



Risk Assessment
For
Hot Tapping of Access Fitting (Flanged, Flareweld, Horizon)
using TD-101 Hot Tap Tool & Service Valve

Client:	Saudi Aramco
Project:	Horizon Hot Tap on 24" and 30" Trunklines – Outside CPF Fence Line
Revision:	A
Date:	June 3 rd 2025

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Date:	March 19 th 2025	June 3 rd 2025	June 3 rd 2025

OH&S RISK MATRIX

PEOPLE CONSEQUENCE

0. No injury / health effect
1. Slight injury or health effect
2. Minor injury or health effect
3. Major injury or health effect
4. Single fatality or Perm Total Disability
5. Multiple fatalities

Risk assess

High Risk

Medium Risk

Low Risk

Action

Intolerable, consider alternatives

Add risk reduction measures and demonstrate ALARP

Manage for continuous improvement

Consequence

0. No injury / health effect

1. Slight injury or health effects

2. Minor injury or health effects

3. Major injury or health effects

4. Single fatality or Perm Total Disability.

5. Multiple fatalities.

How severely could it hurt/cause damage

This will include first aid and medical treatment that does not affect work performance or cause disability

A lost time injury that restricts a person's work performance. Where the injury results in a work assignment after the day of the incident that does not include all the normal duties of that person's regular job. taken off from work to fully recover. (Lost Time Incident).

Work performance is affected in the long term, such as prolonged absence from work. Irreversible damage to health without loss of life, for example noise induced hearing loss, chronic back injuries

From a work-related incident or an occupational illness e.g. poisoning or cancer

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A: Never heard of in industry

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B: Has occurred in industry

C: Has occurred in Country

D: Occurs several times a year in Country

E: Occurs several times a year at site

How likely is it to happen

May occur only in exceptional circumstances

Could occur at some time

Might possibly occur at some time

Likely to occur in most circumstances

Expected to occur in most circumstances

P: People

E: Environment

A: Asset

R: Reputation

RISK ASSESSMENT MATRIX (RAM)									
INCREASING LIKELIHOOD/PROBABILITY									
Potential Severity	Consequences				A	B	C	D	E
	People	Asset Damage & Business Losses	Environmental Effect	Reputational Impact	Never heard of in Industry	Has occurred in Industry	Has occurred in Country	Occurs several times a year in Country	Occurs several times a year at this site
0	No Injury	No Damage	No Effect	No Impact					
1	Slight Injury or health effects	Slight Damage	Slight Effect	Slight Impact		LOW	RISK		
2	Minor Injury or health effects	Minor Damage	Minor Effect	Minor Impact					
3	Major injury or health effects	Moderate Damage	Moderate Effect	Moderate Impact			MEDIUM	RISK	
4	Single Fatality or Permanent Disability	Major Damage	Major Effect	Major Impact					
5	Multiple Fatalities	Massive Damage	Massive Effect	Massive Impact				HIGH	RISK



Risk Assessment for Online Hot Tapping on Flanged Flare-weld or Horizon Access Fittings.

SN	Job Steps	HAZARD	HAZARD EFFECT	Risk Rating Before Mitigation				HIGH MID LOW	Controls/Mitigation Measure	Risk Rating after Mitigation				HIGH MID LOW	Action Party/Remarks
				P	E	A	R			P	E	A	R		
1-	Entry to the Plant	Unfamiliarity with Muster Point Location Lack of awareness of the plant & facilities	Delay in emergency response, potential injury Potential for injury or exposure to hazardous substances due to lack of awareness of plant-specific hazards and emergency procedures.	3B	0B	0B	3B	MID	Provide clear Muster Point map at plant entrance, conduct emergency plan drills for personnel Ensure All personnel are trained on H2S/BA Training by third party and have received facility induction training.	3A	0A	0A	3A	LOW	Safety Supervisor Site Supervisor

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2-	Pressure Testing of Tools	Release/ Leakage during Testing	Potential injury from pressure release, damage to equipment	2B	0B	3B	2B	MID	Thorough tool inspection before testing, utilize proper PPE, conduct testing in isolated area	2A	0A	3A	2A	MID	Pressure Test Technician

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				P	E	A	R			P	E	A	R		
3-	Safety Orientation for New Personnel	Incomplete Understanding of Safety Procedures	Increased risk of accidents or incidents, non-compliance	3B	0B	2B	2B	MID	Interactive training delivery, visual aids, post-training quizzes	3A	0A	2A	2A	LOW	Safety Department

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4-	HSE Training for Operations Assets	Insufficient training to cover all potential hazards	Inadequate risk awareness, potential for operational errors	2C	0B	3B	3B	MED	Comprehensive hazard assessment, develop specialized training program, qualified trainers, periodic evaluations	2A	0A	3A	3A	LOW	Training Department

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				P	E	A	R			P	E	A	R		
5-	Open Work Permit	Expired WP certificate Conflict of simultaneous activities Miscommunication / Misunderstanding and Lack of Awareness	Increased confusion and poor co-ordination and planning could lead to potential personnel injury or incident.	3B	0B	0B	2B	MID	- Permit issuer to check certificate. - Permit Issuer to check work log for conflicting activities that may obstruct work in the area and apply control measures/issue permits on priority basis. - Adequate Communications to be utilized. - Toolbox talk to be completed and all work party members to be competent persons and aware of duties. - Personnel to be aware of all escape routes & safety equipment in the area.	3A	0A	0A	2A	LOW	Worksite Supervisor

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				P	E	A	R			P	E	A	R		
6-	Access Fitting Preparation & Installation of Service Valve	Incorrect valve installation or valve damage during installation (breakage, deformation), improper valve tightening	Leaks, operational failure, production shutdown, environmental risks	3C	0B	0B	2B	MID	Use appropriate and compliant valve, follow manufacturer's instructions closely, perform visual inspection of valve before and after installation, test valve for leaks	3A	0A	0A	2A	LOW	Worksite Supervisor

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7-	Installation of Hot Tap Tool	Damaged or incorrect tool, improper tool setup. Improper securing, loose connections. Strain or Injury by poor manual handling	Tool dislodgement, leaks, equipment damage Damage to access fitting, tool jamming, personnel injury	2B	0B	0B	3B	MID	Use proper alignment, apply appropriate force, ensure proper lubrication Proper manual handling techniques.	2A	0A	0A	3A	LOW	Worksite Supervisor

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				P	E	A	R			P	E	A	R		
8-	Cutting	Incorrect measurements. Incorrect Operation of Air Wrench. Overheating. Damage to Cutting tool.	Leaks, Personnel Injury, Damage to Equipment. Pressure release.	3B	0B	0B	3B	MID	Double Check Measurements and depth information. Use Correct cutting paste. Proper operation of air wrench to manufacturer specifications. Slow and steady cutting technique Back off regularly to clear swarf..	3A	0A	0A	3A	LOW	Worksite Supervisor

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				P	E	A	R			P	E	A	R		
9-	Removal of Hot tap, plug & cleaning	Incorrect tool operation. Failure to remove swarf. Release of pressure, Poor Manual Handling	Leaks, seizing of plug/device equipment damage, personnel injury	3B	0B	0B	3B	MID	Follow work instruction closely. Use magnetic brush and flush tool to avoid swarf in the fitting. Observe correct Manual handling techniques.	3A	0A	0A	3A	LOW	Worksite Supervisor

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				P	E	A	R			P	E	A	R		
10-	Installation Of carrier plug and device	Cross threading, Incorrect operation of retrieval tool. Poor Manual Handling	Improper sealing, device seizing/cross threading, damage to threads. Device malfunction, leaks, improper sealing Exposure to toxic gases	2B	0B	0B	2B	MID	Use manufacturer-recommended lubricant, apply lubricant evenly Follow procedures, use appropriate tools, ensure Proper Manual Handling Use Calibrated Gas Monitor	2A	0A	0A	2A	LOW	Worksite Supervisor

Risk Assessment for Online Retrieval of Corrosion Monitoring Devices

SN	Job Steps	HAZARD	HAZARD EFFECT	Risk Rating Before Mitigation				High MID LOW	Controls/Mitigation Measure	Risk Rating after Mitigation				HIGH MID LOW	Action Party/Remarks
				P	E	A	R			P	E	A	R		
11-	Removal of Retrieval Equipment	Incorrect De-pressurization. Incorrect Manual Handling. Release of process.	Leaks, Personnel injury/strain. Damage to Equipment	3B	1B	0B	3B	MID	Follow Work Instruction closely, Bleed slowly, Take care and use Spill mats and Buckets to catch any process. Correct Manual Handling.	3A	1A	0A	3A	LOW	Worksite Supervisor

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				P	E	A	R			P	E	A	R		
12-	Carrier Plug Orientation & Access Fitting Cap Installation	Forcing the plug, cross-threading, damage to device	Damage to Threads, Device Jamming, leaks ,personnel injury	3B	0B	0B	3B	MID	Apply gentle pressure, ensure proper alignment, avoid forcing, use manufacturer-recommended tools	3A	0A	0A	3A	LOW	Supervisor, Permit Receiver

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				P	E	A	R			P	E	A	R		
13-	General (Steps) Safety	Hot or cold surfaces	Burns, skin irritation, discomfort	3B	0B	0B	3B	MID	Correct PPE to be worn. Prevent contact by other personnel.	3A	0A	0A	3A	LOW	Supervisor, Safety Officer, All Personnel
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				P	E	A	R			P	E	A	R		
14-	General (Steps) Safety (Work permit)	Work permit for the receiver is expired	Eye injuries, burns, cuts, falls, distraction leading to accidents	3B	0B	0B	3B	MID	Verify permit validity before starting work, renew permit if expired, ensure proper authorization	3A	0A	0A	3A	LOW	Supervisor, Safety Officer
		Lack of PPE usage or using mobile phone	Exposure to hazardous gases, potential for explosions or health issues						Enforce mandatory PPE usage, implement strict no-phone policy in work zones, provide training on PPE and hazard awareness						
		Gas tester is not available	Miscommunication, unauthorized work, potential for accidents						Ensure gas testers are available and calibrated, conduct regular gas tests, implement gas detection systems						
		Work permit receiver not available at site													
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14-	General (Steps) Safety (Working at heights)	Fall from height	Serious injuries, fatalities, equipment damage	3B	0B	0B	3B	MID	· Working platform has a fixed fall protection system as much as possible and with valid inspection tag. · Scaffold modification (if needed) shall be done by trained scaffold craftsmen under the supervision of SA certified Scaffold Supervisor. · Personnel fall arrest system (Full body harness & double lanyard with shock absorber) must be worn while working at Height of over 1.8 m or when exposed to fall hazard. · 100% tie-off must be complied.	3A	0A	0A	3A	LOW	Supervisor, Safety Officer

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14-	General (Steps) Safety Housekeeping	Slip and Trip	Falls, sprains, strains, bruises, fractures	2B	0B	0B	3B	MID	Keep work areas clean and tidy, remove obstacles and tripping hazards, provide adequate lighting, use non-slip flooring or mats, wear appropriate footwear, provide training on slip and trip preventio	2A	0A	0A	3A	LOW	Supervisor, Safety Officer, All Personnel