



Institute of Nuclear Power Operations

# Working with the Regulator on Safety Culture

IAEA Technical Meeting on Safety  
Culture Oversight

2011 February 15

G. Kenneth Koves, Ph.D.

# Outline

- Working together on safety culture language alignment
  - February 2010 Workshop
  - Revising the INPO *Principles for a Strong Nuclear Safety Culture*
- Working together on developing safety culture assessment
  - NEI 09-07
  - Safety culture survey



# Working together on safety culture language alignment

- The problem: Different descriptions of safety culture
- February 2010 Workshop
  - Proposed core methodology
  - Participated as panel members
- Revising the INPO *Principles for a Strong Nuclear Safety Culture*
  - Will be based on the NRC Traits from workshop
  - Partner to create reactor-centric descriptions
  - Publication late summer or fall



# Working together on safety culture assessment

- NEI 09-07
  - Contains a weeklong assessment similar to SCART
  - NRC observed and offered suggestions
    - Training quality
    - Survey quality and use
- Safety culture survey
  - Co-developed and administered to US plants
  - Co-analyzed the results - Correlated site results with INPO and NRC measures

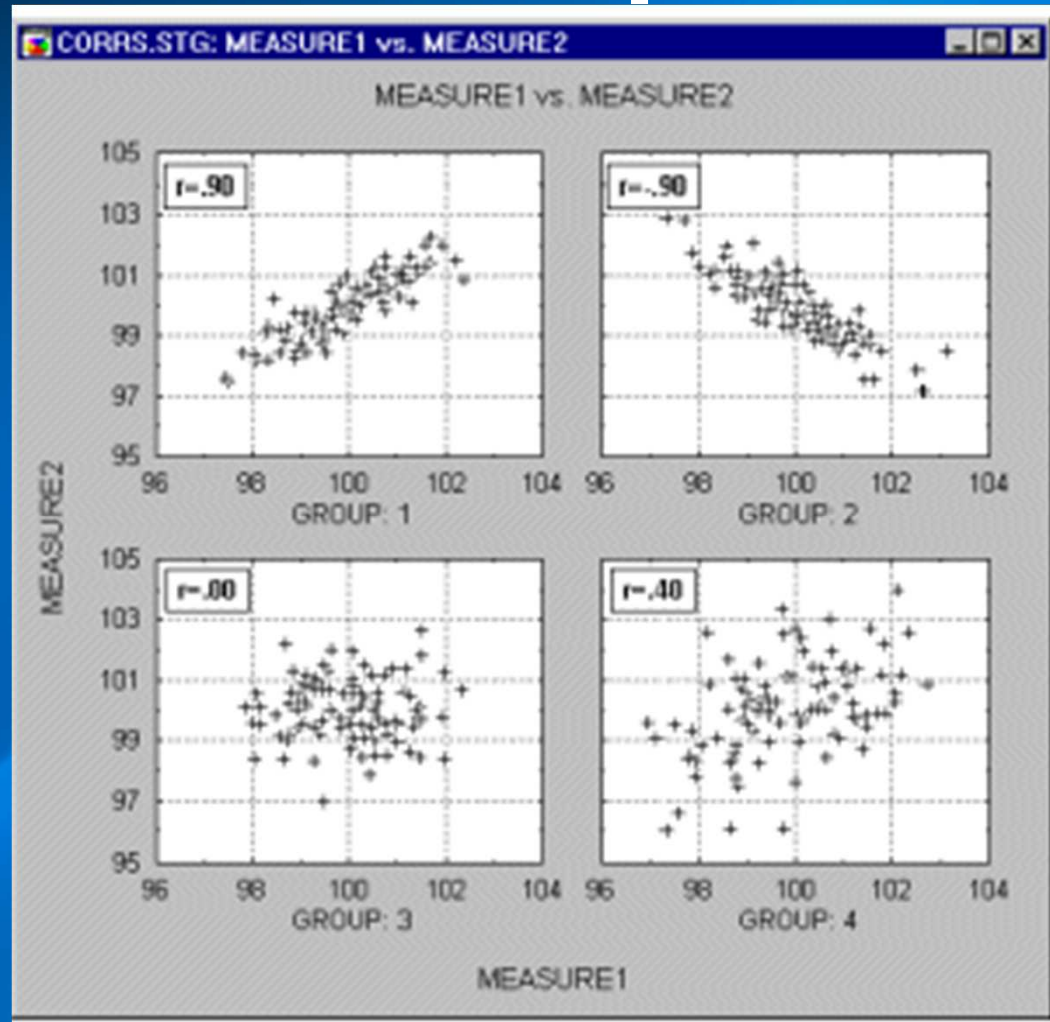


# Correlation

- Correlation quantifies the relationship between two variables
- Correlation ranges between -1 and 1
- 0 means no correlation
- Typical correlations in social science research are .2 to .3



# Correlation Examples



# Correlation Examples

Plant	Average (Mean) Survey Score	Emergency Heat Removal Availability	ROP Column (1-4)
Plant 1	6.21	99%	1
Plant 2	6.05	96%	1
Plant 3	5.89	97%	2
Plant 4	5.77	96%	1
...	...	...	...
Plant 61	4.89	75%	4
Plant 62	4.75	78%	3
Plant 63	4.86	80%	4
Correlation w/ Avg Score		.29	-.33



# Do the survey factors relate to other safety measures? Yes.

Factor	ROP	Unpln Critical Scram	Unpln Auto Scram	Heat Remo Avail	Emer Power Avail	Per Safe Idx	CY Idx	HU Err Rate
Manager Responsibility	-.30	-.29	-.34	.18	.26 (.31)	.23 (.31)	.27 (.39)	-.38
Raising Concerns	-.25	-.17	-.24	.19	.27	.22	.22	-.37
Decision Making	-.32	-.28	-.38	.22	.24	.25	.28	-.36
Supervisor Responsibility	-.28 (-.35)	-.15	-.22 (-.40)	.35	.30	.19	.14 (.32)	-.40
Questioning Attitude	-.18	-.27	-.26 (-.44)	.16	.37	.32	.26 (.32)	-.28
Safety Communication	-.20	-.32	-.34	.16	.27	.27	.28	-.39
Training	-.12	-.33	-.40	.14	.15	.13	.30	-.19



# Conclusion

- Survey factors are related to other measures of organizational effectiveness and equipment performance in US nuclear power plants



# Q&A

- Questions
- [koveskg@inpo.org](mailto:koveskg@inpo.org)

