

# Oil Transit Pipeline Interface Level Detection

## *Application Note Case Study ANCS017*

Pipe “pigging” is a technique utilized to remove undesired residues and build-up from inner-pipe walls. It is frequently deployed in oil pipelines to prevent flow restrictions and eliminate corrosive contaminants from adhering to pipe walls. More advanced “smart pigs” can also measure pipe wall thickness and/or transmit video of internal pipe conditions.

### **Problem**

A major oil producer in Alaska operates oil transit pipelines for transportation of crude oil from the North Slope. Pipelines are pigged frequently to prevent material build-up on the internal walls and reduce potential corrosion. When the pigging process is finished, the pig launcher and receiving stations are purged clean with nitrogen gas. The pipeline owner’s maintenance team needed a means to detect the completion process and that the nitrogen purge gas was through the system.

### **Flow Conditions**

- Line size: 1 1/2", Sch. 40
- Process connection: 1 1/2" RF 600 lb flange
- Wetted parts: 316L stainless steel
- Process temperature: -40 °F to 350 °F (-40 °C to 177 °C)
- Pressure: 300 psig [20,7 bar(g)]
- Fluid type(s)/media: Crude oil and nitrogen gas, interface detect


### **Solution**

Install a thermal dispersion technology level/interface detector at the bottom of the vessel in a vertical drain line. Set the trip point to detect between crude oil and nitrogen. The relay will change state when the crude oil the vessel is displaced by the nitrogen purge gas.

### **FCI Level/Interface Switch Model FLT93S**

### **Benefits**

- Low cost, simple installation in vertical drain line and wire-up to control system.
- No moving parts, ultra-reliable continuous operation with no routine maintenance.
- No interference with pig launcher or receiver station.
- Rugged IP67 rated enclosure ensures protection from oil residue and severe weather.



Pig system,  
flanged  
FCI FLT93S  
FlexSwitch