

NUCLEAR SAFETY CULTURE AT PICKERING A: “POST ISTB”

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Abstract

The Institute of Nuclear Power Operator’s (INPO) defines “Nuclear Safety Culture” as an organization’s values and behaviors- modeled by its leaders and internalized by its members- that serve to make nuclear safety the overriding priority. This paper describes recent experience at Pickering A following an event.

1. Introduction

The Institute of Nuclear Power Operator’s (INPO) defines “Nuclear Safety Culture” as an organization’s values and behaviors- modeled by its leaders and internalized by its members- that serve to make nuclear safety the overriding priority. Safety Management Systems are composed of:

- 1) Managed system
 - Policies
 - Program
 - Procedures
- 2) Culture:
 - Values
 - Behaviors

2. Pickering A Experience

On June 4, 2007, Pickering A Units 1 and 4 were shutdown as a results of a concern that the Inter Station Transfer Bus (ISTB) was not capable of providing emergency power in the event of a Main Steam Line Break (MSLB). Follow-up testing of the ISTB confirmed the concern. A temporary modification (installed June - September 2007) restored capability. A permanent modification is to be installed in 2010.

The root causes of the event were:

- Environment:
 - “Return to Service” culture vs Operational Culture
- Organization:
 - Independence of Engineering decisions
 - Engineering role to protect the design basis.
- Engineering Priority:
 - Engineering balancing of immediate and short term demand

The corrective actions were:

- Alter the environment
 - right balance is achieved between time pressure and the need to practice principles of defense in depth and thorough assessment of issues.
- Clarify the role of Station Engineering
 - to act independently to maintain and interpret the design basis and to define the operating envelope.
- Address engineering prioritization
 - reviews of the entire plant, its design and the margin risk will be performed routinely
 - ensure the risk is being managed.

3. Culture Change

The station developed a set of “Post ISTB Behaviors”. These included:

Team work:

- Involve Engineering as an equal
- Apply realistic timelines to complex problems

Integrity:

- Beware of good news
- Maintain defense in depth
- Identify and correct the root cause
- Ask “How” before “When”

Commitment:

- Focus on important equipment
- Act conservatively
- Take the time necessary for quality work to support decisions
- Don’t defer actions that will solve safety issues

A “Post ISTB Behavioral” change management plan was developed:

- Communications
- Managers communicating and reinforcing messages
- Alignment with all Corporate sources
- Facilitators to monitor, coach and reinforce new behaviors.
- Integrate new behaviors into key site forums
- Senior managers challenged publicly on their knowledge and commitment to the behaviors.

4. Results

A Culture Change Assessment was performed to confirm the change. Two independent reviews were performed (June 25-27 2008, Sept. 15-26, 2008). These assessments concluded:

- New behaviors have been very well communicated and fully accepted at management levels as the “way things should be”
- Team of facilitators was effective at promoting rapid change within the target group.

- All steps in the plan have been completed, with the on-going actions remaining
- A few minor items require on-going work to make fully effective.

A follow up plan was developed to sustain the Culture Change. The plan maintained the momentum by reinforcing behaviors through:

- Continuing communication (station wide all hands meetings, FLM face to face meetings)
- Reinforced at meetings through critique forms and designated real time observer.
- Line supervisor field observation and coaching focused on the ISTB behaviors.
- New managers will be provided Post-ISTB-behavior specific training

Internal champion team was established to continue to facilitate the correct behavior.

- Team trained by the external facilitators.
- Began working in Dec 2008.
- First report provided to Leadership Team
- Reporting quarterly to the Leadership Team

5. Conclusion

The value of the “Post-ISTB Behaviors” was demonstrated by a recent station response to an operator concern. The event involved excessive air leakage to Low Pressure Service Water Control Valve. The following correct behaviors were noted:

- recognized by operator as impairment- shutdown clock declared
- Engineering, operations and Maintenance develop action plan challenged by DOM
- Operational decision making

In conclusion, the safety culture is composed of:

- Organization’s values
- Organization's behaviors
- Modeled by it’s leaders
- Internalized by it’s members

The behavior of its leaders is important.



Post ISTB Organizational Behaviours



TEAMWORK / RESPECT:

Depending on the best from each other

- Involve Engineering as an equal team member in all key decisions.
- Apply realistic timelines for complex problems, especially when in-depth understanding of design basis is required. Indicate if more research is needed to determine the timeline.



INTEGRITY:

Thinking hard; Acting correctly

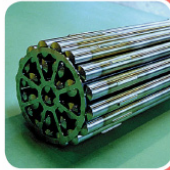
- 'Beware of Good News'. Insist that assumptions are validated and ask probing questions to ensure problems are understood and proven to be resolved.
- Maintain defense in depth so that no single failure or mistake results in unacceptable consequences.
- Drive to identify and correct true root causes.
- Ask, "How?" before "When?" ie Ask the person how they will be doing the work and what steps they will take, before asking when the work will be done.
- Focus on the most important equipment.



COMMITMENT:

Looking toward the long term

- Act conservatively if an immediate decision is needed without all the necessary information.
- Take the time necessary for quality work to support decisions.
- Don't defer actions that will resolve safety issues or improve long-term performance.



PICKERING A ONTARIO POWER
GENERATION

Figure 1 Pickering A poster used to communicate "Post ISTB" Behaviours"