# LESSONS LEARNED FROM A FIVE-YEAR EVALUATION OF THE BELGIAN SAFETY CULTURE OVERSIGHT PROCESS

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#### Outline

#### I. SCO Oversight process within Bel V

- II. Safety Culture Observations in practice
- III. A three-phase assessment
- Annex: Safety Culture Attributes

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### I. SCO Oversight process within Bel V

	Inspectors / Safety Analysts	SC coordinator	Aims	Impacts on oversight process		
Each month	OBSERVATIONS <	Observations → analysis	<ul> <li>Improve observation (description and classification)</li> </ul>	Possible direct reporting to the licensee		
Each quarter	<	Synthetic → report	<ul> <li>Identify early sign of SC issues</li> <li>Presentation to the monthly FANC-BelV meeting</li> </ul>	<ul> <li>In depth analysis</li> <li>Focus inspections on specific dimensions</li> </ul>		
Each Year	<	→ Detailed report	<ul> <li>Global analysis of SCO on yearly basis</li> <li>Discussion with the licensee</li> </ul>	<ul> <li>Input for annual Management inspection</li> <li>Feeding annual inspections programme</li> <li>Follow-up of licensee actions</li> </ul>		
Pluri- annual	↓ ←	→ Trend report	<ul> <li>Identify deep- seated SC issues</li> <li>Discussion with the licensee</li> </ul>			

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#### Where?

→ SC Observations may cover various functional areas

- Management, Organisation & Administration
- Training & Staff Qualification
- Operation
- Maintenance
- Technical support activities (engineering, modification projects, safety analysis ...)
- Operational experience feedback
- Radiation protection
- Emergency planning and preparedness

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#### Who?

➔ SC Observations may concern different levels of responsibility within the licensee or contractor organisation

- Corporate directors
- Plant manager
- Senior and middle-level managers at the nuclear facility
- First line supervisors
- Shop floor workers (operators, maintenance technicians ...)
- Contractors (including engineering support)

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#### When?

➔ SC Observations may be made after any interaction with a licensee or important contractor working for the licensee

- Plant walk down during an inspection
- Direct observation of a licensee or contractor activity on site
- Meeting or discussion with member(s) of licensee staff or contractor staff
- Review of documents (established or authorized by licensee)
- Analysis of licensee event reports and review of corrective actions
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#### What?

➔ SC observations should first provide facts, not a personal interpretation of an observable fact

- Behavioural issue
- Organizational issue
- → SC observations should be enriched by providing elements
- of context (who?, where?, when?, how?...)
  - People involved (organisation, team, function ...)
  - Operation/activity
  - Organisational context (process & procedures, expectations ...)
  - Work conditions
  - Communicational context

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#### How?

- → SC observations should be put in a safety culture
- context = interpretation of an observable fact
  - Provide argumentation (with your own words) why observed fact is a safety culture issue !
  - Provide appreciation of this SC observation
    - $\circ$  Positive = sign of strong safety culture
    - $\circ$  Negative = sign of weak safety culture
  - Provide link to one or more safety culture attributes
    - = Identify related safety culture characteristics and attributes of our Framework of the Safety Culture Concept
      - Main attribute: focus of your observation of behavioural or organisational issue

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 Secondary attributes: additional issues resulting from analysis of behavioural and organisational context

Facility	Туре	Торіс	Initials	Date	Fact	Context	Main attribute	Value Argumentation	Secundary attributes	Reference Report	µCCS Comments	Validation <sup> </sup>	Evaluation grid
NPP Unit 5	Routine Inspection		WXZ		During a inspection in the main control room of the unit 5 (28/11/2012), it has been observed a discrepancy between the level of the tank ICS CO7 (Intermediate Cooling System) indicating 86% and the X-DOC-15 procedure referencing a Technical Specifications criterium of 56% < N < 80% (TS 16.XXX).	The observation has been made at the beginning of the morning shift in the control room. The unit operated at full power. Questioned about the tank level, the operator in charge stated that it was not important: "I never take this level into account. It's always like this I think". Rapidly, the chief operator opened the Technical Specifications and stated that the tank maximum level was not reported in the TS. Only the minimum level was reported.	C3	-	D2, D4,		ОК	C3	

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#### **Dimensions**

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- Relevance of SC observations
- SCO adequacy for SC assessment

**Dimensions** 

- Functions of the process
- Depth of analysis

**Dimensions** 

- Impacts on the oversight process
- Impacts on licensees

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#### Input phase

- Relevance of Safety Culture Observations (SCOs) performed by inspectors:
  - Since the review of the process in 2012, the quality of SCOs shows an improving trend. SCOs now reach a good quality level in terms of description (facts and context) and in terms of attribute selection.
  - The system in place enables to cover a larger scope of safety culture attributes.
- Adequacy of SCOs for safety culture analysis:
  - SCOs are exploitable data in order to develop a safety culture chapter within the yearly safety evaluation dedicated to each nuclear installation.
  - Nevertheless, from a quantitative perspective, it is important to note that the process needs to be fed by a minimal amount of observations.
  - This implies that inspectors' observation capabilities ("What to observe?") should be continuously reinforced through a systematic coaching in the field.

#### **Output phase**

- Functions of the process:
  - The SCO process is considered as appropriate for recording and analysing safety culture observations, and, once a year, for reporting the results to licensees.
  - Nevertheless, it is important to note that the process is not relevant for realtime monitoring. The process actually needs time to gather information and, as said, the analysis method requires a sufficient amount of observations to identify relevant conclusions.
- Depth of analysis:
  - The process enables drawing attention to human and organizational issues to be followed or further investigated. In other words, the tool captures blind spots and signs of safety culture issues.
  - However, until now, SCOs analysis remains at the site level of an installation. A larger amount of SCOs is needed to perform safety culture analyses at the units' or departments' levels. As a next step, analyses could go deeper into the knowledge of specific cultural characteristics of units, departments or occupational groups of a nuclear installation.



#### **Outcome phase**

- Impacts on the oversight process:
  - The process was developed in order to feed the overall oversight process. This implies that results of safety culture analyses should be use for setting licensee actions to be achieved by the licensees or for developing the next year's inspection program.
- Impacts on licensees:
  - Promoting licensees' safety culture was considered as an indirect objective. Actually, in parallel of the regulatory body SCO process, some licensees developed their own safety culture oversight process and asked to be advised by the regulatory body on that matter.



#### **Key drivers to success**

- This kind of process is relevant for capturing and analysing safety culture issues. This also implies adopting a "Learning by doing" approach and seeking for a continuous improvement of internal capabilities. In other words, this kind of process cannot be a "turn-key project" but necessarily is "home-made".
- Qualitative and quantitative sides are equally relevant in order to enable a robust analysis. This implies continuously providing training and, most importantly, organising field coaching for inspectors.

#### **Key drivers to success**

- The nomination of a safety culture coordinator or officer is therefore a critical point in order to develop and manage the process. In that regard, as said, we can lay the emphasis on the coaching and managing functions of the safety culture coordinator.
- As a main advantage of the process, it is also important to mention that implementing a SCO process also constitutes a knowledge development process in itself. Observing safety culture attributes clearly was a new practice for most of the inspectors of the Belgian Regulatory body. The development of the process has been an opportunity to open up new safety issues and to reinforce inspectors' capabilities in HOF oversight.



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### Safety Culture Attributes



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#### Safety Culture Attributes

#### A. Safety is a clearly recognized value

#### **Corresponding safety culture attributes:**

A1.The high priority given to safety is demonstrated in communication and decision making and reflected in documentation

A2. A proactive and long term approach to safety issues is shown in decision making

A3. Safety conscious behaviour is socially accepted and supported

A4. Safety is a primary consideration in the allocation of resources



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BEL FANC @ AFCN Safety Culture Observations Tool Guidance Purpose and scope of the documen Based on identified needs, this document aims specifically at providing practical guidance for collecting and reporting observations that can be related to Safety Culture SC) in a systematic and structured way. This guidance document will then give a framework for the understanding the necoding and the labeling steps of the observation process. Jointly with the FANC, this process will be followed by an analysis step and munications to the licensee. The document does not intent to supersede international standards relating to Safety Culture evaluation ([1] - [19]) but provides a user support (Bel V and FANC). Contents Understanding Safety Culture What is Safety Culture?... What is a good or a had Safety Culture?
 Why Safety Culture observations are important
 Observations process within FANC-Bel V Guidelines for Safety Culture observations ... What is an observation ?..... How to provide observations?
 How to provide observations?
 Describing the fact and the context
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 J.2.2 Identifying SC attributes and argumentating.
 J.2.3 Filling in the SC observation sheet

 5.1.1
 Safety culture characteristics and attributes

 5.1.2
 Safety culture attributes and corresponding guiding indication

### Safety Culture Attributes

#### **B.** Leadership for safety is clear

#### **Corresponding safety culture attributes:**

- B1. Commitment to safety is evident at all levels of management including corporate management
- B2. There is visible leadership showing the involvement of management in safety related activities
- B3. Management seeks the active involvement of individuals in improving safety
- B4. Relationships between management and individuals are built on trust

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Purpose and scope of the document

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### Safety Culture Attributes

#### C. Accountability for safety is clear

#### **Corresponding safety culture attributes:**

C1. Roles, responsibilities and accountability for safety are well defined and clearly understood

C2. There is a high level of compliance with rules and procedures

C3. Ownership for safety is evident for all individuals and reflected in work environment and plant conditions

C4. An appropriate relationship with the regulator ensures that the accountability for safety remains with the licensee



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### Safety Culture Attributes

#### **D. Safety is integrated into all activities**

#### **Corresponding safety culture attributes:**

- D1. Consideration of all types of safety including nuclear, radiological, industrial, environmental and physical safety is evident
- D2. Processes from implementation to review ensure that an adequate level of safety is maintained
- D3. Safe working conditions exist with regard to time pressures, workload and stress
- D4. Cooperation and teamwork ensure that an adequate level of safety is maintained
- D5. Factors affecting human performance are considered

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### Safety Culture Attributes

#### E. Safety is learning driven

#### **Corresponding safety culture attributes:**

- E1. A questioning attitude prevails at all organizational levels
- E2. Open reporting of deviations and errors is established and supported
- E3. Operating experience (both internal and external to the facility) contribute to continuous improvement
- E4. Internal and external assessments, including self-assessments contribute to continuous improvement
- E5. Safety performance indicators are tracked, trended, evaluated and acted upon
- E.6 There is systematic development of individual competences including leadership