How to Recover a Stuck Pipeline Pig

Common causes, recovery considerations and preventive guidance

Overview

A pipeline pig may stop moving for several reasons. Identifying the likely cause is essential to selecting a suitable recovery method and reducing the risk of damage to the pig or pipeline. Two common situations are loss of sealing contact and a physical obstruction. The guidance below describes potential recovery approaches that may help avoid excavation or other invasive intervention.

These recommendations are general information only. Any recovery action must be reviewed and authorized by qualified pipeline personnel in accordance with site procedures, equipment ratings and applicable safety requirements.

1. Pig stopped because of loss of seal

A pig may lose its seal because of excessive wear during a long run, abrasive conditions, dual-diameter sections, or damage from partially closed valves or debris. When sealing contact is lost, the propelling medium may bypass the pig rather than move it forward.

Adjust propelling-medium volume. Where operating limits and system conditions allow, increasing the flow volume may provide sufficient effective force to move the pig despite some bypass.

Relieve pressure and allow the pig to recover. After safely isolating or depressurizing the system as required, allowing a flexible pig to rest may help it recover its original shape. The original guidance suggests approximately 15 minutes as an illustrative recovery period; actual behavior depends on pig material and conditions.

Consider a line-size foam swab. In some circumstances, a light-density, approximately 2 lb/ft³ foam swab may help reduce bypass around the stopped pig and restore movement. Launching a second pig introduces additional risks and should occur only after confirming the location, line condition, compatibility and a safe recovery plan.

Consider reversing flow. For pigs designed for bidirectional travel, a controlled flow reversal may move the pig back a short distance so forward movement can be attempted again. This approach may not be suitable for unidirectional designs, including certain cup pigs.

2. Pig stopped by an obstruction

A pig may also become lodged when it encounters an obstruction it cannot pass. Potential causes include heavy debris accumulation, partially closed valves, tools, or other foreign objects inside the pipeline.

Evaluate available differential pressure. Additional differential pressure may provide more force to move the pig or debris, but pressure must remain within approved pipeline and equipment limits. Do not increase pressure without evaluating the obstruction and the risk of sudden movement or damage.

Consider controlled pressure variation. The original procedure describes alternating pressure as a possible way to free a pig at tight fittings, valves or bends. Any such maneuver should be carefully engineered and controlled; rapid cycling can introduce surge and equipment risks.

Relieve pressure and allow recovery. Where pig deformation may be contributing to the stoppage, safely relieving pressure and allowing time for the pig to regain its shape may help.

Consider reversing flow. A controlled reversal may allow a compatible pig to retreat from an obstruction or be recovered toward the launcher. This approach is not appropriate for pigs that are not designed for reverse travel.

Operational and safety considerations

Before attempting recovery, verify the pig's likely location and the cause of the stoppage as far as practicable. Review pipeline configuration, valve positions, pig design, flow medium, pressure ratings and receiving capacity. Monitor pressure and flow throughout any approved recovery attempt. If the obstruction cannot be characterized or operating conditions become abnormal, stop and consult experienced pigging and pipeline operations personnel.

No single recovery technique is suitable for every situation. A qualified team should determine whether controlled recovery, retrieval or another intervention is the safest course of action.