SAFE JOB PROCEDURE **SJP-08**

April 18, 2018 **HOT TAPPING**

PURPOSE/APPLICATION

Hot tapping is a method of accessing or cutting a hole into live/pressurized pipelines, process lines, water lines, and tanks for the purpose of adding a line or connection without shutting the service down or interrupting the process flow**.** Hot taps can be performed on various systems containing oil, gas, water, process products, steam and various other products.

PPE

- All site-specific PPE
- All special task specific PPE

TRAINING

- Competent workers with task related experience
- ERP review
- Tailgate meeting

TOOLS/EQUIPMENT

- Emergency response team if needed
- Breathing air equipment/attendant if required
- Spill containment kit
- Fire extinguishers
- Communication Device (radio, horn, etc.)
- Signage, barriers or ribbon

#	Job Steps	Hazards	Control Measures
1	▪ Develop a Hot Tap job plan ▪ Ensure that there is a means of safe entry and exit from the Hot Tap location. If not, then treat as "Confined Space"	▪ Fire / Explosion ▪ Entrapment ▪ Exposure to hydro carbons ▪ Toxic environment ▪ Oxygen deficient atmosphere ▪ Line of fire ▪ Pinch point ▪ Slips/ trips/ falls	Identify and review egress routes at tailgate meeting.

#	Job Steps	Hazards	Control Measures

2	▪ Obtain a permit from client
	▪ Prior to any activity at the job site, obtain a "HOT WORK" permit from the client to proceed with the work
	▪ Ensure that the following information is included on the permit:
	  ▪ size of pipeline being tapped into
	  ▪ wall thickness
	  ▪ operating pressure and temperature
	  ▪ flow rate, diameter of bore
		▪ Miss information on line being worked on.	▪ Competent or certified operator familiar with line and process being worked on
			▪ Correct knowledge in filling out and issuing Hot Work Permit.

3	▪ Conduct a pre-job safety meeting and/or tailgate meeting ▪ Define the scope of work in general terms ▪ Review the specific worksite hazard assessment ▪ Review the Hot Tap job plan ▪ Discuss the proper operating technique for the Hot Tap process ▪ The branch connector supplier will have the information from the manufacturer regarding specifications and installation instructions for their product. Ensure that this information is on hand and reviewed with all participants. Specific attention should be paid to correct installation processes ▪ Review the emergency preparedness and response plan – <u>in detail</u>	▪ Lack accurate information and assessment of hazards. ▪ Workers unsure of job scope. Lack of communication.	▪ Define the scope of work in general terms ▪ Review the site-specific hazard assessment ▪ Review the hot tap task plan ▪ Discuss the proper operating technique for the hot tap procedure ▪ Follow all manufacturers' specifications and instructions for all equipment or material to be installed and keep said information on hand for review. ▪ Ensure to do a thorough complete hazard assessment. ▪ Ensure to have thorough tailgate meeting with all personnel involved. ▪ Encourage questions and participation in meeting to ensure that all personnel are aware of their roles and duties in regard to the task. ▪ Ensure there is a means of appropriate emergency communication/response. ▪ Review site specific ERP and task specific ERP in full detail with all personnel involved in the hot tap task

#	Job Steps	Hazards	Control Measures
			▪ Ensure to have emergency response equipment close at hand (fire ext., breather air equipment, emergency comm., etc).
4	▪ Install branch connector and valve ▪ Ensure the correct welding procedure is on hand, reviewed with, and understood by the welder ▪ Ensure that all required PPE is in place, and strategically located. e.g. Fire extinguishers, SABA, SCBA, continuous monitors, etc. ▪ Review manufacturer installation procedures	▪ Exposure to hydro-carbons ▪ Fire/explosion ▪ H2S ▪ Insufficient weld ▪ Pinch points	▪ Ensure the correct welding procedure is on hand, reviewed with, and understood by the welder ▪ Ensure that all required site specific and special PPE is in place, and strategically located (containment/spill kit, fire extinguisher, SCBA/SABA, monitor, etc.) ▪ Review manufacturers installation procedures ▪ Review manufacturer's installation instructions.
5	▪ Conduct a hydrostatic test on the branch connection and valve ▪ Test to maximum operating pressure, hold for 10 minutes and check for leaks	▪ Pressurized systems ▪ Leaks / spills ▪ Line of fire ▪ Equipment failure	▪ Review and follow pressure testing producer
6	▪ Prepare the Hot Tap machine ▪ Test the Hot Tap machine to ensure it is in good mechanical condition ▪ Select and check the cutting bit and bore saw to ensure ease of cutting, the correct hole diameter is achieved, and the cut out coupon is successfully retrieved ▪ Ensure there is a bleed off valve on the barrel of the Hot Tap machine to relieve barrel pressure once the bit/saw/coupon have been retracted into the barrel and the branch valve has been closed	▪ Equipment failure ▪ Inadequate size drill bit and bore saw	▪ Test the hot tap machine to ensure it is in good mechanical condition ▪ Select and check the cutting bit and bore saw to ensure ease of cutting the correct hole diameter ▪ Ensure there is a bleed off valve on the barrel of the hot tap machine to relieve barrel pressure ▪ Ensure appropriate size drill bit and bore saw are selected
7	▪ Install the Hot Tap machine & prepare for the drilling process ▪ Ensure that the Hot Tap machine is securely installed in/on the Hot Tap valve in accordance with standard acceptable practice and/or	▪ Hot tap equipment slippage ▪ Pinch points ▪ Line of fire	▪ Ensure that the hot tap machine is securely installed in/on the hot tap valve in accordance within standard acceptable practice and/or manufacturer

#	Job Steps	Hazards	Control Measures
	manufacturer recommendations		recommendations
8	▪ Open the valve and proceed to drill ▪ Determine how much travel is required to fully saw through the pipe wall and ensure that the drill bit does not come in contact with the opposite side of the pipe being drilled	▪ Cutting completely through the other side of pipe. ▪ Spill or release of product onto ground or into atmosphere	▪ Determine how much travel is required to fully saw through the pipe wall and ensure that the drill bit does not come in contact with the opposite side of the pipe being drilled ▪ Containment/spill kit on hand
9	▪ Withdraw cutting tools ▪ Retract the cutter assembly (bit/saw/coupon) completely and shut branch valve	▪ Pinch points ▪ Cuts	▪ Retract the cutter assembly (bit/saw/coupon) completely and shut branch valve
10	▪ Bleed off Hot Tap barrel pressure ▪ Before removing the Hot Tap machine from the branch valve, bleed off barrel pressure through the bleed off valve on the barrel of the Hot Tap machine ▪ Identify PPE requirements prior to valve bleed off	▪ Equipment failure ▪ Release / spill ▪ Pinch points ▪ Cuts ▪ Contact ▪ Crushing injuries ▪ Exposure	▪ Before removing the hot tap machine from the branch valve, bleed off barrel pressure through the bleed off valve ▪ Ensure all appropriate PPE and response equipment is readily available
11	▪ Remove Hot Tap machine ▪ Disengage the Hot Tap machine from the branch connection valve and remove from Hot Tap work area.	▪ Hot tap equipment ▪ Slippage ▪ Pinch points ▪ Line of fire	▪ Disengage the Hot Tap machine from the branch connection valve and remove from Hot Tap work area

Additional Precautions:

- Communicate with any conflicting work in area
- Note wind direction
- Test emergency communication system
- Only personnel involved with task in hot tap work area
- Double check all system equipment and ensure installed correctly

REFERENCE/REGULATIONS

- Alberta OH&S Codes and Regulations
- Part 2 Hazard Assessment, elimination and controls
- Part 7 Emergency Preparedness and Response **(ERP)**
- Part 18 Personal protective Equipment **(PPE)**
- Part 29 **W**orkplace **H**azardous **M**aterial **I**nformation **S**ystem **(WHMIS)**
- Alberta Construction Safety Association **(ACSA)**
- Canadian Safety Association **(CSA)**
- Canadian Plains Energy Services/Clients welding procedure
- All applicable CPES rules, codes, practices and procedures.

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