



Office of Nuclear Regulatory Research Programs, Performance, and Future Plans

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AGENDA

Program Overview - Brian Sheron

State-of-the-Art Reactor

Consequence Analysis (SOARCA) -
Jennifer Uhle

Analysis of Cancer Risk in

Populations Living Near Nuclear
Power Facilities - Jennifer Uhle

Advanced Reactor Research -

Jennifer Uhle

Probabilistic Risk Assessment -

Christiana Lui

AGENDA (continued)

Human Reliability Analysis -
Christiana Lui

Life Beyond 60 Research - Michael
Case

Long-Term Research - James Lyons

RES Results from the OIG Safety
Culture and Climate Survey - Mary
Muessle

RES Focus Areas - Mary Muessle

Closing Remarks - Brian Sheron

Program Overview

- Accomplishments FY 2009
 - Provided regulatory offices with all requested work products
 - Issued all agency and congressionally mandated reports, e.g. Abnormal Occurrence Report
 - Made progress in resolving open generic issues
 - Developed numerous regulatory guidance documents
 - Conducted numerous knowledge management activities, e.g. TMI-2 seminar

Program Overview (continued)

- Challenges
 - Program
 - Developing new staff
 - Staying connected
 - Technical
 - Defining needed long-term spent fuel storage research
 - SOARCA
 - Level 3 PRA

State-of-the-Art Reactor Consequence Analysis (SOARCA)

- Background
 - Evaluate best estimate consequences of selected scenarios
 - Uses modern computer modeling programs and evaluation techniques
- Status/Accomplishments
 - Initial technical analysis completed
 - Radioactive releases are smaller and occur later than previously estimated
 - Report currently undergoing peer review by independent panel

SOARCA (continued)

- Challenges
 - Public review and comment on SOARCA
 - Communication of SOARCA results to all stakeholders
- Policy Issues
 - Options for follow-on work
 - Regulatory insights

Analysis of Cancer Risk in Populations Living Near Nuclear Power Facilities

- Background
 - Update 1990 NCI study
- Accomplishments
 - Developed initial study methodology
 - Established peer-review committee
 - Established communication team
 - Issued sources sought notice

Analysis of Cancer Risk (continued)

- Challenges
 - Communication to ensure a shared understanding with stakeholders
- Next Steps
 - Develop communication tools to facilitate public outreach

Advanced Reactor Research

- **Background**
 - Anticipate advanced reactor design submittals
- **Status/Accomplishments**
 - Collaborative interactions with DOE
 - Initiated research and infrastructure development for NGNP licensing review
 - Began low-level efforts on small modular reactors

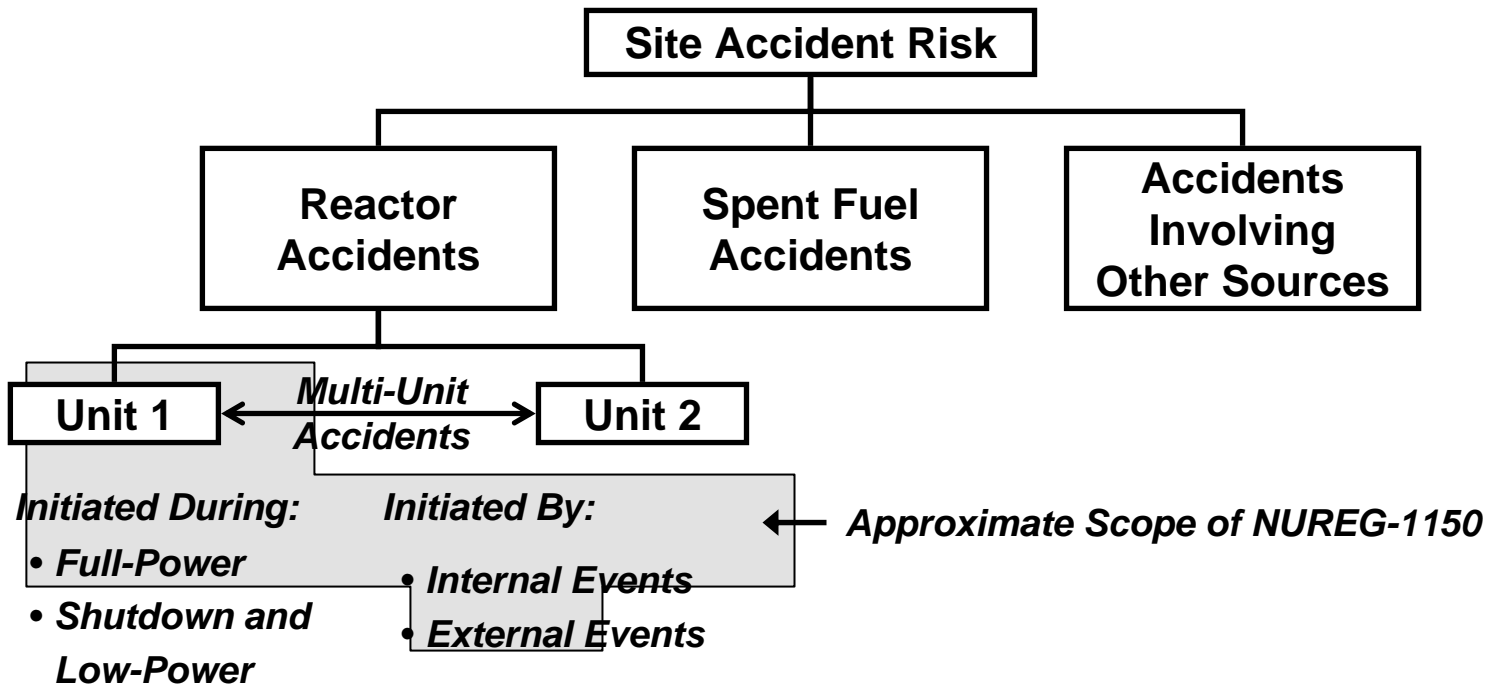
Advanced Reactor Research (continued)

- Challenges
 - Uncertainty in design type
 - Short time horizon
- Next Steps
 - Continue to research technical safety issues and develop infrastructure
 - Coordinate with NRO and interact with DOE

Probabilistic Risk Assessment (PRA)

- **Background**
 - Substantial new developments since NUREG-1150
 - SOARCA insights
 - Need for “Risk Analysis Tool Box”
- **Status/Accomplishments**
 - Identified project goals

New Level 3 PRA



New Level 3 PRA (continued)

- **Challenges**

- Best approach – resources and priority
- Need for industry cooperation

- **Next Steps**

- Develop scoping study to formulate project plan
- Commission guidance

Human Reliability Analysis (HRA)

- **Background**
 - Human element highly influential in safety
- **Status/Accomplishments**
 - Past work led to current regulatory tools and actions
 - Ongoing research to integrate HRA into routine regulatory assessments

HRA (continued)

- **Challenges**

- Quantity and quality of data
- Evolving design detail for:
 - Advanced control rooms
 - New concept of operations

- **Next Steps**

- Continue international and domestic partnership
- Integrate insights into regulatory guidance

Life Beyond 60 Research

- Background
 - NRC regulations do not prevent subsequent license renewal past 60 years
- Status/Accomplishments
 - Scoping efforts identified focus areas
 - NRR user need request developed to provide basis for key future activities

Life Beyond 60 Research (continued)

- Challenges
 - Timely modification to regulatory framework
- Next Steps
 - Begin assessment of potential modification to regulatory framework
 - Develop an expanded materials degradation assessment
 - Develop a catalog of results from licensee implementation of aging management programs

Long-Term Research

- Background
 - Scoping in nature
 - Are there safety issues involved?
 - Who needs to address them?
 - When do they need to be addressed?
 - Fundamental insights for >5 years in the future
- Status/Accomplishments
 - First plan defined in 2007, implemented in 2009, updated yearly
 - Projects funded in FY 2009 and FY 2010

Long-Term Research (continued)

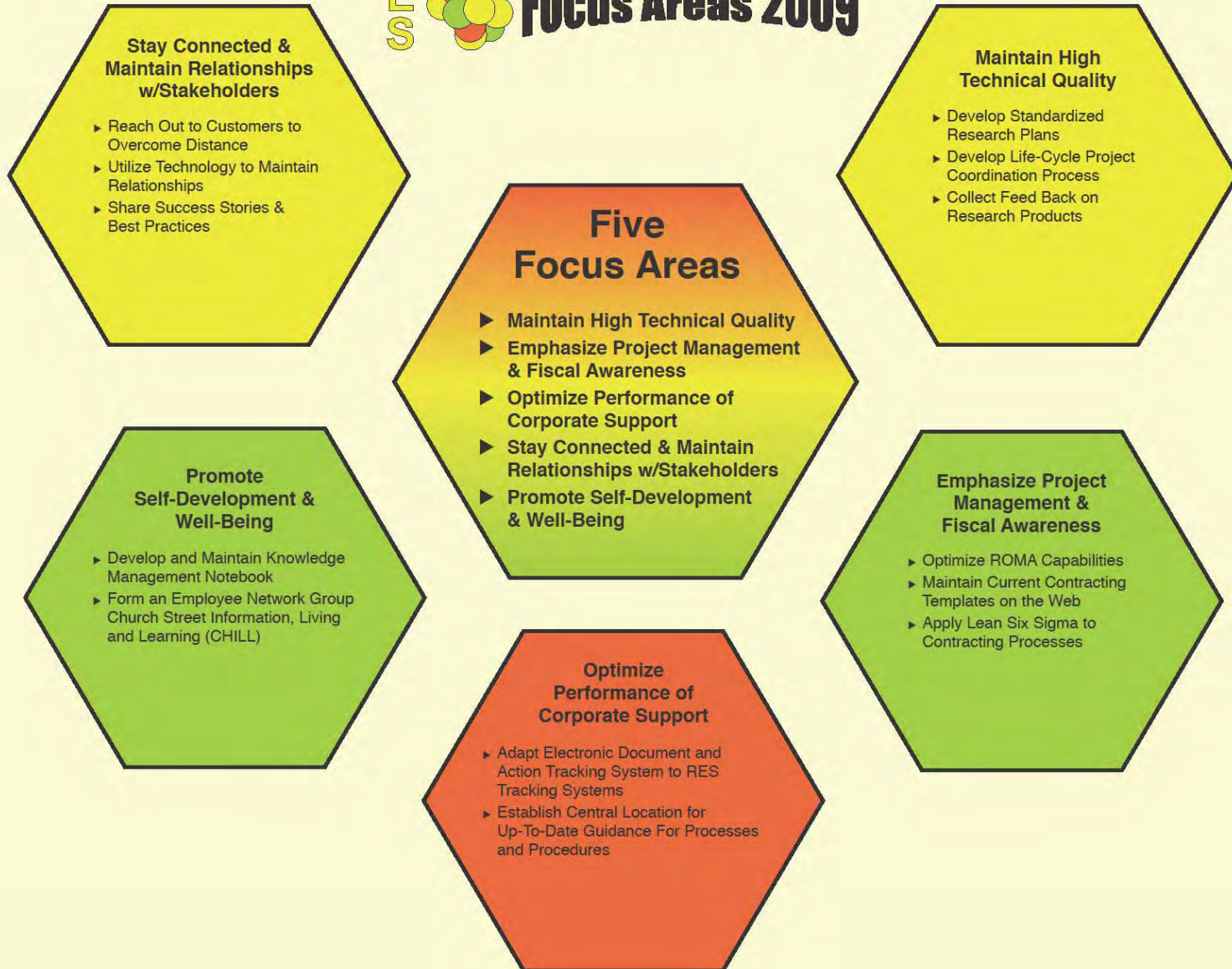
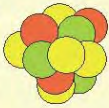
- Challenges
 - Not getting too far ahead of the industry
- Policy Issues/Next Steps
 - Resource allocation process will follow Commission direction

RES Results from the OIG Safety Culture and Climate Survey

- Background - Results of survey
- Status/Accomplishments
 - Analysis of the survey results
 - Strengths in RES
 - Working environment
 - Building teamwork/respect
 - Work/Life balance
 - Fair performance evaluation
 - Effective communication by supervisors

RES Results from the OIG Safety Culture and Climate Survey (continued)

- Challenges
 - Staying connected
 - Communication and Empowerment
 - Training and development
 - Quality Focus



Closing Remarks

- Priorities for FY 2010
- Provide regulatory offices with tools and information needed to assure public health and safety
- Agencywide collaboration and strong coordination

Acronyms

- DOE - U.S. Department of Energy
- FY - Fiscal Year
- HRA - Human Reliability Analysis
- NCI - U.S. National Cancer Institute
- NGNP - Next Generation Nuclear Plant
- NRC - U.S. Nuclear Regulatory Commission
- NRO - Office of New Reactors

Acronyms (continued)

- OIG - Office of Inspector General
- PRA - Probabilistic Risk Assessment
- RES - Office of Nuclear Regulatory Research
- SECY - Office of the Secretary
- SOARCA - State-of-the-Art Reactor Consequence Analysis
- TMI - Three Mile Island