

**April 18, 2018**

**TIE-IN TO EXISTING PIPING SYSTEM**

**PURPOSE/APPLICATION**

To ensure the potential hazards associated with working on existing pipelines are identified, assessed and controlled to ensure the safety of workers. This SJP is to provide direction on the key steps to perform a tie-in on a de-energized pipeline that has been in operation.

For the purpose of this SJP, "Existing Piping System" refers to pipelines and or facilities that have been in operation and have the potential to contain a hazardous product (i.e. produced liquids, gas, and produced water).

*\*Note: This is not a procedure for a Hot Tie-in or Hot Tapping procedure.*

**COMMON HAZARD SOURCES AND CONCERNS**



**PPE**

- Canadian Plains Energy Services (CPES) Minimum Requirements (Hard Hat, Safety Glasses, Safety Footwear, Appropriate Protective Clothing)
- Flame Resistant Clothing (FRC)
- Other PPE as per HIAC (Goggles for drilling, Hearing Protection, Reflective Vest, Face Shield, Fall Protection Equipment)

**TRAINING**

- Confined Space Entry (if required)
- Fall Protection Training (if required)
- Ground Disturbance Level 2
- HIAC for Supervisors and Managers
- H2S Alive
- CPES Orientation
- WHMIS

**TOOLS/EQUIPMENT**

- Equipment (i.e. backhoe, welder) with qualified operator
- Fire extinguishers
- Atmospheric monitors (area and personnel)
- SCBA or SABA
- Shovels
- Intrinsically safe tools/equipment
- Signage and barricades
- Step and extension ladders (if required)
- Spill Kits and catch trays

**PRIOR ACTIVITIES**

1. Ensure access to pipeline is completed following CPES Ground Disturbance and Trenching SWP's (including Ground Disturbance Permits and Checklists, and Line Locate reports)
2. Complete de-energizing, pigging and purging of piping systems.

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**PRE-JOB ACTIVITIES**

1. Assess the work according to the HIAC process, completing the Pre-Job or Site HIAC, ensuring that site hazard sources have been controlled (i.e. Motion – vehicles and equipment controlled)
2. Complete inspection of area, confirm planned scope of work, and communicate hazards and controls during daily tail gate meeting.
3. Inspect all Tools and Equipment – Complete daily pre-use inspection of all tools and equipment
4. Obtain Work Safe Work Permit and/or Agreement
5. **Verify that you have the correct line and/or system**

#	Job Steps	Hazard Sources/ Hazards	Control Measures
1.	Area inspection, plan scope of work.	<ul style="list-style-type: none"> <li>❖ Motion - congested work area</li> <li>❖ Gravity - uneven ground</li> </ul>	<ul style="list-style-type: none"> <li>▪ Flag off work area – where working at heights</li> <li>▪ Pre-job hazard assessment</li> <li>▪ Pre-job safety meeting</li> <li>▪ Task hazard assessment</li> </ul>
2.	Prior to starting task prepare for potential emergency.	<ul style="list-style-type: none"> <li>❖ Flammable/Explosion</li> <li>❖ Hazardous Materials or Controlled Products</li> </ul>	<ul style="list-style-type: none"> <li>▪ Set up extinguishers</li> <li>▪ Spill kits</li> <li>▪ Atmospheric monitors</li> </ul>
3.	Confirm that the piping system being worked on is prepared to be worked on, including pigging of lines.	<ul style="list-style-type: none"> <li>❖ Pressure/Energized</li> <li>❖ Flammable/Explosion</li> <li>❖ Toxic /Carcinogenic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pig Lines</li> <li>▪ If required purge with nitrogen</li> <li>▪ Lock Out/Tag Out where required</li> <li>▪ Verify blanks are installed</li> </ul>
4.	Sweep line if required.	<ul style="list-style-type: none"> <li>❖ Flammable/Explosion</li> <li>❖ Toxic/Carcinogenic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Verify purge is complete and sufficient continuous monitoring</li> <li>▪ Never try to fix a leak while still under pressure</li> <li>▪ Review MSDS with crew</li> <li>▪ Be aware of possible N2</li> <li>▪ Monitor work atmosphere oxygen deficiencies</li> </ul>
5.	Confirm that the piping system is isolated.	<ul style="list-style-type: none"> <li>❖ Pressure/Energized</li> <li>❖ Flammable/Explosive</li> <li>❖ Toxic /Carcinogenic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Install blinds if not already installed</li> <li>▪ Cover and tag disconnected end of piping system</li> </ul>
<b><i>If isolation on a piping system cannot be attained, do not perform the job/task. As per the CPES HIAC requirements, contact your BU Manager.</i></b>			
6.	Drill or punch hole in bottom of pipe in the section that is being removed (check for residual product).	<ul style="list-style-type: none"> <li>❖ Pressure/Energized</li> <li>❖ Flammable/Explosive</li> <li>❖ Toxic /Carcinogenic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Drill/Punching shall be completed while wearing SCBA or SABA <i>(if required)</i></li> <li>▪ Test and monitor atmosphere</li> <li>▪ Use intrinsically safe process (Air actuated drills, cold/hot tap equipment)</li> </ul>
7.	Cold cut line and mud plug.	<ul style="list-style-type: none"> <li>❖ Motion – equipment and</li> </ul>	<ul style="list-style-type: none"> <li>▪ Body position, ergonomics</li> </ul>

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		<p>pipe</p> <ul style="list-style-type: none"> <li>❖ Human factors – strains sharp edges</li> </ul>	<ul style="list-style-type: none"> <li>▪ File inside of pipe at cold cut location</li> </ul>
8.	Remove cut section.	<ul style="list-style-type: none"> <li>❖ Motion – moving equipment</li> <li>❖ Gravity – overhead loads</li> <li>❖ Human Factor - overhead lifting and strains</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use tag lines</li> <li>▪ Use equipment if required</li> </ul>
9.	Ensure punch or drill mark is in the removed section.	<ul style="list-style-type: none"> <li>❖ Holes left in operating line</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mark /flag coupon at punch mark</li> <li>▪ Remove section from jobsite</li> </ul>
10.	Perform tie-in weld.	<ul style="list-style-type: none"> <li>❖ Motion – equipment and pipe</li> <li>❖ Radiation – welding flash</li> <li>❖ Temperature – burns</li> <li>❖ Motion - pinch points</li> </ul>	<ul style="list-style-type: none"> <li>▪ Spotter</li> <li>▪ Body positioning</li> <li>▪ Face shields, eye protection</li> </ul>
11.	Perform NDE on tie-in.	<ul style="list-style-type: none"> <li>❖ Radiation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Post signs and only authorized personnel in area</li> </ul>
12.	Install coating/ sleeves on tie in location.	<ul style="list-style-type: none"> <li>❖ Temperature - burns with propane</li> <li>❖ Motion – equipment and pipe</li> <li>❖ Human Factor - strains</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use care working with open flames</li> <li>▪ Body positioning</li> <li>▪ Team work</li> </ul>
13.	Back fill bell hole and/or clean-up work area.	<ul style="list-style-type: none"> <li>❖ Motion – equipment (contact with underground and surface facilities)</li> <li>❖ Electrical – above and buried</li> </ul>	<ul style="list-style-type: none"> <li>▪ Utilize Signal person in high-visibility vest and air horn</li> <li>▪ Be in constant visual communication with the operator</li> </ul>

**ADDITIONAL PRECAUTIONS**

While performing the Tie-in to an existing piping system, crew must continually monitor the atmosphere in the immediate area and the monitor site hazard sources and conditions.



**REFERENCES**

**Additional Information:**

CPES Codes of Practice (COP) and Safe Work Practice (SWP)

- COP 03 - Respiratory Protective Equipment
- COP 05 - Lock Out/Tag Out
- SWP 17 - Chemical hazards, Biological Hazards and Harmful Substances
- SWP 18 - Tools/Equipment/Machinery
- SWP 20 - Working at Heights
- SWP 22 - Material Handling
- SWP 25 - Ladders
- SWP 34 - Cranes Hoisting and Lifting devices
- SWP 46 - Excavating and Trenching
- SWP 62 - Ground Disturbance

**REGULATIONS**

- Manufacturer specifications and installation instructions for saddles/sleeves/branch fittings
- Alberta Construction Safety Association (ACSA)
- Alberta OH&S, Code & Regulations – June/2009
- CSA Standards
- CPES Energy’s Welding Procedures
- Part 2 Hazard Assessment, Elimination and Control
- Part 7 Emergency Preparedness and Response (ERP)
- Part 10 Fire and Explosion, Hot Work Section 169(1)
- Part 18 Personal Protective Equipment
- Part 29 WHMIS

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