



Improvements to the U.S. Nuclear Regulatory Commission's Operating Experience Program and Future Challenges

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U.S. Nuclear Regulatory Commission

*Improving Nuclear Safety Through Operating
Experience Feedback*

- Present Challenges and Future Solutions -

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NRC Strategic Objective

Enable the use and management of radioactive materials and nuclear fuels for beneficial civilian purposes in a manner that protects public health and safety and the environment, promotes the security of our nation, and provides for regulatory actions that are open, effective, efficient, realistic, and timely.



Key Strategy

Evaluate and utilize domestic and international operational experience and events to enhance decision-making.



The Message

Learn from your
experiences and
those of others.



Operating Experience (OpE) History

- In the 1970s, NRC had no systematic method for evaluating collected data
- Post-TMI, NRC created the Office of Analysis & Evaluation of Operational Data (AEOD), and the Institute of Nuclear Power Operations (INPO) was formed
- In 1994 and 1998, task group evaluations made many recommendations
 - Eliminating unnecessary functions
 - Eliminating or reducing overlap



OpE History

- In 1999, the Office of AEOD was dissolved. Functions were split between two separate offices (NRR and RES)
- In 2003, Davis-Besse Lessons Learned Task Force found shortcomings in agency's OpE activities
- In 2004, staff developed the framework and infrastructure for a new OpE program for reactors

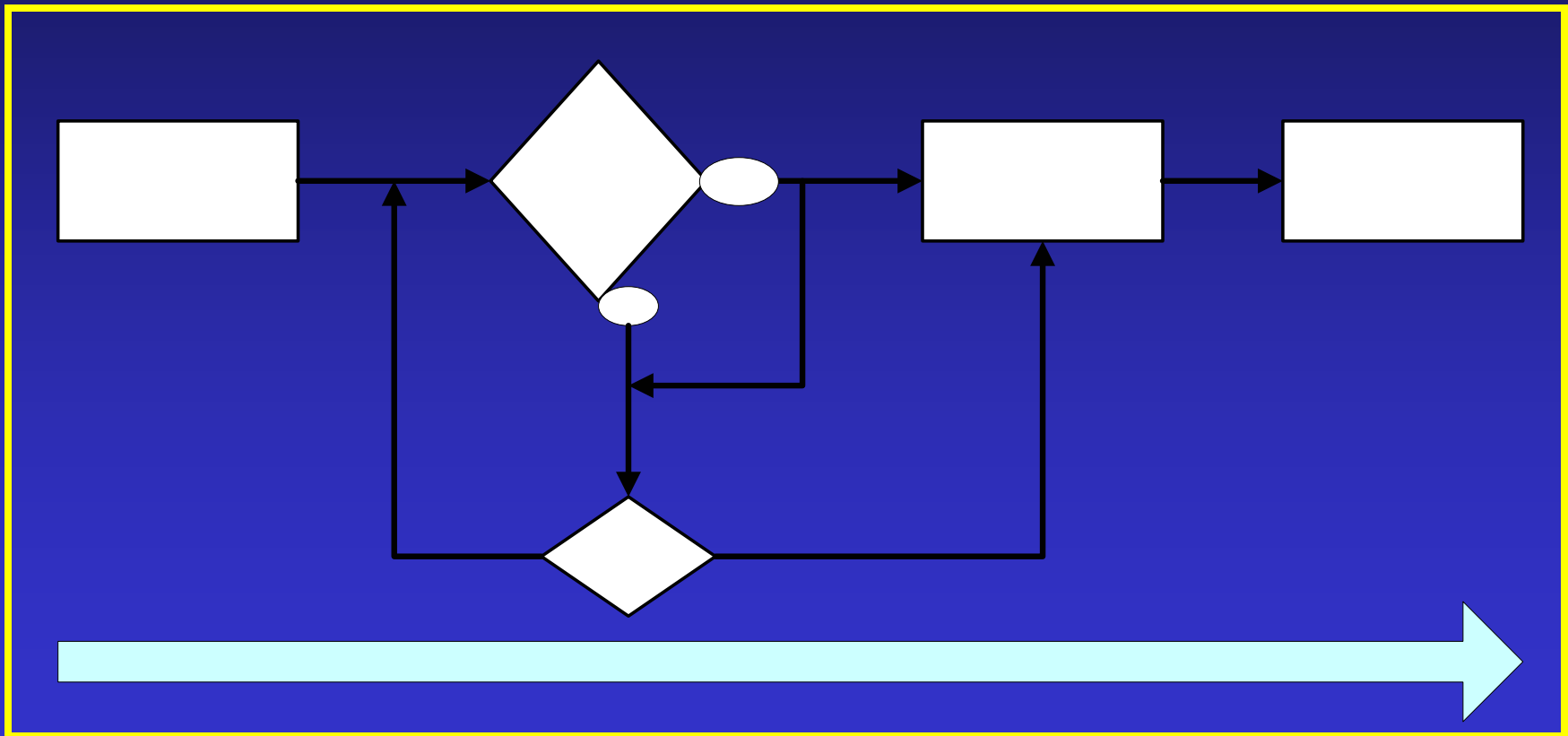


Revised Reactor OpE Program Launched January 2005

- Established a central clearinghouse to collect, communicate, and evaluate reactor OpE information and apply the lessons learned
- Many improvements
 - international OpE now a formal element of screening process
 - new database and internal Web access page
 - increased interaction between HQ, regions, and technical staff

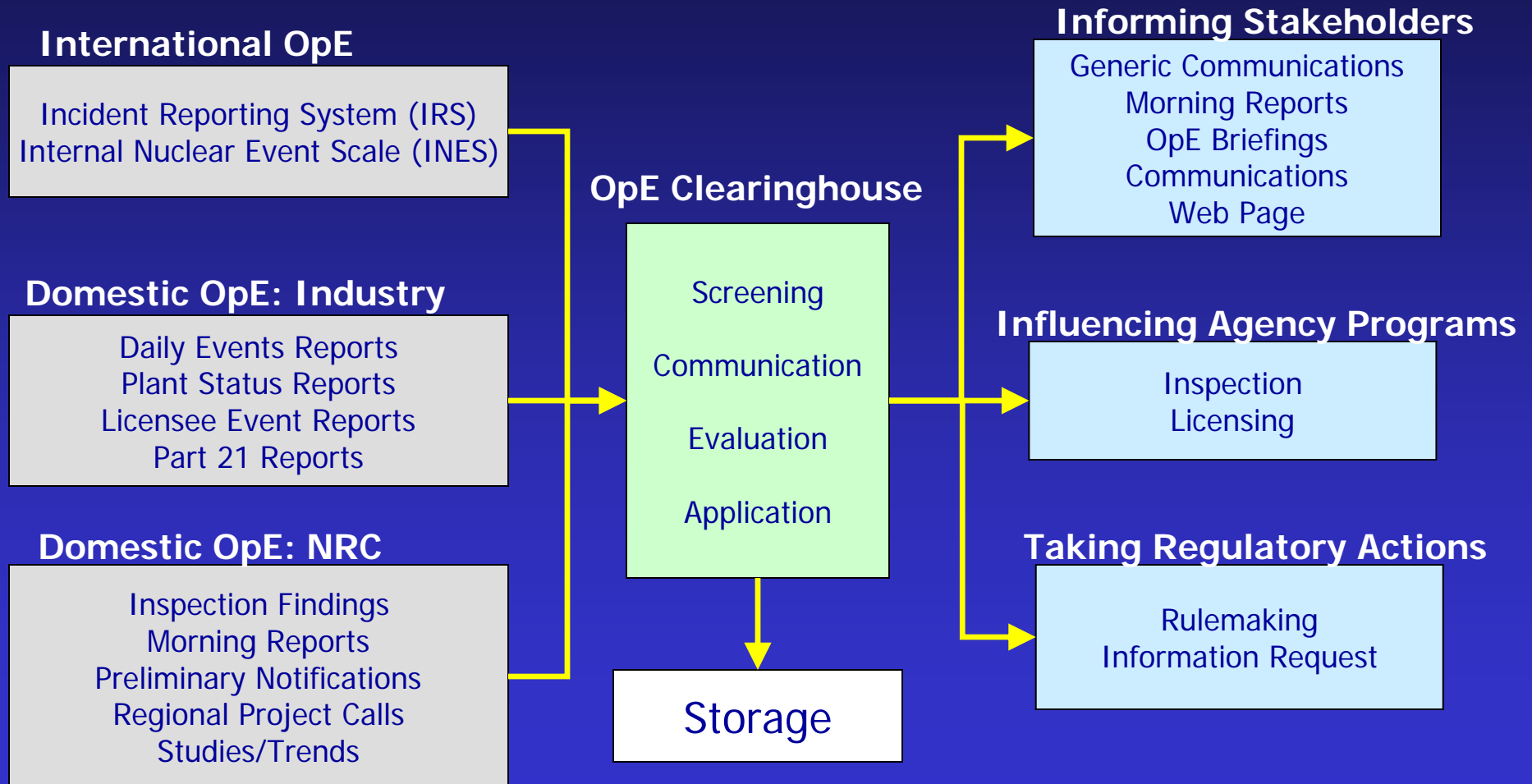


Program at a Glance





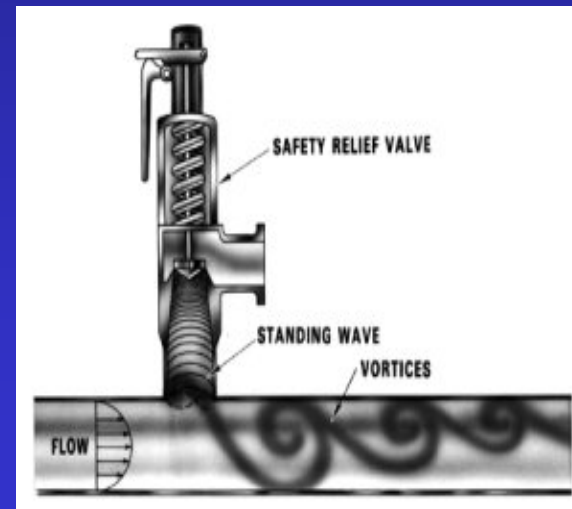
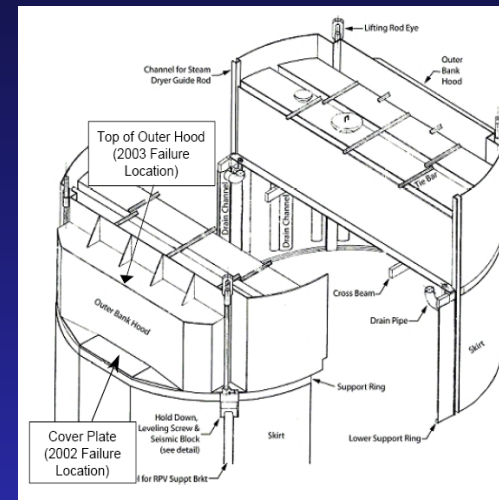
Reactor OpE Program Input – Output Overview





OpE Areas of Attention

- EPU-related issues at Quad Cities
 - Steam dryer cracking
 - Failure of electromatic relief valves
 - Standing wave in valve standpipe
 - Turbulent flow passing over a cavity creates vortices that produce pressure pulsations
 - When the frequency of standing wave coincides with the frequency of pressure pulsations, high amplitude pressure fluctuations take place.

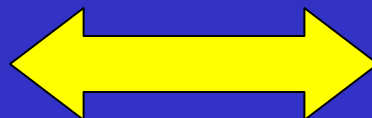
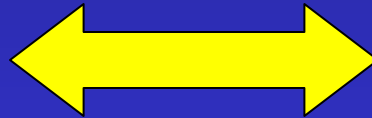
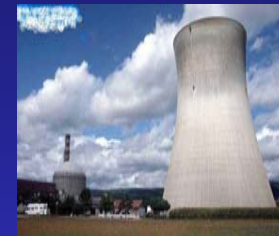
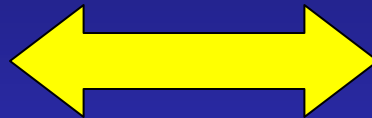




OpE Areas of Attention - Electrical Grid Reliability

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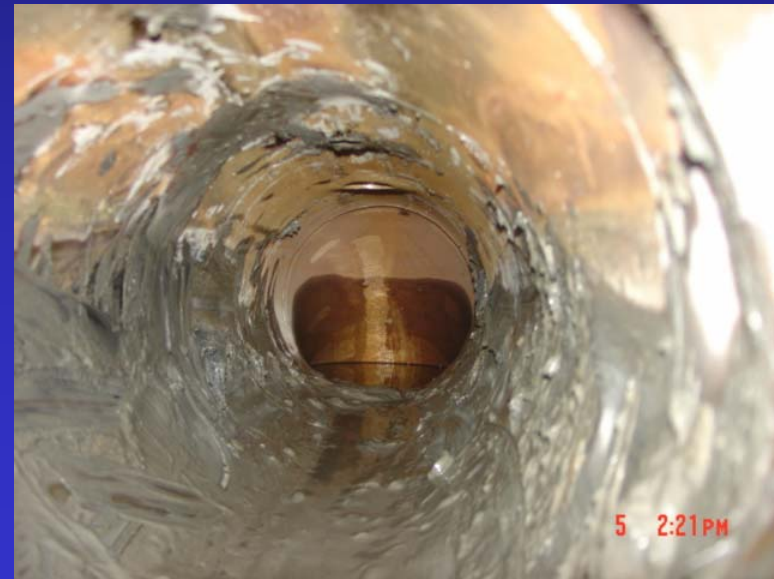


OpE Areas of Attention

- Service water system degradation
 - Silt/sand intrusion events
 - Shaft/coupling failures
 - Several generic communications issued



Before



After



Unauthorized Intruder in Service Water Intake Structure





OpE Areas of Attention – External Events/Natural Phenomena

- Hurricane Andrew, a Category 5 hurricane, hit Turkey Point with sustained winds of 145 miles per hour (mph) and gusts up to 175 mph (1992)
 - Improvements made from Andrew lessons learned resulted in improved performance during 2005 hurricane season
 - Improved communication infrastructure
 - Improved interaction with FEMA prior to plant restart
 - Lessons learned from 2005 hurricanes
 - Greater focus needed on materials licenses during events
 - Develop an NRC procedure for response to natural events
 - Provide better accountability for inspectors sent to the sites
 - Improve diversity and reliability of agency communications



Other OpE Areas of Attention

- Gas intrusion into safety systems
 - Indian Point 2 (“White” finding)
- Design control issues
 - Kewaunee turbine building flooding (“Yellow” finding and INES Level 2 event)
- Shutdown/low power events/conditions
 - Waterford RCS vacuum/void transfer events (Special Inspection)



No Risk – High Impact

- Some operating experience involves no public health impact, but may require significant regulatory attention
- For example: Inadvertent release of small amounts of tritium to the environment – can create strong public concern and a significant challenge for the regulator



Inspector Access to OpE

- OpE Gateway website provides access to several searchable databases for inspector use
 - Inspection findings
 - Generic communications
 - 50.72 event notifications & other event reports
 - 50.73 licensee event reports
 - Inspection reports
 - INPO SEE-IN documents (SOER, SER, SEN, O&MR)
 - Part 21 reports
 - International OpE (IRS, INES)
- OpE community forum provides prompt notification of relevant OpE to various inspectors
- Regional offices share relevant OpE during morning conference calls



International OpE Activities

- Full participation in the International Nuclear Event Scale of IAEA and OECD/NEA
- Participation in Incident Reporting System of IAEA and OECD/NEA
- Exchange of operating experience through routine interfaces, meetings, conferences, and agreements
- Availability of domestic operating experience for public access



Reactor OpE Program 2005 Successes

- Over 1000 OpE items screened
- 127 OpE communications to technical staff
- 30 OpE issues evaluated and closed
- 7 OpE senior management briefings
- All daily reports evaluated for INES rating
- 66 Generic Communications issued
- 30 technical groups formed to review OpE



Future Challenges

- Continued focus on sharing and applying OpE by the regulator and the industry
- Obtaining OpE on new reactor construction/operation



Documents & Guidance

To find NRC's publicly available documents on OpE, go to the "Electronic Reading Room" at:

www.nrc.gov