

Engineering Fundamentals

1. Monitor and evaluate.
2. Operate, maintain and modify in a controlled manner.
3. Communicate, advise and advocate.
4. Acquire and maintain expert knowledge.
5. Make informed decisions by encouraging differing opinions, challenging positions and applying critical thinking skills.

Technical Conscience

1. Senior leaders respect and reinforce technical considerations in decision making.
2. Leaders accept, support and exercise technical authority.

Further, Nuclear Professionals

3. Identify, communicate and advocate.
4. Adhere to sound principles and judgment.
5. Challenge conditions and decisions.



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Engineering Fundamentals and Technical Conscience



Nuclear professionals Deliver Excellence to keep our fleet in the Xcel Energy long-term portfolio

I Deliver Excellence

in my engineering work by applying
engineering fundamentals to my
daily activities.



I understand my personal obligation to internalize
and exercise technical conscience to ensure plant
activities are conducted in a manner consistent
with plant design and licensing bases, to ensure
high reliability, and preserve operating, design
and safety margins.

Behaviors + Results = Performance

Following is a summary of the behaviors I will model to Deliver Excellence (results), using the right process in “**How We Do Business**” from our performance model – the ***Picture of Excellence***.

Engineering Fundamentals

(INPO 12-013, Performance Objectives and Criteria EN.1)

Engineers closely monitor and evaluate plant conditions and equipment performance.

- Know your equipment. Use walkdowns and interactions with Operations and Maintenance to become familiar with system and component challenges. Monitor for and expect material condition excellence.
- Proactively monitor for and take action on any adverse performance trends.
- Proactively identify degraded equipment conditions or repetitive equipment issues through performance monitoring.
- Use predictive maintenance techniques to monitor system and component performance.
- Proactively identify system and component design vulnerabilities.
- Enter issues into the Corrective Action Program (CAP). Conduct evaluations that determine causes and actions to prevent future events.

Ensure the plant is operated, maintained and modified in a controlled manner, consistent with its design requirements and licensing bases.

- Understand and respect design and operating margins and limits. Quantify and proactively defend the plant design and licensing bases.
- Utilize correct design information for plant changes, procedures, tests and engineering documents.
- Accurately and timely reflect design basis in plant changes, procedures, tests and engineering documents.
- Develop and utilize post-modification tests to ensure changes are implemented correctly.

Communicate technical information effectively. Advise decision makers and advocate resolution of conditions that affect design or equipment performance.

- Leverage System/Component Health Reports to communicate equipment issues and actions plans. Hold the organization accountable for achieving results.

- Leverage Plant Health Committee and design review meetings to communicate equipment issues.
- Advocate for your equipment. Communicate adverse trends and raise concerns to your leadership.
- Define and understand the critical functions, credible consequences and factors of safety.
- Effectively and completely document engineering reviews, engineering judgment and assumptions to support conclusions.

Have expert knowledge of plant design, operating requirements, and industry codes and standards.

- Understand regulatory requirements.
- Be fully cognizant of operability requirements and allowances, and apply them rigorously through clear, concise, accurate and timely support of Operability Determinations.
- Use the proper codes and standards to produce quality work consistent with design bases.
- Seek mentors and technical experts when needed.
- Be accountable for your own training needs. Pursue additional skills and knowledge to broaden qualifications and enhance professional development. Remain cognizant of industry issues, advances in technology, and industry operating experience in your area of expertise.

Think critically; exercise disciplined technical decision making, and challenge facts, methods and decisions.

- Use a questioning attitude through intrusive questioning and challenge boards to prevent group-think and poor decisions.
- Invite and respect team members’ input and ideas.
- Address issues with data and/or technical rationale. Validate vendor-supplied information and data.
- Understand plant consequences of every action taken. Understand the potential worst outcomes from an activity, and then perform adequate reviews and contingency preparations to mitigate or prevent adverse outcomes.
- Constructively challenge ideas, actions and decisions of team members. Involve appropriate level of challenge and management review.

Technical Conscience

(INPO 10-005, Principles for Maintaining an Effective Technical Conscience)

Senior leaders and corporate executives respect and reinforce the importance of technical considerations with a consequence-biased approach in decision-making.

Leaders accept, support and exercise their technical authority.

Engineers and technical staff identify, communicate and advocate timely resolution of technical concerns.

- Proactively monitor for and take action on any adverse performance trends.
- Enter issues into the Corrective Action Program (CAP). Conduct evaluations that determine causes and actions to prevent future events.
- Collaborate with other nuclear professionals to define and understand the critical functions, credible consequences and factors of safety.
- Leverage System/Component Health Reports to communicate equipment issues and actions plans.
- Hold the organization accountable for achieving results to restore margins or conformance to plant design.
- Leverage Plant Health Committee and design review meetings to communicate equipment issues.
- Be the advocate for your equipment. Communicate adverse trends and raise concerns to your leadership. When temporary solutions are required, advocate for permanent resolution.

Engineers and technical staff adhere to sound principles and judgement to produce high-quality products and decisions.

- Effectively and completely document engineering reviews, engineering judgment and assumptions to support conclusions.
- Use factual information from diverse sources, avoiding opinions and emotional arguments.
- Clearly communicate assumptions and use of judgement to decision makers to ensure risks and the limits of technical analyses are fully understood.
- Use the proper codes and standards to produce quality work consistent with design bases.

- Ensure technical inputs, methodologies and the bases for engineering results are documented, independently verified and formally communicated to appropriate stakeholders.
- Own your signature; understand the limits of your technical expertise.
- Use verification techniques to ensure that plant conditions and proposed changes are appropriately bounded by requirements of plant design and licensing basis, and preserve operating, design and safety margins.

Nuclear professionals identify, question and advocate to resolve issues that may compromise nuclear safety or plant reliability

- Use the decision making processes like ODMI and OSCAR to document facts, provide bases for advocated positions and ensure challenge and feedback.
- Communicate technical considerations with integrity and confidence by requesting feedback to ensure decision makers understand.
- Proactively present technical considerations and functional expertise to decision makers and leadership in formal and informal settings.
- Leverage company partnerships and agreements to seek subject matter expert input to ensure actions do not compromise adherence to approved designs and specifications.
- Decisions related to plant reliability are based on facts and appropriate consideration for potential risks to plant reliability and may not result in the most conservative option.

