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THE CHANGING ROLE OF THE UNIT INSPECTOR

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THE CHANGING ROLE OF THE UNIT INSPECTOR

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Let's imagine that you have just been hired or promoted to be an inspector for your organization. If you did not realize it yet, you are now a manager of people. Like most new managers, you were selected because of your strong performance in your previous role, but have very little, if any, management training. You will likely have many lessons to learn as you transition into this new role. Welcome to the world of management. Instead of being one of us, you are now one of them, but as a newly appointed member of them, you may have questions about what your new role entails.

One difficulty new company inspectors typically have is becoming comfortable in their new role. This is due to the fact that they have received little guidance about where they fit in with the "team." Where are they on the organization chart? They know who they report to, but may not know what decisions are theirs to make and exactly what they are expected to bring to the team. Remember that this new inspector may have been taking direction yesterday and is now expected to give direction tomorrow.

The transition from us to them can be a tricky thing. You are no longer just responsible for completing work that was delegated to you. You now have to hold others accountable for completing their work, and the leadership team expects you to understand and uphold the company's goals, priorities, and long-term vision. The people who work under you expect you to make sure their work environment is safe, productive, fair, and reasonably comfortable. You are now responsible for a team.

You must make sure that your team continues to function correctly, and completes quality work on schedule. You must pay attention to interpersonal dynamics that, if ignored, could be counterproductive to getting the job done. You are no longer able to consider helping with a problem that is not normally in your job description as "going above and beyond." It is now your job to make sure that your unit and your team is successful, no matter what roadblocks you may encounter. It can be overwhelming, whether you are making the transition within a place you have worked for years or starting fresh at a new organization.

In addition to these management skills, you are now also seen as the subject matter expert (SME) concerning all aspects of your responsibilities. Use every tool at your disposal to gain the knowledge you will need to succeed in your new role. Your success during this transition will be a strong indicator of how successful you will be in your career as you move forward. But take heart; it is still just another day in the office, and there are many things you can do to make the transition easier if you are willing to watch, listen, and learn.

While many of these "soft skills" (non-technical) are better learned on the job, it can be helpful to take a look at the expectations

placed on inspectors throughout the years, in order to gain a better understanding of how we might be successful in our new role. Here is a brief look at how the role of the Unit Inspector has evolved over the last forty years.

40+ YEARS AGO

- Repairs were made according to the best practices as defined by each individual company. API 510 came out in July of 1958, and other codes such as API 570 and 653 were not yet written.
- At that time, there were virtually no contract inspectors; they were all direct.
- Technology was not as precise. We were still using calipers to measure wall thickness. Ultrasonics and radiography were in use, but accurate wall thickness measurement techniques were approximate, at best.
- Documentation was not demanding, because the same inspector had ownership of his equipment and therefore entered and knew the condition of his equipment as verified by visual exam. Typical documentation was brief, and acceptable records consisted of descriptions such as:
 - ✓ "Looks good. Should last a long time."
 - ✓ "Next opportunity—open, clean, and inspect." (Why—what is your mechanical integrity issue that is driving the recommendation of open the "next opportunity?" What does next opportunity mean? Tomorrow? Next week? Thirty years from today?)
 - ✓ "No serious corrosion noted." (What exactly does this mean? Where is the line between serious and not serious?)
- Turnarounds were about every two years, as this provided time for inspection of the unknown. Almost every major piece of equipment was internally inspected during every turnaround for a visual.
- At the time, there were no real "certified" inspectors on run and maintain. While the API-510 Inspection Code has been around since 1958, it was not widely used and was recognized by few, if any jurisdictions.
- There was no real Maintenance Vessel Code. There was the new construction code ASME Section VIII (since we are talking about Vessel Code), and The National Board Inspection Code, which was written primarily for boiler repairs. Then API conceived the idea to write a vessel maintenance code and a certification policy.

Note: API Certifications were driven by the OSHA audits that were conducted in the late 1980's. Back then, there were



several accidents that happened close together that resulted in deaths, and OSHA audits revealed that process safety had room for improvement.

- The first API certification tests were given in late 1989. A total of ten people took the first test, with four passing.

30+ YEARS AGO

- There were minimal contract inspectors.
- There were minimal NDT (nondestructive testing) crews.
- NDE Technology was developing, but still very new.
- Documentation was still in the pen and paper mode.
- Time between Turnarounds was being increased to 3 and 4 years.
- API 510 began testing for certification in 1989.

20+ YEARS AGO

- API repair codes, 653 (1991) and 570 (1993) were released.
- API 653 began testing for certification in 1992.
- API 570 began testing for certification in 1995.
- Inspection job interviews focused on whether candidates knew the names of equipment pieces.

10+ YEARS AGO

- Inspectors were API certified in 510, 570, and 653.
- NDE was an integral part of our life, and the desire for more NDE had driven technology.
- Contract Inspectors were a dominant part of our industry, and would work a project and then leave. This dramatically

changed the need for requirements for maintaining adequate historical data.

- Improved technology meant that inspectors could attain more data that was more accurate at a faster rate.
- API 580 - Risk Based Inspection (RBI) was introduced. The first edition came out in May 2002.
- Time between Turnarounds was generally being increased to 5 and 6 years.
- The first edition of API 571 was released in December 2003.
- Inspection job interviews included the familiarity with computers and typing skills.

Note: Back in 1990, traditional inspectors were told that if they did not learn how to use a computer, they would be considered illiterate in ten years. Excel spreadsheets very quickly became standard for weld mapping and NDE tracking, and word processors were introduced for tracking detailed inspection narratives.

INSPECTORS TODAY

Today, new NDE technologies have caused additional demands on Inspectors to help keep up with the fast paced R&D of new technologies. So in the past 40 years, inspection went from being totally discovery work to being primarily projected work. Major inspections went from reporting what has happened, to projecting what will happen.

“Quality begins as a mindset, must be pervasive throughout manufacturing, and must be assessed IN SITU not POST FACTO”.

The factors that changed were time and public attitude. Leaks, fires, and spills were no longer acceptable in the eyes of the public, nor to government regulatory agencies. As a result, inspections shifted from a reactive approach to a proactive approach. In today's operating environment, it is not enough to base future inspection plans solely on prior recorded/known history of equipment condition. Now, a fundamental understanding of the process/operating conditions and resulting damage mechanisms is required in order to establish and maintain an inspection program that yields the highest probability of detecting potential damage. Inspection plans must be dynamic and account for changing process conditions and current equipment condition. An essential step is to frequently rationalize and align the developed degradation knowledge base of the materials of construction with the operation of the equipment, its inspection history, measured corrosion rates, and known industry problems. With the move to RBI programs, it is even more vital to identify and track process information that validates or might cause changes to existing inspection plans.

As hockey legend Wayne Gretzky says,

"Skate where the puck is going, not where it's been."

Attaining API certifications requires years of specific documented practical industry experience. Many people attain this by "growing up" as a technician on the NDE side of the business. In this role, technicians identify and quantify damage that has happened, and they are doing this strictly at the direction of an inspector. Many others attain their initial field experience as welders, pipefitters, craft foremen, etc., where they are often repairing what inspection has already found. Upon attaining your API certifications and landing a job as a company inspector, you are suddenly compelled to projecting what will happen. It is a total change in mindset that requires the new inspector to change positions almost overnight. After years and years of training to collect and report the most accurate data, as an inspector, you must determine just what to do with that data.

"The best way to predict the future is to control it."

"The majority of problems encountered arise from the lack of application of existing knowledge, not the lack of knowledge."

So here are the facts. The Mechanical Integrity business that our API Inspectors work in is growing in technology and demand. There is an increasing request both from tech companies and non-tech companies for highly-skilled inspectors to create, build, and maintain high quality systems at various levels, from new construction to end of equipment life. Compounding this issue is the lack of engineers. If you stay abreast of trends, there is currently a huge gap in the demand and supply of qualified engineers. As a result, inspectors are filling more technical job duties that were traditionally performed by technical savvy engineers.

Pressure equipment inspectors also need "soft" skills in various non-mechanical integrity knowledge areas in order to optimize their performance. This may include: communication skills,

report writing (legal and technical), leadership skills, computer skills, organizational and time utilization skills. Intellectual honesty and intellectual humility have always been paramount. It is helpful to keep in mind that nobody knows everything; everybody knows something you don't and you know something they don't. It does not take long for your colleagues to know after asking a few questions that you may not know what you are talking about. If you do not know something, the correct answer is, "I don't know but I will find out and get back to you." Then, the most important part is keeping your word. Most of us have two ears, two eyes, and one mouth. Look and listen twice as much as you talk. The best thing we have going for an industry inspector is one's integrity. That cannot be taken away, but you can certainly give it away. About the only thing obvious to others is your credibility, which you can lose due to a lack of intellectual honesty. Have confidence in what you know, recognize what you don't know, and always be conscientious of the "I don't know what I don't know" pitfalls of technical evaluations and recommendations.

TECHNOLOGY AND THE INSPECTOR TODAY

So let's get back to technology and what an inspector does with data. Once you become a Unit Inspector, you are now performing duties such as:

- Managing and maintaining huge databases. Databases are critical to organizations for storing and retrieving key information. People throughout the organization depend on them to be easy to use, reliable, and accurate to accomplish daily tasks and meet business goals.
- Insuring accuracy of data going into databases.
- Using math to manage statistics and evaluate probabilities.

Job requirements are also much more detail orientated. Data that you record and produce today will be used for years to come. Remember the saying, "The devil is in the details," meaning that small things that are overlooked in plans and schemes can cause serious problems later on. Looking out for the small details in life is generally a good practice since it greatly reduces the risk of surprise. While some surprises are pleasant, those planned by the devil are generally not, so it pays to avoid pitfalls which are preventable by remembering that the devil is in the details. This behavior is also often rewarded by the world in general, as you will gain a reputation for being thoughtful, meticulous, and precise.

When considering job duties, reflect on the needs of conducting a Fitness-for-Service (FFS) assessment or RBI study. It is important to determine the detailed cause(s) of the damage or deterioration observed, or anticipated, and the likelihood and degree of further damage that might occur in the future. Flaws and damage that are discovered during an in-service inspection can be the result of a pre-existing condition before the component entered service and/or could be service-induced. The root causes of deterioration could be due to inadequate design considerations including materials selection and design details, and/or interaction with aggressive environments/conditions that the equipment is subjected to during normal service or during transient periods. As a Unit Inspector, you are responsible for being able to collect enough data to enable yourself or others to make informed

Lack of knowledge and understanding of damage mechanisms is beginning to make the “visual” inspector less significant in the inspection and evaluation process. If you don’t know what you are looking for and what it looks like, what ARE you inspecting?

- Do you extinguish fires, or prevent them?
- Are you a corrosion technician or a Corrosion Professional?

technical decisions.

CONCLUSION

In this article we have looked at how the role of an Inspector has changed over the last 40 years, and how the necessary skills for success have adapted as technology and standardization have become part of the way of life for Inspectors. We have discussed how the Inspector has transitioned from an employee that 40 years ago was just capturing and recording data, into a technical analyst that is now responsible for managing and maintaining

huge databases of complex data to project what will happen in the future. The Inspector is responsible for using this data to achieve the overall goals of safety, environment protection, mechanical integrity (MI), and optimal production. This person must also be clever and have the ability to offer alternative methods to achieve the overall goals.

When you are a Unit Inspector, it can sometimes feel like the weight of the world is resting on your shoulders. I encourage you to remember to leave the office behind every now and then and recharge your batteries. If you find yourself spending all of your time at home thinking or talking about work, make a conscious effort to refocus. A well-rounded, rested, recharged employee who has outside interests and goals in life is usually more productive and creative than an embittered workaholic. The same goes for managers and supervisors. Work hard, and play hard too!

As new NDE technology is developed, this will cause additional demands on inspectors, but will also enable them to reduce risk and make better and more informed decisions about the future condition of our pressure equipment. As such, our future inspectors 40 years from now will be very technically savvy. For those young inspectors out there - remember to build strong technical skills. This will save you time, increase your income, and enable you to extract the most bang-per-buck. Learning these technical skills is essential for your career development. It will help you grow professionally in your career, provide value to both your company and the industry as a whole, and will no doubt help increase your financial security. ■

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