A Perspective on the Future of NRC Reactor Oversight

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- **The Past is Prologue to the Future**
- **Potential Near Term Improvement**
- **Transforming the ROP**

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Impetus for Changing the Regulatory Oversight Process

- Industry's safety performance, as measured by NRC and INPO indicators, showed significant improvement in the 1990s
- However, NRC had been issuing more and more minor violations , diverting government and licensee resources away from safety focus
- NRC's own internal reviews showed the SALP and Watchlist approach was inefficient, untimely, very subjective and inscrutable to licensees and the public
- Advances in risk assessment techniques and their use provided confidence that risk-informed PIs and simplified risk analyses could be used as effective assessment tools

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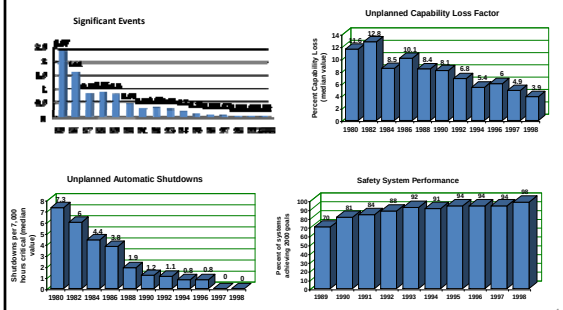
Safety and Performance Trends Improve Across the Board



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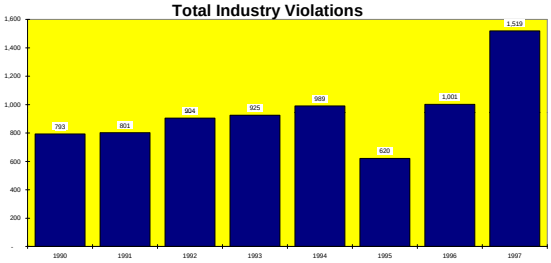
NRC Violations continued to increase



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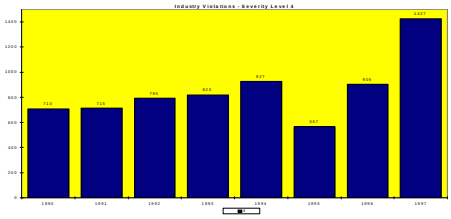
Increase was driven by a 100% jump in Level IV Violations (minor process and procedure errors)



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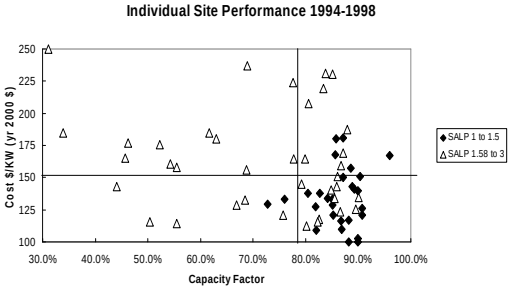
Top Performing Plants



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Development of the ROP was Open Government in Action

- Congressional Interest
- Integrated Review Assessment Process (IRAP)
- NEI 98-W1: A New Regulatory Oversight Process: *Toward Risk-Informed, Performance-Based Assessment, Inspection and Enforcement*
- NRC workshop 9/98
- Program development with all interested stakeholders
- Pilot Program and FACA Panels
- SECY 99-007 and 007a are seminal documents
- Implementation April 2000

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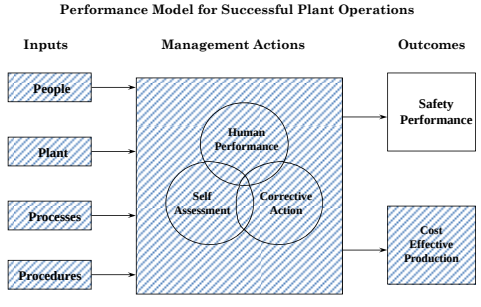
What are appropriate Areas of Focus for the Regulator and the Licensee?



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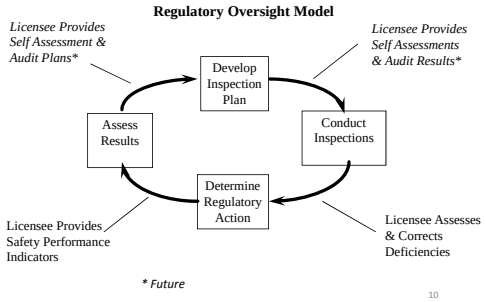
Regulatory Oversight Process

Risk-Informed, Performance-Based Assessment, Inspection and Enforcement



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Potential Near Term Improvements

- Continue to seek to improve the PIs
  - Have already improved risk-significance of original set
  - Nexus to safety outcomes and able to distinguish performance between plants
  - Predictive in nature: Indications of cornerstone performance
  - Tradeoff between inspection and PIs
  - Look for problem areas in cornerstones and consider whether a PI could provide predictive value
- Improve the Significance Determination Process
  - Improve common cause and operator action assessments
  - Reduce time and expense of situations near the green-white threshold: Conduct the 95001 and then determine color based on effectiveness of corrective action
- Safety Culture
  - Common language
  - Common methodology for continuous assessment and NSCA
  - Industry take the lead; NRC transparent oversight

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Future Transformation: How Could the NRC regulate and oversee nuclear power plants?

- The situational leadership model in organizational behavior theory may provide insights
- Hersey-Blanchard's theory asks two questions:
  - How much task direction should be given by the leader?
  - How much interaction/discussion should the leader have with the follower?
- The answer depends on the *situation* and the *maturity* of the follower in that situation, as defined as:
  - *Ability* to perform the task at hand, and
  - *Willingness* to perform the task
- The maturity of the follower and the leader's actions may change over time depending on the situation

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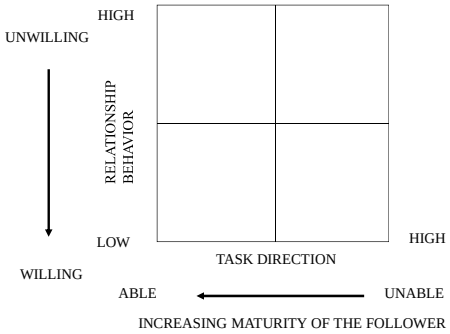
Hersey-Blanchard Situational Leadership Model



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A similar model can be developed to inform regulatory oversight

- The key dimensions are:
  - Regulation: How much direction and how prescriptive?
  - Oversight: How much interaction?
- The appropriate answer depends on the *maturity* of the individual licensee and industry:
  - *Ability* to understand what is important to safety and being able to identify and assess issues
    - Learning from operating experience
    - Applying risk insights
    - Rigorous system for learning: the problem identification and resolution program (PI&R)
  - *Willingness* to be self critical
    - Self Assessment
    - Set own higher standards

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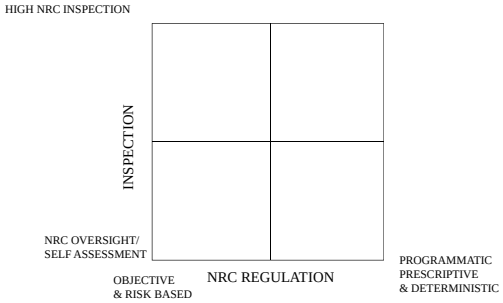
Revising the Regulatory Paradigm



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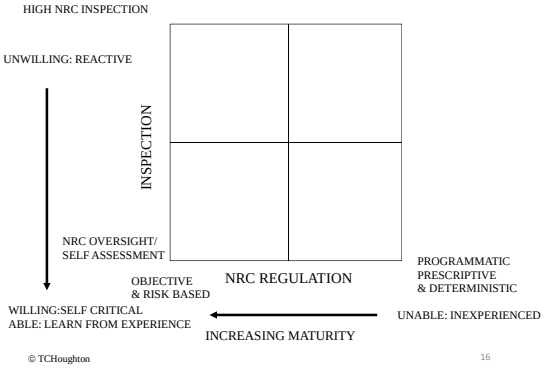
Revising the Regulatory Paradigm



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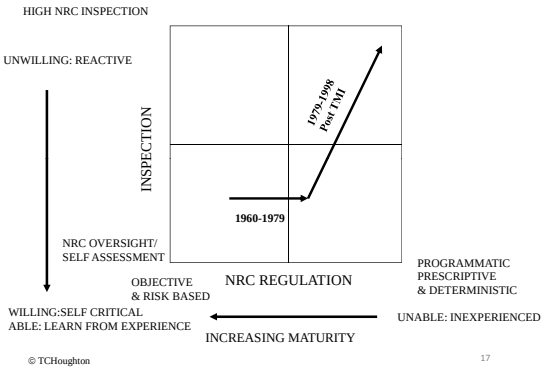

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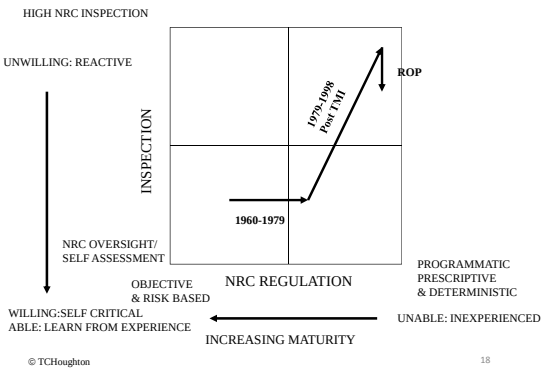

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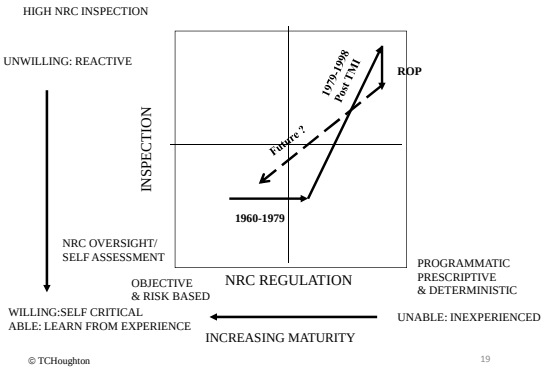

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What Might the Transformation Look Like?

- More Risk-Informed, performance-based regulation
- Baseline inspection hours based on safety performance
- More self assessment in place of direct inspection
- NRC focus on the corrective action program and oversight of self assessment

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Advantages of the Approach

- Regulations are risk-informed and objective-based
  - Less deterministic and prescriptive
  - Allows the licensee to develop more effective solutions/programs and processes
- Inspection focuses on licensees with demonstrated problems (safety outcomes)
- Rewards good performers with less inspection
- Allocates NRC resources more effectively

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