

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

B. Bernard

Outline

I. SCO Oversight process within Bel V

II. Safety Culture Observations in practice

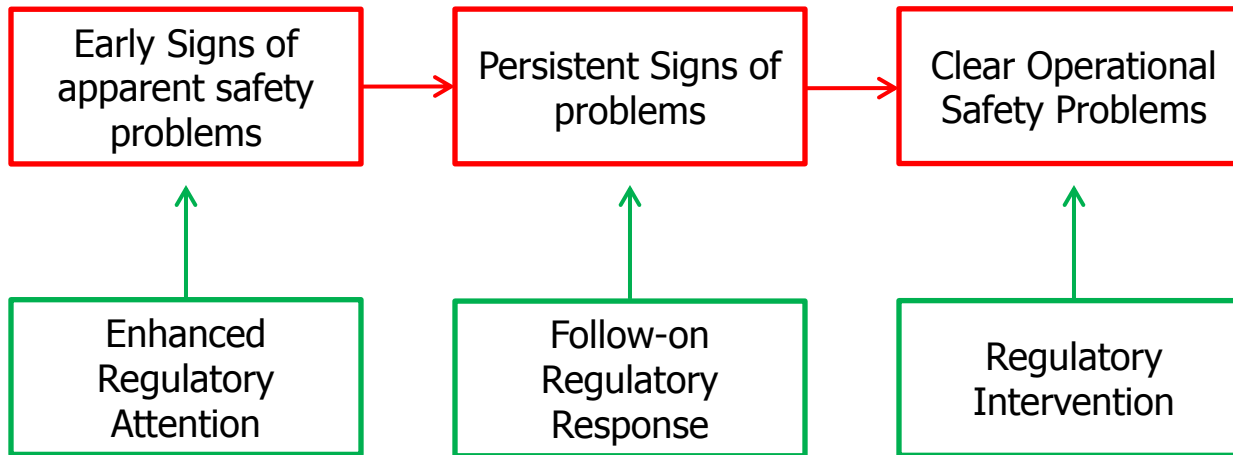
III. A three-phase assessment

Annex: Safety Culture Attributes

I. SCO Oversight process within Bel V

	Inspectors / Safety Analysts	SC coordinator	Aims	Impacts on oversight process
Each month	OBSERVATIONS 	Observations analysis	<ul style="list-style-type: none"> Improve observation (description and classification) 	<ul style="list-style-type: none"> Possible direct reporting to the licensee
Each quarter		Synthetic report	<ul style="list-style-type: none"> Identify early sign of SC issues Presentation to the monthly FANC-BelV meeting 	<ul style="list-style-type: none"> In depth analysis Focus inspections on specific dimensions
Each Year		Detailed report	<ul style="list-style-type: none"> Global analysis of SCO on yearly basis Discussion with the licensee 	<ul style="list-style-type: none"> Input for annual Management inspection Feeding annual inspections programme Follow-up of licensee actions
Pluri-annual		Trend report	<ul style="list-style-type: none"> Identify deep-seated SC issues Discussion with the licensee 	

I. SCO Oversight process within Bel V



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II. Safety Culture Observations in practice

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
- ...

II. Safety Culture Observations in practice

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)
- ...

II. Safety Culture Observations in practice

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
- ...

II. Safety Culture Observations in practice

What?

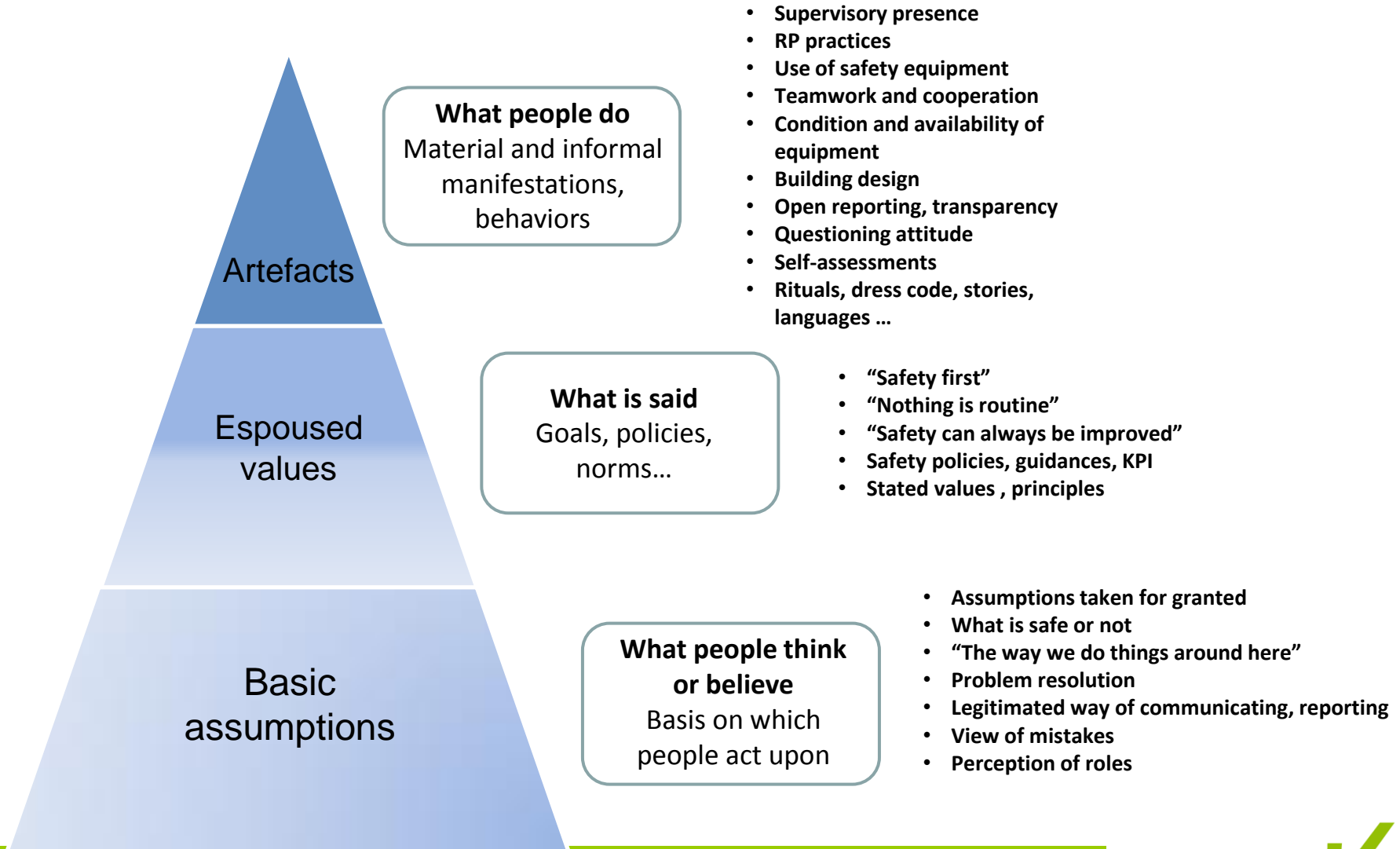
→ SC observations should first provide facts, not a personal interpretation of an observable fact

- 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
- ...

II. Safety Culture Observations in practice



II. Safety Culture Observations in practice

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
 - Positive = sign of strong safety culture
 - 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
 - Secondary attributes: additional issues resulting from analysis of behavioural and organisational context

II. Safety Culture Observations in practice

Facility	Type	Topic	Initials	Date	Fact	Context	Main attribute	Value	Argumentation	Secondary attributes	Reference Report	µCCS Comments	Validation	Evaluation grid
NPP ... Unit 5	Routine Inspection	/	WXZ	/	<p><i>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 C07 (Intermediate Cooling System) indicating 86% and the X-DOC-15 procedure referencing a Technical Specifications criterium of 56% < N < 80% (TS 16.XXX).</i></p>	<p><i>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.</i></p>	C3	-		D2, D4,	OK	C3		

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- Annex: Safety Culture Attributes

III. A three-phase assessment



Dimensions

- 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

III. A three-phase assessment

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.

III. A three-phase assessment

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 real-time 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.

III. A three-phase assessment

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 used 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.

III. A three-phase assessment

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.

III. A three-phase assessment

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

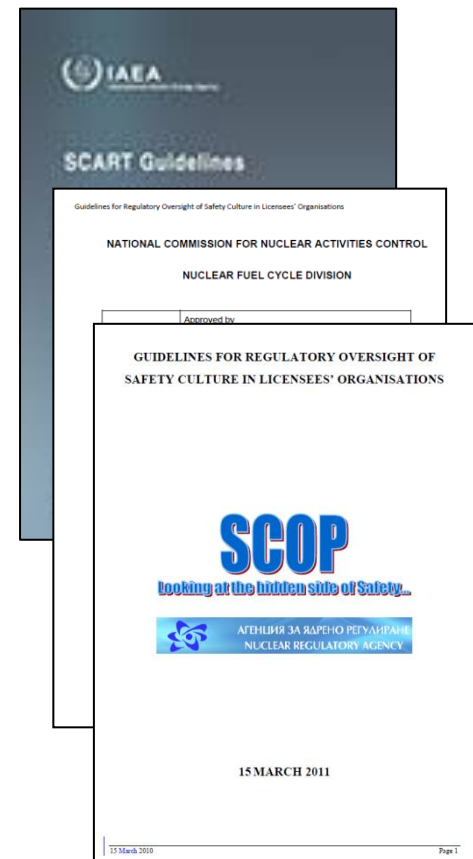


Safety is a clearly recognized value

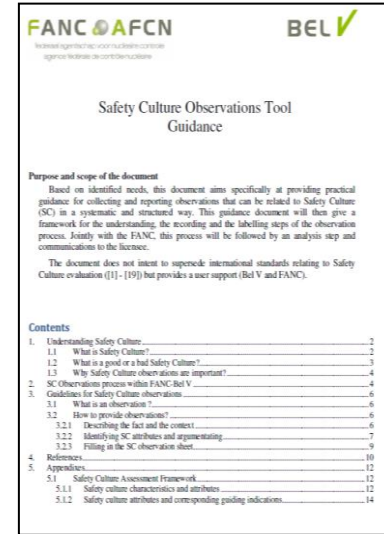
- A1. The high priority given to safety is demonstrated in communication and decision making and reflected in documentation
- A2. Safety is a primary consideration in the allocation of resources
- A3. The strategic business importance is reflected in the business plan
- A4. Individuals are convinced that safety and production go hand in hands
[...]

Safety is learning driven

- E1. A questioning attitude prevails at all organizational levels
- E2. Open reporting of deviations and errors is encouraged
- E3. Internal and external assessments, including self-assessments, are used
- E4. Organizational and operating experience (both internal and external to the facility) are used
[...]



Safety Culture Attributes



FANC **AFCN** **BELV**

Ministerie van Landbouw, Natuur en Voedselkwaliteit
Agence fédérale de sécurité alimentaire

Safety Culture Observations Tool
Guidance

Purpose and scope of the document

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 recording and the labelling steps of the observation process. Jointly with the FANC, this process will be followed by an analysis step and communications to the licensee.

The document does not intend to supersede international standards relating to Safety Culture evaluation (I1 - I19) but provides a user support (Bel V and FANC).

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A. Safety is a clearly recognized value

Corresponding safety culture attributes:

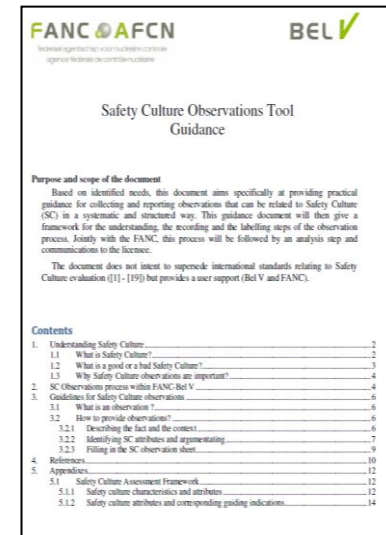
A1. The high priority given to safety is demonstrated in communication and decision making and reflected in documentation

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

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

Safety Culture Attributes

FANC **AFCN** **BELV**

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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

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

FANC AFNC **BEL** ✓

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