As an oil well is drilled, the casing and tubing threads must undergo visual testing before the downhole tubular structure can be assembled. In the oil well drilling industry, tubular products such as these are referred to as *oil country tubular goods*.

The term *casing* applies to the many strings of pipe that are used to line the well during and after drilling. This pipe protects the hole from formation collapse and prevents the exchange of fluids between the formation and well bore. The casing strings are a permanent part of the well and many are cemented into the formation.

The *tubing* string is the production string, the pipe through which the oil or gas is brought to the surface. From time to time, it may be removed and replaced.

### Thread Functions
The threads on both tubing and casing are required to perform two functions: seal the connection to prevent leaks and support the weight of the string as it is lowered into the well.

Extensive service data for older connections and design testing for new connections help predict the capabilities of properly manufactured and undamaged threaded connections. Inspectors visually testing threads are looking for manufacturing errors, damage caused by handling and corrosion that would affect the ability of the connection to seal. The second function of a visual test is to detect any discontinuity that would interfere with the ability of the connection to be properly “made up,” that is, screwed together.

### Types of Seal
There are three types of seals used on oil field tubing and casing:

- interference scaling threads,
- gasket seals and
- metal to metal seals.

#### Interference Scaling Threads
The interference scaling threads use a tapered connection that is made up two or more turns beyond hand tight. This power tight makeup forces the mating surfaces together under pressure. Figure 1 shows the profile of a typical interference sealing thread. Thread lubricant (a heavy grease) is used to close the gap between the root and crest of the mating threads. The smallness of the gap and the length of the thread helical make an effective seal.

#### Gasket Seals
Gasket seals use a ring of resilient material somewhere in the connection. The ring is ductile enough to form itself to the shape of the mating piece. This type of seal is always used with at least one other seal.

#### Metal to Metal Seals
Metal to metal seals are considered the premium seals in the oil field. The machined
The surface of the pin connection forms a seal around a mating machined surface in the box connection.

These three types of seals are used either alone or in combination in the various connections used in oil country tubular goods.

**Inspection Criteria**

American Petroleum Institute (API) round and buttress threads are public property and are governed by API SPEC 5B, where the inspection guidelines are very well defined. Additionally there are over a hundred thread designs used on oil country tubular goods that are proprietary. That is, the design is owned by someone and in many cases, patented. For these non-API threads, the inspection criteria may be confidential. The third party inspector of these connections can only examine the threads and set aside any suspect thread for the manufacturer's evaluation. The inspector must be familiar with the published literature on non-API connections in order to recognize any deviation from normal.

**Inspection**

Before inspection, the threads must be cleaned with solvents and brushes. The waste materials must be captured for proper disposal. During cleaning, the inspector should begin his inspection of the threads. Any obvious imperfections should be marked as soon as they are found.

A critical consideration throughout the threaded area, regardless of the type of connection, is that there are no protrusions on the thread surfaces that could score the mating surface. If the surface has a protrusion, the pressure of makeup will be concentrated in the high spot causing friction and galling, instead of being distributed across the broad surface. Minor repair of high spots with a hand file may be permitted with the pipe owner's permission. If the protrusion cannot be repaired the connection is rejected.

Thread form is critical to the load strength and sealing ability of the threads. Because most machining errors are not detectable without the aid of a profile gage, each connection would need to be inspected.
must be checked with a precision profile gage (Fig. 2). Light between the profile gage and the connection indicates a thread form error. Improper thread form is cause for rejection. Profile gages are also used to verify that repaired protrusions have been sufficiently repaired.

**Imperfection Criteria for Pin Threads**

The pin thread of API threads have four distinct areas with different criteria for each, Fig. 3a shows the areas on a round thread, buttress threads areas are similar.

**Pin Sealing Area Criteria**

The threads toward the end of the pipe are the sealing threads. This area is referred to as the minimum length full crested threads ($L_c$). The $L_c$ length is a specified length. Tables in API SPEC 5B give the distance from the end of the pipe to the end of the $L_c$ area for each size connection. The $L_c$ thread must be free of visible tears, cuts, grinds, shoulders or any other anomaly that breaks the continuity of the threads. All threads in the $L_c$ must have full crests on round threads. Buttress threads are allowed some non full crested threads. Any potential leak path in the $L_c$ area as well as not meeting any of the above criteria would cause the connection to be rejected. The $L_c$ threads are allowed superficial discoloration, but that is the limit of discontinuities allowed.

**Pin Nonsealing Threads Criteria**

The threads between the end of the $L_c$ area and the vanish point of the threads are not considered as sealing threads so they are allowed to have imperfections that could be considered to be leak paths. The manufacturer may repair threads in this area by grinding within API specified limits. The most critical factor in this area is that there be no protrusions on the thread flanks that will remove the protective coating or score the mating surfaces.

**Chamfer Criteria**

The chamfer area on the end of the pipe is beveled to provide a place for the thread to start. This bevel must be present for 360° around the pipe face and the starting thread must run out on the chamfer. This design minimizes the risk of damage while making the connections on the drilling rig floor. If a ridge were present and folded over, it would result in galling during makeup. If the starting thread is not continuous, that is, if a portion of the groove is missing, this condition in itself is acceptable but may be a sign that the pipe and thread axis are misaligned.

There are tolerances for angular and axial alignment and this condition must be evaluated. The chamfer smoothness is not critical since it does not contribute to the thread function after it provides a place to start makeup.

**Pin Face Criteria**

The fourth and final area where threads are critical is the pipe end. The ends must be free of burrs on the inside and outside. Freedom from burrs is actually important to the entire threaded area because burrs might be dislodged during makeup. If they become dislodged they could interfere with makeup and promote galling. Burrs on the inside of the face are of concern because they may damage tools and equipment used for surveys or other functions during drilling.

**Coupling Threads**

There are three areas on the coupling threads (Fig. 3b). The area on the coupling referred to as the perfect thread length must meet the same criteria as the $L_c$ area on the pin. The perfect thread length on the coupling starts with the first threads at the end of the coupling and continues to the plane located near the made-up position of the first full thread of the pin threads. The length of this area provides the pin thread a properly formed mating thread throughout its travel during makeup. A mirror is required when inspecting couplings in order to view the flanks facing the center of the coupling. The repair of minor anomalies in the coupling threads is normally not practical because of curvature of the
connection. Additionally couplings have a zinc, tin or metallic phosphate coating to improve corrosion resistance, antigalling and sealing ability and repairs would damage this coating.

The second coupling area, those threads in the center of the coupling, are required only to be present. These threads are considered acceptable if the thread root is present all the way to the center. Seams, laps or cracks in the coupling threads are always considered rejectable but are not normally found by visual testing alone because of the coating applied to the internal threads. While cutting the second end, the thread cutter may cut beyond the center of the coupling. This condition is acceptable unless the cutting extends into the perfect thread area.

The counter bore and face is the other area of the coupling. The diameter of the recess shall be sufficient to prevent cutting ghost thread roots on the surface of the recess. Also, there should be no burrs (Fig. 4) or protrusions in the counter bore area that could damage the pipe threads during stabbing at the rig site.

The criteria for pin and coupling are summarized in Table 1 for round and buttress threads.

### Presence of Makeup Triangle

The visual thread inspector checks for the presence of the makeup triangle (a manufacturer's stamp indicating where makeup should stop) on buttress threads and round threads larger than 400 mm (16 in.). The lack of a triangle is not normally cause for rejection, but the customer should be notified since the triangle is used to aid proper makeup on the rig floor. The thread area stops at the apex of the makeup triangle.

### Makeup Connections

The completely tightened makeup is also checked visually during a visual thread test. The pin thread face should be made up to 13 mm (0.5 in.) from the center of the coupling (Fig. 5) for most pipe. The center of the coupling can usually be visually located. By counting threads between the center of the coupling and the face of the pin on the opposite side, the distance can be quite accurately estimated. Further evaluation by measurement may be required for classification if visual evaluation shows a significant error.

### Shoulders

API round threads are designed to run out at the pipe surface. Excessive metal, machined for threading but in fact not threaded, where the thread stops on the outside surface of the pipe is referred to as a shoulder. If the shoulder goes all the way around the connection, it indicates that either the pipe is too big or the thread is too small.

---

**Table 1. Criteria for visual testing of API round and buttress threads**

<table>
<thead>
<tr>
<th>Area</th>
<th>Anomalies</th>
<th>Applies to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin face</td>
<td>knife edge, burrs</td>
<td>round and buttress</td>
</tr>
<tr>
<td>Chamfer</td>
<td>feather edge, burrs</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>chamfer not present for full 360 degrees around pipe</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>starting thread not running out on chamfer</td>
<td>round and buttress</td>
</tr>
<tr>
<td>Pin, Lc area</td>
<td>any imperfection that will cause a leak path</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>any imperfection that causes distortion of thread form</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>non full crested threads</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>no more than two non full crested threads no longer than 25 percent of</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>circumference</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>any imperfection that causes distortion of thread form</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>other imperfection cannot extend beyond root of thread or 12.5 percent</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>of wall thickness</td>
<td>round and buttress</td>
</tr>
<tr>
<td>Pin, not Lc area</td>
<td>any imperfection that causes distortion of thread form</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>other imperfection cannot extend beyond root of thread or 12.5 percent</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>of wall thickness</td>
<td>round and buttress</td>
</tr>
<tr>
<td>Coupling</td>
<td>threads not extending to center of coupling except beyond the perfect</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>thread length</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>metal protrusion</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>any imperfection that will cause leak path except beyond perfect thread</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>length</td>
<td>round and buttress</td>
</tr>
<tr>
<td></td>
<td>non full crested threads except beyond perfect thread length</td>
<td>round and buttress</td>
</tr>
<tr>
<td>Coupling face and</td>
<td>any metal protrusion that would prevent proper makeup</td>
<td>round and buttress</td>
</tr>
<tr>
<td>counterbore</td>
<td></td>
<td>round and buttress</td>
</tr>
</tbody>
</table>
Further investigation is required to determine which of these conditions exists. A small thread size is a serious condition because makeup and sealing depend on both thread members being the proper size.

An angular alignment problem may be indicated by shoulders on only one side for round threads. Angular misalignment (hooked threads) would cause makeup problems in the field.

Conclusion

Visual inspection of threads in oil wells has specific requirements and an understanding of these requirements along with careful attention to detail are needed for successful inspections.

References


Introduction to Guided Wave Testing

Reyaz Sabet-Sharghi*

One of the more recent applications introduced into the NDT practitioner’s tool kit, guided wave testing (GWT) has generated much interest over the past few years due to the level of coverage it affords to pipeline operators and the relative ease with which it can be applied. When applied to the screening of pipelines, it provides 100 percent volumetric coverage of an extended axial length of piping (tens to hundreds of feet depending on pipe configuration) in a relatively short period of time. When properly applied, it has proven to be of great use to pipeline operators wishing to establish the integrity of highly inaccessible sections of their lines.

When using GWT, all parties involved should be mindful that it is a screening tool sensitive to changes in cross section area and pipe stiffness. Although most GWT systems are able to provide the user with estimated wall-loss values for indications that have been detected, the need for accurate remaining wall values requires the use of a secondary method (typically conventional UT) to measure the actual remaining wall value at the indication.

Basic Guided Wave Theory

Ultrasonic bulk waves are widely known to only exist in two forms; shear and compressive.1 On the other hand, a large number of guided wave modes exist in pipes and plates. These are highly dispersive in nature as their velocity is a function of frequency. Guided wave testing on pipe is made possible by the controlled excitation of one (or more) of these wave forms that is then guided by the geometry of the pipe and travels along in the axial direction. These excited waveforms reflect from regions of change in the pipe stiffness or cross sectional area.

Early industrially available GWT systems excited the L(0,2) longitudinal wave. However, this waveform was found to interact with the fluids present in the pipe and was heavily attenuated by them. As a result, later system configurations used the T(0,1) torsional waveform which does not interact with the product in the pipe and, because it has a constant velocity independent of frequency, has the added benefit of being the only nondispersive guided wave. Despite these differences, much interest remains in possibly combining the two waveforms in a single test.2 A noteworthy characteristic of both the waveforms mentioned above is the fact that they are axisymmetric. This refers to the fact that the shape of the waveform at any axial location on the pipe is the same no matter where it is viewed around the circumference. When an axisymmetric waveform reflects from a feature that is also axisymmetric (such as a girth weld), the reflected wave maintains the characteristics of the incident wave. However, should the incident wave reflect off a feature that is not axisymmetric (not uniform

around the circumference of the pipe or localized to one area of the circumference such as a branch, drain vent or patch of corrosion), the incident waveform undergoes a mode conversion. The resulting reflected wave is a combination of the axisymmetric wave and converted modes of the guided wave. These mode converted waveforms are known as flexural modes and are used to identify the circumferential extent of a feature and “focus” on its location around the circumference.

Two separate approaches are used for exciting the T(0,1) wave by the three existing GWT equipment manufacturers; two use piezoelectric transducers mechanically coupled to the outside diameter (OD) of the pipe to introduce the mechanical displacement that excites the wave. The third manufacturer uses the magnetostrictive effect that causes a physical change in the dimension of ferromagnetic domains when an external alternating current (AC) magnetic field is applied to the material. The challenge for all three existing systems is to excite a pure T(0,1) mode. An inability to do so introduces background noise into the incident signal. This can make the collected data either difficult to interpret or completely useless. All three units operate in the pulse-echo mode, in which the system generates the intended T(0,1) waveform which travels along the axis of the pipe. It then switches to receive mode, waiting for any reflections that occur at locations of change in the cross sectional area or stiffness of the pipe. As a result of operating in this mode, the systems all have associated dead zones and near fields where detection capabilities are either nonexistent or severely reduced. As a result of the frequencies used in GWT (in the kHz range), the length of the dead zone and near field is far greater than that experienced in conventional UT. Typical dead zones can extend to approximately 0.5 m (1.6 ft) from the location of the transducer/excitior assembly with the near field extending another 1 m (3.2 ft) beyond that. These dimensions are critical when planning GWT work as they are important considerations affecting placement of the transducer/excitior assembly.

Basic System Components

Regardless of manufacturer, all GWT equipment includes these basic components. A transducer ring/excitior coil assembly is used to excite the guided wave within the pipe. In all cases, this assembly is uniquely prepared for the diameter of pipe to be tested. A controller unit contains the hardware necessary to drive the transducer ring/excitior. A laptop with control/analysis software for the system is included along with cabling to connect the components. The system is simple and relatively light weight, factors that make it very mobile. The equipment is typically transported in vehicles but can be easily shifted around on site by the technicians performing the work (Fig. 1).

---

*IESCO LLC; 3445 Kashiwa St.; Torrance, CA 90505; (310) 257-8222; <rsabet@iesconde.com>
Applications

Guided wave testing was initially developed in the late 1990s as a means for screening extended lengths of piping for corrosion under insulation (CUI). In the short period of time since its inception, the number of applications for which the method is currently being used has expanded rapidly.

At present, the most widely used application for the method is the testing of road crossing lines. Considered an advanced application, GWT of road crossings provides the operator with the opportunity to perform a rapid health check of the line with minimal civil and mechanical preparatory work. At a time when existing transmission and distribution networks are nearing the end of life expectancy and testing costs typically exceed $50,000 per crossing, GWT provides a proven cost effective means to reliably assess the integrity of the crossing. Guided wave testing of crossings should be performed in strict conformance to verified procedures by well-qualified and experienced technicians. Moreover, the configuration of the line as it enters and exits the crossing will dictate the location from which the tests are to be performed, and the extent to which civil and mechanical preparation of the test site such as excavations are required (Fig. 2).

In addition to road crossings, GWT is extensively used for screening above-ground and overhead pipe racks (can be insulated, bare or coated pipes), jetty loading lines, buried lines, sphere legs and soil-to-air interfaces. The common factor for its use in these applications is the ability of the method to reliably and rapidly screen extended lengths of sometimes inaccessible piping (Fig. 3).

Capabilities

Guided wave testing has the ability to test 100 percent of pipe volume over extended lengths. It is equally sensitive to inside diameter and outside diameter discontinuities though it should be noted that the system cannot differentiate between the two. Its use does not require removal of coatings or insulation from the entire length of line being tested, though these may have to be removed from the location where the transducer ring/exciton coil assembly is to be installed. Excavation of the complete length of buried piping to be tested is not required. Guided wave testing can be performed through a 90° elbow, saddle supports and other minor pipe features but is not reliable when directed through a 45° turn.

Limitations

Although guided wave testing is able to negotiate 90° testing procedures do not allow analysis of results beyond the second elbow due to the compounding effect of the signal mode conversion that occurs. This may impact testing strategies and feasibility of GWT usage in certain instances.

Historically, there has been a minimum sensitivity level quoted at five percent cross sectional area loss. Advances to most systems have resulted in this figure being reduced to one percent or less for certain applications. However, the screening nature of the method dictates that sensitivity limits must be understood for each application and clearly highlighted. As a result of the above, the method is not a
reliable means of detecting axially aligned cracks as these do not typically represent a large enough change in the pipe cross sectional area. External coatings and wraps that are adhered well to the pipe wall are typically attenuative and may result in a significant reduction of effective scan range.

Certification

At the time of publication of this article, no standardized independent training and certification scheme has been developed or adopted by any of the existing industry boards such as ASNT. Each manufacturer has developed and implemented a unique training and testing scheme that enables the technician to effectively operate their specific testing apparatus in the field and to analyze the resulting data. End user acceptance of these certification schemes has been mixed. Some pipeline operators accept certain certification schemes at face value; others require independent in-house verification of technician capabilities.

On the other hand, there has been recent activity by both the British Institute for NDT (BINDT) in their Personnel Certification in Non-Destructive Testing (PCN) program in Europe and ASNT in the United States aimed at establishing an industry-wide training and certification scheme for this method. ASNT is including “Level I, II & III Topical Outlines for Guided Wave Testing” in the 2011 edition of the ANSI/ASNT CP-105, ASNT Standard Topical Outlines for Qualification of Nondestructive Testing Personnel, and the 2011 ASNT Recommended Practice No. SNT-TC-1A will provide recommended training and experience times for Level I & II personnel in this test method. Moreover, other bodies such as NACE International, the American Society of Mechanical Engineers (ASME) and the American Petroleum Institute (API) are at varying stages of adopting their own guidelines and procedures for application of the method.

Regardless of the certification scheme adopted, the prospective practitioner should be aware of the fact that the method is one where technician input and interpretation are critical. The author’s personal experience for more than seven years has shown that intense training, experience and oversight are critical in light of the nature of the method and the production and financial implications of the analyzed results in certain applications where the line is inaccessible. For these reasons, any attempts to abbreviate training and the certification process would be highly detrimental to the end users that rely on GWT as the only means available for assessing the integrity of their transmission and distribution networks.

Expansion of Applications

Application of guided wave testing is not focused exclusively on pipe screening. It is an evolving field with several industry led areas of development. Tube testing is a field of guided wave testing that has been available for a few years, but is one that continues to face technical obstacles. Development has also included application of the method to twisted tube bundles in addition to the more traditional finned and non-finned straight and U-bend tubing. Some guided wave equipment manufacturers provide capabilities for transducer ring/excitor coil systems that can be permanently installed on any type of piping that requires monitoring as part of an end user’s asset management strategy.
Penetrant & Magnetic Particle Inspection Materials

- AMS-2644 & ISO Approved
- Batch to Batch Consistency
- Cost Effective - Best Value
- Reliable Expertise Since 1952

Available through authorized distributors

Manufactured and sold in Europe as Met-L-Chek® and Pen-Chek® by NDT Europa BV,
Damsluisweg 77, 1332 EB Almere, The Netherlands
Phone: +31 (0)36 5495000  Fax: +31 (0)36 5495011  Email: info@ndt-europa.nl

Met-L-Chek Company
1639 Euclid Street, Santa Monica, California 90404 U.S.A.
Phone: 310-450-1111  Fax: 310-452-4046  E-mail: info@met-l-chek.com
“Penetrant Professor” newsletter, msds and product data available on line at www.met-l-chek.com
Kianoush Samani began his NDT career right out of high school in his native country of Iran. Five years ago, he made a dramatic decision to move to the U.S., the “land of opportunity.” He wasn’t sure what to expect but the power of the Internet put him in touch with the right folks. Today, he’s enthusiastically pursuing a busy career using advanced techniques in ultrasonic testing.

Q: How did you begin your career in NDT?
A: I have been doing NDT now for 12 years. After I got my high school diploma, I started working for an inspection company as an X-ray technician. I realized after a couple of years, that if I wanted to improve my skills and move up, I had better get a university degree. So, while I was working, I started at the university for a degree as a welding engineer. After graduation I was involved in the review of NDT procedures on a construction project to ensure compliance with applicable codes and standards such as ASME, API, DIN, BS and AWS.

I got some of my certs back in Iran. The company I was working for sent me for training per ISO-9712, the European standard for certifying NDE personnel. About five years ago, I decided to come here to the U.S. I had no idea how to get a job related to NDE and my experience. I just searched online and found a Website — NDE.org — and uploaded my resume. After a couple of weeks, the owner of the company I work for now found my resume and called me. I was hired subsequent to an interview.

Q: What made you decide to come to the United States?
A: I was looking for better opportunities and this is the land of opportunity. It was a good move for me and my family.

Q: The opportunities you found here helped you grow professionally?
A: Yes, when I started working with my current employer, I was just working as a UT technician. And now, I’m a senior NDT technician with multiple certifications. I started as a UT technician and they sent me to a petroleum refinery in El Segundo. I got my API 510 and API 570 and continued working there for a couple of years as an RBI (risk based inspection) analyst. In 2007, my employer called me and asked if I wanted to join to the guided wave group. Until that time, I was only familiar with conventional NDE.

Q: Do you use guided wave UT exclusively now?
A: No, I’m also doing phased array, TOFD (time of flight diffraction) and advanced shear wave.

Q: Can you describe guided wave UT for us?
A: Guided wave UT is a screening tool. It’s not a detection tool like conventional UT or shear wave. It’s a long-range inspection technique for use on inaccessible areas such as buried pipes, road crossings, insulated pipes and elevated pipes to detect any corrosion/erosion or damage mechanisms. It’s called guided wave because the low frequency waves are guided along the length of the pipe by the pipe walls. So, if the pipe is bent, the sound travels around the bend. In conventional UT the sound travels straight, until reflected. In normal application, tens of meters of piping can be inspected from a single location. The guided wave transducer ring installed on the pipe sends the signal in both directions, positive and negative. Positive is usually in the product flow direction and negative is against the flow. Guided wave is a technique that is highly dependent on the operator. With insufficient training and experience, you can easily make mistakes and miss corrosion and defects. It’s not difficult but you have to have the right training.

Q: Does the product in the pipe affect the guided wave test results?
A: No, not really. It’s not going to affect the data. That’s another advantage of using guided wave; you don’t need to take the pipe out of service. The ring you install is dependent on the pipe condition and the features of the pipe — the diameter of the pipe, the product and temperature, the type of coating. We need to have a clear section of pipe for the ring location. If we have insulated pipe, we need to cut the insulation and strip two or three feet just for installing the ring on the pipe. This is important because some of the coatings, like epoxy coatings, affect the range. The transducers have to actually contact the pipe to send the signal along the pipe.

Q: Do environmental factors affect guided wave UT?
A: We typically work in very, very hot areas like Arabic countries and also we have projects in Alaska where we’ve been using...
guided wave at about −54 °C (−65 °F). You have to take extra precautions and be gentle with the equipment when you work in extreme conditions like these, but it's doable.

**Q:** What indications do you look for with guided wave UT?

**A:** We’re looking for internal or external metal loss caused by pitting, general corrosion, corrosion under insulation and etc.

**Q:** If something shows up during the screening with guided wave UT, what’s the next step? Do they dig it up?

**A:** Yes they do but that depends on the severity of the defect and also the service of the line. Usually, for minor to medium size defects, monitoring may be suggested.

**Q:** Is your work focused in a particular industry?

**A:** We can do guided wave in refineries, power plants — anywhere they are using pipelines.

**Q:** Do you work with a crew?

**A:** Guided wave is typically done with a two-man crew. I work with an assistant. In Alaska, we sometimes work with two or three crews. I’m usually working as the lead inspector or the lead technician and supervising the other crews too.

**Q:** Are there other NDT methods you’d like to learn more about?

**A:** Yes, eddy current. I’ve never had a chance to learn eddy current. I’m also waiting for a gap between projects to take my API 571 and 580 and NACE.

**Q:** Have you ever had an NDT mentor?

**A:** Oh, yes. For guided wave, I started by working in the field for a few months with my supervisor, Reyaz Sabet-Sharghi, as his assistant, just to get familiar with the technique and installation of the ring on the pipe. Every day he explained to me how guided wave worked and where we needed to focus for the critical points. After working with him for a few months, my employer sent me to the U.K. to work with the equipment manufacturer for training and certification. I passed my Level I and still Reyaz worked with me until he made sure I could go to the field and work as a lead technician.

**Q:** What’s the best career advice you’ve received?

**A:** When I came to the U.S., I took my shear wave class with Ron Nisbet, one of the best NDE Level III’s in our company. He encouraged me in class and told me what training and certification I needed to take. That’s the reason I took my API 510 and 570. His encouragement made me study harder and work harder to get more certs. I think that’s why I’m here now.

**Q:** What do you like the least about your job?

**A:** Being away from my family. I travel 70 to 80 percent of the time.

**Q:** What do you like the best about your job?

**A:** I think finding defects before they cause major problems is the part of the job that I like best.

**Q:** What advice would you offer to those considering careers in NDT?

**A:** Get the right training and then study hard. Knowledge is the key in this business.

You can reach Kia Samani by phone at (310) 357-7172 or by e-mail at <ksamani@iesconde.com>.
The NDT Technician: A Quarterly Publication for the NDT Practitioner (ISSN 1537-5919) is published quarterly by the American Society for Nondestructive Testing, Inc. The TNT mission is to provide information valuable to NDT practitioners and a platform for discussion of issues relevant to their profession.

ASNT exists to create a safer world by promoting the profession and technologies of nondestructive testing.

Copyright © 2010 by the American Society for Nondestructive Testing, Inc. ASNT is not responsible for the authenticity or accuracy of information herein. Published opinions and statements do not necessarily reflect the opinion of ASNT. Products or services that are advertised or mentioned do not carry the endorsement or recommendation of ASNT.


FYI continued from p 8

Integrity management program. Research in the field of long-term reliability is ongoing to determine the external variables that do not normally factor into typical one-time installation cases but may affect the operation and results of an “install and forget” system. Research is also ongoing into the application of GWT to aircraft, composites and other fields of structural health monitoring.

Conclusion

Guided wave testing has proven to be an effective means of performing rapid condition assessments on extended lengths of piping, and shows great promise in monitoring applications. Its rapid success has lead to a general consensus calling for development of an independent, industry-driven training and certification program to guarantee a minimum level of competency for field technicians.

References


