

Using Cultural “Warning Flags” within the Office for Nuclear Regulation

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Typically, following an accident or incident, investigations reveal issues around ‘poor’ culture which are seemingly only apparent with hindsight. The Office for Nuclear Regulation (ONR) has developed a method to collect and collate these weak signals across its dutyholders to aid understanding of the threats to performance. Understanding organisational culture within the regulatory context is central to understanding performance. ONR has recently developed guidance for inspectors to use to collect insights on organisational culture. The intent is to identify and monitor weak signals across nine “warning flags” to understand the threat that culture could have on performance.

The intent is for the flags to be used across safety and security purposes to gather insights about dutyholders, understand the threat from organisational culture, and determine appropriate follow-up action. The warning flags support inspectors in gathering intelligence from their everyday interactions in a proportionate and consistent manner. The observations may inform inspectors’ holistic regulatory judgements on dutyholder compliance. They can also inform developing regulatory strategies to target organisational culture aspects that are adversely impacting compliance. The flags have been deliberately worded so that they are applicable across all of ONR’s purposes, and in this way, they are also applicable outside of nuclear contexts.

ONR have briefed dutyholders on the flags, and they have been used to support the internal regulator, senior leadership walkdowns and consideration in investigations. Whilst the flags are not a model of organisational culture, they can provide insights that would be useful within companies as to the effectiveness of culture improvement initiatives. The paper provides a summary of the development of the framework of flags and outlines how these were piloted and developed within ONR.

Keywords: Weak signals; organisational culture, regulation, nuclear

Introduction

Background

The Office for Nuclear Regulation (ONR) is the UK’s independent nuclear regulator for safety, security and safeguards. Its mission is to protect society by securing safe nuclear operations. ONR delivers five statutory purposes to ensure safe nuclear operations, now and in the long term. These are:

- nuclear safety;
- nuclear site health and safety;
- nuclear security;
- nuclear safeguards; and
- safety of transport of nuclear and radioactive materials.

ONR has the legal authority to regulate nuclear safety, nuclear security and nuclear site health and safety at the 35 licensed nuclear sites in Great Britain (GB). This includes the existing fleet of operating reactors, fuel cycle facilities, waste management and decommissioning sites, as well as licensed and, in part, authorised defence sites, together with the regulation of the design and construction of new nuclear facilities, including the supply chain.

ONR adopts an enabling regulatory philosophy which is used to deliver the most appropriate outcomes in the public interest, in a proportionate and consistent manner, through a spectrum of regulatory tools, from influencing, advising and, where necessary, enforcement. It is widely recognised that dutyholders’ organisational culture will influence sustained and effective compliance. Organisational culture is often a prerequisite for effective safety, security and safeguards management.

The International Atomic Energy Agency (IAEA) sets out the standards that promote the achievement and maintenance of high levels of safety and security. These include fundamental principles for safety and security, and their supporting requirements and guides, including expectations for fostering and sustaining a strong safety and security culture. They include specific requirements for consideration of safety and security culture in regulatory activities (for example, IAEA 2013 & 2016).

Over the last four years, ONR has had a focus on safety culture including several pieces of work supported by experts in organisational psychology at Alliance Manchester Business School (Clarke et al, 2023, Siegl et al, 2023). To support this work, internal awareness training was developed by ONR for all inspectors, across all of ONR’s purposes, to support their regulatory activities. The approach adopted was to identify manifestations of a drifting culture, so that, during inspections and other activities, inspectors were aware of these. Development of this training led to a recognition that, within ONR’s regulatory guidance, collecting signs of cultural drift would support an enabling approach.

The Regulators’ Code (pertaining to the Legislative and Regulatory Reform Act, 2006) provides a framework for how regulators in the UK are expected to deliver regulation and engage with dutyholders. ONR sets out principles of enforcement as follows:

“proportionality in applying the law and securing compliance; consistency of approach; targeting of enforcement action; transparency about how the regulator operates and what those regulated may expect; and accountability for the regulator’s actions. These principles should apply both to enforcement in particular cases and to management of enforcement activities as a whole.” (ONR, 2024)

The intent was to develop an approach to collecting regulatory intelligence to help ONR understand organisational culture and support the aspiration to be proportionate and targeted.

Science of Weak Signals

Weak signals have been identified as small signals that on their own do not lead to harm. The notion of weak signals in safety space was first coined in Manmade Disaster Theory (Turner, 1978) which proposed that disasters do not come out of the blue. The theory contends that there is an accumulation and build up of latent conditions (weak signals) that increases risk, and that this goes unnoticed, until these have built up and lead to an event. Pidgeon and O’Leary (2000) proposed that:

‘latent errors and events accumulate which are culturally taken for granted or go unnoticed because of a collective failure of organisational intelligence’.

This work is consistent with the work from the researchers into High Reliability Organisations (HROs), which proposes that such organisations are mindful of weak signals. Whilst these signals on their own have no significant or clear link to potential danger, by monitoring and resolving them, harm is avoided. Following the Buncefield incident, the Major Incident Investigation Board final report recommended that the sector should develop attributes of HROs, and they identified two key attributes, namely chronic unease and avoidance of complacency, and attentiveness to weak signals. Similarly, the Norwegian PSA (2010) states that leaders should keep track of weaknesses in operations, integrating information across integrating information across different parts of the business, as well as learning from previous errors and applying that knowledge to improve risk management. Lekka (2011) reports that these principles are in line with HRO characteristics, such as learning orientation, management commitment to safety and the ability to foster an open and fair culture whereby errors are openly discussed, analysed and used as learning opportunities (e.g. Weick and Sutcliffe, 2007).

Turner (1978) reflected that being aware of weak signals does not necessarily lead to organisational appreciation of the threat to performance, he attributed these to complacency and cultural tolerance, inadequate technical understanding, or the inability to communicate the significance of the weak signal. These areas were also flagged within the 2003 Columbia Accident Investigation Board which describes missed opportunities, blocked or ineffective communication channels, flawed analysis, and ineffective leadership. Fundamentally, the research asserts that without a method of collecting weak signals it is possible that they will go unrecognised and could lead to adverse events.

Weak Signals and the Regulator

At Davis Besse Nuclear Power Plant (DBNPP), boronated water leaked from cracked control rod mechanisms at the reactor pressure vessel head and ate through 6 inches of carbon steel. This football-sized hole in the reactor pressure vessel was identified in 2002, and only 3/8 inch of stainless-steel liner remained holding back the high-pressure reactor coolant. The role of the regulator (Nuclear Regulatory Commission, NRC) as a contributor to this event is covered in USNRC (2008), and one of the contributors was that NRC failed to integrate known or available information into its assessments of DBNPP’s safety performance. The regulatory body took actions to consider how deteriorating conditions could be identified, as well as mechanisms to detect safety culture weaknesses.

When the Davis Besse event is taken alongside the academic findings from HROs, it is clear that regulators can identify and collect weak signals which would contribute to understanding of organisational culture, and the adequacy of a licensee. This is the principle upon which ONR has built its approach to collect weak signals of performance during routine regulatory activities.

Organisational Culture

Organisational culture is defined as the collective beliefs, values, attitudes and behaviour of an organisation that influence its conduct (BS ISO, 2022). In the 1980s, Edgar Schein developed a model for understanding organisational culture divided into three levels: artifacts (overt and obvious elements), values and assumptions. In 1992, Schein used the iceberg model of culture to discriminate between those cultural aspects that are visible, and those that are invisible. This principle is used as a way of understanding and inferring those aspects of culture that can be identified by regulators in the course of their activities. The intent of ONR’s approach is to use the visible weak signals to infer the invisible and gather a holistic picture concerning cultural weaknesses and strengths.

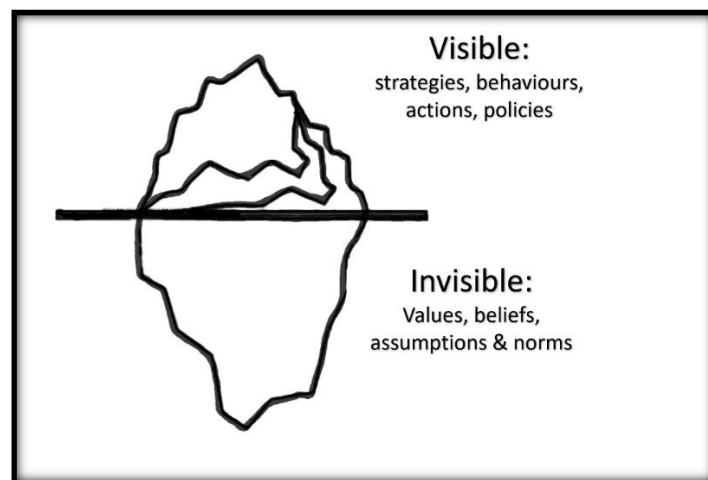


Figure 1 - Iceberg as a metaphor for considering culture.

Method – Development and Refinement of the Flags

Developing Organisational Culture Flags

CAIB (2003) defined “organisational culture” as: “the basic values, norms beliefs, and practices that characterise the functioning of a particular institution. At the most basic level, organisational culture defines the assumptions that employees make as they carry out their work; it defines “the way we do things here”. An organisation’s culture is a powerful force that persists through reorganisations and the departure of key personnel.”

Organisational cultural shortcomings are often identified as a contributor to events across the world and across diverse industries (for example, Piper Alpha, Deepwater Horizon, Chernobyl, Brumadinho Dam collapse, Colonial Pipeline ransomware event, NHS maternity hospital events). Hence organisational culture can be considered as the bedrock upon which dutyholders implement compliance arrangements that adequately control hazards.

To support development of a method to capture weak signals a review of literature, investigation reports, academic reports and regulatory approaches was carried out to identify those common failings that contributed to events. The following were reviewed:

- Nimrod: Haddon-Cave (2009) suggested the following physical and organisational causes to the loss of RAF Nimrod XV230: safety case failures (including incompetence, complacency and cynicism), supply chain and outsourcing problems, organisational change, leadership, deviation from basic principles, and business eclipsing airworthiness.
- Following a series of significant major hazard events globally, the UK Health and Safety Executive (HSE, 2008) set out seven principles of leadership based on identified lessons.
 1. Leadership, demonstrated through actions from the top, so that all managers and staff know that process safety is being taken seriously;
 2. Process safety management, including indicators of process safety performance (allowing learning from near misses and pre-cursor events, and avoiding major incidents);
 3. Real and dynamic risk assessments to ensure that staff understand the links between hazards and the risks they create, and the control measures that are in place to control them (the barriers to failure);
 4. Robust management of change approaches that capture real time plant and operational issues so that today's plant and operating envelope are properly understood by those that 'need to know it';
 5. Sustainability, with the business focusing on long term performance, so that investment and maintenance decisions, in particular, are focused on the longer term, whilst also maintaining a responsible customer approach to any activities that are contracted out;
 6. Well trained and competent people at all levels in the organisation and in sufficient numbers to address steady state operation, periods of change and emergency situations, and the infrastructure to ensure sustained competency; and
 7. A learning organisation that not only values and encourages learning from its own experiences, but looks beyond itself for lessons, and avoids complacency.
- Researchers from Bristol and Bath Universities analysed 12 accidents and incidents (Taylor et al, 2018; Taylor et al, 2016) and found common issues relating to: leadership, operational attitudes and behaviours (operational ‘culture’), safety management systems, impact of the business environment (often commercial and budgetary requirements), oversight and scrutiny, competence and training (at all levels), risk assessment and management (at all levels), organisational learning, communication failures, and supply chain (management of contractors).
- Lekka and Healey (2012) reviewed 16 events and identified the following common contributors: commitment to safety, complacency and lack of oversight, training and competence, learning from previous incidents, adequacy of

procedures, hazard awareness and management, safety communication, clarity of roles and responsibilities, and management of change.

- CAIB (2003) identified the following factors relevant to both the Columbia and Challenger accidents: management practices, failure to learn, communication did not flow effectively, did not follow its own rules, in-house capabilities and expertise eroded, safety and engineering functions lacked authority and independence, and inadequate understanding of programme risk.

ONR's intent was to develop a method to collect weak signals. For example, during the course of routine activities, inspectors will come across things that do not warrant reporting or feedback, e.g. personal protective equipment standards not fully used, laydown areas messy, competence shortfalls etc. Whilst each of these insights on their own would not be of a sufficient level, collecting these weak signals will allow patterns to be identified. This could be a particular problem area related to a flag or location; it supports monitoring of trends and allows a judgement about whether there is a threat to organisational culture. The insights are collected during routine regulatory engagements, investigations, inspections and other dutyholder interventions. Through a process of review and consolidation of the academic literature and research (above), the framework of flags shown in Figure 2 was developed.

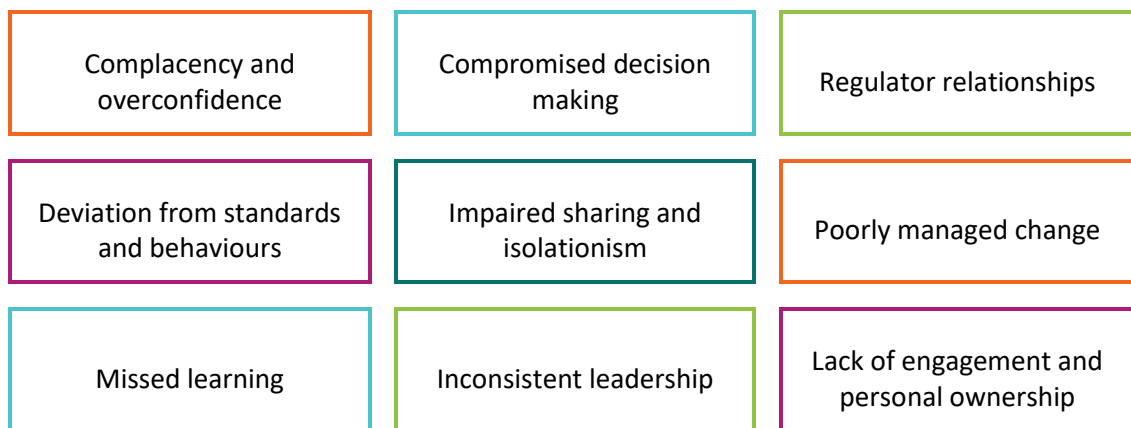


Figure 2 – Organisational Culture Flags – Warning

First Iteration of Flags

Following the development of the first iteration of the flags, extensive review and consultation within ONR was carried out. The intent was to consider the following:

- Were the flags worded in a way that could be used across all of ONR's purposes?
- Were the flags worded unambiguously such that they could be clearly understood?
- Do inspectors detect cultural information on the flags?

This first review was carried out to support the development of e-learning for inspectors and involved development of case studies and examples to support the review. Additionally, a review by security colleagues identified key security events, and provided the opportunity to verify that the flags could be used for that purpose. Bunn and Sagan (2014) identified areas very similar to the flags derived from security events, as did a review of the Y12 event (Fissile Materials Group, 2012).

Following refinement of the flags and development of the e-learning, efforts were put into the development of the Organisational Culture Technical Inspection Guide (TIG). TIGs are guides to facilitate a consistent approach to ONR's inspections by providing guidance to inspectors. The Organisational Culture TIG (ONR 2024a) was a revision of the previous Safety Culture TIG. Stakeholders were consulted to determine which elements of the previous TIG should be retained, as well as how the flags could be used to support regulatory decision-making. This exercise determined that the TIG should:

- Provide examples of what types of things would be noted for each flag, and provide positive and negative examples;
- Develop a framework for using the flags;
- Identify links to regulatory activities, e.g., ONR's processes for assigning regulatory attention levels, developing intervention strategy, and carrying out investigations; and
- Development of good and bad examples for each flag.

The aim was to develop an inclusive model and a common language for use across ONR's purposes. Significant effort was put into ensuring these aims were met.

Identification of Good and Bad Manifestations of the Flags

Workshops were held with regulatory inspectors from across ONR's purpose. The intent was to use operational experience to identify credible examples that reflected the experience of inspectors. An experienced inspector facilitated these groups, and then produced a draft of the nine flags, pulling together examples of 'what good looks like', and 'what bad looks like'. This was then subject to peer review within a small group of experienced inspectors to ensure the language was inclusive, and that the examples reflected the five purposes of ONR. Changes to these positive and negative examples included:

- Use of the term 'dutyholders', as opposed to 'licensees' to reflect both supply chain and transport requirements;
- Remove exclusively safety or nuclear safety examples; and
- Ensure plain English.

These examples were used to develop the examples to support inspectors and are presented as Appendix B in the TIG.

Alongside the awareness training of the TIG, the good and bad manifestations of the culture provide tactical support to inspectors of the sorts of issues that may be seen, as well as which flag the insight sits within.

Piloting of the Flags

Two main approaches were adopted for the piloting of the flags, to explore how the flags could be used and if they were appropriate. The pilots were:

- Routine collection of flags within a subdivision,
- Standalone organisational culture interventions.

The intent was to explore:

- how the flags worked in practice;
- how they supported regulatory activities; and
- whether they were acceptable to regulators and dutyholders.

These activities supported the development of the new Technical Inspection Guide (ONR, 2024a).

Pilot 1 – Routine Flag collection within a regulatory subdivision

The flags were used in one of ONR's regulatory subdivisions, with a team of inspectors and assessors working at two licensee sites. The team are typically on site carrying out inspections, assessments, interventions, meetings and walkdowns both within hazardous facilities as well as within the corporate body.

The pilot involved training and coaching of inspectors, routinely reporting insights against the warning flags, and the collation of the flags against the themes, and the finally determining how the findings will be used. The team is made up of around 20 inspectors and they have all been contributing to this new way of working.

A presentation was given to the team introducing the flags, as well as getting participants to identify examples of the types of insights associated with the flags that they routinely identify. The expectation was set that the inspectors should consider the flags during their activities at the sites and consider the associated positives and negative cultural attributes. The findings from use of the flags were fed back at a routine meeting which is held monthly as a way of reporting and capturing the regulatory insights from across the licensees. The flags were inserted as an agenda item into this meeting and were fed back alongside the conclusions from the activities carried out on site. Initially the ONR specialist Leadership and Management for Safety (LMfS) inspector had to provide coaching and assist in the reporting and categorisation of the flags. However, over time the inspectors became familiar with the flags, and became more balanced in their reporting.

One outcome of this pilot was the need to provide guidance on the positive versions of the warning flag, as it was not always a straightforward inverting of the wording. This led to the development of a handy, single-page guide for the positive as well as negative versions of the flags (see Appendix C of ONR, 2024a). The flags have been collected monthly for around 12 months across the subdivision. The types of insight collected included comments around use of procedures, PPE, reporting of events, and in isolation were not indicative of culture, but were isolated examples.

Around 30 insights are collected each month and made up of positives and negatives. The flags were initially collected for around six months and then an affinisiation exercise was carried out. The process used aligns to the "yellow sticky" exercise described by WANO (2018). The approach involves the manual organisation of large quantities of information into logical groupings, and in this instance the insights were printed out onto yellow sticky notes, and wall charts with the flag titles were attached to the walls. A team of five inspectors carried out this exercise. Each sticky was read and placed on the appropriate wall chart. Where this was not obvious the group would have a discussion and agree which flag the insight should be allocated to. This exercise was continued until all the yellow stickies were allocated to a flag. The group was then split into two, and each flag was reviewed to identify sub themes under the flags, identifying patterns as well as moving other stickies to provide further evidence or to consolidate hunches. This iterative process involved reviewing the flags, searching for patterns, conclusions or uncertainty until the data was exhausted, and the outcome could be reported. The output was a summary of the key findings pulling together the evidence to present a conclusion.

Generally, there was a mixed picture across the sites, with pockets of good behaviours and lower reported instances of negative flags; and other areas where there were more negative warning flags. The flags provided insights to support the development of ONR's intervention strategy, as well as insights to contribute to ONR's assessment of the appropriate regulatory attention level (ONR, 2024b). Additionally, data was not collected for some flags which caused ONR inspectors to reflect on the adequacy of the inspection process as well as the relevance of the flags. The implications for maintaining and improving data collection, and the implications for ONR's intervention strategy were discussed during a governance meeting.

The flags are now routinely collected within the subdivision, and the inspectors are attuned to identifying cultural and leadership insights during the course of regulatory engagements. A significant advantage of collecting the flags within the subdivision is the awareness of the importance of culture in enabling improved behaviours and outcomes for the licensee.

The outcome from this analysis provided support to the regulatory intervention strategy, and judgements as to the consistency and proportionality of ONR's interventions.

The main outcomes from this pilot were:

- Development of a handy one-pager to support collection of positive cultural indicators; and
- Broadening of the 'Management of Change' flag beyond organisational change, but also to include changes to plant and process.

Pilot 2 – Standalone Organisational culture inspection.

In certain contexts, ONR carries out dedicated organisational culture inspections and assessments. This is typically risk based and covers cases of whistleblowing, incident trends, or prior to permissioning activities. The flags were used to support a culture inspection at a licensee as part of an enabling approach and to identify insights for the site. The flags were used as a framework to guide question sets, alongside the ONR guide on examining culture in organisations (ONR, 2023). The flags provided a useful model for providing balanced feedback to the licensee, with threats clearly identified, as well as positives. The feedback made clear that this was not a commentary on the safety culture but were insights that the licensee could consider supporting improvement.

The main outcomes from this pilot were:

- Inspectors would need guidance to support how to feed back cultural insights; and
- Licensees and ONR inspectors appreciated the insights provided, and the simplicity of the flags.

Drafting of the Revised Technical Inspection Guide (TIG)

These pilots as well as the stakeholder review, provided a robust platform for the revision of the ONR's TIG, and supported the development of the document 'Organisational Culture Guide for Inspectors' (ONR, 2024a). The TIG includes guidance on how the flags can be used, a description of the flags as well as positive and negative examples; and handy summary cards which can be used during inspections.

The draft TIG was shared with industry and regulatory bodies (e.g. Environment Agency, and Defence Nuclear Safety Regulator). There was significant engagement, and the following is a summary of the feedback:

- Proposed editorial and content suggestions on the flags, e.g. suggestions for missing elements, rewording, enlargement (e.g. learning, poorly managed change and engagement) should be broadened to include other aspects;
- How to use the flags – avoidance of bias, how to feedback, and also how to consider large sites that have variable cultures;
- Concern about where the TIG sits within the wider regulatory /industry body guidance on culture and human performance.
- Training for inspectors – do ONR inspectors have the appropriate skills to collect the flags?
- The tone of the document is too negative – not enough focus on the positives and feeding back the positives.

These comments were considered, and where appropriate were included in the revised TIG.

Summary of the Final Version of the Flags

The final published version of the TIG is now available (ONR, 2024a). The flags are summarised below, providing the negative and positive version, as well as examples and a summary for each flag. This section is based on the TIG (ONR, 2024a).

1. Complacency and overconfidence/

A suite of green key performance indicators or an absence of major accidents and incidents does not necessarily indicate that risks are being adequately managed. It is possible that complacency and overconfidence means there is not an appetite to consider warning signs, question arrangements or challenge decisions. Leaders may not welcome diverse indications of actual performance, such as audit and inspection findings, outstanding actions from audits, inspections, or monitor subtle indications. This flag is important as focusing exclusively on good news can lead to employee disengagement with learning and consequently cynicism and a failure to continuously improve. Examples could include blame and scapegoating decreasing the likelihood of reporting, failing to determine root causes, overly focusing on individual accountability, and failing to implement corrective actions in a timely manner.

Warning Flag

If past performance was good or current performance seems good, low-level issues may not be recognised or challenged, e.g. numbers/key performance indicators/probabilistic safety assessment etc., prove we are fine. We do not need to do anything different

Positive Manifestation

Performance is considered broadly, including weak signals, taking a holistic approach that is not reliant only on indicators of historic performance, e.g. dutyholder's senior management drive continual improvement in safety and security performance and have a clear understanding of the standards and expectations

2. Compromised decision-making.

Compromised decision making is implicated in many organisational events, and this flag explores decisions, from local operation, tactical through to strategic. Examples could include decisions prioritising production, schedule, generation or other priorities at the expense of safety, security or safeguards. This could include deferring the resolution of maintenance and equipment problems, or that decisions to deviate from standards can always be 'justified'. The reasons and rationale for decisions are not communicated appropriately which can lead to cynicism about motivations, and additionally compromises perceptions of leadership and decreases trust.

Warning Flag

Short-termism, decisions imposed from afar and emphasis on commercial and other factors may deprioritise safety and security issues, e.g. operational decisions appear to prioritise commercial pressures including schedule, cost and convenience above standards.

Positive Manifestation

Decisions are timely, communicated appropriately and not compromised by short term thinking, decisions imposed from afar or commercial/other factors, e.g. technical conscience is considered fairly against operational convenience. Seniority of rank does not dominate decision-making and is recognised in formal mechanisms.

3. Relationships between regulator and dutyholder

This warning flag considers how receptive the dutyholder is to challenge and to insights from the internal and external regulators. There could be a reliance on the external regulator to help manage risk within the organisation, instead of the dutyholder managing its own activities in an appropriate manner. Relationships could be overly friendly or conversely defensive and uncooperative, which may be evident in how regulatory insights are accepted (and acted upon), ignored and disregarded, or argued over. The regulator's behaviours and how they are received can influence the dutyholder's behaviours and can indicate cultural shortfalls.

Warning Flag

Interactions may be defensive, adversarial or overly friendly. Regulator behaviours also influence dutyholder culture. Examples may include objections to planned interventions, and arguments over findings, or being obstructive.

Positive Manifestation

The relationship between the dutyholder and the regulator is founded on mutual trust. All are clear on their role and the importance of an open and honest relationship, e.g. dutyholders have open discussions with the regulator about problems, risks, concerns, do not need to be prompted and there is trust on both sides.

4. Deviation from standards and behaviours

It is widely recognised that work as described differs from work as done. The intent of this flag is collect examples where behaviours drift away from accepted good practice or a dutyholder's management system arrangement. For example, arrangements, procedures and work instructions are not used, safe standards of work are eroded, poor housekeeping is present, or key skills and expertise are being lost. Conduct does not appear to prioritise safe and secure behaviours. There is a lack of formality and discipline, which compromises performance and, if tolerated, could lead to significant degradation of performance. There may be evidence of non-compliance being tolerated and normalised throughout the dutyholder.

Warning Flag

Good practice is not followed, safe systems of work, formality and discipline are eroded; special initiatives overshadow the day job, e.g. turning a blind eye to routine rule breaking (e.g., walkways, clear desk policy, smoking, PPE, litter) and walking by.

Positive Manifestation

Standards and behaviours are clearly defined, reinforced and implemented. Good practice is followed, and special initiatives do not compromise the day job, e.g. staff apply good practice behaviours and techniques such as pre- and post-job debriefs and consider job risk factors and error precursors.

5. Impaired sharing and isolationism

Due to the high-risk nature of the nuclear industry, networks, benchmarks, industry and international bodies are particularly important. The industry should share and build upon knowledge, arrangements and events from high-performing organisations as part of continuous learning to identify and understand performance gaps. However, some organisations state that they are too different to gain value from sharing, cite other concerns that ostensibly preclude sharing, or focus on 'keeping up appearances'. This can lead to organisations lagging behind the industry standard and not being aware that their performance has drifted, as well as failing to identify relevant learning from others.

Warning Flag

If organisations do not share knowledge or benchmark against others, they may lag behind or be unaware of industry standards, e.g. fail to benchmark and use security reasons as an excuse for not sharing.

Positive Manifestation

Organisations share knowledge with and benchmark against others, ensuring they stay up to date with current industry standards and best practice, e.g. the dutyholder has the technical capability to appreciate industry norms and standards in all necessary technical disciplines. Networks are used and maintained.

6. Poorly managed change

It is widely recognised that modifications to process, plant and people, if poorly executed, can lead to poor outcomes. If changes are poorly managed and communicated, staff not consulted and engaged, or the risks not understood and mitigated, the negative impact will be greater. These principles are equally important to organisational change, including deviating from a capable organisation and failing to manage changes in leadership, capability and competence.

Warning Flag

Leadership is not engaged, risks not mitigated, and staff inadequately consulted and communicated with when modifications are made. Lip service is paid to change arrangements, e.g., under categorising changes, avoiding governance processes and making optimistic assumptions about risk.

Positive Manifestation

Leadership is engaged in managing change, risks are mitigated, and staff are appropriately consulted and communicated with when modifications are made, e.g. all change happens in a planned, controlled way and with a clear sense of the desired end state, and risk gap.

7. Missed learning

A learning organisation should challenge the differences between established understanding and practice and reflect on these to identify and understand any shortfalls between actual and intended outcomes. Near misses should be seen as opportunities to learn and a culture of open reporting should be fostered.

Warning Flag

If learning from current practice and thinking is not acted on, opportunities to improve (e.g. reporting, investigating and acting) may be missed, e.g. opportunities to identify trends from a broad range of sources are missed and learning not considered.

Positive Manifestation

Shortfalls are appropriately identified, understood and addressed. Learning is taken from many sources including incidents, audits and regulators, e.g. causal factors of incidents arising from apparent human and organisation failings are sought rather than just blaming individuals or issuing instructions to take care.

8. Inconsistent leadership

There are many indicators of leadership shortfalls that undermine organisational culture, including lack of visibility, lack of communication of behavioural expectations, shortfalls in skills, knowledge and competencies. There may also be implicit or explicit promotion of production, schedule or efficiencies at the expense of safety or security, and these behaviours are not recognised or challenged by leaders. Additionally, leaders may not reinforce expected behaviours - for example, delivery of actions from inspections, audits and investigations, use of personal protective equipment and relevant procedures, and reporting of unsafe conditions - by providing oversight and appropriate focus. Leaders may fail to ensure that they have access to a variety of opinions within the organisation so don't they have a good understanding of performance including behaviours and effective implementation of the management system. ONR has developed a guide on safety leadership which outlines a model of safety leadership (ONR, 2022), and has embedded leadership within the Safety and Security Assessment Principles (ONR, 2014, 2022a). Leaders embed good management practices, including establishing clear norms and expectations so that there is a sense of fairness and predictability, encouraging open communications and actively listening; and supporting and appreciating people speaking up.

Warning Flag

Leaders may lack visibility, skills, knowledge and competencies, and may not provide sufficient communication, oversight, challenge and follow-up, e.g. leaders are seen as remote and there is little direct contact or communication; or only after events have occurred.

Positive Manifestation

Leaders are visible and effective communicators, recognising their competencies while providing oversight, challenge and follow up, e.g. leaders have sufficient knowledge and experience to understand the impact of their decisions on safety and security.

9. Lack of personal ownership and engagement

This warning flag reflects the behaviours by the staff at all levels throughout the organisation, including contractors and the supply chain, and concerns their engagement, ownership, participation and involvement in company arrangements. These behaviours are important for engaging with management processes, contributing to organisational learning, improving work instructions or providing challenge. All believe that their contribution is valued, that they have a role and recognise that their voice matters.

Warning Flag

Workforce engagement, participation and involvement may be low. Pockets of disengagement and silos may develop, e.g. people passing the blame or pointing at others rather than accepting responsibility to fix problems or make improvements

Positive Manifestation

The workforce is engaged, involved and collaborative. Staff feel valued and psychologically safe, so they can fully contribute, e.g. arrangements are in place that allow people to change procedures and collaborate in setting fit for purpose arrangements.

Conclusions

Through a robust process ONR has developed a Technical Inspection Guide 'Organisational Culture Guide for Inspectors' which provides a framework for the collection of weak signals within dutyholder organisations. The warning flags which form the core of the new guidance are empirically derived and have been piloted across ONR at a range of dutyholders. By using the flags within one of its regulatory subdivisions, ONR has realised a number of benefits, including increased awareness by inspectors of leadership and cultural factors, and increased confidence in identifying, communicating and documenting weak signals. Through use of the warning flags and the framework, organisational culture has become more accessible to inspectors and the TIG provides examples and support to assist inspectors in the collection of these cultural insights.

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