hazard control methods 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. Personnel in the construction area are required to wear hardhats. When possible, work shall be planned and coordinated to eliminate work by multiple crews in the same area. Tools and materials shall be properly stored when not in use. Where appropriate solid work surfaces will be placed over open grating to prevent objects from falling through the grating.			

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				H	M	L			H	M	L
								<p>A Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service.</p> <p>A Rigging has permanently affixed, and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load.</p> <p>A Rigging not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer; and</p> <p>A Rigging not be used without affixed, legible identification markings.</p> <p>A Rigging equipment, when not in use, shall be removed from the</p>			

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				H	M	L			H	M	L
							A A D/E /S/ A D/E /S/ A A	immediate work area so as not to present a hazard to employees. Only Qualified Riggers shall preform rigging operations. Only Qualified Signal Persons shall perform signal operations. All employees are trained and aware of the site-specific work requirements for raising and lowering tools and materials via rope. All employees are trained and aware of and will implement the site-specific Stop the drop procedure and required controls including the teetering of tools and materials above 4 ft. Complete a Last Minute Risk Assessment (LMRA) prior to beginning each task			

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				H	M	L			H	M	L
3	Overhead work within and around the project 	Falling objects from overhead work resulting in damage to equipment	F/E ☐		X		S/A	Critical equipment below overhead work areas will be protected from potential falling objects.			X
							S	Where appropriate, tools shall be tethered to minimize the potential for falling or being dropped.			
							A	Utilize critical lift plan process to control lifts.			
							A	Limit access to process unit to essential personnel only.			
							A	Ensure that crane operators are trained and certified to operate equipment.			
							A	Ensure that crane has been inspected and in proper working condition.			
							A	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.			

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				H	M	L			H	M	L
							A	When possible, work shall be planned and coordinated to eliminate work by multiple crews in the same area.			
							D/E /S/ A	All employees are trained and aware of the site-specific work instruction for raising and lowering tools and materials via rope.			
							D/E /S/ A	All employees are trained and aware of and will implement the site-specific Stop the drop procedure and required controls.			
							A	Complete a Last Minute Risk Assessment (LMRA) prior to beginning each task			

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				H	M	L			H	M	L
							S/A A	harness and SRL's) at or above (6) four feet. SRL's will be placed on all scaffolding ladders 10 feet and above and will be fitted with swing gates. Only Qualified persons shall modify scaffolding			
5	Scaffold and ladder use within and around the GOLD project 	Personnel exposure to damaged/incomplete scaffolding materials resulting in falls or injury.	P ☐		X		D/E /S/ W/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			X

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				H	M	L			H	M	L
	 						A	Ensure JSA for specific LAI tasks address proper hazard control methods			
							A	<p>A Scaffolding Competent Person will perform inspections prior to initial use, before each work shift, and upon any occurrence that may affect the structural integrity of the scaffold as required by Worley Scaffolding, Ladders, Stairs and Walkways Standard PHP-0045-COR-EN</p> <p>Employees working from Scaffolding from an</p>			

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				H	M	L			H	M	L
							A/S	elevation of six feet or more, shall use fall protection equipment (harness and double SRL's)			
							A	Employees who are required to use ladders will be required to complete the Ladders and Stairway Training Program.			
							A	Inspect ladder before use. Use 4:1 ratio for ladder angle. Ensure base area is level. Request assistance if needed.			
							A/S	Use fall protection device when working at elevation greater than 6 ft. Ensure ladder is tied off.			
							D/E	Swing gates will be utilized at all scaffolding ladder points to assure safe entry and egress.			
							E/A				

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				H	M	L			H	M	L
							A	Vertical lifelines will be utilized on all scaffold ladders 10 foot or grater to eliminate fall potential while climbing, descending, or transitioning from ladder to work platform or vice versa. Complete a Last Minute Risk Assessment (LMRA) prior to beginning each task			
6	Scaffold Erection & Dismantling 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	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		X	

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				H	M	L			H	M	L
								<p>Ensure JSA for specific LAI tasks address proper hazard control methods</p> <p>W/S 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.</p> <p>A/S Personnel in the construction area are required to wear hardhats.</p> <p>A When possible, work shall be planned and coordinated to eliminate work by multiple crews in the same area.</p> <p>A Tools and materials shall be properly stored when not in use.</p> <p>S Where appropriate solid work surfaces will be placed over open</p>			

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				H	M	L			H	M	L
								grating to prevent objects from falling through the grating. All employees are trained and aware of the site-specific work requirements for raising and lowering tools and materials via rope. All employees are trained and aware of and will implement the site-specific Stop the drop procedure and required controls. Employees working bellow others during scaffolding dismantling shall wear sealed eye protection (goggles/Spogles) to prevent eye injury due to falling dust or debris. Complete a Last Minute Risk Assessment (LMRA) prior to beginning each task			

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				H	M	L			H	M	L
7	Scaffold erection and use within and around the GOLD project	Personnel exposure to damaged or incomplete scaffolding resulting in falls or injury.	P ☐		X		A A/S	A Scaffolding Competent Person will perform inspections prior to initial use, before each work shift, and upon any occurrence that may affect the structural integrity of the scaffold as required by Scaffolding, Ladders, Stairs and Walkways Standard PHP-0045-COR-EN Employees working on, Erection or Dismantling Scaffolding from an elevation of six feet or more, shall use fall protection			X

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				H	M	L			H	M	L
								equipment (harness and double SRL's) Swing gates will be utilized at all scaffolding ladder points to assure safe entry and egress. Complete a Last Minute Risk Assessment (LMRA) prior to beginning each task.			
8	Elevated Lift (aerial or scissor) use, Egress and Access  	Personnel falling from height to lower elevation resulting in injury or death	P ☒		X		D/E /S/ W/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			X

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	 						A A A/S	Ensure JSA for specific LAI tasks address proper hazard control methods Obtain documented approval from Site Manager and Site HSE Supervisor via FHA process prior to exiting an elevated lift platform. The platform must be attended at all times by a lift operator while any personnel are exiting or accessing an elevated platform. 100% tie off must be maintained while exiting or entering the platform. The employee will secure a second lanyard to an anchorage point outside the basket before disconnecting their lanyard from the lift and exiting. When re-entering, secure second lanyard to the lift only after both feet are on the floor of the			

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								basket, and then release the lanyard tied to outside anchorage. The floor of the basket or lift should be at the same level as the structure to be accessed. At no time should employees exit or enter over the lift controls. Access gates are to be utilized, if at all possible, to exit or enter the elevated platform. If the manufacturer prohibits egress and access of an elevated lifting platform, such practices are prohibited unless written approval is obtained from the manufacturer. Body harness shall be inspected daily and prior to each use.			

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LAI HAZARD ANALYSIS

Project Number:		Project Task: Pipe Work				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
							A	Complete a Last Minute Risk Assessment (LMRA) prior to beginning each task.			
9	Removal of any Component Creating a Risk of Falling   	Injury from falls or dropped objects	P ☐		X		E/S /W/ A A S/W	Prior to the removal of any part of any access walkway or handrail, Authorization is required. Follow site-specific requirements. i.e. a floor grating / handrail removal approval form shall be completed and approved, and prior to the work commencing: A hazard checklist and JSA shall be completed. A substantial barricade with appropriate signage shall be erected at all approaches to the			X

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				H	M	L			H	M	L
							S	area where the grating will be removed. Any personnel working inside the barricaded area shall wear appropriate fall protection; and The area below the intended opening that may be affected by overhead hazards shall be barricaded and sign-posted to prevent access.			
							A/S	After work has been completed and prior to the barricade being removed, all grating or floor plates and handrails are to be checked and approved to verify that all clamps and clips have been secured.			
10	Overhead Material handling (Crane)	Personnel exposure to falling objects from overhead work resulting in injury.	P ☐	X			D/E /S/ W/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		X	

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				H	M	L			H	M	L
	within and around the GOLD project     							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. 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			

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				H	M	L			H	M	L
								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. 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			

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				H	M	L			H	M	L
11	Overhead Material handling (Crane) within and around the GOLD project	Equipment exposure to falling objects from overhead work resulting in damage to a live process.	F/E ☐		X		A A A A A	Utilize critical lift plan process to control lift. 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.			X

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				H	M	L			H	M	L
							A	When possible, work shall be planned and coordinated to eliminate work by multiple crews in the same area.			
							A	Ensure information from regular coordination meetings with unit operators is communicated.			
12	Bull Rigging  	Equipment Damage and Injury due to improper rigging technique or inappropriate/damaged equipment, failure due to overload or loss of control of load	P/F/E ☐	X			D/E /S/ W/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		X	
							A	Ensure JSA for specific LAI tasks address proper hazard control methods			

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				H	M	L			H	M	L
							D/A	Only certified riggers will perform rigging tasks.			
							S	Inspect all rigging prior to each use and ensure that proper color code is in place. check the weight capacity of all rigging being used before lift takes place. Any damaged rigging or rigging components must be removed from service.			
							D/A A/W	All Support Structure must be inspected for defect prior to use.			
							A	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°.			

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				H	M	L			H	M	L
							A	Control hand and body placement. Keep hands and body from between material and rigging equipment.			
							A/D /S	Use a tagline or 2 tag-lines if necessary and no touch tools to control load throughout movement and placement.			
							A/W	Post hazard watch and/or set up a barricade around lift area.			
							A/D	Keep any traffic from under suspended load and do not allow load to be lifted over any personnel.			
							D	Make sure load is securely slung and properly balanced to prevent shifting.			
							A/D	Only attempt to shift or lift items that are free to move with only their own weight as resistance. Should the item to be moved be "stuck", other controlled mechanical means must be used			

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				H	M	L			H	M	L
							A	to free the component prior to the rigging being attached. ensure that all movement of the load happens in a controlled manner.			
13	Stage Pipe Using cribbing, jack-stands, rigging support Take measurements and layouts Using levels, squares, tape measure	Cuts & Abrasions (from edges and corners of material) Muscle strains from tight spots, bad body position Crushing hazards from moving or adjusting large bore pipe Pipe shifting or rolling on cribbing or jack stand Falling material due to improper jack stand use Tripping hazards from lay-down material.	P/E ☐		X		A A/D A/D S	Do not place hands on corners or edges of structural material. Keep back straight. Survey the area and have safe plan to get measurements. If unable to do so consult supervisor. Never hold with your hand any object to be struck with a hammer by another worker. Hold the object with pliers or another tong-type device. Use a tag-line to control load. Maintain communication with rigging department personnel and operator.			X

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				H	M	L			H	M	L
							S	Chock pipe on both sides on cribbing. Lock both sides of 4 leg jack stand.			
							S/D	Use a 4 leg jack stand for 6" or larger diameter pipe. Use jack stand(s) only on level solid ground when surface conditions are anything other than concrete. Level, sturdy, and rigid support material must be placed beneath the legs of the jack stands. Inspect jack stands daily for damage or missing parts. Use only complete jack stands.			
							A/W /D	Protruding pipe material will be flagged. Lay-down areas will be barricaded and tagged with a gate for access. Material will be stored in a way that does not block access to any other material and will have clear access paths.			

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				H	M	L			H	M	L
14	Pipe Fabrication Cut prep pipe, Bevel, grind etc. Using electric reciprocating saw, band-saw, grinder, and drills	Excessive noise (powered tools) Cuts & Abrasions (from blades, bits, discs, or edges of material) Electric shock (damaged tools, cords) Airborne debris (cutting material) Tripping hazards (cords in walkways) Inhalation Hazard from Galvanizing Muscle pulls or arm/wrist snap from drill binding or twisting	P		X		S A/D A/S A/D /S	Utilize double hearing protection (ear plugs & earmuff) anytime within 10' of operating tool(s.) Unplug power tools to change disc, bits, blades, or to adjust guard. Hold tools with both hands on designated factory handles. Inspect cords (that are not normally turned in everyday) before use and frequently throughout task to make sure no abrasions, cuts, or wear have occurred. Have GFCI. Unplug powered tools when not in use. Construct spark containment. Have a fire-watch and fire-watch checklist. Fire-watch will have a horn, vest, and radio on person, fire extinguisher in close proximity. Fire-watch will be able to see and focus on spark containment. Utilize monogoggles and face shield.			X

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				H	M	L			H	M	L
							A	Run cords overhead so a 7' clearance can be maintained in the walkways. Flag cords if they are low.			
							S	Utilize a ½ mask with HEPA filter (P-100) when spraying galvanized paint			
							A/D	Hold drill with both hands, firm grip, and drill at a moderate speed. Step up in drill bit size gradually when drilling and use cutting lubricant to reduce binding.			
15	Fit Pipe Fabrication Align material and help assemble pipe using hammer, levels, squares, wedges, 2-hole pins, pipe clamp,	Line of fire (swinging tools) Pinch points between hands or body and material Trips, Slips, Falls (from poor material management) Stored energy while separating flange Striking hazard while using hammer and wedges	P ☐		X		A	Do not swing tools towards coworkers or one-self.			X
							A	Do not place hands in between pipe when making fit or between pipe and pipe clamp.			
							D/S	Utilize a flange spreader at all times as the first choice. When it is not feasible to use a flange			

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				H	M	L			H	M	L
	Separate Flanges Using hand-tools, hammer, wedges, flange spreader						A/D	spreader, use of wedges must be approved by project management. Keep hands away from wedges when swinging hammer - use a ratchet strap to hold or control the wedge(s) while striking with a hammer. Use of banana wedges is prohibited.			
							A/D	Keep all materials organized throughout the progress of the task. Keep materials out of walkways and keep clear access to any larger materials to avoid trips			
16	Pipe Fabrication Bolt-up flanges Using air tools, air compressor, 3/4" impact gun	Excessive noise from air tools Tripping hazards (from hoses) Airborne debris (dust, metal)	P ☐		X		S A/D	Utilize double hearing protection (ear plugs & earmuffs) while operating or standing within 10' of operating air tools. Run hoses overhead so a 7' clearance can be maintained in			X

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				H	M	L			H	M	L
	Align material and bolt up flanges using hammer, beaters, sleever bar, spud wrenches. Align and control flange / spool Loosen/tighten nuts and/or insert/ remove studs Insert /remove Gasket(s)	Hose whips or lashes (air hoses, utility hoses) Struck-by hammer or beater and wedges, bull pin. Pinch points between flanges, pieces of material. Trip hazard from poor material management. Pinch points between material or equipment, sleever bar, hammer, and spud wrenches. Force release and body strike from sleever bar slipping or wrong diameter spud bar, Wrench slipping					S S A A A A/D	the walkways. Flag hoses if they are low (* if necessary) Utilize double eye protection (sealed eyewear [mono goggle] and face shield) Have whip checks on all hose connections. Hold impact gun with both hands and a firm grip. Do not swing hammer or beater towards coworkers or one-self. Keep hands / body parts from between flanges and pieces of pipe. Keep all materials organized throughout the progress of the task. Keep materials out of			

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				H	M	L			H	M	L
							A	walkways and keep clear access to any larger materials to avoid trips.			
							A	Keep hands / body away from all pinch points.			
							D/S	Chock pipe or lock pipe on a jack-stand.			
							A/D	Keep hand away from bull pin when swinging hammer - use a ratchet strap to hold or control bull pin while striking with a hammer or set the bull pin then keep free hand clear while striking it with a hammer, Keep both hands on the end of sleever bar while controlling pipe. Do not remove if force is on bar. Do not place hands on the ends of pipe. Use the correct diameter spud bar for the flange being worked on.			

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				H	M	L			H	M	L
							A/D /S	Do not place hands between flanges – always use a tool (e.g. scraper) to remove, set, or adjust a gasket.			
17	Pipe Fabrication Weld pipe Using welding machine, welding leads, argon hose, and argon cylinder 	Eye burns from arc. Burns from spots on fresh welds. Excessive noise from portable welding machine and power tools. Fumes/Inhalation hazard when welding. Shock hazards. Welding leads coming disconnected and falling to grade. Falling slag, flying sparks (from welding), Fires. Hot spots on iron	P ☐		X		A S/D A S/W	Ensure JSA for specific LAI tasks address proper hazard control methods. Utilize welding helmet with #10 thru #14 lens filter. Maintain a dry lens surface. Welding helmet will be used with hardhat. Utilize welding screens to prevent arc flash burns in open areas to protect coworkers. Do not place hands / body parts on hot (fresh) welds. Utilize ear plugs and earmuffs within 10' of portable welding machine or power tool over 95 dB. A barricade should be in place			X

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				H	M	L			H	M	L
								10' around welding machines and tagged "Double Hearing Protection Required". ½ Mask respirator with HEPA filters is required for welding and anyone within 10' of welding operations. All welding machines must be properly grounded during use. All welding lead connections must have a nylon whip check in place when at elevated areas. A qualified fire watch must be at the work location when "Group 2" Hot work is being performed. Fire watch must have hi-vis vest, horn, radio and 20# fire extinguisher. Fire watch must remain at location for 30 minutes after hot work has stopped.			

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				H	M	L			H	M	L
							D/S	Construct a welding enclosure. Have fire extinguisher in close proximity. Welder will utilize welding gloves.			
							D/S /W	Secure argon cylinder to a fixed structure using #9 wire.			
							D/S	Snoop all fitting to ensure there is no leakage.			
							A	Equipment is for outdoor use only with adequate ventilation.			
							A/D /S	As purge gas is introduced and begins to release from the low point purge opening, stand at a safe distance while using a calibrated gas monitor to verify purge so any leaking or venting gases aren't being directed at or inhaled by the authorized personnel.			

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				H	M	L			H	M	L
							A/D /W	Pre-job walkdowns should accurately identify all equipment where inert gas purging may be venting into the work area . Barriers and warnings should be maintained (Unoccupied) around open purge vents at all times during purging activities.			
							D	All sewer openings or vent pipes within 35 foot of fire box must be sealed.			
							A	Do not place hands or body on hot (fresh) welds. Flag hot spots.			
18	PipeFabrication Lifting, moving, adjustment of Pipe Using picker/forklift or crane to lift, lower or maintain pipe spool/ load while	Crushing hazards from unbalanced load Rigging failure from damaged equipment Electrocution from contact with power lines or temporary power supply cords Pinch points between hands or body and material or equipment	P ☐		X		A	Ensure JSA for specific LAI tasks address proper hazard control methods. (see relevant sections above)			X
							A/D /W	Post hazard watch and use flagman to maneuver equipment in and out of the unit. Use tagline to control load. Keep any traffic from under suspended load.			

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				H	M	L			H	M	L
	fabricating material  						A A/D A	Inspect all rigging prior to each use and ensure that proper color code is in place. (Have a certified rigger perform rigging tasks) 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. Control hand and body placement. Keep hands from between pipes and pinch points.			
19	Pipe Fabrication Perform above tasks from elevation 	Falling Objects from elevation Fall Potential from elevation	P/F	X			D/E /S/ W/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			X

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

 Control Type: **D**=Design hazard out or minimize, **E**=Engineering control, **S**=Safety device, **W**=Warning device, **A**=Administrative control

LAI HAZARD ANALYSIS											
Project Number:		Project Task: Pipe Work					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
							A	Procedures during the pre-task brief Ensure JSA for specific LAI tasks address proper hazard control methods. (see relevant sections above)			

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