

TechTalk

Zero discharge during temporary flowback operations



Outline

- Why Zero discharge?
- Design of application
- Case studies of field usage
- Conclusion

Please visit flexpipesystems.com for additional information.

Flexpipe's spoolable composite linepipe facilitates the implementation of temporary zero discharge operations and can be reused multiple times.

Flowback operations and well testing are performed on new wells and they produce a certain amount of fluids during this service. For unconnected new wells, temporary separators, flare stacks and storage tanks are required to store and dispose of these fluids. There are several concerns when dealing with these fluids, including environmental impact, safety of the onsite workers, lost revenue and additional costs. Operators are seeking an alternative solution to make the temporary operations more economical.

Why zero discharge?

Zero discharge of well fluids during flowback operations yields multiple benefits.

- Improved environmental performance through the containment and use of all fluids produced during well testing is exemplary and efficient
- Additional revenue results from allowing the flow of well effluents through a test separator and into a production line.
- Flaring, related emissions and the need to maintain and operate a temporary flare stack are eliminated.

In some jurisdictions, zero discharge operations are required by the local environmental authorities.

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Design of application

Flexpipe® or Flexcord™ pipe is used to implement zero discharge flowback by allowing a temporary surface linepipe connection to existing facilities or centralized collection equipment for the produced well fluids. This allows for collection and separation of the well fluids at a common location distant from the well site, depending on the design of the facilities. Instead of laying permanent linepipe and incurring high costs, Flexpipe® or Flexcord™ pipe can be installed temporarily on the surface in cases where the equipment will be removed after well servicing. Once well servicing is completed, linepipe can be re-spooled quickly and easily and stored for future use. Re-spooling can be performed multiple times allowing for several deployments of the line in more than one location, or it can be repurposed as a permanent line.



Case studies of field usage

A service contractor evaluated the use of Flexpipe® pipe for zero discharge applications for flowback operations. First, a technical evaluation of the operating conditions, including operating pressure and temperature, was performed to determine the compatibility of Flexpipe® pipe for the application. The evaluation

also included a risk analysis and environmental review to determine operational risks and benefits. Once the project was given the green light a site visit was conducted prior to the operation to review the requirements for equipment, set up and pipe quantity. With the available information, an effective economic analysis was completed and proper risk mitigation steps were taken in the field to ensure safe effective operating conditions.

Case Study #1

- Total flow = 16,000 barrels of oil
- Hydro-test pressure = 1,200 psi
- Stable flowing pressure = 450 psi; 518 psi max operating pressure
- Maximum temperature = 160°F (71°C)
- Estimated revenue recognition by client = \$1,600,000 (16,000 barrels @ \$100/barrel*)

- Zero discharge was achieved with no flaring requirements and all produced fluids were collected and processed.
- 550 meters of FlexPipe Linepipe was installed in four hours and then re-spooled in four hours at the end of the project

Case Study #2

- Total flow = 4,000 barrels of oil
- Hydro-test pressure = 1,200 psi
- Stable flowing pressure = 250 psi
- Maximum temperature = 160°F (71°C)
- Estimated revenue recognition by client = \$1,600,000 (16,000 barrels @ \$100/barrel*)

- 1,200 meters of Flexpipe was installed in six hours, and taken down in six hours.

*2014 USD\$/Barrel

Conclusion

Economic and environmental benefits are realized during flowback operations using Flexpipe® or Flexcord™ pipe for zero discharge applications. Our linepipe is used to convey produced well fluids to the most convenient location for processing and storage. The speed and ease of installation allows it to be used for temporary lines which is an ideal fit for flowback operations.