



Digital Modernization Hurdles and Solutions

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About Invensys

- Invensys PLC – 30,000 employees, in 60 countries
 - Invensys Process Systems (IPS)
 - Comprised of Foxboro, Triconex, Wonderware, Simsci-Esscor, Avantis, Validation Technologies
- IPS is presently providing input to the industry working groups and the NRC



Digital Instrumentation and Control Issues in the Nuclear Industry

- Diversity, Defense in Depth – D3
- Risk Informed Digital I&C
- Operator Training
- Cyber Security
- Lessons Learned from other Industries



Diversity, Defense in Depth

- IPS – install a highly available, highly reliable Triple Modular Redundant (TMR) controller for Reactor Protection and ESFAS with a diverse digital controller I/A series
- Use technology to solve this issue – not challenge the license base or operation position



Diversity, Defense in Depth

- Invensys and our customers need a workable and understandable position on issues of concern – causing confusion and delays
- Common Cause Failure – extensive diagnostics and a highly developed platform substantially reduce this risk



Risk Informed Digital I&C

- Consultative teaming relationship
- TMR technology – deployed on safety, mission critical, and life critical systems
- This technology currently supports High Probabilistic Reliability Analysis numbers
- Need to evaluate and take credit for methodologies used in other countries and industries



Operator Training

- TMR, Fault Tolerant, High Diagnostic systems allow for minimal training for Operations
- Can be used on Important To Safety and Safety Related applications minimizing training



Cyber Security

- Invensys is committed to industry leading cyber security initiatives
- Utilize Wurldtech Securities Achilles Level 1 assessment test as Cyber Security benchmark



Lessons Learned from other Industries

- Triconex is by far the most trusted safety system in the continuous process industries
- Make obsolescence “Obsolete
- Provide Digital Commercial Off The Shelf Technology (COTS) Solutions under a 10CFR Appendix B program
- IPS safety platform meets safety criteria for Hydro Carbon Industry and Rail Signaling Industry



Conclusion

- We are pleased with the progress being made by the recent working groups
- Facilitate technology transfer from other Mission Critical / High Reliability industries
- Staff should continue to develop consultative relationships with key technology providers



Conclusion

- IPS encourages the staff to engage I&C design early in COL phase for new builds
- IPS is committed to the industry, to help resolve I&C issues, on existing and new plant designs to accelerate the renaissance of nuclear power