

Bringing Nuclear Safety Culture

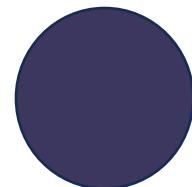
to Life



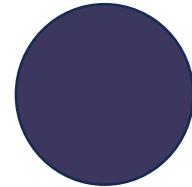
Claire Harris, President
Clean Energy Connections Inc.



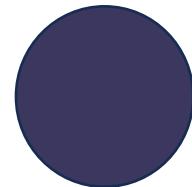
Agenda



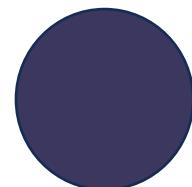
What is Nuclear Safety Culture (NSC)



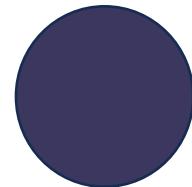
Requirements for NSC



How healthy is your NSC?



How healthy is your organization's NSC?



How do we measure, analyze and improve?

Nuclear

Makes us ask “What is special about the Nuclear Power Industry?
What must we understand and accept about it to be safe?”



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Safety

Focuses attention on what the culture must achieve:
Makes us ask “What exactly IS safety?”

Culture

Makes us ask : “What do we mean by culture?” and “How does culture relate to safety?”

Nuclear: What is special or unique?

1

Potential for very rapid very high levels of energy to be released.

2

Hazards which have to be controlled for extremely long periods of time.

3

Hazards which are undetectable by humans without special tools.

4

Technically complex culminating in written specifications for operation, testing, maintenance, etc.

5

Huge investment, extremely expensive to modify, easily damaged by “small things” like chemistry.

6

Degradation and life expectancy have to be closely monitored.

Safety: What does “*being Nuclear*” tell us?

THE REACTOR IS FAST ACTING AND UNFORGIVING:

Total respect for the technology is required.

THERE ARE INTANGIBLE HAZARDS:

We must follow practices that we cannot “recognise as needed” at times. **We have to follow the rules.**

WE MUST WORK TO THE DOCUMENTS:

The management system is critical, and human performance is critical. The work will be heavily proceduralized whether people like this or not.

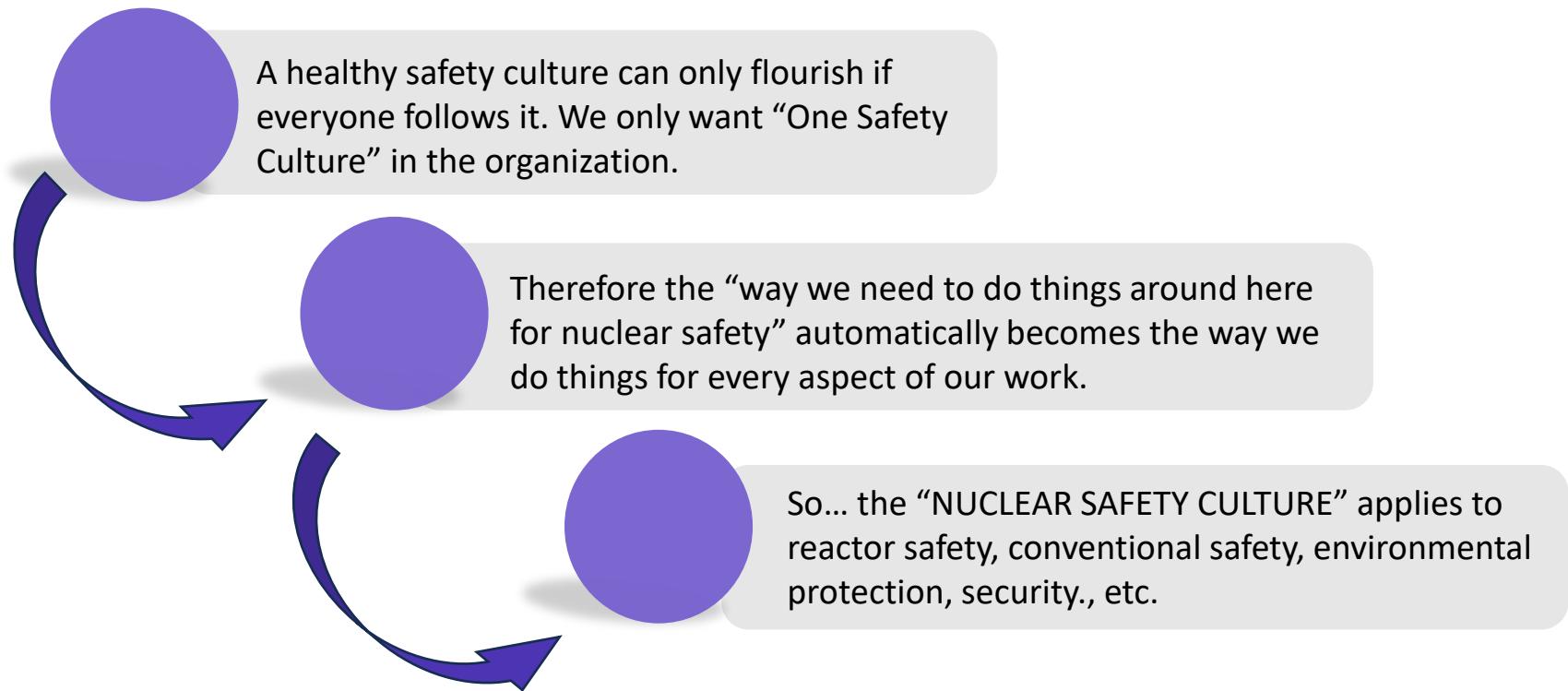
IT IS VERY DIFFICULT TO MODIFY OR REPAIR: We must get it right the first time in design, look after it in maintenance and not play with it or “put it to the test” in operation. We must not tread on the margins without significant reasons.

WE WILL ALWAYS HAVE ONLY LIMITED OPERATING EXPERIENCE OURSELVES: We must learn from others; all the time.

IT'S AN EXECUTIVE PROBLEM - BIG, EXPENSIVE AND EASILY DAMAGED: Executives must pay attention to detail, see what other people do not see, act courageously.

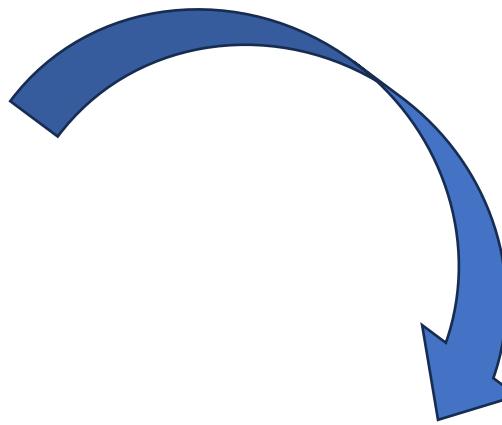
There is only one culture

Culture is the silent force running your organization. whether you are aware of it or not.



CSA N286:12

Management system requirements for nuclear facilities



*A trademark of the Canadian Standards Association, operating as "CSA Group"

4.2 Safety culture

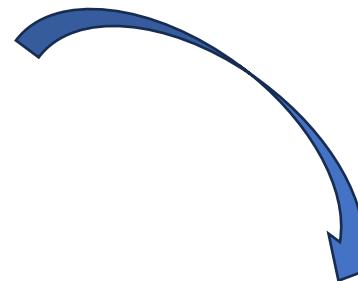
Management shall use the management system to understand and promote a safety culture by

- a) issuing a statement committing workers to adhere to the management system;
- b) defining and implementing practices that contribute to excellence in worker performance;
- c) providing the means by which the business supports workers in carrying out their tasks safely and successfully, by taking into account the interactions between individuals, technology, and the organization; and
- d) monitoring to understand and improve the culture.



Figure 1
Summary of standards and applicable elements
(See Clauses [0.2](#) and [A.2.1](#).)

Category 4	Category 3 Note: Category 3 includes Category 4 requirements.	Category 2 Note: Category 2 includes Category 3 and 4 requirements.	Category 1 Note: Category 1 includes Category 2, 3, and 4 requirements.
QA program <ul style="list-style-type: none"> • Training requirements • Contract review • Document control • Calibration • Procurement • Verification activities • Identification • Handling and storage control • Production • Packaging and shipping • CFSIs • Records • Nonconformance and corrective action • Customer-supplied items and services • Statistical techniques 	QA program <ul style="list-style-type: none"> • Training and qualification program • QA manual • Tender and contract review • Program descriptions • Design <ul style="list-style-type: none"> – Interfaces – Design inputs – Software – Design outputs – Design verification – Design changes • Verification planning • Identification and traceability • Production planning • Use of experience • Special processes • External audits • Dedication 	QA program <ul style="list-style-type: none"> • Program procedures • Design <ul style="list-style-type: none"> – Planning – Preliminary design – Design analysis – Detailed design • Nonconformance cause analysis • Internal audits 	QA program <ul style="list-style-type: none"> • Process review • Design <ul style="list-style-type: none"> – Alternatives • Nonconformance (preventive measures) • Corrective action for potential nonconformances



4.6 Safety culture

Management of the supplier's business shall use the QA program to understand and promote a safety culture by

- issuing a statement committing personnel to adherence to the QA program;
- providing the means by which the business supports personnel in carrying out their tasks safely and successfully, by taking into account the interactions between individuals, technology, and the organization;
- monitoring to understand and improve the culture; and
- driving the organization to understand the customer requirements and the importance of safety of the items and services offered.

INPO: Traits of a healthy nuclear safety culture

1. PERSONAL ACCOUNTABILITY
2. QUESTIONING ATTITUDE
3. SAFETY COMMUNICATION
4. LEADERSHIP ACCOUNTABILITY
5. DECISION MAKING
6. RESPECTFUL WORK ENVIRONMENT
7. CONTINUOUS LEARNING
8. PROBLEM IDENTIFICATION AND RESOLUTION
9. ENVIRONMENT FOR RAISING CONCERNs
10. WORK PROCESSES

Eight practices to create healthy NSC Traits

1

Uphold high standards

2

Let safety speak in all decisions

3

Take pride in all work

4

Listen openly and speak honestly, building relationships on respect

5

Create a sense of belonging

6

Question and challenge to get it right

7

Plan, do, check, act, and learn. Share & improve

8

Share the story face to face



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LET safety speak in
all
decisions





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Uphold High Standards





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QUALITY

**TAKE PRIDE IN
YOUR WORK**



Bringing Nuclear Safety Culture to Life



Create a sense of
belonging





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Indigenous inclusion at work is more than just inclusion...its about reconciliation



**“ The important thing
is to never stop
questioning. ”**

Albert Einstein



**Question & Challenge
to get it right**





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**Listen openly and
speak honestly,
building
relationships on
respect**



Plan, do, check, act

And learn, share and improve



Share the story face to face



INPO Traits of a Healthy Nuclear Safety Culture

Actions	Personal Accountability	Questioning Attitude	Safety Communication	Leadership Accountability	Decision Making	Respectful Work Environment	Continuous Learning	Problem Identification and Resolution	Environment for Raising Concerns	Work Processes
	Personal Accountability	Questioning Attitude	Safety Communication	Leadership Accountability	Decision Making	Respectful Work Environment	Continuous Learning	Problem Identification and Resolution	Environment for Raising Concerns	Work Processes
We uphold high standards										
Take Pride in our work										
Belong to the team										
Listen openly and speak honestly										
Build relationships on respect										
Question and challenge to get it right										
Let safety speak in all decisions										
Think, Plan and Act										
Learn, share and improve										
Share the story face to face										





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CUSTOMIZED PLAYBOOK FOR NUCLEAR SAFETY CULTURE

