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FYI

3D Imaging for Nondestructive Testing – Part 2

by Matt Bellis

Introduction

This is the second in a series of articles on the use of 3D imaging for nondestructive testing. The first article discussed the basics of 3D imaging and focused on laser triangulation and structured light techniques. This article will focus on the application of 3D imaging in the assessment of corrosion on pipelines. In this application, 3D imaging will be used to identify areas of corrosion, determine the maximum amount of metal loss, extract the river bottom profile, and calculate the remaining strength of a pipeline.

Pipeline Maximum Safe Pressure Calculation

3D surface information, often referred to as 3D scans or 3D images, is an excellent technique for characterizing the shape of an object. In nondestructive testing applications, 3D surface information is used to detect and assess corrosion, gouges, cracks, dents, and other types of surface damage.

Both ASME and API define levels of inspection (ASME, 1991; Osage, 2003). For inspection of midstream piping, for example, a level one inspection of a corrosion pit can be performed by measuring the deepest part of the pit and the length of the pit. Based on these two measurements, the maximum safe operating pressure of the damaged pipeline can be calculated. This approach is based on Maxey's surface flaw equations (consider Figure 1a).

For undamaged pipe, Barlow’s formula can be used to calculate the maximum internal pressure that a pipe can withstand. The formula, depicted in Equation 1, requires knowledge of the pipe dimensions and material properties:

\[ P_{\text{burst}} = \frac{\sigma_o 2t}{D} \]

where

- \( P \) = burst pressure
- \( \sigma_o \) = allowable stress
- \( t \) = pipe wall thickness
- \( D \) = outside diameter of the pipe
Figure 1. Diagrams of pipes: (a) undamaged pipe; (b) damaged pipe with rectangular discontinuity; (c) damaged pipe with parabolic discontinuity; and (d) corrosion profile of damaged pipe (t is the pipe wall thickness, D is the outer diameter of the pipe, d is the depth of the discontinuity, and L is the length of the discontinuity).
In the 1960s, W.A. Maxey developed a technique for determining the maximum allowable pressure of a damaged pipe using Barlow's formula (Eiber et al., 1967; Eiber et al., 1968). Maxey recognized that for situations where failure was caused by hoop stress, the impact of surface flaws could be modeled as a reduction in the pipeline wall thickness over a cross-sectional area, as shown in Figure 1b. The research to follow (Kiefner et al., 1973; Kiefner and Vieth, 1989; Maxey et al., 1972) led to the following formula:

\[ P_{\text{burst}} = \frac{\sigma_s 2t}{D} \left( 1 - \frac{A}{A_0} \right) \left( 1 - \frac{A}{A_o M} \right) \]

where

- \( A = \text{area of damage} \)
- \( d = \text{depth of a discontinuity} \)
- \( A_o = L t \)
- \( M = \sqrt{1 + \frac{0.8 L^2}{D t}} \)

The factor \( M \), referred to as the bulging or folias factor, accounts for bulging that occurs over the area of metal loss.

The simplified discontinuity model shown in Figure 1b was replaced by a more complicated discontinuity model in the ASME B31G-1991 recommendation (ASME, 1991), but it still required only two measurements: maximum depth and length of the damaged area.

\[ P_{\text{burst}} = \frac{\sigma_s 2t}{D} \left( 1 - \frac{2d}{3t} \right) \left( 1 - \frac{2d}{3tM} \right) \]

where

- \( A = \frac{2}{3} dL \)
- \( \sigma_{\text{flow}} = 1.1 \text{SMYS} \)
- \( M = \sqrt{1 + \frac{0.8t^2}{Dt}} \)

The \( \text{AMSE B31G} \) technique, shown in Figure 1c, is a level one technique and is similar to the API level one technique used for assessing pipeline inside plants. Although acquisition of the required data is simple, the cross-sectional area of metal loss is generally overestimated, resulting in a burst pressure calculation that is much lower than the actual burst pressure.

Both ASME and API developed level two techniques to provide a more accurate calculation of the burst pressure. The level two techniques require a more sophisticated discontinuity description.

\[ P_{\text{burst}} = \frac{\sigma_s 2t}{D} \left( 1 - \frac{A}{A_o} \right) \left( 1 - \frac{A}{A_o M} \right) \]

where

- \( A = \text{area of damage} \)
- \( d = \text{depth of a discontinuity} \)
- \( A_o = L t \)
- \( M = \text{bulging stress magnification factor (folios factor)} \)

Level two techniques require the collection of data at points other than the deepest point. To manually collect the necessary data, technicians would typically draw a grid over the damaged infrastructure and measure the deepest point in each grid cell. Accurate assessment of large areas might require several hundred measurements. This is difficult to achieve with manual measurements. Figure 1d shows a corrosion profile, also referred to as a river bottom or critical profile.

Figure 2 is a 3D image of the surface of a liquid pipeline. The areas of corrosion are
readily apparent from the 3D image. Using analysis tools developed for metal loss assessment, the corrosion profile was extracted from the 3D surface information.

The corrosion profile, also known as the river bottom profile, was used as the basis for determining the actual cross-sectional area of damage. Unlike level one techniques, the impact of the discontinuity on the remaining strength pipe was not estimated using a rectangular or parabolic model. Instead, the exact area of damage was determined. Figure 3 compares the exact cross-sectional area of damage, as determined from the 3D surface information, to the estimated area of damage calculated using two level one techniques: the ASME B31G and the modified form of ASME B31G (0.85dL technique). The metal loss estimates for each technique are shown in Table 1.

The maximum safe pressure using each technique is also shown in Figure 3. The overestimation of the metal loss from both of the level one techniques results in an underestimation of the remaining strength of the pipe; this is reflected in the maximum safe operating pressures calculated using each technique.

The ASME level two technique, commonly referred to as the RSTRENG or effective area technique, has been validated extensively using burst tests. The API level two technique has also been validated using burst testing.

**Conclusion**

Assessing the impact of metal loss on damaged infrastructure is just one of many examples of the use of 3D imaging in the field of nondestructive testing. 3D imaging can also be used to assess the impact of mechanical damage on structures, to determine whether or not the surface roughness of a substrate will result in good coating adhesion, to compare as-operated conditions of infrastructure to the as-designed or as-built condition, and many other applications.

Laser scanning and structured light imaging have emerged as two technologies

**TABLE 1**

<table>
<thead>
<tr>
<th>Technique</th>
<th>Metal loss estimates</th>
</tr>
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<tbody>
<tr>
<td>Area model for ASME B31G-1991 (level one)</td>
<td>$A_{B31G} = (2/3)LD = 408 \text{ mm}^2$</td>
</tr>
<tr>
<td>Area model of 0.85dL (level one)</td>
<td>$A_{0.85dL} = 0.85dL = 520 \text{ mm}^2$</td>
</tr>
<tr>
<td>Area model RSTRENG Effective Area (level two)</td>
<td>$A_{E2} = 263 \text{ mm}^2$</td>
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**Figure 3.** Comparison of metal loss estimates for level one assessment techniques versus level two corrosion profile calculation.
capable of acquiring 3D surface information. Both technologies determine depth based on triangulation between a light source, the object under inspection, and a camera sensor. Both technologies have demonstrated accuracy, precision, and probabilities of detection sufficient to meet the demands of nondestructive testing.

**AUTHOR**

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**REFERENCES**


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**INBOX | Q&A**

**Q.**

I kind of know the process of applying for certifications. But would like to know the fastest way I can apply for PT and VT. I have all the hours, that’s not a problem. I just want to know the fast track to getting my application accepted.

**A.**

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Open this .pdf file and complete all the required documentation prior to entering the online application and save it to enter on the online application later. That way you will be ready with the required documentation during the application, as the online application will time out after 15 minutes of inactivity.

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Respectfully,

Don E. Didion III

NDT Technical Specialist/Certification Manager

ASNT International Service Center

Email questions for the “Inbox” to the editor: hcowans@asnt.org.
Editor’s Note: The contents of the Instagram account Sharing NDT and the YouTube channel NDT Video Library contain the opinions of their creators and do not necessarily reflect the opinion of ASNT. These accounts are not endorsed by or affiliated with ASNT.

Introduction
The emergence and advancement of new technology is a constant presence in the NDT industry, and keeping up with these trends is often recommended to technicians who want to further their careers and maximize their experience. But change isn’t limited to the equipment or techniques used by practitioners in a lab or on a job site; technology advancement can have an effect on other areas of career development, as well, and that includes the increasing value and ubiquity of social media. Engaging with social media can help technicians connect with other members of their industry, learn more about new opportunities, and expand their knowledge of NDT methods and techniques. But for technicians new to social media, or at least new to utilizing it for their careers, it can be hard to know where to begin.

“Social media” can seem like an abstract concept, but it’s really just a way of interacting and communicating with one’s personal and professional network. Some platforms, such as Facebook and Twitter, are more focused on personal relationships. In these spaces, users will often connect with people and topics that might be outside of the scope of their career. In contrast, more career-focused spaces like LinkedIn should be treated as more of a professional environment, where users connect with colleagues and other members of their industry. In many ways, social media is a space where individuals, brands, and organizations interact and intersect, and navigating this can be a challenge. But for those in the NDT industry, these intersections provide many opportunities to stay connected and involved in the industry, as well.

Benefits of Social Media Use
Social media can often be thought of as frivolous, but utilizing it well can have many advantages for a technician. One way social media platforms can be useful is that they can provide a great opportunity for educational experiences that are unique supplements to what a technician can learn in a textbook or a classroom.

When Peter Pelayo started his NDT-focused blog on Instagram, SharingNDT, it was with this concept of education in mind. Instagram, an image-focused platform that allows users to upload and share photographs to their followers, struck Pelayo as the perfect place to showcase the work of NDT practitioners. The blog has over 900 followers as of 5 March 2018.

The project was inspired by Pelayo’s own desire to learn more about methods and techniques of NDT that he might not encounter in his day-to-day work. “Working in an aerospace laboratory environment with only two methods, I knew there was a lot to learn outside of the classroom and textbooks,” he said. “Seeing and talking to technicians about their work helps strengthen my understanding in this field outside of my normal working environment. I figured if this would help me, it would also help other students and technicians in the NDT field.”

Marybeth Miceli, cofounder of we-NDT Marketing, also noted the opportunity that social media provides for
technicians to learn from one another, especially when specific questions come up. Social media can allow a technician to utilize a broader network of resources: “Since an NDTer’s work hours vary wildly sometimes, use of social media connects technicians to each other when it is convenient for them,” Miceli said.

These connections provide deeper access to the information a technician might need. “Odds are, someone else has come across a similar problem and come up with a workaround. Sharing that on-the-job experience and knowledge with each other is priceless,” Miceli said. “Technicians can speak directly to NDT engineers or asset owners about challenges and ways to come up with solutions. It helps each person see what challenges the other faces and how to solve them together.”

Dana Sims, the public relations and brand manager at the ASNT International Service Center, notes this as being something she commonly sees on ASNT’s LinkedIn group, which can be found by searching for “American Society for Nondestructive Testing” in LinkedIn’s search bar under the category “Groups.” Users who are a part of this group will often post technical questions, utilizing the resource of over 20,000 fellow group members of varying backgrounds that can provide their perspective and expertise to answer the question, Sims said. Having access to a broad network of information from industry members all over the world is a huge advantage to technicians that want to expand their knowledge base. (More information about utilizing LinkedIn groups will be discussed in Part Two of this article.)

In the case of Pelayo’s blog, he has already seen the results of his increased network of information. “Although I had a general concept of welding, ultrasonic testing, eddy current testing, and portable inspection, I couldn’t keep a conversation going on the subject. Because other technicians have shared their expertise, I don’t feel like I’m in the dark on these subjects because I’ve learned from them in the community,” Pelayo said.

Pratik Wagh began his YouTube channel, NDT Video Library, with the same focus on utilizing social media for educational purposes. “I had access to some of the best players in the field of NDT (through my job, through conferences, through LinkedIn groups, etc.), and I realized that a lot of my friends, students, and fellow teachers didn’t. I felt like I need to share my learnings with my community so that everyone can benefit from it,” Wagh said. His channel now has over 700 subscribers, and his videos often feature back-and-forth conversations in the comment sections, sometimes even with follow-up videos, making the space “almost like video FAQs about NDT,” he notes.

“My dream is that every teacher and student has access to my channel and they learn NDT in a fun way,” Wagh said.

Spreading knowledge about NDT isn’t just beneficial to those already in the field; it can be a great way to increase awareness of the industry. Miceli noted that in addition to the connections made
between NDT technicians, “I also like to think that social media helps to get the word out about the importance of NDT in our world.”

“One thing I started a few years ago was the #whyINDT trend to talk about the importance of NDT in our society and why each of us is in the industry. I felt that it really connected us all across the globe. Social media is able to do that like no other publication or platform,” Miceli said.

For Pelayo, this increasing awareness is another goal of his blog. “One of my teachers told me that the NDT department is usually buried deep inside a company where nobody can see it, which is why NDT is a mystery for so many people. I want to change that and give NDT the exposure it needs,” he said.

The opportunity to expand knowledge of NDT, both among technicians and to the public, is an important benefit of engaging in a social media community, but it’s not the only benefit. Social media also provides an opportunity to network, which can lead to connections that can further a technician’s career. “Social media can connect people to their next position or their next hire,” Miceli said.

Through running his blog, Pelayo has experienced the power of social media connections firsthand. “[T]he social reach has increased to where I’m somewhat synonymous with the blog and vice versa,” he said. This integration has proven useful in Pelayo’s own career. “When I’ve made consulting visits, the blog provides a platform to keep the communication going with the NDT techs that I meet out in the field,” he said.

Miceli has also seen the direct impact that social media usage has had in her career. “For years I was known as the Social Media Lady. Everyone knew who I was because they would see my posts on LinkedIn, Facebook, and Twitter. Multiple times I have connected with people on LinkedIn who have eventually turned into clients, as a direct result of seeing me sharing knowledge on these platforms,” she said.

Navigating Social Media Platforms for NDT

For someone new to social media, getting started can be overwhelming. Even those who are already active on social media in their personal lives might not know how to get the most out of their engagement with it professionally. Luckily, social media platforms are available to anyone, and there are some simple ways to build an online presence.

While there are myriad websites and apps that make up the social media landscape, it can help to focus on those that are the most popular or useful within the industry. For example, “[i]n the NDT industry, LinkedIn rules,” Miceli said. LinkedIn is a social media site devoted to professional networking that allows users to create a profile and connect with companies and colleagues in their industry (LinkedIn, 2018). For novices to the site, Miceli recommends setting up a profile “that describes what you bring to a job.” Users should also find out if the company they work for has a LinkedIn page that they can connect with; if not, Miceli recommends setting one up to better reach out to colleagues.

For another social media experience uniquely suited to the NDT field, interested technicians can also check out Instagram. Instagram is a social media community devoted to “visual storytelling” (Instagram, 2018). Instagram users can upload, edit, and share captioned photographs with their followers, who can then like or comment on these photographs. Sims noted that Instagram can be a great way to showcase the most exciting parts of NDT. “You can go look at a page of fabulous pictures […] it makes you part of the action,” she said.
For Pelayo, starting his blog on an image-based platform made perfect sense. “The kinds of content I showcase on SharingNDT are visual representations of what NDT is all about. It can be a picture of the technician inspecting, studying, or literally standing in the middle of the ocean on an oilrig platform, hanging from a rope in a refinery, or on the side of ship in a port,” Pelayo said.

The potential of using video for accessible education is what drew Wagh to YouTube, a platform that allows creators to post videos. Users who don’t want to create their own content can still use the platform to “subscribe” to the content creators they are interested in and receive notifications when new videos are published (YouTube, 2018). Wagh saw an opportunity to utilize YouTube for NDT educational outreach.

“I couldn’t find any YouTube channel in NDT that explains concepts using animations. So I decided to take a crash course in making simple animations, and I am designing videos and documenting my journey as I explore the world of NDT myself,” Wagh said. The accessibility of video content made available by YouTube is something that Wagh sees as beneficial to NDT students.

“Throughout my teaching career, I realized that almost everyone is a visual learner. And making cool, short animation videos helped my students understand faster. And then since the videos are available on YouTube for free, they can refresh their memory with what they learned in class, anytime they want in the field,” Wagh said.

While these platforms might showcase some highlights for the NDT industry, there are ways to connect with NDT across any platform. ASNT, for example, has social media pages on Facebook and Twitter along with YouTube, LinkedIn, and Instagram. With so many different platforms to choose from, it’s important to know how to optimize time spent on social media. In the next part of this article, we’ll explore how to get the most out of these various platforms to build an online presence and connect with professional communities.

ACKNOWLEDGMENTS
The author would like to extend thanks to Marybeth Miceli, Peter Pelayo, Dana Sims, and Pratik Wagh for sharing their insights and experiences.

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Correction

On page 8 of the January 2018 issue of The NDT Technician, a reference in the FYI article “3D Imaging for Nondestructive Testing” by Matt Bellis was incorrectly attributed to Research and Markets. The correct reference is below. The NDT Technician regrets this error.

Bradley W. Brandt is the Lead NDT Specialist at Roush Yates Engines, which manufactures and supports engines for NASCAR and other racing organizations. In 2017, an engine that had been inspected by Brandt and his team went on to win the Daytona 500. Brandt is the section treasurer of the Charlotte Section of ASNT and a graduate of the NDE program of Central Piedmont Community College.

Q. How did you first become involved in NDT?
A. I was working as a machinist by trade, and I had been doing that for a number of years, and I decided to move on, finish getting an education—I felt like an education was probably an important thing to get—so I just started looking through the programs at the local community college, Central Piedmont Community College, and found that they had an NDE program [...] I am a hands-on type of person, so after looking into that particular program, it piqued my interest. So, I did a little research, went in and spoke with the instructors and some of the students there, and it was a really good group of people. So I started taking some courses, and from there got my degree.

[For my current position], I received two years of on-the-job training from the NDT tech that was at Roush Yates before me. His name was Jerry Smith, and he had 20 years of NDT experience, most of which was with the [US] Navy. His mentoring helped me in areas that my training could not have [...] anyone going into NDT/NDE at entry level will likely have a knowledgeable mentor when they get there.

Q. What was it like transitioning from machinist to NDT technician?
A. It was actually fairly difficult, due to the fact that I was already in a career and I didn’t have much support outside of my wife. Just having to work and go to school for a short period of time, it was pretty difficult to try to get through the course load. I think that it’s difficult for anybody in that situation. Toward the end, I was able to really spend time in coursework; the first half of the schooling was a little more basic, and the second half was really in-depth with some of the heavier course material.

Q. What inspired you to want to go back to school, especially with already being in a career?
A. I just felt like I never completed school; I felt like that was something that I was interested in, having a goal to continue to grow and move forward. I was just excited to challenge myself I guess, to move to a different industry.

Q. Can you tell me more about your current position? What does a typical day look like?
A. During the race season, we have a lot of engines that are getting turned around to re-race. So some of the components in the engine will get used one time, and some of them will have a lifespan that allows them to be used multiple times. So when an engine comes back from the racetrack, it gets torn down, cleaned, and brought to me, and those certain components from that engine will be NDT’ed and gone through. We look for cracks and uneven wear and things that can cause catastrophic failure at the racetrack. Then we turn those parts over and they get reused and rebuilt.
Q. What are some things that your work in NDT prevents for these race cars?
A. Say we weren’t doing NDT on some of these engine components. Visually, someone that’s rebuilding the engine might not see damage or cracks, and if it goes into the engine again and goes out into service, those components could cause a catastrophic failure—for a person that’s running for a race win, or a championship even, those components could prevent them from reaching that goal.

Q. What methods do you use most often in your inspections?
A. Most often we are using magnetic particle testing, liquid penetrant testing, and visual testing, and we use those on a daily basis. It’s about even across the board with all three. Everything that we do MT and PT on, we also do a visual [test] on to check for wear. Some of the stuff that we do MT and PT on, after the part’s cleaned post inspection, we try to do a visual analysis of it as well.

Q. So you often use multiple methods for one inspection?
A. Yes, for one inspection, it’s usually multiple methods. Anything that we do magnetic particle testing on, or liquid penetrant testing on, we also do visual on. The visual test is more to see the wear in the part, rather than finding the cracks or discontinuities.

Q. What’s been your most interesting application of NDT?
A. For me, I think the most interesting component that we inspect would be the engine blocks. In NDT school, I didn’t really realize that things that are as large as engine blocks could be processed using magnetic particle testing. It’s just interesting the way we’re able to use magnetic particle to do something that large; I knew it was possible, but I never really saw an application that large in my education.

Q. What are some of the biggest challenges that you encounter?
A. A lot of times we run into quick engine turnarounds, so we’ll have an engine that needs to be processed quickly (or a number of engines that need to be processed quickly), and it’s challenging to maintain a level of accuracy while trying to process parts quickly. I think one of the toughest challenges is the ability to do that. The most important thing for me is accuracy, but in the industry that we’re in, speed is everything really, so trying to maintain a safe speed, so to speak, is challenging. But at the same time, it’s exciting.

Q. What has been a highlight of working in this industry for you?
A. One of the greatest accomplishments: last year we won the 2017 Daytona 500. Knowing that I was the NDT inspector that sent the engine components back to the racetrack and said, “Hey, these components are okay to re-run,” and then that engine in turn went to the racetrack and won that prestigious of a race—knowing that I was a part of that, it’s pretty special. And just being a part of a sport, being a part of something greater, it’s kind of neat. It’s pretty neat to share what I do. It’s easier to share about NDT when it’s something interesting, as well, [since] it’s difficult for people to understand NDT.

Q. So you find that NDT outreach is a little easier because what you do is exciting for people to hear about?
A. Yeah, when somebody says, “What do you do for a living?” I can say, “I work in NASCAR.” And then they can ask me what I do in the engine shop, and I can explain what NDT is, and I can explain how it’s used. For some people, it might be a little easier to relate to and to understand. It’s just a good platform that I can use to encourage people to be interested in NDT.

Q. Do you have experience mentoring people into this career?
A. When I was in school, the community college in Charlotte that I was a part of had a student section of ASNT, and I was the chair of that student section. [For] the classes of students that were coming in, I was able to speak to them, to encourage them. That was kind of neat at the time: I wasn’t in racing, but was able to encourage people and my classmates all the same. Since I’ve started in this position, I’ve been able to, through ASNT, share my story with some of the students at the STEM workshop. Last fall, I went to the conference in Nashville and shared some of what I do with students from Nashville. So that was exciting, to give them something to relate to in NDT as well.

Q. Have you always been a fan of NASCAR?
A. Yeah, I grew up in a family that enjoyed going to the local short tracks on Friday and Saturday nights. We’d spend time at the racetracks in Michigan, and we knew and had family friends that raced cars at the local tracks, so as a young boy I saw what racing was, and I thought it was neat. Through my teenage years it was the same thing: I was into cars and watched a lot of NASCAR. I spent a lot of time watching it and following it. I never thought I’d have the opportunity to be a part of it, but how everything came together, it put me in that place.

Q. Do you have any advice for technicians, particularly in regards to going back to school and getting a degree?
A. Looking back at the way that I was involved, there’s a number of options. But I would first start out and do some research on the methods and on the industries that NDT serves. And then if there’s a method that you particularly are interested in, go take some courses in that method. There are training centers and there are a number of community colleges, and even universities, that offer NDT courses in certain methods, and start out with just getting into the methods that you want to get into. You don’t necessarily need the associate’s degree. It’s great to have that, and it’s a great way to get started in industry, but I learned a lot of methods and unless I plan on using all those methods, [I might have preferred to research] more on what I may have been more interested in, and spent a lot more time studying and training in that particular method. And there are a lot of companies that have opportunities to start out at entry-level. If you’re willing to get dirty, and to start out at the lower level, a lot of those companies will help you get training.
PRACTITIONER PROFILE | Bradley W. Brandt

Anybody starting out in this industry, another good thing to remember is to stay involved with the local sections of ASNT. There’s a lot of support at places like that. At monthly meetings, I get a lot of encouragement and people that I can ask questions. If I have issues with parts, I can ask them, “What do you think about this?” or “What do you think about that?” I would just encourage people to be involved. It is a small sacrifice, but it’s definitely worth it to keep yourself up-to-date the best you can. Continue to learn and grow.

Q. Can you tell me more about your experience being involved with your ASNT section?

A. Throughout my time at school, just being involved with the North Carolina Student Section put me in contact with everyone that’s involved in the Charlotte Section. Just through building those relationships, they kind of encouraged me to stay involved at that level, and being able to be involved, they also encouraged me to help out the best that I could. I didn’t realize that most sections have a large number of members, but the percentage of members who actually attend the meetings is a lot lower. So, it’s a challenge to get people involved, but I enjoy being a part of that. It kind of connects me to industries across the board, and it can keep me fresh on NDT all over the place and the changes that are happening in the industry.

Q. What are your current professional goals? Are there any methods that you would like to learn more about?

A. I would love to get involved with other methods and to integrate other methods into our routine, things that can help speed up the process here and even give us more accuracy. Over time, if I can research some of those methods and applications for us, I think that would be a great start. Also, to be certified would be a good, solid career goal. They don’t require certification where I’m at, but just to keep my mind continually moving forward and continually working toward professional goals is always a positive thing.

Q. How has NDT changed during your career, and what do you see as some of the growth areas?

A. Just in the past five years, growth in technology has driven so much of this industry. Computer technology especially has led to growth in thermography, growth in ultrasound, radiography, eddy current; you name it. The ability to use those applications in remote locations and to send that inspection or to send that result to anyone that needs to get it—I think there’s been a massive growth and I think there’s going to continue to be. The technology drives it, and I think ASNT does a really good job of keeping up with that.

Bradley W. Brandt can be reached at bbrandt@roushyates.com.
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High Temperature Penetrant Indications

Dry Method MPI Materials

Fluorescent & Visible Wet Method MPI

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