HFIR Nuclear Safety Culture Experience

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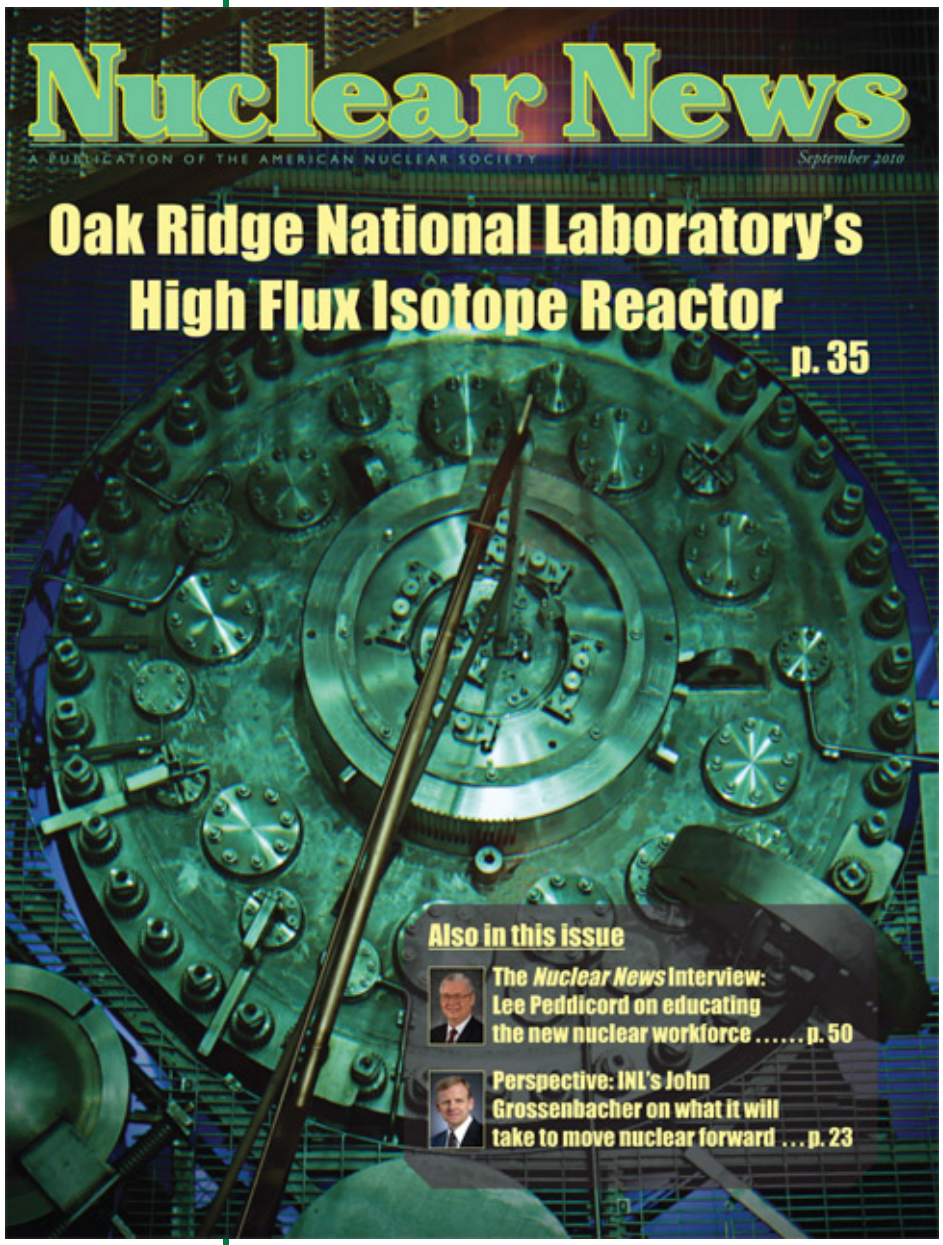

U.S. DEPARTMENT OF ENERGY

OAK RIDGE NATIONAL LABORATORY
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"INPO Principles for Strong Nuclear Safety Culture"

- My initial reaction
- General content
- HFIR implementation
- Lessons learned from implementation
- Thoughts on usefulness for other research reactors

My Initial Reaction: Skepticism!

- Previously had applied other INPO guidance to Research Reactor (Work Control)
  - INPO had good information, but was targeted to complex facility, with many personnel
  - Application of INPO guidance at HFIR required a careful graded approach for the simpler (and less hazardous) facility and smaller organization
- Initial thought was to distance my organization from this initiative
  - The importance of Nuclear Safety was obvious and we did well already, and we had a low hazard facility
  - We did not have resources for "pursuit of excellence" activities
- But there did seem to be some valuable guidance that was worth pursuing – my opinion changed over time

Content: Nuclear Safety Culture – what it is and why it is important

"The organization's values and behaviors,

modeled by its leaders and internalized by its members,

that serve to make nuclear safety the overriding priority."

- Recent events such as the Davis-Besse reactor vessel head problem occurred in spite of extensive industry process and other improvements
- A common thread appeared to be the organization culture where the safety environment at the plant received insufficient attention
- These events and the notion that culture was a key ingredient was the basis for the book

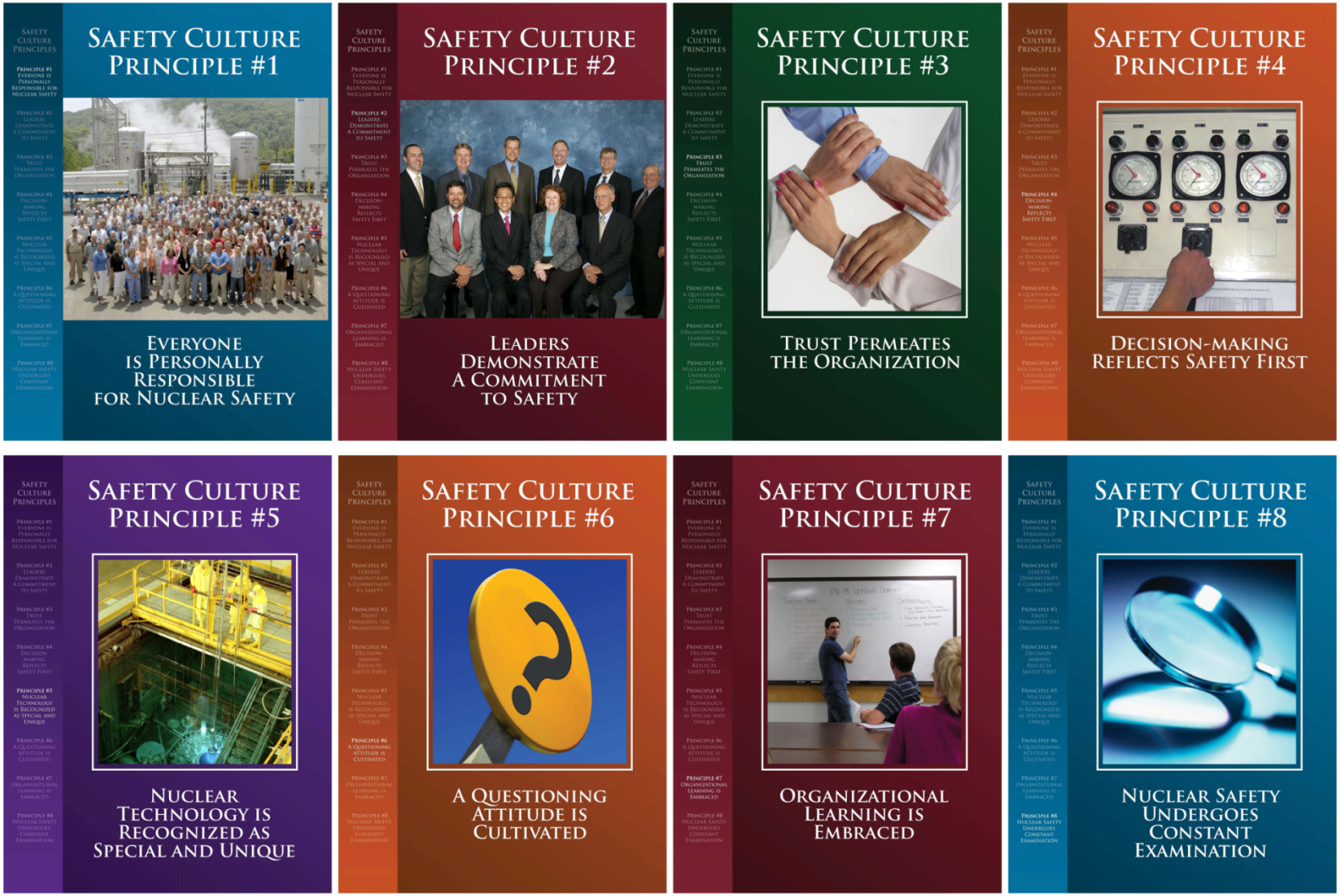
Content: Philosophical key points

- Reactor operations must balance Safety, Production, and Cost Control
- Nuclear safety is the first value adopted at a nuclear plant and is never abandoned
- Focus is on nuclear safety but the same principles apply to radiological, industrial, and environmental safety

Content:

- Helps those who manage nuclear facilities to identify potential improvements in nuclear safety
- Builds on Principles for Enhancing Professionalism of Nuclear Personnel, and is complementary to Human Performance, Self Assessment, Principles for Effective Decision Making *(be careful here!)*
- IS NOT a program or specific implementing methods
- Documents 8 principles of a healthy nuclear safety culture, includes attributes to clarify intent of principles (these have a strong basis in plant events)

The Eight Principles



Examples of Attributes called out in booklet

- #1 Everyone is personally responsible for nuclear safety
  - Support groups such as human resources, labor relations, and business and financial planning, also understand their roles in contributing to nuclear safety.
- #2 Leaders demonstrate commitment to safety
  - Managers and supervisors provide appropriate oversight during safety significant evolutions

How was it implemented at HFIR?

- Fall 2006 - Management changes with greater focus on facility mission – Safety, Reliability, Efficiency
- May 2007 – HFIR startup with cold source
- October 07 – RRD Improvement agenda: Focus on Human Performance and Reliability
  - A Nuclear Safety Analyst was assigned as the Human Performance Coordinator and Advocate for HFIR in addition to his day job (his presentation follows)
  - Display of INPO Nuclear Safety Culture Principle posters with discussion in safety or staff meetings
  - Division safety meeting on Trust (principle 3) and viewing of INPO video "The Special Characteristics of Nuclear Power" (1/09)
- Scheduled Nuclear Safety Culture Assessment

Utilities Service Alliance: Nuclear Safety Culture Assessment benchmarked HFIR

- Performs NCSA for member nuclear power plants and the Missouri University Research Reactor (MURR)
- Focuses on the 8 INPO nuclear safety culture principles
- The process is being accepted by NRC
- Reciprocal arrangement for team participation
- The NSCA consists:
  - Electronic survey & documentation review ~ 1 month before survey
  - Four days of formal onsite interviews at all levels of RRD staff including craft
  - Pre-exit debrief and formal exit meeting
  - Final report submitted at a later date by the team leader

Assessment Results

- Survey generated over 10,000 data points, and team conducted 52 interviews and observed 10 meetings.
- The team identified ten strengths, five positive observations, six areas for improvement, and one negative observation.
- Overall, the assessment team found that:
  - HFIR has a healthy nuclear safety culture, a healthy respect for nuclear safety, and does not compromise nuclear safety for other priorities.
  - Station personnel feel that they can challenge any decision if needed, without fear of retaliation.
  - Among strongest questioning attitude that they had seen.
- The negative observation: Managers and supervisors are not consistently involved in training to reinforce expected worker behaviors.

What did we learn during this implementation effort?

- Nuclear safety can be improved just by providing an overt focus on this important area
- Nuclear safety activities – use broad brush (personnel, process, and equipment… copying even!)
- The focus on nuclear safety can be easy and consume minimal resources:
  - Pointing out which equipment is important to nuclear safety during pre-job brief
  - Starting meetings with nuclear safety topic, such as lessons learned from previous experience
  - Supervisory and management oversight of jobs with potential nuclear safety impact

Thoughts: Is this initiative (or some graded approach) of value to a research reactor?

- 3 out of 4 HFIR Reactor Operators agree that the Nuclear Safety Culture initiative is of value…
- Most of the value can be obtained with just putting an overt focus on nuclear safety, everything else follows
- Implementation elements can be simple
- Graded approach required and nothing should be included by reference
- The Nuclear Safety Culture Assessment is of greater depth and consumes more resources than would be practical for most research reactors