



Areas of NRC Interest in Nondestructive Examinations

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Regulatory Information Conference
March 13, 2018



Challenges to NDE Evaluations

- NDE Technology is changing rapidly
- We have a better understanding of human performance and human factors than in the 1970s
- Some methods and processes used since the 1970s of achieving a goal may not be the most efficient

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Technical Gaps in Nondestructive Examinations

- Human Factors
- Ultrasonic Modeling
- Effects of Incomplete Inspection Coverage
- Training and Practice

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Human Factors in NDE

- Poor Human Factors can cause a skilled inspector with an effective inspection procedure to fail
- HF best practices are not well-understood in the NDE world
- NRR needs to be informed about HF issues to assure that any regulatory actions are effective

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Ultrasonic Modeling

- Ultrasonic Modeling programs are very good at producing sound-field maps
- There is a poor understanding as to how well these sound field maps and calculated responses correlate to actual inspection quality
- The required sound field is likely a function of materials and the flaw type
- A solid technical basis as to how to interpret the sound-field maps and predicted responses would allow the NRC staff to quickly assess a proposed inspection

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Incomplete Coverage

- Many nuclear power plant components cannot be entirely inspected due to geometry, nearby obstructions, or materials
- The NRC has been repeatedly reviewing these partial inspections for the past 40+ years
- The assessments have been largely based on operational experience and engineering judgement
- The NRC and Industry would like to optimize this process to reduce the repetitive nature of the reviews
- Any changes to the current system will require a technical basis

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Training and Practice

- Currently, obtaining a Level II ultrasonic certification takes 800 hours of on-the-job experience
- There is a strong interest in industry to modify this requirement
 - Substitute a smaller number of laboratory-training hours
 - Switch to a completely different and more systematic approach to training
- The current training system has been effective
- Any changes to the current system will require a technical basis

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Future Research

- The NRC is conducting and/or sponsoring research into each of these areas to guide future regulatory decisions

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