

Challenges and Future Directions in Nondestructive Examination

Maintaining NDE Reliability

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Content

- Introduction
- Challenges
- Industry Actions Addressing NDE Reliability
- Summary
- Questions

2



Introduction

- Improving NDE Reliability is a significant element of the industry NDE Program
- Several of the key challenges affecting NDE reliability will be discussed
- Recent Industry actions addressing NDE reliability will be presented

3



Challenges

- Aging Workforce
 - New examiners are less experienced
- Maintaining Examiner Proficiency
 - Many qualifications
- Advances in NDE Technology
 - Conventional Ultrasonic Testing (UT) to Phase Array UT
 - Non-encoded to encoded examinations
- Complex Examinations
 - Dissimilar metal welds, weld overlay, thermal fatigue, etc.
- Human Factors
 - Short outages
 - Contract workforce

4



Industry Actions Addressing NDE Reliability

- Aging Workforce (transfer of knowledge and training of examiners)
 - Site Level III and In-Service Inspection Coordinator - Succession Planning Tool
 - Hands-On Demonstration Mentoring Tool
 - UT Operator Training for Weld Overlay Examination
 - UT Operator Training for Stress Corrosion Cracking (SCC)

5



Industry Actions Addressing NDE Reliability

- Maintaining Examiner Proficiency
 - UT Hands-on-Practice Guideline
 - UT Operator Training for Weld Overlay Examination
 - Just-in-Time training (JIT)
 - Thermal fatigue and weld overlay mockups for JIT prior to performing examinations
 - Virtual UT Mockups
 - UT Simulator Technology

6



Industry Actions Addressing NDE Reliability

- Advances in NDE Technology
 - Development of ultrasonic phased array piping techniques for dissimilar metal welds
 - Advances in phased array beam skewing technologies
 - Alternatives to automated scanners for ultrasonic data collection
 - Evaluation of ultrasonic simulation software

7



Industry Actions Addressing NDE Reliability

- Complex Examinations
 - Optimization of NDE requirements
 - Evaluating Code requirements and changing where appropriate
 - Focus efforts and resources where needed
 - Dissimilar Metal Weld Ultrasonic Examination Guideline
 - Planning and execution of examinations
 - Encoded UT without robotics

8



Industry Actions Addressing NDE Reliability

- Human Factors
 - UT procedure optimization and standardization
 - Industry Best Practices for Performing Reliable NDE
 - Examination planning, scheduling, and staffing
 - Examiner preparation, just-in-time training and practice
 - NDE focused pre-job brief, oversight, and post-job debrief
 - Data review and examination closeout
 - UT Team Scanning Assessment and Guidance

9



Summary

- Reliable NDE is essential for an effective ISI Program
- Many NDE reliability improvements have been made over the last several years
- The Industry continues to prioritize research to improve NDE reliability

10



Questions?

11


