



NEW:

24" See Snake Tool for the Inspection of Metallic Pipes

Fall 2009: New 24-inch See Snake tool

Unsurpassed in sensitivity, cornering ability and range, the new 24-inch See Snake represents the state-of-the-art in Remote Field Technology (RFT) inspection of metallic pipes. By combining some of the latest improvements in RFT technology with traditional pipeline pig designs, the 24-inch See Snake tool provides to municipal engineers the same type of information historically only available to oil and gas pipeline operators; with one major difference:

“The See Snake tool determines the remaining wall of the pipe through internal scale and deposits.”

The 24-inch See Snake tool has been specifically designed to inspect the wall thickness of the pipe at variable lift-offs to accommodate wall thickness variations, pipe ovality, liners and internal scale. The same tool can be adjusted to inspect pipelines as small as 20-inch; or as large as 28-inch. The ultimate goal of the tool is to provide accurate condition assessment information that will allow reliable planning for critical mains. Using the See Snake’s results operators will be able to determine the weak links in the line and address potential failures before they happen as a result of an external trigger.



How See Snake Technology Works

The See Snake line of RFT tools are highly flexible tools that employ Remote Field Technology for measuring pipe wall thickness. RFT technology works by detecting changes in an AC electromagnetic field generated by the tool. The field interacts with the metal in the encompassing pipe and becomes stronger in areas of metal loss. The field interactions are measured by on board detectors, and subsequently processed and stored on-board. Once all the data is acquired, sophisticated analysis software is applied to generate accurate information on the wall thickness of the line. The tool detects wall thinning caused by corrosion or erosion, as well as line features such as joint couplings, branches and elbows.

Technology Strengths

- Non-contact NDT method.

RFT has the advantage that it does not require intimate contact with the pipe wall to detect changes in remaining wall thickness. Therefore, internal scale, sludge, sand and liners such as HDPE, cement mortar or clay do not interfere significantly with the operation of the Tool.

- Equally sensitive to internal and external flaws.

RFT also has the advantage that it is equally sensitive to ID or OD wall loss. In other words, it does not matter whether the wall loss (usually graphitization in cast iron pipes) is on the soil side, or the product side of the pipe: it will be detected equally well.

- Complete coverage at fast inspection speeds. RFT is faster and more complete than isolated excavations and spot measurements, which could miss localized corrosion. The maximum speed is 10m/min.

- Accurate results that identify both the severity and location of areas of wall thinning. RFT technology is well established and has been deployed on metallic pipes since the 1980s. The See Snake Tools are the latest in RFT technology and have numerous detectors covering the circumference of the pipe, providing enhanced resolution and accurate wall thickness information.

The Tool records the clock position of any wall-thinning defect that it detects. In addition, the Tool's progress is tracked above ground using "Above Ground Markers" (AGM's) at known GPS station-points. These serve as additional "weigh points" in combination with the data from the on-board odometer to increase accuracy of locating defects such as pits.

- Novel mechanical design can accommodate ID variations as well as traverse sharp bends. The Tools are fully able to negotiate short radius elbows, and can operate at pressures up to at least 300 psig. The See Snake tools are completely self contained and "free swimming". That is, they have all required electronics, batteries, memory and sensors on board, and they can travel un-tethered down long lengths of pipeline.

- Compact and Transport friendly.

See Snake tools are light weight and transported easily in man-handle-able shipping cases.

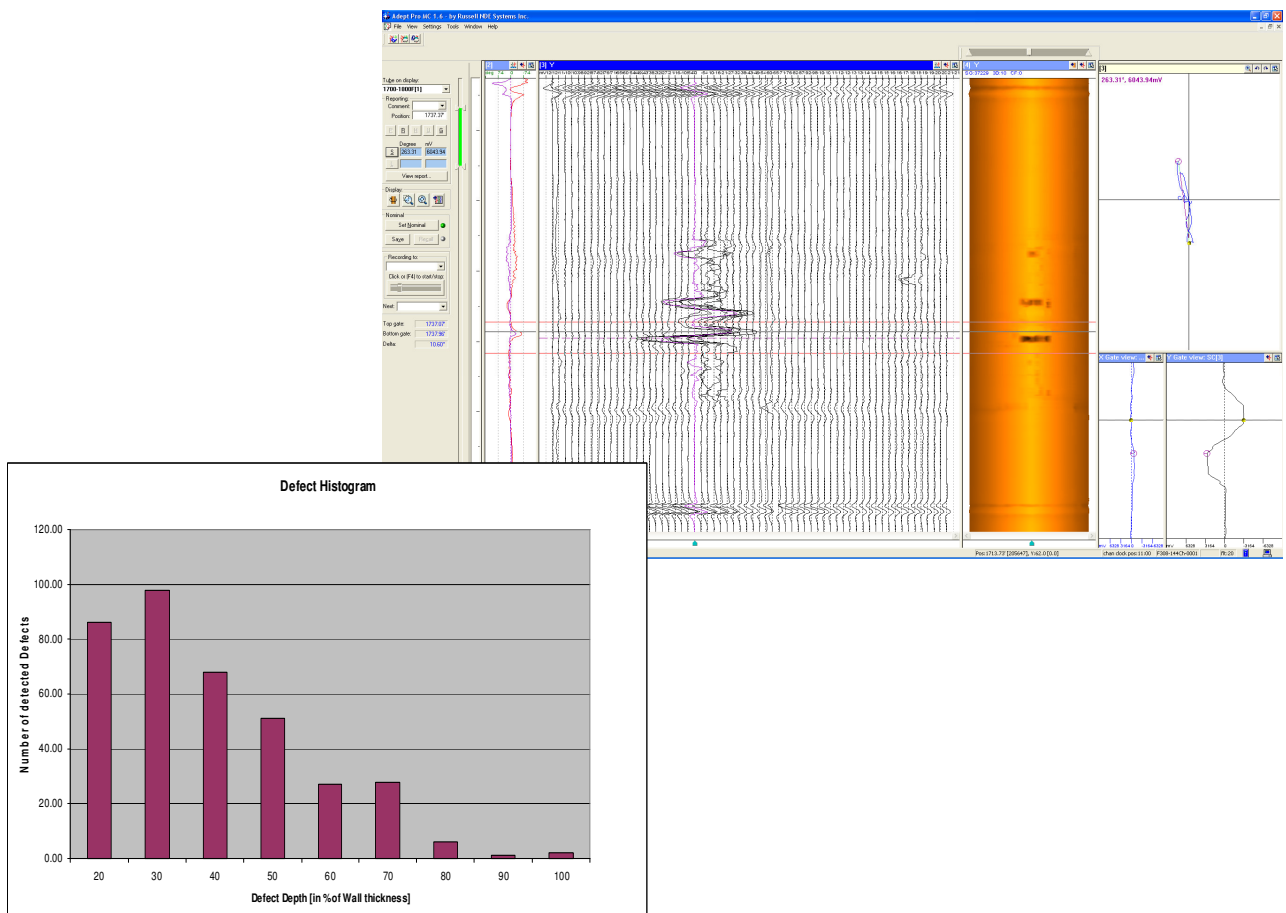


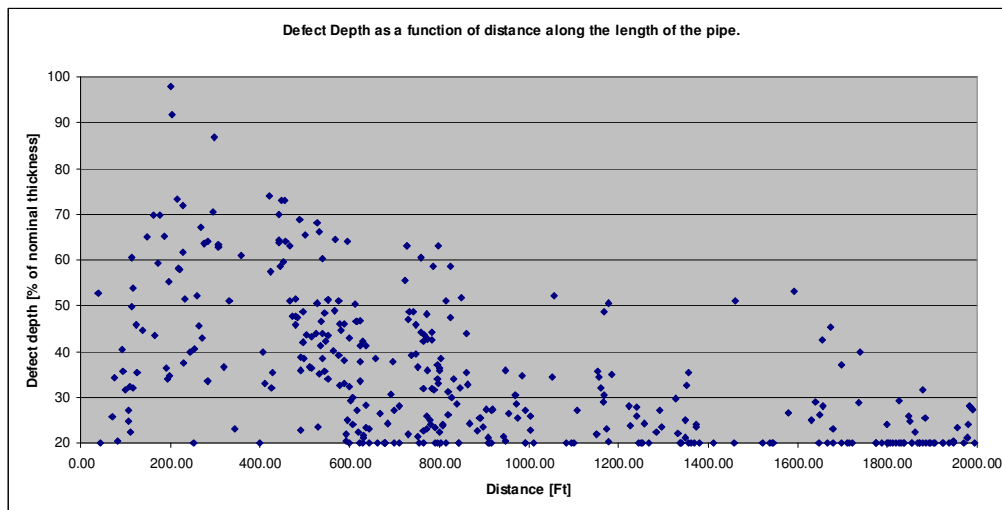
Field Demonstration

In September, 2009, Russell N.D.E. demonstrated the performance of the brand new 24" Remote Field Tool. The trial was sponsored by the U.S. Environmental Protection Agency and was facilitated by the Battelle Institute. Louisville Water provided a 24-inch cast iron, cement lined water main for the demonstration, with a wall thickness of 0.75 inch (19mm). The water main was scheduled for replacement and was out of service during the demo.

Because the pipeline was out of service, the Tool was winched through the pipeline using a wire rope winch instead of flowing with water. Winches were positioned at each end of the pipeline, which was 627m in length. This allowed the Tool to be launched from one end and extracted at the other end, with the trailing winch being used to control the Tool speed at 5m/minute. The inspection time was 2 hours, followed by a data download of half an hour.

The image below shows the log produced by the 24" Tool of a single pipe segment (from Bell-and-Spigot to Bell-and-spigot). 168 such joint lengths were analysed, and a total of 367 wall loss instances reported. In the screen capture several local defects are detected and displayed. A histogram of the results show that a majority of the defects are less than or equal to 50% deep, with a much smaller group in the 60-80% range, and only a few defects 90% or deeper. More importantly the results from the See Snake tool show that the deep defects are concentrated within one section of the line, leaving more than half of the line with significant useful life.





Tool Specifications and Information

- Pressure rating: 300 psig
- Number of channels: 240
- Length: 12'
- Battery capacity: 12 continuous hours of operation – scalable up to 72 hours.
- Accuracy of defect depth prediction: +/- 15% for pit-type defects, +/- 5% for general thinning
- Threshold of detection: 20% deep.
- Clearance: the Tool can be configured for 0.250" to 2.0" clearance between the detectors and the pipe. This allows for liners and tubercles on the pipe I.D.
- Inspection speed: 10 to 30 feet/minute. Speed depends on wall thickness.
- Applicable for: cast iron, ductile iron and steel pipelines. Also applies for inspection of the steel cylinder in PCCP pipe
- Diameter Scalability: Tool can be adjusted for sizes between 20" and 28". The Tool design is also applicable for larger pipelines, up to 56" diameter.
- Shipping: the Tool packs into three cases. Tool may be transported by air or road.



Other sizes available:

See Snake (free swimming) Tools are currently available to inspect 3", 4", 6", 8", 12", 16" and 20-30" pipes. Tethered Tools are also available in the same size range. For larger diameter pipe we offer Tools that can be assembled inside a de-watered pipeline, in sizes up to 120. For further details on the 24" Tool and other Tools offered by Russell and its subsidiary company, PICA: Pipeline Inspection and Condition Analysis Corp., please contact us though info@russelltech.com or call +1-780-468-6800.

PICA Contact information:

UNITED KINGDOM
 Ferazzi House, Bridle Way,
 Liverpool, L30 4UA, U.K.
 Ph: 07798-574254,
 Fax: 0151-530-4864
www.picacorp.com

WESTERN N. AMERICA
 4909-75 Ave., Edmonton,
 AB, Canada T6B 2S3
 Phone: (780) 468-6800
 Fax: (780) 462-9378
www.picacorp.com

EASTERN N. AMERICA
 PO Box 46052, Pointe
 Claire,
 Montréal, QC., H9R 5R4
 Phone: (514) 703-9009
 Fax: (514) 695-0254

INDIA & MIDDLE EAST
 C-2/290, Sector "F",
 Jankipuram, LKO, India.
 Ph: +91 97177 20995
 Fax: +91 522 4027541
info@russelltech-india.com