



Pipeline Inspection and Condition Analysis Corp.

PICA offers leak detection for water, waste-water and other liquids pipelines using its patent-pending “Navigator™” acoustic sphere. Dedicated potable water Navigators™ are available for PICA launch and catch or client launch and catch.

NAVIGATOR™ acoustic sphere description

Suitable for detection of leaks and gas pockets in any liquid-filled pipeline. Goes through the pipe with the flow at up to 2 feet/second and pressures between 20 and 100 psi.

Records the location of any leaks that are making a leak noise and any gas pockets that are making a bubbling noise. The spheres are 3.78” diameter.

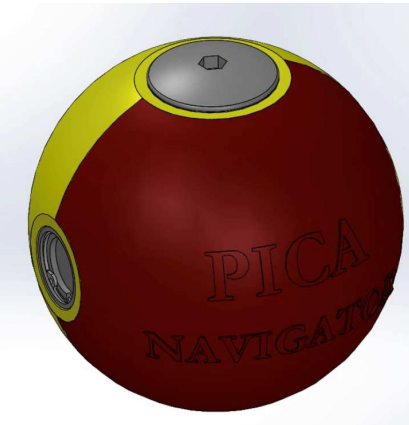


Fig-1: Navigator™ type-1



Fig-2: Transport/charging case

Specifications:

- Enhanced leak detection capability and ability to detect gas pockets.
- Magnetic analysis (provides potential for bulk thickness and feature detection)
- 24 hour run time
- Adjustable buoyancy: positive, negative or neutral buoyancy (means they will not get stuck in deposits or debris that is on the bottom of the pipe and they won't rise into manways on large pipes either)
- Navigators require a flow between 0.5 and 2 meters/sec. and a pressure between 20 and 100 psi
- The pipe must be full and free of air bubbles if possible
- Can be launched and trapped by PICA or client
- 3.78” diameter (about the size of a softball)
- Works in metal pipes, Asbestos Cement, plastic pipes, FRP and others
- Detects leaks as small as 0.6 litres/minute at pressures over 20 psi
- Illuminated dome light for enhanced visibility during catch operation
- Pressure proof to 150 psi



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- We will always run at least two devices, and a third is supplied in case of any problem.
- Completely sealed case, with automatic charging in the travel case
- Nothing to turn-on: take it out of the travel case and it's running.
- Flashing lights with different colours tell you if it is charged and turned on.
- Multiple runs can be recorded on one Navigator.

The device is undergoing field trials in May 2023, and will be ready for field deployment in early June, 2023.

Requirements

- Pipe must be full and flowing at a constant, measured rate
- Pressure needs to be monitored and logged during deployment
- PICA needs to be provided a .KMZ file of the pipeline route and elevation profile
- Launch can be through 4" or larger ARV, a check valve, or by-pass spool
- Trap can be through an ARV (with PICA catch net) or at a transition manhole if the line is a force main (using a PICA net or client net).
- Avoid air entering the pipe during launch (bubbles may travel with the tool and make data noisy)
- Plan and profile as-built drawings help PICA to accurately identify leak locations
- Data can take up to 10 business days to analyze and can be expedited at extra cost.

Data

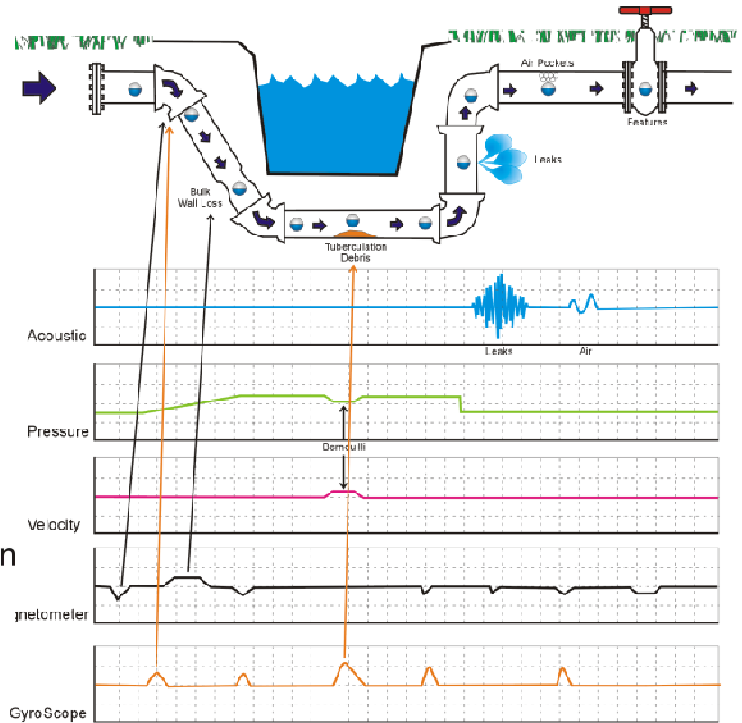
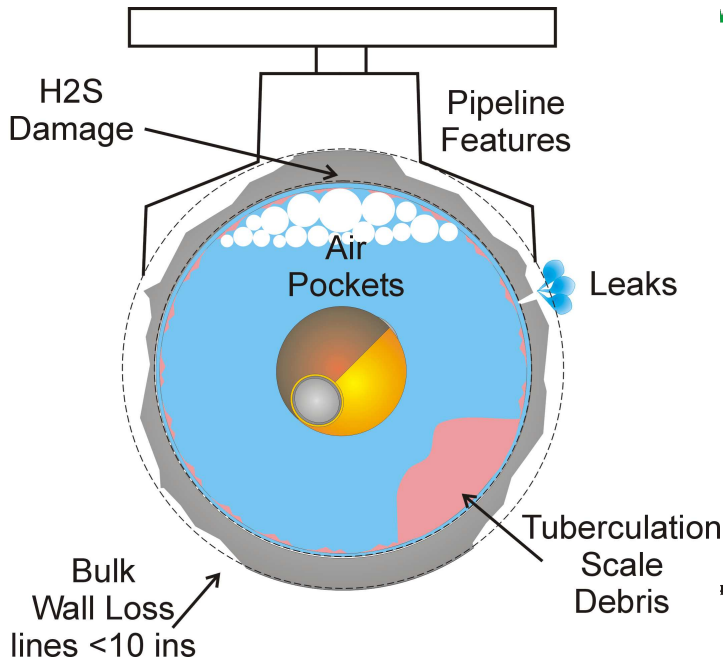
Navigators™ gather data from the fluid column in the pipeline. The fluid column transmits noises from leaks and bubbles that can be detected by the ultrasonic transducer on board the Navigator.

Having a completely full pipeline, that has minimal entrapped air bubbles, helps Navigator to "hear" leak noises and noises made by gas pockets. Gas pockets in a force main can indicate areas where H₂S corrosion is likely to be taking place. Over time, these areas can become paper-thin and will eventually leak or catastrophically fail and create a sink-hole or local flood. Navigators™ should be run regularly to detect gas pockets and leaks and potentially to find areas that have thinned using its on-board magnetometer.



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See the next page for graphics that help to understand the pipe characteristics that Navigator™ is sensitive to.



Fig's-3&4: typical anomalies that Navigator™ is sensitive to and Graphic presentation of data



Fig-5: launch through by-pass



Fig-6: PICA 4" ARV insertion Tool



Fig-7: screen to stop Navigator and scoop to retrieve it.