

	<h2 style="margin: 0;">Temporary Pipe Installation</h2>
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1.0 Applicability

This practice applies to all Encana Oil & Gas (USA) Inc. (Encana) staff and service providers who work under contract for Encana at all facilities owned or operated by Encana.

2.0 Scope

2.1 Purpose

The purpose of this practice is to establish the minimum operational requirements for temporary pipe installation procedures and management practices for the Business Units (BUs) and sub-Business Units (SBUs) at Encana. Based on site-specific conditions, an SBU may elect to develop more comprehensive operational procedures in order to further reduce hazards and risks associated with a work location.

2.2 Background

Temporary pipework is a functional description of equipment also known as flow control equipment, treating iron or “CHIKSAN” flowlines. In a large number of applications the connection of this equipment is made with hammer lug or WECO unions which can be integral, welded (but not back-welded) or threaded. There is no single standard or organization, such as API, NORSOK or IADC, which has set the requirements for the design, manufacture and installation of temporary pipework used for operations on wells. Although the same nominal temporary pipework connections from different suppliers are dimensionally compatible, and can therefore be connected, the design standards of the pipe body on which the unions are forged or welded, can be, and often are, different.

2.3 Temporary Pipe Installation Checklist

This checklist summarizes the steps in the design and installation of temporary piping installations on a site.

☑	Step	Activity
☐	1	Determine the applicable codes to be adhered to in design of temporary pipe and hoses. See sections 3.1-3.4. Consider whether it is standard or sour service. This practice is for the operations covered in section 2.4. Permanent facility installations are covered under Encana’s Specification for Piping and Valves .

<input type="checkbox"/>	2	Ensure that the service provider's piping and hoses are supplied and maintained in accordance with section 3.5 which covers component inspection and traceability.
<input type="checkbox"/>	3	Ensure that the service provider's piping and hoses are installed with specific requirements as described in section 3.7.
<input type="checkbox"/>	4	<p>Ensure that service provider piping complies with Encana guidelines as found in sections:</p> <p>3.8 Inspection, Testing, and Maintenance of Temporary Pipework and Restraints</p> <p>3.9 Hydrostatic Testing Requirements</p> <p>3.10 Rating of Unions, Pipes, Valves and Accessories</p> <p>3.12 Lifting Over and Working On Pressurized Lines</p> <p>3.13 Pressure Relief Valves (PRVs)</p> <p>3.14 Emergency Shut-Down (ESD) System Requirements</p> <p>3.15 Determining Whether Temporary Pipe Can or Cannot be Used</p> <p>3.16 Disposing of Temporary Pipe No Longer Fit for Service</p> <p>3.17 Forbidden Connections and Pipework</p>

2.4 Operations Covered

- General Pumping Operations (transfer of fluids, mud/brine mixing operations, (reverse) circulating well fluids, etc.)
- Pressure Testing of Surface Lines and Equipment (including wellhead, BOP, Christmas Tree, flow lines, etc.)
- Pressure Testing of Downhole Equipment (casing, packers, tubing, plugs, valves, accessories)
- Cementing
- Well Killing
- Well Stimulation
- Well Fracturing
- Nitrogen/CO₂ Pumping
- Well Clean-up/Flowback
- Well Testing
- Underbalanced Drilling Operations
- Managed-Pressure Drilling

2.5 Temporary Pipework Components

Temporary pipework consists of the conduits for directing fluids from a pump or compressor to a wellhead, from a well into process equipment or fluids directed to outlets ending with plugs on which sensors are mounted. Usually, but not always, one source / sink will be the well i.e. the wellhead or Christmas Tree. Occasionally, temporary pipework may be required for the transfer of fluids between vessels.

The vessels and equipment in the process train are not considered in the Temporary Pipework Standard. However, the inlets and outlets (not necessarily in the flowpath or pumping path) on vessels and equipment, must meet the requirements of this practice.

Temporary pipework is mobilized and assembled by a service provider for the purposes of performing the contracted operations detailed in Section 2.4 of this practice.

Items of Temporary Pipework covered by the practice include, but are not limited to:

- Pipework runs (straights), pup joints, elbows
- T-pieces
- Laterals (Y-pieces)
- Swivel joints
- Treating Loops
- Crossovers
- High Pressure Hoses
- Flanges, Blinds, Plugs, Tappings for Sensors, Sample Points

The pipework connections to be controlled in this Standard are classified as:

- Hammer unions
- Hub connections
- Flange connections
- Pressure sealing threaded (PST) connections
- Non-pressure sealing thread (NPST) connection of Hammer Union subs to the pipe body
- Pipe body to pipe body (welded connections).

3.0 Core information and requirements

The core information and requirements of this practice include the following:

1. Code Requirements
2. Standard and Sour Service
3. Hoses

4. Design of Temporary Pipework
5. Component Traceability
6. Transportation to Location
7. Installation
8. Inspection, Testing, and Maintenance of Temporary Pipework and Restraints
9. Hydrostatic Testing Requirements
10. Rating of Unions, Pipes, Valves and Accessories
11. High Pressure Warning Signs
12. Lifting Over and Working on Pressurized Lines
13. Pressure Relief Valves (PRVs)
14. Emergency Shut-Down (ESD) System Requirements
15. Determining Whether Temporary Pipe Can or Cannot be Used
16. Disposing of Temporary Pipe no Longer Fit for Service
17. Forbidden Connections and Pipework

3.1 Code Requirements

It is preferred that temporary pipework equipment be supplied as one-piece (integral) forged items, but fabrication from pipe with butt-welded unions is acceptable.

Those with the responsibility for initiating and managing contracts for services requiring the supply of temporary pipework are responsible for ensuring that the service provider's system for controlling the temporary pipework provided is capable of meeting, and the personnel entrusted with its maintenance, installation and operation are competent to meet, the requirements of this practice.

Temporary pipework must meet the requirements of ASME B31.3 as a minimum, or proven manufacturers' standards where these can be shown to comprise a higher, more stringent standard.

Where standards (e.g. API 16C [17], ASME VIII div 2 [18], API 6A) other than ASME B31.3 Chapter IX are invoked in the design criteria governing the minimum wall thickness, the relation between design or working pressure and test pressure (viz. 1: 1 ½) must be respected. The governing stress must be the lesser of the allowable stress for the design pressure and the allowable stress for the test pressure divided by 1.5.

The maximum working pressure of pipework used in high temperature applications or exposed to low temperatures, for example, in gas well testing, must reflect any reduced allowable stress and material testing requirements, e.g. Charpy values, stipulated in the design codes to which the pipework has been built, tensile being strengths determined experimentally at high temperatures.

Temporary pipework must have been "Type Approved" by an Independent Competent Body. The design verification procedures and results must be documented and include as applicable:

- Product/equipment description (including the restraining system where considered as part of the design)
- Application and limitations
- Documents reviewed for the Type Approval (e.g. drawings, calculations, material specifications)
- Fabrication procedures, comprising manufacturing methods and sequences, test procedures, NDE procedures & techniques, quality procedures, welding plan, weld procedure specifications and qualifications
- Equipment marking
- Documentation to be supplied to the purchaser. (The design documentation and certification media must be readily identifiable to the type and the pieces respectively, clear, legible, reproducible, and retrievable)
- Note: As a minimum, manufacturer's material certificates must satisfy the requirements of ISO 10474 Class 3.1B

All ferromagnetic pressure containing components made from forgings or castings must be subjected to an acceptable level (established by the manufacturer) of magnetic particle inspection in accordance with procedures specified in ASTM E 709 with acceptance criteria per API 6A and API 16C at the finished machine level prior to painting.

Each weld must be subject to 100% volumetric inspection, the inspection method being appropriate to the welding procedure.

3.2 Standard and Sour Service

Temporary pipework is manufactured for use in either Standard or Sour Service environments. Above 5,000 psi (34.5 Mpa) Sour Service equipment generally has a significantly lower rated cold maximum working pressure than the equivalent standard service equipment. Where locations regularly encounter sour gas, it is recommended that Sour Service temporary pipework only be supplied. This is entirely due to the requirements to control the use of this equipment and avoid having unions of the same description (that is, the same FIG no.) for different services (standard and sour) and having different pressure ratings. [For example, a Fig.1502 standard service hammer union has a WP of 15,000 psi, (103.5 Mpa) whereas a Fig.1502 sour service hammer union has a WP of 10,000 psi (69 Mpa). The male part of the standard service union can be fully made up to the female part of a sour service hammer union.]

3.3 Hoses

Flexible hoses, other than for low pressure usage, must comply with the requirements of API 16C, or otherwise be suitably validated.

The working pressure and test pressure of the end connections must be consistent with the working pressure rating of the hose.

Hoses must be anti-static, otherwise electrical continuity must be achieved by provision of a conducting wire run along the length of the hose.

The hose manufacturer's operating, maintenance, inspection and test requirements must be complied with.

3.4 Design of Temporary Pipework

ASME B 31.3 Chapter IX requires formal flexibility analysis to be carried out; however, where the temporary pipework installation is a duplicate of a previous successfully operating system or is judged adequate by comparison with previously analyzed systems, the requirement for formal analysis is relaxed. [The inclusion of swivels, avoiding binding or external loading on connections and avoiding the transmission of vibrations (during pumping operations, for example) through the lines further diminishes any need for flexibility analysis.]

Design review and design verification for the particular operation in which the pipework is used must include pipework support/restraint arrangements and bending moments caused by unsupported pipework or hoses, e.g. pipework made up to flowhead or pumping manifolds).

Operations carried out in "Arctic" conditions and operations generating low temperatures in temporary pipework (e.g. by the Joule-Thomson effect, nitrogen pumping) must be evaluated to ensure that the temperatures do not fall below the design range of the metallic and polymer components when pumping or flowing fluids. Where the initial environmental conditions are outside the equipment specification, actions (e.g. pumping warm fluid) must be taken to ensure that it is within specification at the commencement of operations and remains so.

The designated maximum working pressure of the pipework for the specific operations being undertaken will reflect any requirements for temperature derating for the pipework components.

3.5 Component Traceability

Each temporary pipework component must be indelibly identified with its service and unique identifier traceable to its type and manufacture. Metal banding or hard stamping, using low stress stamps, where banding is impracticable, must include the following data:

- the unique identification number, traceable to material certification
- the maximum allowable working pressure
- test-due date
- type of service (e.g. H₂S, Standard)

The band must be fitted such that it floats on the pipe and cutting is the only means of removal. If the data is missing then the item must be rejected and re-certified.

Pipework identification, including blind runs, pipe extensions made up to vessel outlets for the purpose of mounting instrumentation, plugs on vessel outlets or unused inlets, etc., must be clearly visible to persons tasked to “walk-the-lines.”

[Note: Reliance on color-coding alone for categorical identification is to be avoided, though it is recognized that color-coding can assist with a quick visual identification of service type and pressure rating.]

Where hoses are fitted with higher rated end connections; the rated working pressure of the hose must be printed on and be clearly visible along the length of the hose.

3.6 Transportation to Location

Pipework and accessories must be transported in racks/containers/baskets designed so that the manual handling risks are as low as reasonably practicable.

Prior to actual mobilization, an independent person (e.g. Job Owner, QA/QC Engineer, Logistic Engineer) must check that the equipment provided is complete and in compliance with the requirements of this practice.

The pre-mobilization check must confirm that the hammer unions supplied are incapable of being mismatched and all temporary pipework interfaces are compatible.

3.7 Installation

Torque wrenches for flange, hub connector and fastener make up must be provided. They must be calibrated and controlled under a Quality Management System (meeting the requirements of ISO 9001).

All sections of a temporary pipework system must be installed so as not to impinge on fittings, valves, instrumentation or other protuberances.

The make-up of hammer unions, flanges, etc. should be undertaken using tools other than sledge hammers where possible. Where hammers are used they must be supplied at a weight appropriate to the size of the connection being made up.

Anchor points for the temporary pipework restraint system must be suitable for the potential dynamic loading that could be applied to them.

Where fluids are being pumped through temporary pipework connected to a well capable of producing H₂S, the pipework run between the Christmas Tree up to and including the first leak-tight valve must be suitable for sour service.

Before make-up, all unions must be cleaned of dirt and debris with a wire brush and then properly lubricated.

While not required, the following items are suggested practices that may be applicable to specific operations:

Where there is a potential for hydrate formation, suitable and sufficient consideration must be given to installing methanol and/or glycol injection points.

In the event of the production of potentially high concentration of solids from wells, Chiksan swivels must be substituted by 90 degree bends, target tees or laterals. In general, Chiksan swivels must not be used for well testing operations upstream from the choke manifold to the well head or for pumping operations upstream of the non-return valve: only fixed bends or a suitably qualified hose is allowed.

[Note: The only exception allowed is the swivel under a test tree.]

For high pressure-high temperature (HPHT) operations on producing wells the pipework connections must be hub clamp-type with metal-to metal seals, or flanged, up to the choke manifold.

All high pressure treating pipes for stimulation operations must be oriented with the union wing half facing towards the well.

To build flexibility into the high pressure treating pipe assembly and to keep the piping lying flat on the ground, a swivel joint must be installed on each end of a swing.

A master valve, plug valve or gate valve must be installed at the well.

Check valves must be placed on each treating line as close to the well as practical. Check valves should be placed on the ground. Pressure bleed off valves must be installed between the check valve and the isolation valve.

Each pump must have a check valve in line between the high pressure pump unit and the ground manifold or manifold trailer.

Flapper type check valves must be installed right-side-up and in a horizontal or inclined position. This will allow the check valve to function as designed. Arrows on check valve bodies indicate correct flow direction through the check valve.

The installation of plug valves in addition to the mandatory check valves between the high pressure pump unit and the ground manifold is optional.

In primary treating lines, pressure relief valves if required must be placed between the pumps and wellhead check valve

Plug valves must be used under all high pressure relief valves for emergency isolation only.

High pressure relief valves must be oriented in a direction to prevent exposure to personnel and equipment in the event of a discharge.

All high pressure pumps should be equipped with approved automatic overpressure shutdown devices. In the absence of automatic overpressure shutdown devices, pressure relief valves capable of flowrates that will adequately relieve pressure must be used.

High pressure bleed-off lines must have two 2" x 1" plug valves installed in series immediately adjacent to the main treating line.

The valve closest to the main treating line must be the primary valve and must always be fully open or fully closed. It must be the first valve to be opened and the last valve to be closed.

The secondary valve must be used as a flow control valve.

Bleed-off line valves must always be opened slowly to prevent a fluid hammering effect.

Bleed-off lines are to be as straight as possible and correctly secured.

To avoid unnecessary weight at the manifold trailer connection, check valves and/or plug valves required to isolate individual pumps must be installed on the ground between the high pressure pumps and manifold trailer. Adequately supported check valves mounted on pumping units may be utilized.

High pressure tees (with a 90 degree branch) must not be utilized as a frachead on the wellhead on multiple line entries with proppant laden fluids. Approved fracheads are the preferred top connection for multiple entries. Wyes and laterals may be used.

In stimulation operations, flanged top connection must be used. Appropriate integral flanged connections are to be used whenever possible but must be used if treating pressures may exceed 5,000 psi. Whenever a flanged top connection is used, a new flange ring gasket must be used.

3.8 Inspection, Testing, and Maintenance of Temporary Pipework and Restraints

Before commencement of operations, the designated representatives of the contractors and Encana must make an inspection of the installation to assure that it complies with Encana requirements as developed by the SBU written procedures.

3.8.1 Inspection

All temporary pipework must be subject to a regular (minimum annual), maintenance program and must take into account the manufacturers' maintenance recommendations. Where pipework has frequent usage or has been exposed to harsh service (high rate frac proppant operations, well testing with sand production) a job-based inspection program should supplement time-based inspection.

For nitrogen delivery operations temporary piping must be given particular consideration. Dedicated nitrogen supply line piping must be retained and utilized solely for nitrogen pumping operations.

The service provider must develop a formal inspection and maintenance program for all iron and equipment used for operations. As part of this program, a formal schedule must be developed by the service provider to perform thickness testing of all iron and equipment by a certified third-party inspection company at least annually or at the request of Encana to determine if the iron and equipment has developed any deterioration or flaws. Adequate training, examination and certification of personnel must consist of those requirements provided in ASME *BPVC* Section V. The NDT must be performed by one of two methods:

- Ultrasonic Examination
- Radiographic Examination (X-Rays)

Following the inspection, the third-party inspector must provide a report detailing the techniques and results of inspection.

Rigid pipework

- Visual inspection of the pipe bore for erosion and corrosion.
- Visual inspection and inspection by the use of thread and form gauges of threads and load shoulders and inspection of sealing surface conditions. Bolts and lock rings, for:
 - male sub inspection
 - female union thread half inspection
 - wing nuts
 - hub inspection, (including clamps and bolts)
 - segment and retaining clip (circlip) inspection
 - swivel joint ball race inspection
- Hammer union wing nuts must be replaced where the lug is too small to strike accurately, delivering a tangential blow.
- Magnetic Particle Inspection (MPI) of hammer union segments.
- Wall thickness measurements.
- Pressure testing to maximum working pressure for rigid pipework, unless repairs/modifications have been carried out on the item of equipment in which case it must be subject to a pressure test of 1.5 times the working pressure.

Hoses - “flexible pipework”

- The inspection of hoses must comply with the above requirements for the end connections.
- The external protection cover for the hose must be inspected for damage (such as scuffing, kinks and bulges) and action taken to replace the hose.

- The internal bore of the hose must be checked for wear corrosion and erosion as prescribed by the hose manufacturer.
- Annual pressure test to cold WP or to the pressure prescribed by the manufacturer.

Less frequent, or as specified by the manufacturer, but not exceeding 5 years non-destructive examination (NDE) must incorporate:

- Magnetic Particle Inspection (MPI) of pipework welds.
- MPI/Liquid Penetrant Inspection (LPI) of castings, e.g. cast wing nuts.

The above requirements are a minimum. The inspection, testing and maintenance must be carried out in compliance with the relevant standards or codes and the manufacturer's guidelines or User's procedures where these set additional or more stringent requirements. The inspection equipment used must be in calibration. The results of maintenance, inspection and testing must be recorded for each serialized item of pipework.

Pipework requiring elastomeric seals must be prepared with seals suitable for the pipework service and environment and for the fluids pumped or produced. Elastomeric seals and thermoplastic back-up seals must be inspected and replaced, if exhibiting damage or degradation.

3.8.2 Failure Mitigation Utilizing Restraints

While it is mandatory for pipework and associated equipment to be rigorously maintained to prevent mechanical failure, it is a further requirement of this practice to mitigate the consequences of a failure. Whether pumping or flowing energized or non-energized fluids, the pipework must be effectively restrained in accordance with the Encana Ethos Practice for Pipe and Hose Restraints.

Pipework must be suitably restrained to anchor points corresponding to the maximum pressure to which it is tested.

- Open ended lines, discharge lines, relief lines, lines run to flare pits, etc. must be anchored or tied down at their ends, or as close as practicable to their ends.
- Hoses used for transporting fluids must have their connections restrained with suitably rated restraints.
- Pipework transferring gravity fed liquids between vessels open to the atmosphere (with the pipework connected to the vessels at each end) does *not* require restraints.

The elements of the pipework restraint system - including anchor mechanisms and adjustable pipe supports - must be inspected and maintained in accordance with the manufacturer's recommendations.

3.8.3 Maintenance

During operation, the pipework must be monitored for leaks, vibration, movement and correct operation. If leaks and significant vibration are seen, flow/pumping must be stopped immediately.

Prior to any period of flow the pipework must be re-checked to confirm that it is safe to proceed with the flow.

Mechanical joints, bolt torque and tie down arrangements must be checked after periods of vibration.

Connection tightening, moving the pipework, and similar operations while the pipework is under pressure must not be permitted.

Unless it is unsafe to do so, pipework must be re-tested if any change out of components or any other intrusion into the system's pressure envelope occurs.

[Note: Exception made for fixed choke changes on a well test choke manifold.]

While not required, it is recommended that if the well produces solids, the pipe wall thicknesses of the equipment most vulnerable to erosion must be checked at least once every 2 hours.

3.9 Hydrostatic Testing Requirements

Pressure testing must be performed in accordance with the Encana Ethos Practice for Pressure Testing. Additionally, prior to subjecting the process to pressure, a Job Safety Analysis (JSA) must be held to cover the stages in the pressure testing, the dangers from a pressure release, the exclusion of personnel not directly involved with the test, and the responsibilities of those involved in the pressure testing.

Tests must be undertaken using calibrated pressure indicators and pressure test recorders. The tests must be recorded and endorsed by operators and supervisors. The records arising from the testing must be controlled and retained.

The test pressure applied must be at least 10% higher than the maximum operation design or expected pressure of the process line-section, and must respect the maximum working pressure of the equipment and any safety devices and relief valves.

When hydrocarbons are to be flowed through the process, the pipework and process equipment must be purged of air.

3.10 Rating of Unions, Pipes, Valves and Accessories

Pressure ratings of all equipment to be used must be within maximum allowable working pressure (MAWP). This must be confirmed before any equipment is exposed to pressure.

All unions, pipes, valves and accessories must be rated to the same pressure and type of service.

3.11 High Pressure Warning Signs

All personnel present at the site must be alerted to the presence of high pressure by means of warning signs and barriers to keep them clear of the pressurized areas.



3.12 Lifting Over and Working On Pressurized Lines

The lifting of loads will not be permitted over pressurized pipes or vessel areas except in unavoidable cases. If this is the case, a critical lift plan must be developed and approved by the site manager before initiating the lift.

Under no circumstances is work to take place on any pipe, vessel or fitting that is under pressure. System must be fully depressurized.

3.13 Pressure Relief Valves (PRVs)

Suggested practices:

The PRV's must fulfill the following conditions:

- a. The relief pressure must be less than the maximum rated pressure of the equipment that the relief valve is installed to protect.*
- b. The relief pressure of the PRV must be tested before commencing work.*
- c. The PRV must be properly anchored.*

A tested Check Valve must be installed downstream of the PRV to prevent well pressure or flow acting against it. The check valve must be between the production tree and the PRV, as close as possible to the production tree.

Note: Before operations commence, the check valve must be pressure/function tested at maximum pressure on the downstream side with zero pressure on the upstream side.

- d. A bleed port with double isolation must be installed between the production tree and the check valve. Before operations commence it should be function tested to the maximum differential pressure likely to develop during the job.*

- e. *The outlet of the PRV must be located far enough away to protect personnel and equipment. Expelled fluids should be contained in a safe area.*
- f. *The PRV must be rated to the same pressure as the line in which it is installed.*

3.14 Emergency Shut-Down (ESD) System Requirements

IF the risk assessment requires ESD, suggested practices could include:

All temporary installations must have Emergency Shut-Down (ESD) systems that will shut in the well when activated.

All personnel present at the wellsite must be informed of the location of the ESD activation panels, how to operate them, and the effect of their use.

3.15 Determining Whether Temporary Pipe Can or Cannot be Used

Along with regular inspections and testing, temporary piping will be unacceptable for use if any of the following are observed:

- Exposed to overpressure greater than 10% over the MAWP of the piping
- Leaks
- Failures – both during operations or pressure tests
- Excessive and visual wear
- Failed annual inspection, X-Ray test, UT test, mag particle test, wall thickness test
- Improper banding
- Past due certification
- Does not comply with manufacturer recommendations and standards
- Damaged threads
- Not designed for job
- Improper installation

3.16 Disposing of Temporary Pipe No Longer Fit for Service

Once temporary piping has been deemed unfit for service it must be clearly marked, cut up, and scrapped.

3.17 Forbidden Connections and Pipework

The following connections and pipework are forbidden for operations on wells requiring the use of temporary pipework:

- The pressure de-rating of pipework from its original working pressure specification because of reduction in its wall thickness below the minimum prescribed by the manufacturer to retain its original working pressure.
- Back-welded threaded connections or fittings.
- Mismatched pipework hammer union components.
- Use of standard service pipework on sour service operations.

4.0 Roles and Responsibilities

USA Division EH&S	Responsible for developing, implementing, communicating, evaluating, maintaining, and improving this practice. Implementation consists of making this practice available to all staff through Encana's intranet and providing appropriate training materials and system tools for use by the business units (BUs). Evaluation consists of, at a minimum, the performance of Ethos audits within the BUs or sub-business units (SBUs) on a routine basis. Based on the results of audits and requests from staff for modifications, USA Division EH&S will make appropriate changes to the practice to maintain and improve it.
BU EH&S	Responsible for helping implement this practice within their respective BU and SBUs.
BU leadership	Responsible for implementation of this practice in their BU or SBU through providing adequate resources to support the practice.
BU staff	Responsible for following this practice and incorporating its requirements into their work.

5.0 Goals, Objectives, and Performance Measures

The goal of this practice is to prevent incidents and mitigate risk by providing a systematic method for temporary pipe installation, where appropriate.

Performance measures include the following:

- BU implementation of this practice
- Ethos audit scores for the implementation of this practice
- Number of incident causal factors or root causes related to improper pipe installation

6.0 Training

Encana field support and field operations employees subject to this practice shall successfully complete training in temporary pipe installation and use aligned with this practice as follows:

- Upon hire
- Upon major modification or revision to this practice
- Every three years (at a minimum)

Service providers shall receive training on key elements of this practice during the contractor orientation delivered at each SBU. They will also be made aware of and given access to this practice during review of the Contractor Expectations Manual.

7.0 Resources

BUs must identify, allocate, and verify appropriate resources to communicate and implement this practice.

8.0 Associated Forms, Documents, and References

8.1 Forms

None referenced.

8.2 Documents/References

API 7K – Specification for Drilling and Well Servicing Equipment

API RP 7L – Procedures for Inspection, Maintenance, Repair, and Remanufacture of Drilling Equipment

API 16C – Specification for Choke and Kill Systems

ASME B31.3 Process Piping Code

Encana Ethos Practice for Pipe and Hose Restraints

Encana Ethos Practice for Pressure Testing

[Encana's Specification for Piping and Valves](#)

8.3 Definitions

Term	Definition
Early Life Cycle	The early stages of a well from rig release to initial production.
Contractor	A company Encana has selected to perform a service. The individual performing the service is specified (e.g., site representative or site supervisor) as acting as an agent for Encana.
Service Provider	A company Encana has selected to perform a service without specifying the individuals who provide the service (e.g., Ensign Drilling or Halliburton).
Onsite Service Providers	Service providers that perform work for Encana on an Encana field site (e.g., wellsite, pipeline, seismic line, road, and facility).
Restraint System	Nylon Sling, Cable and Shackle, Whipcheck, Whipsock, etc.
Staff	Includes all Encana employees and contractors hired to conduct work on Encana's behalf.

8.4 Decision Record and Implementation Plan

The Decision Record documents how this practice was developed and pertinent decisions made during the development. The Implementation Plan documents the purpose and audience of the practice as well as changes that were made either from the previous version of the practice or from standard operations. These records can be located by clicking on the links below:

- Decision Record for the Ethos Temporary Pipe Installation Practice
- Implementation Plan for the Ethos Temporary Pipe Installation Practice