



# RIC 2013 Domestic and International Cooperation to Advance Nuclear Safety Culture Research

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TH36 - The NRC's Safety Culture Policy Statement: Domestic and  
International Initiatives

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## Spotlight on Safety Culture

- Increased global emphasis on safety culture
- NRC and INPO contributing through research and interaction

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## Complementary but Independent Goals

**Memorandum of Agreement**  
between  
Nuclear Regulatory Commission and  
Institute for Nuclear Power Operations  
December 10, 2007

“...desire for a continuing and cooperative  
relationship in the exchange of experience,  
information, and data related to the safety  
and security of nuclear power plants.”

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## Safety Culture Survey & Analysis

- ▶ INPO collected data from personnel at 97% of operating nuclear power plants in United States
- ▶ Independent INPO and NRC analyses found statistically significant relationships between safety culture survey results and measures of plant performance
- ▶ Factors identified in survey show reasonable alignment to the traits in the NRC’s Safety Culture Policy Statement

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## Noteworthy Correlations

Safety Culture Survey Factors	Established Performance Measures
Management Responsibility for Safety	Number of Inspection Findings with Cross-Cutting Aspects at a plant per year
Questioning Attitude	Number of Allegations reported to the NRC from plant personnel per year
Supervisor Responsibility for Safety	Rate of Human Performance Errors per year
Safety Communication	Number of Unplanned Scrams at a plant per year

\*Correlations are statistically significant (p < .05). The size of the correlations indicate medium effect sizes in the social sciences.

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## International Safety Culture Activities

- ▶ IAEA Global Safety Culture Questionnaire
  - INPO providing guidance on lessons learned from developing survey items in U.S.
  - NRC suggesting methodology for evaluating the validity of the survey
- ▶ IAEA Action Plan on Nuclear Safety
  - NRC and INPO presented to the G8 Nuclear Safety and Security Group
  - NRC participating in International Experts Meetings to develop implementation strategy for Action Plan

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### Influence of NRC Safety Culture Activities

- ▶ Common Language Workshop panelists developed detailed safety culture framework for power reactors
- ▶ INPO revised safety culture guidance documents
  - Performance Objectives & Criteria
  - *Traits for a Healthy Nuclear Safety Culture* (Previously *Principles for a Strong Nuclear Safety Culture*)
  - Addendum I - Examples
  - Addendum II - Cross-references
- ▶ At least three nuclear vendors have used the SC survey as part of assessments



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### Influence on Future Activities

- ▶ *Traits for a Healthy Nuclear Safety Culture*
  - World Association of Nuclear Operators (WANO) has proposed using the Traits as their safety culture guidance document
  - INPO discussing with AREVA US leadership to apply the Traits to AREVA US
- ▶ INPO Safety Culture Survey
  - Bruce Power (Canada) working on version of survey for corporate support organizations
  - Additional nuclear vendors plan to use the survey
  - WANO Paris Center may use as a pre-evaluation survey
  - EDF Energy (UK) may use survey as an annual assessment



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### For More Information

- ▶ Morrow, S. & Barnes, V. (2012). *Independent Evaluation of INPO's Nuclear Safety Culture Survey and Construct Validation Study*. Nuclear Regulatory Commission. ADAMS Accession No. ML12172A093. Available at <http://pbadupws.nrc.gov/docs/ML1217/ML12172A093.pdf>
- ▶ *Traits of a Healthy Nuclear Safety Culture*. Institute for Nuclear Power Operations, 12-012, December 2012. Contact Ken Koves ([KovesKG@INPO.org](mailto:KovesKG@INPO.org)) for a copy.



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