National Program: Safety culture improvement initiatives in the Australian offshore petroleum industry

1 Executive summary

Safety culture is a topical issue in high hazard industries worldwide. In 2012, The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) commenced a national program aiming to explore the ways in which safety culture is understood and applied within the Australian offshore petroleum industry (the industry). Facility operators (operators) participated in an online quantitative survey and a series of semi-structured interviews designed to answer three broad research questions:

1. How prevalent are safety culture improvement initiatives across the industry?
2. How does the industry conceptualise safety culture?
3. How does the industry operationalise safety culture?

Analysis of the data collected indicates that safety culture improvement initiatives are planned or implemented by the vast majority of participating organisations. Significant variation was identified in the way that the industry understands the concept of safety culture, and in the approaches used to create and drive safety culture change. It is apparent that there is no commonly accepted definition or model of safety culture used to frame safety culture improvement strategies. This has led to a highly diverse collection of safety improvement practices being labelled “safety culture improvement”. The labelling of safety improvement initiatives as “safety culture” when such initiatives do not target safety culture is problematic, and may in time lead to a perception that safety culture change is ineffective as a means of improving safety performance.

To facilitate the development of robust and effective safety culture improvement strategies across the industry, NOPSEMA recommends that the industry adopt a consistent definition and model of safety culture. Individual operators’ safety culture improvement strategies should then be framed upon this accepted definition and model of safety culture. It is expected that this will drive the development of better quality safety culture improvement strategies, which are more likely to succeed in improving safety performance. A definition and a model of safety culture are proposed, drawn from the current national program and the published academic and applied literature.
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# Glossary

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<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
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<tr>
<td>Concurrent validity</td>
<td>Whether a psychometric tool distinguishes between groups that it should theoretically be able to distinguish between.</td>
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<td>Construct validity</td>
<td>Whether a psychometric tool is measuring what it claims to measure – this is commonly demonstrated through convergent and discriminant validity.</td>
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<td>Convergent validity</td>
<td>Whether a psychometric tool is similar to other tools to which it should theoretically be similar.</td>
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<tr>
<td>Discriminant validity</td>
<td>Whether a psychometric tool is different from other tools from which it should theoretically be different.</td>
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<tr>
<td>Likert scale</td>
<td>A questionnaire response style in which the participant responds to a statement or question by selecting a preferred response from a prescribed set of options ranging from least to most. A popular response set ranges from “strongly agree” to “strongly disagree”.</td>
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<tr>
<td>Mono-method Bias</td>
<td>A threat to construct validity, whereby the use of a single measure of a construct cannot demonstrate that the construct is being accurately measured in its entirety.</td>
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<td>Operator</td>
<td>The person who under the OPGGS(S) regulations is registered as the operator of the facility or proposed facility.</td>
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<tr>
<td>Predictive validity</td>
<td>Whether a psychometric tool predicts what it should theoretically be able to predict.</td>
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<td>The industry</td>
<td>The Australian offshore petroleum industry operating within NOPSEMA’s jurisdiction</td>
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<tr>
<td>The interim report</td>
<td>NOPSEMA’s report describing the data collected in Part 1 of the current research project: ‘Interim report – Industry safety improvement initiatives’</td>
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<td>Triangulation</td>
<td>A data collection technique where multiple measures of a construct are utilised to improve the accuracy of measurement and eliminate mono-method bias. This technique increases the likelihood that all aspects of a construct are captured.</td>
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### Abbreviations and acronyms

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<tr>
<th>Term</th>
<th>Meaning</th>
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<tr>
<td>FSO</td>
<td>Floating Storage and Offtake</td>
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<tr>
<td>FPSO</td>
<td>Floating Production Storage and Offtake</td>
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<td>HR</td>
<td>Human Resources</td>
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<td>HSE</td>
<td>Health Safety and Environment</td>
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<td>IR</td>
<td>Integrated Rating crew members</td>
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<td>JSA</td>
<td>Job Safety Analysis</td>
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<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>LTIFR</td>
<td>Lost Time Injury Frequency Rate</td>
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<td>MODU</td>
<td>Mobile Offshore Drilling Unit</td>
</tr>
<tr>
<td>NOPSEMA</td>
<td>National Offshore Petroleum Safety and Environmental Management Authority</td>
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<tr>
<td>OHS</td>
<td>Occupational Health and Safety</td>
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<td>OIM</td>
<td>Offshore Installation Manager</td>
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<tr>
<td>OPGGS(S) Regs</td>
<td>Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009</td>
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<tr>
<td>PTW</td>
<td>Permit to Work</td>
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<tr>
<td>SMS</td>
<td>Safety Management System</td>
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<tr>
<td>TRCF</td>
<td>Total Recordable Case Frequency</td>
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<tr>
<td>TRIFR</td>
<td>Total Recordable Injury Frequency Rate</td>
</tr>
<tr>
<td>TRIR</td>
<td>Total Recordable Injury Rate</td>
</tr>
<tr>
<td>WA</td>
<td>Western Australia</td>
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2 Background

Safety culture represents an ongoing concern and challenge for high-hazard industries worldwide. First identified as a causal factor in the Chernobyl nuclear disaster of 1986, safety culture weaknesses have consistently appeared in investigation findings following major incidents, including Piper Alpha in 1988, the Columbia space shuttle in 2003, the Texas City refinery in 2005, and Macondo in 2010. As a result, safety culture has served as a topic of increasing attention over the past two decades, with academics, consultants, governments, regulators, and corporations attempting to understand, operationalise, measure, and change the safety culture of organisations, as a means of improving safety performance. However, a critical review of the academic and practice-based literature identifies a confused and sometimes contradictory body of information, with little practical direction available for organisations wishing to improve their safety culture.

2.1 Safety culture theory

Safety culture is understood within academic literature as a component of a wider organisational culture, with the theories of organisational culture being applied to a safety context. In general terms, safety culture is a socially constructed group-level construct which is thought to drive the degree to which safety is the primary concern within an organisation. The majority of the research published within the field of safety culture refers to Schein’s (1985) theory of organisational culture as underpinning the concept of safety culture. Schein describes organisational culture as being like an onion – there are multiple layers. This is a common way of describing culture and is used by a number of culture researchers, with variation in the numbers of layers discussed. Schein refers to three layers of culture – artefacts, espoused values, and basic assumptions.

Artefacts represent the outer layer of culture. These are the physical things within an organisation, such as the condition of tools and equipment, what people are wearing, posters on the walls, the layout of the work area, housekeeping, etc. Artefacts are easy to observe but difficult to interpret. For example, a work site is observed with a large number of field-based supervisors, each with a relatively small crew reporting to them. This is an observable artefact. It may represent an organisational belief that in-field coaching and continuous feedback is the best way to develop a competent and capable workforce. Alternatively, this same artefact may represent a belief that all workers are lazy and they must be constantly supervised if they are to be productive. Both of these beliefs will have different implications for decision-making, morale, and proactive safety behaviours such as stopping the job, seeking better ways of mitigating hazards, etc.

Espoused values make up the middle layer of the culture ‘onion’. This is what we say we do, as an organisation, and as members of the organisation. Espoused values include the contents of policies and procedures, and the things spoken about within the organisation. Espoused values can often be incongruent with what actually happens at work. For example, an espoused value that is common to many organisations is that “every person has the right to stop the job”. This is something that the workforce is told regularly, and when asked (for example, within a perception survey), will generally agree that they do indeed have the right to stop the job. However there are many occasions where an emergency situation has emerged and no-one has actually stopped the job. Senior leaders later ask why this was the case, when workers have been repeatedly told that they can stop the job. The reason for this incongruence lies in the central layer of the ‘onion’ – basic assumptions.

Basic assumptions represent the core beliefs of an organisation which drive the behaviour of members of the workforce. These are often unspoken and difficult for members of the organisation to recognise or articulate. Basic assumptions represent the central focus of culture analysis, as they explain why observed organisational phenomena occur. An understanding of an organisation’s basic assumptions will help to explain why those workers didn’t stop the job in that emergency situation, or why a site has such a large number of supervisors in the field. An understanding of relevant basic assumptions when developing solutions to problems or improvement strategies can increase the likelihood of success.
Schein and other organisational culture researchers argue that culture is an abstract construct, not a concrete phenomenon, which is socially constructed, consisting of shared group norms. It develops over time, as group members experience and solve internal and external challenges. When a problem is solved, and the solution worked well enough to be considered valid by the group members, this solution is then taught to new group members as the correct way to think, feel and act in relation to the problem. Over time, this correct way of thinking, feeling and acting becomes a basic assumption. It is no longer subject to challenge, and becomes an accepted part of ‘the way we do things around here’, informing future behaviour and organisational artefacts. At this stage, group members are no longer consciously aware of the existence of the basic assumption, and when asked it would be unlikely that they could identify or articulate it. It is critical that any analysis of culture aims to uncover the basic assumptions that explain observable artefacts. This understanding allows for meaningful interpretation of observable data, and consequently the development of practical and value-adding safety improvement strategies.

2.2 Models of safety culture

The academic literature broadly approaches safety culture in one of two ways – either as something an organisation has, consisting of organisational systems and structures, or something an organisation is, consisting of the beliefs and attitudes of its members. Reason (1998) argues that both of these aspects of culture are equally important, however that the former is easier to manipulate than the latter, and so represents a more realistic target for change. He further argues that the thoughts and beliefs of adults are difficult to change through persuasion; however that organisational controls can be used to change behaviour, which can then over time lead to changes in thoughts and beliefs. Reason (1997) suggests that a positive safety culture consists of systems elements that contribute to the development of an informed culture. That is, a culture in which the members of the organisation have current knowledge about those factors which determine the safety of the system. An informed culture is comprised of four critical subcomponents – a reporting culture, a just culture, a flexible culture and a learning culture. Successful social engineering of each subcomponent is dependent on the implementation of certain system design requirements. Reason’s recommended approach to safety culture improvement has been endorsed by the Petroleum Safety Authority of Norway (PSA, 2004) in their ‘HSE and Culture’ brochure.

Alternatively, a relatively new approach to understanding safety culture is represented in the recent emergence of safety culture maturity frameworks. These frameworks describe a maturity curve with a number of ‘levels’, through which an organisation’s safety culture develops over time, moving from one level to the next. An organisation’s maturity level can be determined through the use of a matrix of factors which reference different identifiers at each level of maturity. The International Association of Oil and Gas Producers (OGP, 2010) structured their guide to safety culture improvement tools around a maturity framework developed by Parker, Lawrie and Hudson (2006). This model describes five maturity levels ranging from pathological through to generative, set against a matrix of concrete and abstract factors and associated identifiers. Examples of concrete factors include reporting, auditing, training and rewards. Examples of abstract factors include management perceptions, communication and workforce commitment.

Finally, a large proportion of safety culture literature has focused on the development and factor analysis of perception surveys to measure safety culture or safety climate. Published studies have identified a plethora of factors which are claimed to reflect the existence or strength of an organisation’s safety culture, but with little consistency or replication evident across the research. There does, however, appear to be at least five indicators of safety culture that emerge fairly consistently across published studies (Wiegmann et al., 2004). These indicators are organisational/executive commitment, management involvement, employee empowerment, reward systems, and reporting systems. Few of these publications aim to explore the relationships between factors, or their influence on safety outcomes. However one study demonstrated a mediated relationship between management commitment and safety outcomes, where management commitment influenced safety performance via employee involvement and the quality of the safety management system (SMS) (Fernandez-Muniz, Montes-Peon, & Vazquez-Ordas, 2007).
While these safety culture models differ in their methods and in the way they describe and explain safety culture, they do have a few key elements in common. Each model highlights the interaction between leaders, systems, and the workforce in the creation, maintenance, and evolution of a safety culture. Applied approaches to safety culture improvement should therefore take a holistic view of safety culture, and ensure that their strategies are designed to influence leaders, systems and the workforce.

2.3 Methodological approaches

Unfortunately, the methodologies utilised to measure, describe, or understand culture in the majority of the published research are not reflective of models of organisational or safety culture. Attempts to operationalise the concept range from aggregation of individual values and beliefs about safety (e.g. Harvey et al., 2001) through to surveying perceptions about health and safety management within the organisation (e.g. Zohar & Luria, 2005). In the majority of cases, researchers aim to measure safety culture and/or safety climate through use of a variety of self-report questionnaires. Some researchers claim that safety climate is a reflection of safety culture (e.g. Cox & Cheyne, 2000), some argue that the two are entirely separate concepts (e.g. Zohar & Luria, 2005), while others use the two terms interchangeably. Very few researchers (e.g. Antonsen, 2009; Schein, 1993) reveal or explore the basic assumptions which are widely agreed to represent the culture of an organisation, or discuss their findings in relation to a theory of organisational or safety culture. Finally, and most importantly, while a causal relationship between safety culture and safety performance has been theorised by a number of researchers, this relationship has not been proven through research using self-report data.

2.3.1 Perception surveys

Academic research in the field of safety culture has predominantly applied traditional psychological research paradigms in an attempt to develop a normative set of factors by which the safety culture of an organisation can be empirically measured. As identified above, these attempts have been largely unsuccessful as findings are generally not replicated. Schein (1993) has challenged this approach to the study of organisational culture, observing that it “has produced very reliable results about very unimportant things” (p. 703).

The dominant approach to the measurement of safety culture has been the development of perception surveys and subsequent analysis of their data. The use of such self-report data to measure and make assertions about safety culture is questionable for a number of reasons. The subjective nature of the data collected, and challenges associated with the use of self-report measures raises questions about the reliability and validity of the raw data, even before any analysis is completed. Perceptions are subjective; they are strongly influenced by individual factors such as people’s work history, cognitive ability, tendency to think critically, organisational engagement, job satisfaction, etc. Because of this, at best perception surveys can only measure the espoused values of an organisation.

However, even when measuring espoused values, the reliability of the data is limited by people’s willingness to respond honestly to questions, and their susceptibility to cognitive biases such as selective memory. Selective memory occurs when an individual preferentially remembers events that are consistent with their own motivations (Gardner, Pickett, & Brewer, 2000; Higgins & Tykocinski, 1992). For example, people may want to think of themselves as ‘good’ workers, part of which includes adherence to rules and assimilation to espoused values. When completing safety surveys, individuals experiencing selective memory may forget the times when they have deliberately broken safety rules to achieve production targets, they may overestimate the frequency with which they conduct risk assessments prior to starting a job, they may forget those times they saw a hazard and didn’t report it, or when they saw a colleague behaving unsafely and didn’t talk to them about it.

From a data-analysis and interpretation perspective, the majority of published perception survey research suffers from mono-method bias, and a failure to demonstrate construct or predictive validity. Essentially this means that these studies are not able to demonstrate that what they are measuring is actually safety culture (construct validity), they use only one instrument and so cannot demonstrate that they are
Antonsen (2009) has demonstrated the poor predictive validity of perception surveys through the case of the Snorre Alpha gas blowout. In this example, a safety climate survey generated consistently positive results. Twelve months later, a major incident occurred that could have resulted in multiple fatalities, indeed it was fortunate that fatalities were avoided (i.e. according to Antonsen, all barriers failed). Significantly, the safety climate survey actually reported findings that were directly contradicted by the later incident investigation findings – causal factors identified during the investigation had been identified as organisational strengths by the perception survey. The case study provides a strong precedent to challenge the degree to which these types of survey assessments tap into the real organisational conditions for risk control and mitigation. Of course this was only one case study, and could theoretically represent a unique situation. However, as the existing body of perception survey research has not triangulated with other organisational data to support the validity of findings, it cannot refute the potential generalizability of Antonsen’s findings.

Beyond the issue of data validity is the issue of effectiveness. Ultimately, the purpose of seeking to understand an organisation’s safety culture must be to keep people safe. This concept appears to have been forgotten in much of the research. Appendix 1 contains a summary of 18 recently published articles in the field of safety culture/climate measurement. Only five of these 18 studies have attempted to link their results with safety outcomes, and even these merely provide correlational data, which does not indicate and should not be used to suggest a causal relationship. Further, where correlations have been established, these are predominantly focused on personal safety indicators. Safety culture is more likely to contribute to organisational (i.e. major accident event) incidents rather than personal injuries (Reason, 1998).

Historically, investigations into major disasters where safety culture is identified as a contributing factor, including the Macondo well blowout in 2009, have often noted very low rates of injury immediately preceding the disaster. Therefore, a correlation between perception survey findings and personal safety statistics should not be interpreted as supporting the use of an instrument in measuring safety culture.

A number of authors (Choudry, Fang, & Mohamed, 2007; Cooper, 2000; Cox & Flin, 1998; Flin, Mearns, O’Connor, & Bryden, 2000; Guldenmund, 2000, 2007, 2010; Wiegmann et al., 2004) have reviewed and critiqued the body of research purporting to measure safety culture and safety climate. In general, these reviews have a number of findings in common:

- the concept of safety culture is poorly defined and understood
- safety culture and climate research has demonstrated exponential growth over the past two decades
- there is little consensus regarding the nature of the distinction between safety culture and safety climate, or even if a distinction exists
- there are many, many questionnaires available claiming to measure safety culture and/or climate
- a variety of safety culture/climate ‘factors’ have been identified, however most studies have been unable to replicate previously identified factor structures
- of the multitude of factors identified throughout the research, a few common themes are evident
- there is at best a weak correlation between safety culture/climate questionnaire findings and personal safety performance
- the collective understanding of safety culture and climate remains fragmented and confused.

In summary, “As applied by safety researchers, the culture concept is deprived of much of its depth and subtlety, and is morphed into a grab bag of behavioural and other visible characteristics, without reference to the meaning these characteristics might actually have, and often infused with normative overtones.” (Guldenmund, 2010, p. 1466).

### 2.3.2 Other approaches

Fleming (2007) developed and validated an audit tool aiming to overcome some of the challenges associated with the use of perception surveys by delivering an objective evaluation of safety culture. The audit assesses against a set of observable indicators commonly associated with safety culture. Given that
the audit tool aims to assess against a normative set of objective indicators, it is unlikely that this tool will tap into the basic assumptions of the organisation. Rather, the tool is likely to provide a good overview of artefacts and espoused values. As such, its use of objective indicators may provide a more useful starting point than subjective perception survey data, to indicate areas that would benefit from further qualitative investigation.

As an alternative to the normative approach, action research has been recognised as one possible mechanism in which culture can be understood and applied in meaningful ways. Both Schein (1993) and Antonsen (2009) describe processes by which relevant basic assumptions are uncovered as a means of understanding a problem. Those basic assumptions are then used to guide the development of improvement initiatives. Neither approach attempts to apply a normative model of culture to the organisations in question, rather the unique basic assumptions of each organisation are identified and applied to generate meaningful explanations and solutions.

Outside of the academic realm, there is an abundance of magazine articles describing how various organisations have implemented ‘safety culture change’ (e.g. Borbidge, 2006; Chaix, 2008; Easton, 2011; Gallaway, 2011; Mathis, 2009; Petersen, 2005; Ronning, 2007; Troxell & Fisher, 2009; Wood, 2007). Unfortunately, the majority of these articles actually describe the implementation of basic safety management systems, incident reporting and action tracking systems, improved hazard controls, behavioural safety programs, or frontline leadership training. Such basic safety improvement initiatives may have an impact on safety culture in organisations with very low levels of safety system maturity, but are unlikely to do so for more mature organisations. For organisations with mature systems and programs already established and entrenched, there is little guidance available to assist in safety culture improvement. Further, these traditional approaches typically focus their change efforts on the behaviours of crew members and frontline supervisors, rather than attempting to address the executive decision-making which creates the basic assumptions that inform organisational behaviour.

A few practice-based publications do describe long-term safety culture change projects implemented in large manufacturing and utility companies (Simon and Cistaro, 2009; Simon & Frazee, 2005). These projects identified safety culture improvement as their target and, through change programs lasting between five and ten years duration, achieved significant and sustained improvement in recordable injury statistics. While the same consulting group was involved in each of the projects, the specific methodologies employed for each company varied. This approach involved deliberate recognition of the unique culture of each organisation, and in some cases each unit within the organisation. Strategies were designed to fit within existing cultures and power structures, and to drive change in ways that would be culturally appropriate for each group.

From the above discussion, it is apparent that attempts to develop a normative framework by which to ‘diagnose’ problems with an organisation’s safety culture and subsequently predict future safety performance have not been successful. With the exception of Fleming’s (2007) audit tool, such approaches do not provide any guidance as to how the data that they collect can be interpreted and applied in any meaningful way, nor do they identify how to develop and implement improvement initiatives, should the data indicate areas of concern. However, a few studies have sought to identify cultural facets (i.e. basic assumptions) as a means of understanding and explaining an observed problem, and then used that understanding to design improvement initiatives tailored to the unique culture of the group in question. These studies reported meaningful improvements in safety outcomes. These improvements occurred not as a result of a normative safety culture diagnostic process, but through the careful design of improvement initiatives to fit with – or to deconstruct and rebuild – the relevant basic assumptions of the target group.

At this point in time, normative approaches attempting to measure safety culture have failed to demonstrate any consistent set of cultural factors. Furthermore, these approaches have also failed to demonstrate any meaningful relationship between questionnaire responses and safety performance. It may therefore be appropriate to question the practical utility of attempts to normatively measure safety culture within organisations as a means of improving safety outcomes. Guldenmund (2010, p. 1471) argues that “An understanding of a culture’s past often enables them to interpret and explain the present. There is
no need here to change a culture, but rather to customize certain measures or processes to local cultural conditions.” Alternatively, Schein (2010) identifies mechanisms by which leaders can drive meaningful change in an organisation’s culture. From either perspective, improvement activities must be developed and implemented with an understanding of the relevant basic assumptions that are influencing the undesirable outcome which is the target for change. However, it appears that a normative assessment provides little value to this process, except to perhaps provide a starting point for further exploration.

3 Safety culture national program objectives

It appears that there is little published information available to sensibly advise organisations wishing to improve their safety performance through cultural analysis and change. This appears to represent a gap in which a regulator could reasonably contribute to facilitate continuous improvement across the industry. However, it is first necessary to identify the extent and state of current safety culture improvement practices within the Australian offshore petroleum industry; to determine whether the gap that is apparent within the academic literature is reflected in practice. Further, there is benefit in understanding the existing safety culture improvement practices applied across the industry, with the goal of sharing best practices and moving towards a more consistent industry-wide approach. The ultimate goal is the optimisation of safety resources by expending them on those activities that are most likely to keep people safe.

To achieve these objectives, the safety culture national program sought to answer three broad research questions:

1. How prevalent are safety culture improvement initiatives across the industry?
2. How does the industry conceptualise safety culture?
3. How does the industry operationalise safety culture?

4 Methodology

The national program was split into two parts. Part one consisted of an online survey regarding safety improvement initiatives and addressed research question one. Part two involved a series of semi-structured interviews focusing specifically on safety culture improvement strategies, and addressed research questions two and three. The aim of part one was to collect a broad data set identifying the variety and prevalence of strategies currently used by operators to improve their safety performance. The survey was administered via the SurveyMonkey online platform, and comprised 39 questions in total. Questions related to the use of people-focused safety improvement initiatives including training and coaching, the use of incentives, the use of safety climate perception surveys, and the implementation of safety culture improvement initiatives (see Appendix 2 for the full survey).

Question logic was established within SurveyMonkey to skip certain questions that would be irrelevant to the respondent, based on responses to previous questions. For example, question 16 asks whether personal safety training is provided as a way of improving safety performance. Where respondents answered ‘yes’, the inbuilt question logic would direct them to question 17, which asks about personal safety training recipients. Alternatively, where respondents answered ‘no’, the question logic would skip question 17 and direct them to question 18. At the conclusion of part one, an interim report (NOPSEMA, 2013) was published. The interim report was descriptive in nature, and primarily consisted of question response distributions displayed in graphical format.

Part one survey responses also allowed for the identification of appropriate participants for part two of the national program – that is, those operators with a safety culture improvement strategy in place. These operators participated in semi-structured interviews and answered questions pertaining to their safety culture improvement strategy. The interviews were exploratory in nature and sought to capture a rich data set appropriate for thematic analysis.
4.1 Data collection

4.1.1 Part one – online survey

The operator register that NOPSEMA is obliged to maintain under the Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations (OPGGSS(S) Regs) was utilised to identify current operators as at October 2012. Operators with offices within Australia were subsequently identified and contacted by telephone to identify the appropriate respondent for the research. Respondents were typically employed in a corporate safety management role. The respondent was then contacted, generally by telephone and in some cases by email, informed about the national program, and asked to participate. Respondents were emailed a hyperlink to the online survey, which contained further information about the purpose of the research, including assurances regarding confidentiality in data storage and reporting. Operators without an Australian office were not contacted.

A total of 34 operators were invited to participate in part one of the research. Responses were received from 30 of those operators. One operator declined to participate, and the remaining three expressed willingness to participate, however were unable to do so by the closing date of the survey. Two responses were incomplete, and were therefore excluded from the final analysis. A total of 28 responses were included in the analysis, representing a response rate of 82%. Responses were received from operators of facilities capable of undertaking a range of activities (i.e. production, drilling, construction and conveying petroleum fluids [pipelines]), and a variety of company sizes ranging from less than 50 employees, through to more than 2000 employees. Responses were received from operators responsible for 139 of a possible 178 facilities, or 78% of the facilities with a registered operator in Australia at the time. This was considered sufficient, for the purposes of this research, to demonstrate a representative sample.

4.1.2 Part two – semi-structured interviews

Participants appropriate for part two of the national program were identified based on their response to question 33 of the survey – “Has your organisation implemented a safety culture improvement strategy?” A total of 19 participants responded either “Yes”, or “We are currently developing a strategy but have not yet commenced implementation.” These 19 participants were asked to respond to question 36 – “NOPSEMA will be commencing a series of information-gathering interviews with industry personnel regarding their safety culture improvement strategies. Please provide the name and contact information for the appropriate interviewee within your organisation. (Note, the nominated interviewee should be the person responsible for the implementation of the strategy.)” Of these 19 participants, 17 (89%) provided the requested contact information.

The 17 representatives nominated through question 36 of the survey were contacted via telephone. An explanation of the national program was provided along with an invitation to participate in the interviews. All 17 nominated representatives (100%) agreed to participate in part two of the national program. Each of the representatives was responsible for the implementation of their organisation’s safety culture improvement strategy. The majority of participants were the same individuals who responded to the online survey. With the exception of one offshore site-based leader, all participants were employed within a corporate safety function in their organisations. Participants were sent, via email, further information describing the purpose of the research, assurances of confidentiality in data storage and reporting, and a list of core questions that would be asked during the interview (see Appendix 3).

Interviews were primarily conducted at the operator’s place of business where possible. Two interviews were conducted at NOPSEMA’s Perth-based offices, at the request of the participants. A further two interviews were conducted via telephone, where participants were not located in Perth, Western Australia. In most cases, interviews were one-on-one. In one case, two operator representatives participated in the interview, and in another case, five operator representatives participated. Interviews consisted of an initial period of rapport-building, where participants were provided the opportunity to ask questions relating to the national program. The research process was explained to them, including the core research questions, the interview process, audio recording, transcribing, theme analysis, and reporting of interview data.
Confidentiality of data storage and anonymity of reporting were again reiterated. The duration of this introductory period typically lasted between 15 and 30 minutes.

Interview durations ranged from approximately 30 minutes to two hours. The average audio recording time (excluding rapport-building and introductory information) was 46 minutes, with a total of 13 hours and seven minutes of audio recorded across the 17 interviews. Audio files were sent to a professional transcribing service, who issued transcripts electronically in Microsoft Word format. A total of 315 pages of text were received from the transcribing service. Transcripts were then subject to a further in-house quality check, whereby each written transcript was compared against the corresponding audio recording. A small number of errors were identified and corrected. Errors were predominantly related to the use of industry jargon and acronyms. Transcripts were then de-identified, whereby all references to company names, product names, individuals, and recognisable incidents were removed from the transcripts.

Some participants also volunteered written materials to provide greater clarity regarding the content of their safety culture improvement initiatives. Such materials included PowerPoint presentations, training workbooks, leadership booklets, brochures, cards, letters and KPI reports. These materials comprised a total of 116 pages of further data.

4.2 Data analysis

Interview transcripts and additional materials were uploaded to NVivo, a qualitative analysis software package. A thematic analysis process was then followed (see Braun & Clarke, 2006). Thematic analysis is a qualitative method of analysis used to identify, analyse and report patterns across a data set. It involves searching across a data set to identify repeated patterns of meaning. Sections of text are assigned a code, or theme, based on the researcher’s interpretation of the content of the text.

Qualitative research is driven by the theoretical positions and values of the researcher. It is therefore typical for qualitative research reports to state explicitly the theoretical framework, methods and assumptions that have been chosen to facilitate data analysis. Within the current research, a ‘realist epistemology’ has been adopted for the interpretation of meaning, where meaning is assumed to have a straightforward relationship with experience and language. The coding process utilised an ‘inductive’ approach, where theme identification was data-driven, rather than theory driven. That is, themes were identified from the data, rather than drawing themes from theory and attempting to make the data fit those themes. Finally, a ‘semantic’ approach was used to identify themes. In this approach, themes reflect an interpretation of the patterns of the explicit or surface meanings of the data, rather than describing underlying concepts theorised to shape or inform the semantic content of the data.

The thematic analysis process identified a total of 22 themes across the data set. A number of these themes were sufficiently diverse in content to justify the development of 46 subthemes. More specifically, analysis of responses pertaining to research question two identified a total of eight themes and 12 subthemes, while 14 themes and 34 subthemes were identified in relation to research question three. In the following sections, each identified theme and subtheme is reported, described and discussed.
5 Results

The results of the national program have been split into different sections to align with the research questions identified in section 3. The question of prevalence of safety culture improvement initiatives is addressed in section 6, and draws from data collected in part one of the national program. Results relating to industry conceptualisation of safety culture are reported in two sections. These reflect participant definitions of safety culture (section 7), and the factors that they believe influence safety culture (section 8). Results relating to industry operationalization of safety culture are reported in three sections. Within this research question, participants spoke about the elements of their safety culture improvement strategies. These comments represent the majority of the total data collected, and resulting themes are reported in section 12. In addition, participants also spoke about the outcomes they have observed as a result of their improvement strategies (section 14) and challenges that they have experienced in implementing a successful safety culture improvement strategy (section 15). In the following sections, each identified theme and associated subtheme is described, with interview extracts included to provide examples of context.

6 Prevalence of safety culture improvement strategies within industry

The online survey conducted in part one of the national program sought to identify, among other things, the prevalence of safety culture improvement strategies within the industry. As published in the interim report, 92% of participating organisations reported that they had either already implemented a safety culture improvement strategy, or that they were planning to do so in the near future. The relevant extract from the interim report is presented in Figure 1, which shows response distributions for question 33 – “Has your organisation implemented a safety culture improvement strategy?”

Figure 1: Interim report extract

<table>
<thead>
<tr>
<th>Safety culture improvement strategy</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Not yet, but we have a formal plan in place to develop a strategy in the near future</td>
<td></td>
</tr>
<tr>
<td>We are currently developing a strategy but have not yet commenced implementation</td>
<td></td>
</tr>
<tr>
<td>Not yet, but we have informally agreed to develop a strategy in the near future</td>
<td></td>
</tr>
<tr>
<td>Unsure</td>
<td></td>
</tr>
<tr>
<td>No, and we have no plans to do so</td>
<td></td>
</tr>
</tbody>
</table>

0% 10% 20% 30% 40% 50% 60%
This response distribution suggests that safety culture change initiatives are becoming common within the industry. The significant proportion of participating organisations indicating their commitment to safety culture initiatives suggests that part two of the national program will provide value to the industry, by facilitating continuous improvement in the field of safety culture change.

7 Industry conceptualisations of safety culture

The second research question sought to identify common mental models of safety culture within the industry. Analysis of interview transcripts has divided this research question into two topic areas – definitions of safety culture, and elements of a safety culture. ‘Definitions of safety culture’ provides some indication of what participants mean when they use the term “safety culture”, while ‘elements of a safety culture’ identifies participants’ espoused beliefs about the factors that contribute to a safety culture.

8 Definitions of safety culture

Safety culture was defined by the majority of participants as “the way we do things around here”, or variations of this. This was the only formal definition mentioned during the interviews, with the remaining participants indicating that their organisation has not adopted a definition of safety culture. Themes pertaining to definitions of safety culture are outlined below.

8.1 The way we do things around here

The only definitions of safety culture articulated by participants were variations of “the way we do things around here”. A frequently occurring variation within this theme was “how people behave when no-one is watching”. This definition typically appeared to be focused on the behaviours of the frontline workforce, rather than the behaviours of leaders and executives.

“I know it’s simple to say that the culture is what they do when you’re not there, and I suppose it always shows in that there’s always issues if – for instance, we always know that we have more incidents in the slipway on night shift, mainly because there’s no-one there except them.”

8.2 No formal definition

A significant number of participants identified that their organisation did not employ a formal definition of safety culture within their culture improvement program. However, some of these participants then went on to explain their own understanding of safety culture. Two further themes were identified within these explanations – namely that safety culture is values-driven, and that it forms part of broader organisational culture.

8.3 Values-driven

A number of participants discussed the importance of holding safety as a value, both at a corporate level and at an individual level. Participant comments reflected a belief that, where safety is held as a value, this will inform people’s behaviours.

“Safety culture to us is probably the values – we hold a value within our company being safe, and therefore it transpires from there. It’s the attitudes of our people, and how they determine what is safe, what isn’t safe. So I suppose, when it comes down to the workforce, in a sense it’s whether they are prepared to undertake their activities in a safe manner when nobody else is looking. So in basic terms are they prepared to do that, and that starts generating a bit of a culture for us.”
Again, this perspective appears to be centred on the behaviours of members of the frontline workforce rather than the behaviours of leaders within the organisation. Additionally, comments appear to reflect a belief that espoused values (what we say we do) will influence workforce behaviour, rather than an understanding of the role of unspoken basic assumptions in driving organisational behaviour.

8.4 Part of organisational culture

A smaller number of participants discussed safety culture as a subset of organisational culture. Participants did not discuss this theme in a great amount of detail, rather the relationship to organisational culture tended to be mentioned within a broader explanation of safety culture.

“Obviously safety culture is part of an organisation’s culture in general. So the way I see it is HSE is part of an organisation’s performance indicator; just as production is. It’s how that organisation manages that - how they see that performance, as in the importance of it and how they actually manage it and improve it.”

9 Elements of a safety culture

Analysis of interview transcripts identified the existence of four common themes in relation to the elements of a safety culture - leadership, people, systems and communication. With the exception of communication, each of these themes was highly diverse in content, leading to the development of a number of subthemes. Relationships were observed between themes and subthemes, reflecting an understanding of the interactions between leaders, people, systems and communication within a safety culture.

9.1 Leadership

Leadership was the most frequently occurring theme identified through interview analysis, within which two subthemes were apparent. Leader language and behaviour, and the ability to gain the trust of subordinates were both identified as critical to the role of leaders in creating and driving safety culture. These subthemes are explored in greater detail below.

9.1.1 Language and behaviour

Leader language and behaviour was the most frequently identified subtheme within conversations about the contribution of leadership to safety culture. Participants expressed an understanding that leaders shape the beliefs and subsequent behaviours of their subordinates through what they say and what they do. Leader behaviour and language was recognised as a factor that can either promote or detract from a positive safety culture. In particular, participants spoke about the need for consistent behaviour both from individual leaders and from the leadership team as a whole, and the importance of leaders demonstrating that safety is a priority.

“So how individual managers portray safety within their conversations when they’re having them with contractors, when they’re having them with government regulators, everything else, defines your culture. So if they’re not saying the right words, they’re the biggest detractors that you have to a safety culture.”
9.1.2 Trust

Earning the trust of subordinates was identified as an important aspect of a leader’s ability to create and drive improvements in safety culture. Participants discussed trust primarily in relation to its impact on people’s willingness to raise concerns or report incidents. That is, that a higher level of trust in leadership should lead to more frequent proactive challenges, and more transparent reporting of incidents.

“We need this - again, the openness, the honesty - in a good safety culture, that people will conform and highlight things. To me we can learn so much from near misses, that if we weren’t to investigate those - if they weren’t reported - my biggest fear that one day’s near miss could be next week’s fatality and any safety culture or any safety system that allows that to happen is failing badly, so it is the ability - to facilitate a good safety culture, essentially, you have to be open, honest with your workforce and give them - empower them to come forward and tell you if something has the potential to go wrong.”

9.2 People

‘People’ was identified as a high-level theme, encompassing a number of subthemes. This theme is drawn from participant comments relating to the frontline workforce rather than leaders or executives. Specifically, behaviour, ownership and participation, attitude and belief about safety, and workforce competence were identified as separate subthemes. These subthemes are discussed in greater detail below.

9.2.1 Behaviour

Participants frequently identified workforce behaviour as an outcome of safety culture, and also as a challenge to achieving a positive safety culture. In particular, safety behaviours such as compliance and stopping the job were mentioned by a number of participants.

“A readiness to, basically – not just readiness but a receptiveness to stop production, to stop where we need to stop and reconsider and think.”

9.2.2 Ownership and participation

Workforce ownership and participation was identified as another factor influencing safety culture. Comments focused on the way members of the workforce interact with safety systems and with other people. In particular, participants spoke about the need for the workforce to be actively engaged with risk assessment processes, and to be empowered to apply those systems appropriately.

“There’s taking part. You have to encourage people to take part in the systems we use, whether they’re observation programs or the risk assessments or toolbox talks. Everybody needs to participate to give them added value. “Empowering” is a word we use probably too much these days, but it is important that the people do feel empowered to take part and the safety culture needs to set the guidelines for all that in just how much participation we need from people.”
9.2.3 Workforce attitude and belief

The attitudes and beliefs of the workforce were identified as an outcome or indicator of culture. Workforce attitudes and beliefs were recognised as a significant barrier to effective safety culture improvement. In some cases participants were able to describe the way that beliefs and attitudes can reflect basic assumptions formed through past organisational decisions and practices.

“We had a situation recently, as an example, with one of the ship’s masters, who did something because he thought he was helping the client. And we went to him, and basically something went wrong, and he sent us an event report that said, “Despite the fact that the weather conditions were terrible and probably beyond the safe operation, I went and did it anyway.” And when we said, “Well, why did you do that,” he said, “Because in –” I think it was 1998 – “when I didn’t do it, I got into trouble.” We said, “Well, you know, the company is different now.” So that’s a challenge for us is changing sort of some of the ingrained cultural beliefs in the organisation.”

9.2.4 Competence

A competent workforce was discussed as a contributing factor to the development of a positive safety culture. Comments reflected an understanding that the workforce must be able to competently interact with safety systems in order to comply and to achieve positive safety outcomes.

“…to provide training and adequate levels of coaching and then put our people through the competencies to make sure that they can actually undertake the roles and they are competent enough to do those; to ensure that all of our procedures are adhered to and the safety management system followed.”

9.3 Systems

The contribution of organisational systems to the development of safety culture was identified as another high level theme. Various types of systems were discussed, forming a number of subthemes. Subthemes identified during the analysis of transcripts were ‘continuous improvement systems’, ‘reporting systems’, ‘safety management systems’, ‘integration of safety’, ‘human resources systems’ and ‘organisational performance measurement’. These subthemes are explored in greater detail below.

9.3.1 Continuous improvement

Participants identified the need for organisational systems that allow and promote organisational learning. Particular emphasis was placed on making system modifications as a result of findings from incident investigations and other sources of organisational data, to ensure that learning is not lost.

“Instead of having a culture that comes down hard, it’s a culture that someone respectfully intervenes: have a conversation, ask the right questions – open ended – “Why did this occur?” and learn from it and then put that back into the system for people to follow.”
9.3.2 Reporting

Systems that allow and encourage reporting were also identified as contributing to a positive safety culture. Similarly, poor reporting was understood to detract from a positive safety culture. This subtheme was strongly linked to the ‘Leadership – Trust’ subtheme (see 9.1.2). This suggests that participants recognise that a willingness on the behalf of the workforce to report incidents is driven by the degree to which the workforce trusts their leaders.

“A good safety culture is one where the many failures within the cultures are identified and disclosed. It is very much, for us, about being able to have a candid, open sort of system of reporting within our company. And then that those cultures, the values and the improvements are also embraced all the way down throughout the work force.”

9.3.3 Safety management system

A robust safety management system (SMS) was identified by participants as contributing to a positive safety culture. The SMS was typically discussed in relation to its role in driving frontline workforce safety behaviour.

“There are various tools, mechanisms and approaches which we adopt under the auspices of our HSE policy where we get people to behave in a way which we expect to enable good safety outcomes as a result.”

9.3.4 Integration of safety

A number of participants identified that the development of a positive safety culture required the integration of safety across systems and functions. That is, that for a positive safety culture to exist; safety could not be seen as the responsibility of the safety department, rather that all functions should recognise their own contribution to safety through the decisions they make.

“The safety culture, itself, is probably - it just has to be embedded in every part of your operation. It has to be the link point for all the operations starts with safety and the safety culture.”

9.3.5 Human Resources systems

The role of human resources (HR) systems in supporting safety culture was noted in a number of interviews. Participants discussed the inclusion of safety issues within the recruitment process, the role of training and competency in developing a safety culture, and the importance of effective workforce planning and retention in maintaining a safety culture.

“People; it’s not just competence. You need the right number of people as well, I guess. It’s no use having competent people but only having two of them and that’s all you got in your organisation.”
9.3.6 Performance measurement

The role of organisational performance measurement was discussed in relation to driving continuous improvement in safety culture. Participants commented on the importance of measuring accurately, measuring the right things, and also on the need for appropriate analysis, interpretation, and actions arising from measurement.

“So you should be taking performance measures that assure you or assure the management or executives that the risk controls in place are being managed. That’s actually a really difficult thing to do and it’s actually a difficult thing to sell, because it’s not as tangible as counting the number of inspections you do rather than, well, how many inspections found this type of deviation and stuff like that.”

9.4 Communication

Communication was discussed by about half of the participants as a discrete factor contributing to safety culture; however it also appeared in a number of other themes, particularly those relating to leadership and people. Within this theme, communication was discussed in general terms in relation to its contribution to safety culture.

“The factors that facilitate it are, funny enough, communication. Everybody is going to say this. Communication, communication, communication.”
10 Commentary on industry conceptualisations of safety culture

The themes discussed above broadly reflect the key elements of the safety culture models and commonly identified factors reported in the academic literature. Of particular interest are the ‘Systems’ subthemes ‘HR systems’ and ‘integration of safety’. The inclusion of these themes appears to demonstrate an understanding of the influence of broader, non-‘safety’ organisational systems on safety outcomes. Figure 2 provides a diagrammatical representation of the themes, subthemes, and relationships identified across the data set.

Figure 2: Conceptual model of safety culture

This model is reflective of themes identified through the entire data set, and suggests a holistic understanding of the safety culture concept within the industry. However, when considering individual responses, it becomes apparent that few participants were able to articulate safety culture in this holistic manner. There appeared to be significant variation in participants’ understanding of safety culture as a concept, with a number of participants responding to conceptual questions by describing their own implemented strategies rather than discussing their understanding of the concept and structure of safety culture. Many participants defined culture purely in terms of workforce behaviour, and did not demonstrate an understanding of behaviour as an outcome of culture.

This may indicate that some organisations seeking to improve their safety culture have a limited understanding of the concept, given that participants were responsible for the implementation of their organisations’ safety culture improvement initiatives. A poor understanding of what culture is, how it is formed, and how it influences organisational outcomes can lead to the development and implementation of ineffective programs. Consequent failure of such programs can then lead to a perception that safety culture is not an effective safety improvement mechanism, and subsequent de-valuing of the concept within industry. It is noted however, that participant responses may have been influenced by factors other than knowledge and understanding of safety culture, such as memory, attention, mental fatigue, and nervousness. Therefore the current findings should be understood as identification of a potential challenge rather than a definitive problem.
11 Industry operationalization of safety culture

The final research question sought to identify the ways in which industry applies concepts of safety culture to improve safety performance. For ease of readability, themes identified in response to this research question have been separated into three topic areas. The first identifies the specific elements making up the various safety culture improvement strategies described during the interviews. The second topic area outlines the changes that participants have measured and observed during the implementation of their improvement strategies, as well as the outcomes they expect to see in the future. The final topic area identifies the common challenges to safety culture improvement which were identified across a number of interviews.

12 Safety culture improvement strategy elements

Many of the elements that participants identified as important to the development of a safety culture are reflected in their safety culture improvement strategies. This is to be expected and demonstrates alignment between individual mental models of culture and practical culture change strategies. In particular, the themes of leadership, people and systems were repeated, with a larger number of subthemes appearing. Participants also spoke about triggers for change, the theories and models that their improvement strategies are based upon, issues of organisational identity, and the concept of continuous improvement. The identified themes and subthemes are described in detail below. Where relevant, themes and subthemes are discussed in relation to the data collected in part one of the national program and published in the interim report.

12.1 Trigger for change

A number of participants identified a clear point in their organisation’s history which prompted the decision to embark upon a safety culture improvement process. All of these related to perceived poor performance in different forms. Poor injury rates, fatalities, and external feedback were all identified as triggers for change.

“...we had a fatality outside of [country] on one of our facilities, and the person who died was very close to a number of people in our [country] office, and that affected them quite heavily to the point where they said, “We need to change.””

12.2 Theories and models

Around half of respondents identified that their safety culture improvement strategy is based on a theory or model of safety culture. These included culture maturity models (e.g. Parker, Lawrie & Hudson, 2006) just culture models (e.g. Reason, 1997), various safety leadership frameworks, and organisational mindfulness concepts (e.g. Weick, Sutcliff & Obstfeld, 1999). Some participants were unsure as to whether their strategy was based on a model, particularly in cases where their approach had been developed by an external consultant. Others had based their approach around risk management models or behaviour change models. Comments pertaining to this theme typically did not provide much detail about the theory or model of choice; therefore interview extracts for this theme have not been included in this report.
12.3 Leadership

‘Leadership’ was one of the most frequently occurring themes during participants’ discussions about their conceptualisations of safety culture. Given this prevalence, it is not surprising that ‘leadership’ should also form one of the key themes identified during participants’ descriptions of safety culture improvement initiatives within their organisations. The subthemes of ‘leader behaviour’ and ‘trust’ discussed in section 9.1 were identified again within this theme, along with two additional subthemes – ‘executive buy-in’ and ‘leadership development’.

12.3.1 Executive buy-in

The importance of executive buy-in to the success of safety culture improvement initiatives was highlighted by a number of participants. The impact of executive buy-in was discussed both in terms of the need for executives to commit to strategy, as well as the impact that perceived executive buy-in was likely to have on the workforce. It was further identified that, for executives to genuinely commit to safety culture improvement, they needed to have a sound understanding of the safety issues being faced by the organisation, and the factors contributing to those issues.

“And management look at it and go, “Okay. Yes. I can see why you want us to improve our plant maintenance system or our auditing program, and stuff because you’re providing good data.” But having the combination of leadership who don’t fully understand and then giving them data that’s really simplistic, it’s just really counterproductive, because you try to do that to engage them in it, without giving them really meaty stuff, because that would scare them. But it’s also giving them a false sense of security. And there’s that balance there; I’ve got no idea how you manage it. Because I’d rather scare them, but everyone else seems not to and not wanting to. I’ve seen some stuff done really well, there’s some good data there with other companies, but in order to get to that executive level, they take a lot of the shades out and so it simplifies it a bit. But what you want to do is provide them enough information to get them to ask questions and engage with it or highlight the key concerns and then they can respond to it. But when you just oversimplify it, you’re just creating - you’re actually creating what I would say is a dangerous scenario. Because you’re not allowing the executives to have awareness of exactly what’s happening.”

The interim report identifies that the majority of organisations provide safety training and coaching to their personnel as a way of improving safety performance. However, a surprisingly low percentage of organisations reported the inclusion of their executives in personal safety training (55%), process safety training (48%), safety leadership training (51%) and safety leadership coaching (45%).

Given the consensus that executive-level commitment is fundamental to the success of safety culture improvement initiatives, it is somewhat concerning that such a large percentage of industry executives do not participate in safety-related professional development activities. As the above interview extract highlights, it is critical that executives have a sound understanding of safety issues impacting the business. Executives ultimately make the decisions about how resources will be allocated across the organisation. If executives have a poor understanding of the implications of their decisions on organisational behaviour and safety outcomes, this can result in decisions which adversely impact the safety culture of the organisation.
12.3.2 Leader behaviour

Many participants identified the active role assigned to leaders in driving their safety culture improvement initiatives. Particular leader behaviours discussed included proactive engagement with the workforce, leaders managing their own behaviours which set the standard for subordinates, and behaving in a consistent manner. Participants also spoke about the implementation of tools and processes to assist leaders in engaging effectively with the workforce.

“They were the worst in the [company] global fleet and they’re now the best. It’s a wonderful example of what’s possible and it’s purely because of a change in leadership. It’s about some of the stuff we talked about of being genuine, of being a real leader, engaging, yes. And making sure that indeed you portray yourself as a worthwhile leader because you are an example to these people and they know they can build on you and they can believe you. They can trust you. They can come to you if there are problems that you will help them to solve it.”

12.3.3 Leadership development

Leadership development was identified as a core component of safety culture improvement strategies. Participants recognised that leaders require coaching and training in order to demonstrate the behaviours required to create and drive a positive safety culture. Interestingly, the type of training and coaching spoken about did not appear to be limited to safety-specific leadership, many participants spoke about providing leaders with general leadership skills development as part of their safety culture improvement initiatives.

“All of our managers, all of our project people, all of our supervisors, all of our operational supervisors and basically then the production managers, have all been trained in [brand]. It’s an indictment on our society that we have to train people how to have a conversation but that’s basically what the training is all about, is giving the people the tools and the confidence to go out and have a conversation with the person out on the shop floor.”

This theme reflects the interim report findings, with 89% of participating organisations providing safety leadership training, and 81% providing safety leadership coaching to personnel as a way of improving safety performance.

12.3.4 Trust

Trust was the final leadership subtheme identified as important to the success of safety culture improvement initiatives. While trust was discussed primarily as an outcome of leader behaviour, this subtheme is distinguishable from the ‘leader behaviour’ subtheme because of the specific purpose of such behaviours. Specifically, to win the trust of the workforce, rather than to set an example of desired behaviour or drive a particular culture.

“One of the things that really destroys culture is a lack of trust and if there’s no trust in an organisation you’re not going to achieve anything. And so my philosophy with dealing with them is that you never lie to them. I prefer to say to them, “I can’t tell you that”.”
12.4 People

As with ‘leadership’, the ‘people’ theme identified during conceptual discussions (section 9.2) has been reflected in participants’ descriptions of their safety culture improvement initiatives. The subthemes of ‘behaviour’ and ‘ownership and participation’ were identified again within this theme. The ‘competence’ subtheme previously identified has been replaced here with ‘training’, which can be considered a practical approach to creating competence. ‘Recognition’ and ‘compliance’ have also been identified within this theme as people-related elements of safety culture improvement initiatives.

12.4.1 Ownership and participation

Workforce ownership and participation was identified as an important contributing factor to the development of a positive safety culture in participants’ conceptualisations of safety culture. This understanding appears to have been incorporated into the development of subsequent safety culture improvement initiatives, with many participants describing workforce ownership and participation activities as a key element of their strategy. In particular, participants spoke about involving the workforce in the development of aspects of their safety culture improvement initiatives, and also in risk assessment and control activities.

“So we split the people in little groups, say six to 10 per group and we went through the six statements. And then we said, “What do we expect for behaviour with regards to the statements for crews, for supervisors and for managers?” And there was a whole lot of stuff that came out, tremendous. And just going through that exercise that’s when you start building the culture and people start to think and they start to believe or not, and you find out what the issues are. […] But the fun thing was that if you see that crews come with certain detailed stuff and they say, “This is what we expect from managers.” So you take the manager’s stuff and you go to a manager, “This is what is expected from you by the crews,” and they look at it, “Oh my god,” and that’s where again you start building.”

12.4.2 Behaviour

As with the ownership and participation subtheme, workforce behaviour was also reflected in both conceptual and operational discussions. While from a conceptual perspective, participants discussed behaviour as an outcome of culture, operationally behaviour was typically discussed in relation to the implementation of behavioural safety programs. In some cases, desired behaviours were identified within an over-arching safety culture framework, while in others more traditional behavioural safety approaches were implemented.

“We keep using this word “safe behaviour program” and it’s funny, but that’s exactly what it is. All we want is these guys to act in a manner that doesn’t jeopardise their or anybody else’s safety in any way.”

This theme reflects the results published in the interim report, with 85% of participating organisations reporting the use of a behavioural safety observation and feedback program over the last two years.

Behavioural safety programs can contribute to safety culture improvement when implemented as part of a broader strategy targeting multiple levels of the organisation. However, they should not be used as the sole or primary mechanism for safety culture improvement. Given that safety culture is created and driven through executive decision-making and subsequent leader behaviour, strategies targeting workforce behaviour in isolation are unlikely to result in safety culture change.
12.4.3 Training

Workforce training was frequently identified as an element of safety culture improvement programs. Training at the workforce level was typically discussed in relation to behavioural safety initiatives and the use of risk management tools.

“We had trainers going out to each of our vessels and spending an extended period of time, up to about 10 days on a vessel, to spend a lot of time with the crew and then work through the real, the grass root levels of how you actually intervene, and making sure that people were using all of these tools, which to us are very critical within the system of the permits, the permits and JHAs, how to physically use the lockout systems, the correct use of PPE, physically how you would approach people to stop unsafe work and that side of the operation.”

Findings detailed in the interim report support this theme. A large proportion of those organisations delivering personal and process safety training as a means of improving safety performance identified that this training includes frontline personnel, both site- and office-based. Figure 3 contains extracts from the interim report, providing a graphical representation of the percentages of participating organisations delivering personal and process safety training to specified recipients.

Figure 3: Interim report extract
12.4.4 Recognition

A number of participants identified the use of formal positive recognition programs within their safety culture improvement strategy. Recognition strategies ranged from verbal feedback through to peer mentoring opportunities, and issuing of material rewards.

“‘We’ve always got time to do it properly.’ People didn’t believe it to start with but when we started to actually send out emails to say things like, “Yesterday the master of the [vessel] refused to berth a ship because of this. Good on you for exercising the stop work obligation. You were right. The wind was too high.” That’s encouraged people to report – because we track this.”

A range of reinforcement strategies were also identified in the interim report, in relation to achievement of injury frequency rate targets. Figure 4 contains an extract from the interim report, providing a graphical representation of the types of reinforcement strategies applied within participating organisations, when injury frequency rate targets are achieved.

Figure 4: Interim report extract

Injury frequency rate reinforcement strategies

<table>
<thead>
<tr>
<th>Reinforcement Strategy</th>
<th>Number of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global frequency rates communicated across the organisation</td>
<td></td>
</tr>
<tr>
<td>Formal recognition of site/team/department performance from executives</td>
<td></td>
</tr>
<tr>
<td>Site/team/department prize, trophy, award, or similar</td>
<td></td>
</tr>
<tr>
<td>Informal recognition of site/team/department performance from leaders</td>
<td></td>
</tr>
<tr>
<td>Site/team/department frequency rates communicated across the organisation</td>
<td></td>
</tr>
<tr>
<td>Financial bonus for team/department performance</td>
<td></td>
</tr>
<tr>
<td>Financial bonus across the organisation</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
</tr>
</tbody>
</table>

While recognition for good performance is absolutely critical to any improvement process, this strategy should be applied thoughtfully and with caution. Recognition and reward programs are based on the scientifically supported and valid premise that people will increase the frequency of behaviours for which they expect to be rewarded. Unfortunately, the design of many reward and recognition systems actually serves to reinforce the very behaviours organisations wish to discourage (see Kerr, 1995).

In the safety realm, this is typically the case for reward and recognition strategies which focus on the achievement of lag indicator targets, such as injury frequency rates or number of successive zero incident days achieved. While these strategies aim to reward good safety performance, commonly shared
anecdotes suggests that they actually reward ‘creative’ reporting, non-reporting, or manipulation of statistics. Even a verbal or written commendation for lagging safety performance achievement can reinforce this type of undesirable behaviour. To avoid inadvertent reinforcement of undesirable behaviour, reward and recognition systems should focus on achievement of lead indicators which are likely to facilitate the genuine achievement of lag targets.

12.4.5 Compliance

A focus on workforce compliance was also mentioned by some participants as an element of their safety culture improvement initiatives. A proportion of these comments were focused on improving workforce behaviour in relation to rules, while other comments pertained to simplifying rules and requirements to facilitate workforce compliance.

“They have so much paperwork that it’s impossible for anyone to know how to access and find all that stuff to be able to do what they need to do. So then they have something happen and then they say, hang on, on page 57 of a 3,000 page manual, it says, do this, why didn’t you do that? Oh, we couldn’t find it, we couldn’t access it, we always do it this way. So you have the passive non-compliance. That doesn’t help.”

12.5 Systems

Systems was identified as a theme during conceptual discussions about safety culture, and as with ‘leadership’ and ‘people’, this theme was reflected in participants’ descriptions of implemented safety culture improvement approaches. The conceptual subthemes of ‘continuous improvement’ and ‘HR systems’ were also identified in the practical safety culture improvement strategies described during the interviews. Other subthemes identified within this theme have theoretical similarities to their conceptual counterparts, but display practical differences. Conceptually, participants spoke about the importance of ‘reporting’ to safety culture, while in practice they described the implementation of ‘just culture’ approaches. The requirement for a good quality ‘SMS’ was identified during conceptual discussions, which has translated into the inclusion of ‘traditional safety strategies’ and ‘simplification’ in implementation. At a conceptual level, participants also spoke about ‘integration of safety’ responsibilities and activities across all areas of the business, which in implementation appears to be focused on ‘integration’ of specific safety culture improvement strategies across the business. In addition, ‘organisational alignment’, ‘vision and values’, and ‘sustainability’ were identified as new subthemes within participant descriptions of systems.

12.5.1 Integration

The majority of participants spoke about efforts to integrate their safety culture improvement strategy within their existing organisational systems. This approach was focused on ensuring sustainability of change over time, with many participants speaking about a desire to improve existing systems rather than creating something entirely new.

“…looked at where we think we are now, where do we want to be in 12 months, where do we want to be in three years, five years, and very much talked about the safety culture and linking that culture into the organisation in terms of productivity, positive income if you know what I mean – in profitability, all of those sort of things, in getting to understand that all those things are tied in together. I mean, when you look at it, it’s nothing different to any other business model.”
12.5.2 Organisational alignment

The need for organisational alignment was identified as an element of successful safety culture improvement by a number of participants. While this subtheme appears to be similar to the ‘integration’ subtheme discussed above, ‘integration’ was discussed in relation to organisational systems, while this subtheme relates to alignment of people within the business. Specifically, participants commented on the need to drive culture change through various business units, departments, locations, contractors, and phases of work, to facilitate consistency across the organisation.

“It’s just moving through the different phases and performance planning, looking at key performance indicators and targets and performance review structure, customer engagement, and all the people that do need to be involved, so from within the organisational structure from our head office and asset teams, filtering down to the rig team and then the offshore team.”

12.5.3 Vision and Values

Some participants described the development of their safety culture improvement strategies as being based on their organisation’s safety vision and values. Typically, vision and values were used to frame a set of desired behaviours, sometimes targeting only the workforce level and sometimes across multiple job levels including management. Comments relating to vision and values often also spoke about winning over the hearts and minds of the workforce.

“So we start at the top, what is the vision and values? So we had debates and we said, “What do we want to really be measured against and what is the main stuff of the culture we want to build?””

12.5.4 Sustainability

Sustainability strategies were identified by a number of participants as a critical part of their safety culture improvement approaches. Participants discussed the importance of sustaining positive changes achieved through safety culture improvement initiatives. There was a recognition that initial implementation of strategies and programs may be relatively easy to achieve, but that sustaining those changes posed a greater challenge.

“There’s no box that you can get that says, “Here’s a safety culture.” It’s something that we’ve got to work with. It’s something you’ve got to be prepared to move with, it’s something you’ve got to be prepared to change direction at times, depending on what’s working and what isn’t working.”
12.5.5 Systems improvement

The importance of continuous systems improvement was discussed in a number of interviews as contributing to a positive safety culture. Mechanisms to drive continuous systems improvement were identified as an element of safety culture improvement strategy. Particular emphasis was placed on learning from incidents, which included robust reporting and timely action closeout, along with systems modifications to prevent reoccurrences.

“**It’s going to be modelled on a learning culture where it’s going to feed back so at every stage, there’s going to be basically three levels or three separate parts to it where you’ve got this development at the front, operations or project management in the middle and then at the back end, you’ve got the closeouts and QHSE and reporting at the end and learning. So there’s going to be different feedback loops where at the end of a project, we’re going to feed back into the business development and into the operations that are running. That will run in order to learn how we can do things better.”**

12.5.6 HR systems

HR systems were identified as increasingly important to safety culture improvement. In particular, participants discussed the incorporation of safety-related content into recruitment processes, including safety leadership and values-related behavioural interviewing. Participants also discussed the need for improved workforce planning to allow sufficient time for work to be done safely, the role of competency matrices in facilitating safe performance, and inclusion of safety items in personnel development plans.

“We also selected our supervisors on their – and we did very, very carefully select supervisors on their safety attitudes more than anything and because we’ve worked with many of them before, we were able to go through, and that was one of the processes we had in determining which were the guys that were going to be there or not, and we did a lot of assessments.”

While the use of safety-specific personality inventories was not mentioned during these interviews, 25% of organisations participating in the interim report identified the use of such inventories during recruitment. It is beyond the scope of this report to provide a thorough overview and critique of the research in this area. However, caution is recommended when considering the use of safety-specific candidate screening instruments, as they typically do not demonstrate predictive validity. Rather, instrument providers tend to rely on correlational data to support their use in screening candidates for safety behaviour. As previously mentioned, a correlation does not indicate a predictive or causal relationship and should not be interpreted as evidence for the predictive efficacy of an instrument.

In using unproven screening tools, organisations may unnecessarily limit their candidate pool. Within an employment market currently characterised by skills shortages, organisations basing recruitment decisions on such instruments may recruit people with fewer competencies or less experience, with the expectation that this will be offset by an improvement in safety behaviour. Unfortunately the research to date does not appear to support the ability of existing instruments to ensure this expected offset. Organisations considering the use of such instruments should closely investigate the predictive claims made by instrument providers, particularly in relation to the percentage of unique variance in safety behaviour explained by the instrument.
12.5.7 Just culture

Some participants identified the inclusion of Just Culture frameworks (e.g. Reason, 1997) into their safety culture improvement strategies. The implementation of a Just Culture framework appeared to be used to target improvements in levels and quality of incident reporting, and to drive systems modifications as a result of investigation findings.

“We run everything through the Just Culture Decision Tree. We have a process in place where our initial reaction is not just to name, shame and fire someone or just name and shame even. Our initial process is to look at the severity of the incident and the potential outcomes. We have an investigation

12.5.8 Traditional safety strategies

Some participants identified the use of traditional safety improvement strategies, in the absence of other safety culture improvement strategies such as those discussed above, which their organisations had labelled as “safety culture improvement”. Such strategies included the implementation or improvement of risk assessment tools, safety observation programs, SMS elements, safety meetings, action tracking systems, and crew-focused behaviour based safety programs. While the introduction or modification of traditional safety strategies is likely to have a positive impact on safety culture for companies with a very low level of safety system maturity, such strategies should not be labelled as safety culture improvements when used in isolation from the other elements of safety culture improvement identified in this report.

It should be noted that many safety culture improvement initiatives described throughout the interviews included improvements to traditional safety improvement strategies; however these were incorporated into a holistic approach involving a number of other strategies discussed in this report. The use of many of these strategies was also highlighted in the interim report, with all participating organisations reporting the use of at least one traditional safety improvement strategy over the past two years. An extract from the interim report is presented in Figure 5, which provides a graphical representation of the reported use of specified traditional safety improvement strategies.
12.5.9 Simplification

Some participants spoke about simplifying their safety systems, as a means of improving workforce understanding and engagement, particularly in relation to risk management and hazard mitigation tools. Participants spoke about developing tools designed to be used by crew members, rather than by engineers and managers. In particular, emphasis was placed upon reducing the amount of paperwork that frontline site-based members of the workforce are required to complete. Participants expressed a belief that much of the required paperwork does not assist crews in risk control and hazard mitigation, and that it rather serves to disempower the workforce, driving lower levels of engagement and participation in essential safety activities. This subtheme links to the ‘People-Compliance’ subtheme outlined above, with many participants discussing system simplification as a means of improving active compliance and minimising passive or accidental non-compliance.

“We have a system at the moment where we are trying to reduce the amount of paperwork offshore, deliberately. And assigning people with tools to assess risk, put control measures in place, and plan their business. So we are moving away from a system that says, okay, we are going to write down every single thing you need to do all the time. We are moving away from things like a JSA for every task, because all it is, is paperwork. They print off the same JSA, sign the back, stick it in a drawer, and then something happens and we beat them within an inch of their life. Because somewhere on one line on a 10 page JSA it says wear a pink hard hat and theirs was blue, and that doesn’t achieve safety it doesn’t get us to where we need to go.”

12.6 Organisational identity

A number of participants discussed a concern or focus within their safety culture improvement strategies relating to the creation or maintenance of organisational identity. Participants described two main areas of focus relating to organisational identity within their improvement strategies. The most common area of
focus was that of ensuring that all personnel are formally educated in relation to the type of culture the company is striving to achieve, and the behaviours expected of them within that culture. This subtheme has been labelled ‘acculturation’. The second focus area related to the use of particular products within the overall safety culture improvement strategy, and reflected a desire for bespoke products which are owned by the organisation in question. This subtheme has been labelled ‘product ownership’.

12.6.1 Acculturation

Many participants described a formal acculturation process as part of their safety culture improvement program. Typically these involved workshops, training or inductions, where all employees, including leaders, were provided with information about the safety culture program. In some cases this included training in how to give and receive feedback, while in other cases the workforce was engaged in developing aspects of the content of the safety culture program. In all cases the purpose of the acculturation process was to ensure that all personnel understood the safety culture program and what was required of them.

“We ran a targeted safety training program across the whole organisation including contractors in 2010/11, that was actually through the leadership down to the supervisor level, and in 2011/2012, we took the training to the individual worker. So all up we trained, I would say about 1900 people.”

12.6.2 Product ownership

A number of participants expressed a concern that the use of products owned and trademarked by other organisations (including consultancies) would detract from their own organisational identity, and may not ‘fit’ within their organisation. Indeed some participants spoke about previous attempts to use ‘off-the-shelf’ products, and the subsequent difficulties experienced with them. Other participants expressed concerns that the use of such off-the-shelf products could potentially damage or detract from the positives already established within their culture. As a result of these concerns, many participants identified that their organisations had made the choice to develop their own bespoke products to support their safety culture improvement process, which were designed to fit within their existing systems and culture, while driving change and improvement.

“No, I don’t want to use a cookbook. I want to create it on the spot using the principles and key ingredients. I want to create it on the spot with the people because then they own it and then they believe it.”

This theme is reflected in findings outlined within the interim report, particularly in relation to participating organisations’ use of safety climate perception surveys. Of those organisations reporting the use of safety climate perception surveys, 85% identified that their survey was either developed fit-for purpose by an external provider (55%), or developed internally (30%).

12.7 Continuous improvement

When participants were asked whether their safety culture improvement strategy had an end point, the response was universally ‘no’. Participants all expressed a belief that culture improvement is an ongoing process, and that there would never be a time where they could reasonably stop striving for improvement. This is the only theme identified within this research for which all participants were in agreement.

“There will never be a stage that we can say, “Right. We can stop that safety culture now.” To me it’s just going to be ongoing forever.”
13 Commentary on industry safety culture improvement strategies

The themes identified in the preceding section broadly align with participants’ conceptual understanding of safety culture (section 9). This is not surprising, rather it would be concerning if there was a significant difference between how people understand the concept of safety culture and the measures they implement to improve safety culture. The themes identified also align with the key elements of safety culture models and commonly identified factors reported in the academic literature. Figure 6 presents a diagrammatical representation of the themes and relationships identified in relation to industry safety culture improvement strategies.

Figure 6: Industry safety culture improvement strategy elements

Similar to the conceptual model presented in section 10, this model is reflective of analysis conducted across the entire data set, and provides a holistic model of safety culture improvement. However, in this case the whole is more than the sum of the parts. Analysis of individual responses demonstrates that the holistic approach modelled in Figure 6 is not representative of all approaches to safety culture improvement. Some approaches did reflect such a holistic approach and included strategies targeting each of the elements identified within the model; however other strategies focused only on one or two of the elements. For example, some participants spoke about the introduction of a behavioural safety program, others spoke about systems changes, and others talked about leadership development, but each of these appeared to be the sole strategy for safety culture improvement implemented within the organisation.

The significant variation in the breadth of strategies implemented by the various organisations reflects the apparent variations in participants’ understanding of safety culture as a concept, discussed in section 10. This suggests that the robustness of implemented safety culture improvement strategies is highly reliant on the associated mental model of the person designing the strategy. These mental models are likely to be significantly influenced by the availability and variability of academic and commercial information about safety culture. Given the confused and fragmented state of the literature, outlined in section 2, the variation in individual conceptualisation and operationalization of safety culture is to be expected.
14 Outcomes associated with safety culture improvement initiatives

In addition to describing the key elements of their safety culture improvement strategies, participants also provided information about the actual and expected outcomes associated with their strategies. Participants spoke about formal goals associated with their strategies, various measures used to track success, outcomes they have observed since commencing implementation, and future indicators of success that they expect to see as a result of their strategies.

14.1 Goals

Participants discussed two main types of goals that they hoped to achieve through their safety culture improvement strategies – peer reputation and goal zero.

14.1.1 Peer Reputation

A number of participants expressed a desire to achieve a level of safety excellence that sets them apart as a leader amongst their industry peers. It was expected that a successful safety culture improvement program would contribute towards the achievement of this goal.

“...where our culture is recognised as a model by industry and stakeholders and results in a workplace free of incidents.”

14.1.2 Goal ‘Zero’

Many participants identified that their organisations have established a formal aspirational goal of zero incidents/injuries/harm. Similarly, other participants spoke about achievement of “perfect days”. Again it was expected that successful implementation of their safety culture improvement initiatives would assist their organisations in getting closer to their aspirational goal.

“Of course, ultimately the target is Goal Zero. We want to achieve Goal Zero.”

14.2 Formal measurement

Participants reported the use of a variety of measurements to track the success of their safety culture improvement strategies. These included a variety of quantitative lead and lag indicators, as well as qualitative indicators and safety climate perception surveys.

14.2.1 Quantitative indicators

Participants identified a number of lead indicators used to measure the success of their safety culture improvement strategies. These included the following indicators:

- numbers of behavioural observations conducted
- percentage of actions closed out or overdue
- number of management site visits
- number of audits and inspections completed versus planned
- number of times personnel stopped the job
- percentage of required safety critical competencies assessed and current within the workforce
- formal external feedback received (e.g. through client or contractor surveys etc.)
- process safety metrics
- number of near misses reported.
Participants also identified the use of lag indicators to measure the success of their safety culture improvement strategies; however these were fewer than the number lead indicators mentioned. The following lag indicators were identified:

- injury frequency rates
- significant incident frequency rates
- business performance metrics
- injury-free days.

14.2.2 Qualitative indicators

Qualitative indicators were also mentioned by a number of participants as a way of gauging the effectiveness of their safety culture improvement strategies. In many cases, participants believed that qualitative indicators were at times more useful than quantitative indicators, as they tended to provide a richer and more meaningful source of data, and were less susceptible to manipulation. The following qualitative indicators were discussed:

- occurrences of proactive safety behaviour, such as challenging an instruction or seeking to change a procedure
- feedback received from people visiting facilities, including clients, regulators, and office-based personnel
- the quality of some of the lead indicators mentioned above, such as what managers actually do during their site visits, the level of detail involved in audits and inspections, and the quality of feedback occurring during behavioural observations
- housekeeping
- “the feel of the facility”.

14.2.3 Safety climate perception surveys

Fewer than half of the interview participants discussed the use safety climate perception surveys to measure their safety culture. Participants appeared to understand the limitations of perception survey data, with many describing the use of triangulation methods such as focus groups, observations and interviews. Such qualitative data was used to provide greater insight into perception survey findings, as well as representing a more scientifically sound approach to measurement.

"That survey involved 100 questions to some 1900 folk and also some focus interviews to sort of draw out – again, statistics will take you so far. You then have got to get behind the statistics. We did that in focus groups a bit like you’re doing now, and from that we identified these three areas for improvement. Then, with the help of [consultant], we developed the programs I’ve referred to."

Interestingly, the interim report shows that 78% of participating organisations identified the use of safety climate perception surveys within their organisations. There are a number of possible reasons for the comparatively small proportion of interview participants discussing the use of perception surveys. Participants may have forgotten to mention perception surveys during their interviews, they may not use perception surveys as a measure within their safety culture program, or they may not use perception surveys at all within their organisations.

14.3 Observed improvements

Participants spoke about the improvements they have observed since commencing their safety culture improvement strategy. Their observations broadly pertained to positive behaviour change and improved relationships.
### 14.3.1 Behaviour

Positive behaviour changes were the most frequently discussed observed improvement resulting from safety culture improvement strategies. Participants reported that positive behaviour change has been observed in members of the workforce, leaders and executives. The most frequently reported behaviour change appears to be in relation to improved communication on site. This included improved feedback between individuals, as well as increasing occurrences of people asking questions about the work they are involved in.

> “Everybody that goes out to the vessel tells me it’s working, and that’s from client, regulator, visitors in general. I have another example. General manager operations came out and went out to the vessel out here, and he came back and he said, “This is awesome.” He said, “I’ve just been out there on the vessel and I was down in the field joint coating area and these guys are down there talking to me about critical path and cycle times.” He said, “I’ve never heard field joint coaters talking about that sort of thing before.” But they’re in part of the process. They understand where they fit into the job. They understand their role. They have ownership of the whole process.”

### 14.3.2 Relationships

Participants discussed an observed improvement in relationships as a result of safety culture improvement initiatives. Observed improvements were reported between different crew groups, between employees and contractors, and between leaders and subordinates.

> “When I was on the vessel the other day with different work groups and traditionally different work groups of marine people and riggers, but there they are in a welfare meeting, thanking each other for work they’ve helped each other out with. And so to me, that’s a good indication to see that there’s a good morale going on because if they end up feeling as though they’re separate groups and having to fight each other to get stuff done then that’s a precursor for things to go wrong in the workplace.”

### 14.4 Future success indicators

Beyond formal measurement and observed improvements, participants also spoke about the outcomes they expected to achieve through successful implementation of their safety culture improvement strategies. They described improved safety ownership across the organisation, reduction in injuries, improved feedback, and improved communication as indicators of future success.

#### 14.4.1 Safety ownership

The primary expected outcome associated with a successful safety culture improvement program was related to individual ownership of safety. Participants consistently expressed an expectation that, if their program is successful, they will see a consistently high level of proactive safety behaviour being demonstrated by all personnel.

> “I think that we will know the strategy is successful when the most junior person in the organisation feels comfortable going up to the managing director on a supply base and stopping him and saying, “You haven’t got your hard hat on”. Yes, really. In a polite way.”
14.4.2 Injuries

Injuries were expected to decrease as a result of a successful safety culture improvement program. A number of participants specified their expectation of a sustained and continuous improvement in injury rates over time. They also recognised that for such a change to occur processes must be in place to maintain the momentum of their safety culture improvement program.

“Ultimately, by having all our rigs operating with zero incidents. I don’t think you can say anything other than that, a reduction in incidents. Yeah, that’s probably your initial goal, but ultimately, if it keeps working, we want to get down to zero incidents.”

14.4.3 Feedback

Participants expressed an expectation that their safety culture improvement initiatives will improve the content of formal and informal feedback received from their workforce, leaders, clients, contractors and regulators. Specifically, feedback is expected to become more positive, or to focus on changes that have been observed on site. Within this theme, participants placed particular emphasis upon qualitative feedback content.

“What are our clients saying? That will be the other key area. If our clients are going on board, and then coming back with negative comments, well, we haven’t succeeded. But if they’re coming back with positive comments saying, “Great, they really worked well with us,” you know, “The safety was above and beyond what we expected,” then we know we’re getting the message across.”

14.4.4 Communication

Safety culture improvement strategies were expected, if successful, to result in improved communication across the organisation. In particular, participants spoke about expected improvements in two-way communication between frontline employees and management.

“Again, by the quality of discussions, by the openness of the communications. If it starts to dry up, then it’s because we’re not responding properly. Just the general communication between the coalface and us. That should improve. That should get more comprehensive, and it should be a little more detailed, and that’s how we will know whether it’s working.”
15 Challenges to successful safety culture improvement

A number of participants discussed particular challenges they had experienced in the implementation of their safety culture improvement strategies. The relationship between client and contractor organisations, differences arising from national culture, and the history of the industry were all identified as significant challenges to successful safety culture improvement.

15.1 Client-contractor relationship

The challenges posed by the client-contractor relationship were raised by a number of participants, representing both client and contractor facility operator organisations. The issues discussed in relation to this theme were reasonably diverse, resulting in the identification of three subthemes – client-contractor alignment, contractual issues, and accepting cultural diversity.

15.1.1 Alignment

Participants representing client organisations spoke about processes to drive their contractors to align with their safety systems, safety values, and expected safety-related behaviours. Contractors were frequently identified as a significant source of risk for client organisations. Obtaining alignment from their contractors was described as a significant challenge to the successful development of a positive safety culture among client organisations.

“And a key part of building a safety culture is working with our contractors because our contractors are typically doing the more hazardous work activities. It’s essential we forge strong relationships with those guys and support them accordingly.”

15.1.2 Contractual issues

The incorporation of safety requirements and safety culture requirements during contract negotiations was identified as a challenge to safety culture improvement by participants representing both client and contractor organisations. Participants representing contractor organisations spoke about the frustrations caused during contract negotiations relating to the issue of safety culture programs and other safety tools. They spoke about occasions where they had worked to establish safety culture improvement strategies and other safety tools and processes within their organisations, yet client organisations still mandated that contractors adopted the client’s own strategies and tools. Participants representing contractor organisations noted that this trend appeared to be changing, and that an increasing number of client organisations are now more willing to allow contractors to maintain their own strategies and tools.

“Unless you can demonstrate that you have something that is equal or goes beyond what they can provide, then all our people will undertake their program. Although, we are starting to hear more and more, “If you’ve got something, let’s have a look at it. Let’s see what we can assist you with to more – to reinforce your own.” So we are hearing that. There’s a bit more flexibility nowadays, but three years ago, it was down the line, in the contract; “You must attend and undertake this program.” But it’s – for us, it’s been a resourcing issue. You know, we’ve only got X amount of dollars that we can actually put forward into certain activities before we’re running into the red.”

15.1.3 Accepting cultural diversity

A smaller number of participants expressed a recognition that attempts to align a contractor’s culture with that of the client is inappropriate and unnecessary. Representatives from contractor organisations spoke...
about demonstrating to their clients the maturity of the systems and strategies that they have in place, and clarifying how those systems and strategies meet the client’s requirements. In some cases this may also involve contractor organisations refusing to meet client demands where these are perceived as unrealistic or detracting from the contractor’s culture. Representatives from client organisations spoke about the differences in cultures that they have observed between contractors, and expressed an understanding that these differences are not inherently bad or negative and so should not be automatically targeted for change.

“Our client is not necessarily happy with the way we stop work at times. [...] We say, “It’s our boat. We decide what we’re doing, and we’re not working at the moment.” [...] You know, as far as we’re concerned, we’ve got a very, very strict set of rules. We’ve told everybody in the system what the rules are and how we work with it, and we stick to that to the absolute letter, not just for the client, not just for ourselves, but also the guys then have got trust in the system and, that’s another element in the process, if you like. So it’s all those things all tied in together.”

15.2 National culture

Differences between national cultures were frequently identified as a challenge to the development of a positive safety culture. Some participants discussed Australian culture in particular as challenging, comparing international and local safety statistics. Others cited challenges due to their corporate headquarters being located in countries that do not operate under a safety case regime. The conceptual differences in regimes appears to create a significant challenge to achieving appropriate commitment for investment in continuous improvement activities, such as safety culture improvement, where these are not legislative requirements. Additionally, participants identified that safety improvement initiatives coming from parent companies in other countries were not appropriate for the Australian culture, and that implementation of these was problematic. Finally, some participants operating in a number of different countries recognised the need to modify their safety culture improvement approaches to align with the national culture of each country in question.

“...when we talked with [Client] initially, we wanted to make sure that what we had fit our organisation and again, not being funny about it, but an American process does not fit our way of thinking.”

15.3 Industry history

The history of the offshore oil and gas industry was identified as a challenge to successful safety culture improvement initiatives. Participants spoke in particular about those members of their workforce who have been employed within the industry for a number of decades, where certain behaviours and beliefs that have been consistently reinforced over that time period are now proving difficult to change.

“I think as an industry, we all suffer from that problem. The safety culture in the past in the drilling industry - probably 20 years ago or 30 years ago, when I first started - was pretty non-existent really and that’s the battle we’ve got, to get across to these guys, that we actually mean it.”
16 Implications

Broadly, the information gathered through the safety culture national program indicates that safety culture improvement initiatives are increasingly prevalent across the industry. The vast majority of participating organisations indicated that they currently have safety culture improvement initiatives in place, or that they plan to implement such initiatives in the near future. Given this growing interest in safety culture improvement, the current findings present a timely opportunity to facilitate industry alignment in the way safety culture is understood and approached.

The data collection and analysis conducted through the safety culture national program has generated a number of observations about the way safety culture is understood and applied across the industry. The most significant of these observations is the inconsistencies in both theory and application evident across the organisations interviewed. In the absence of a definitive definition and model of safety culture upon which to design an improvement strategy, the label "safety culture improvement" appears to be applied to an increasingly diverse range of safety improvement initiatives. While the existence of any robust safety improvement initiative is positive, the industry appears to be at risk of labelling every safety improvement initiative as "safety culture".

The mislabelling of safety improvement initiatives is likely to represent an ongoing challenge for client-contractor relationships. Many client operators now require that their long-term third-party contractors either have a safety culture improvement strategy in place, or that contractors participate in the client's own improvement strategy. In the absence of a common standard or approach to safety culture improvement, there exists a strong potential for significant differences between client and contractor approaches to safety culture improvement. This is likely to contribute to increasing conflict within these relationships, and confusion regarding safety culture in general. Similarly, such variation in approaches to safety culture improvement between organisations may lead to confusion and disengagement across a mobile workforce.

If the current variability in approaches to safety culture improvement continues, there is a risk that safety culture will be labelled a "fad", and will be perceived as failing to add value to safety performance. Safety culture improvement initiatives which are poorly designed and implemented (i.e. they do not address safety culture) are unlikely to succeed in improving safety performance. Organisations and their members who have been involved in such unsuccessful attempts are then likely to conclude that the reason for the poor outcome is because safety culture as a concept is flawed, rather than recognising that the outcome was due to their approach to implementing the concept. This may be because there is no clear standard for such organisations to measure their approach against. For example, if a scaffold collapses due to poor construction, the organisation involved does not then blame the concept of scaffolding for the failure, and refuse to use scaffolding in the future. Rather, there are standards by which the scaffold can be assessed to determine why the failure occurred, and ideally to prevent such a failure from occurring in the first place.

Safety culture has the potential to significantly impact safety performance positively or negatively, but only if approaches to operationalise the concept are implemented with rigour. The findings of this national program suggest that, at present, such rigour is lacking amongst a significant proportion of the industry. To ensure that the potential power of safety culture is not lost in poor approaches to implementation, there is a need for a common definition and model of safety culture across the industry. This should lead to a more robust approach to safety culture improvement across the industry, and may assist in minimising some of the challenges associated with client-contractor relationships, in relation to safety culture improvement. This common definition and model should not dictate the content of individual strategies, rather the way such strategies should be framed and what should be targeted. For example, Permit to Work (PTW) systems are designed and applied in different ways between organisations, but there is still a consistent understanding of the theory and model underlying the PTW system.
17 Recommendations

NOPSEMA recommends the adoption of a common definition and model of safety culture across the industry, as a means of improving the rigour of safety culture improvement strategies and increasing their likelihood of success. The following definition of safety culture is proposed:

Safety culture refers to the shared basic assumptions, held by most members of an organisation, which create and reinforce group norms of thoughts, language and behaviour in relation to major accident event prevention.

A model of safety culture is proposed in Figure 7, which outlines the way in which safety culture is created and reinforced to drive safety performance. This model highlights the process by which executive commitment to safety influences organisational safety outcomes. Safety outcomes exist as a direct result of organisational behaviour (at all job levels). Organisational behaviour is influenced by executive decisions and behaviour, as well as organisation-level factors of leadership practices, systems, and working environment. These three factors interact with each other, and are created and driven by executive decisions and behaviour. Executive decisions and behaviour are a reflection of executive commitment to safety; however this relationship is mediated by executives’ safety knowledge, and their understanding of organisational behaviour.

The model demonstrates alignment with Schein’s (1985) description of the way that organisational culture develops. Executives decide and act in response to internal and external challenges. The assumptions that such decisions and actions are based upon are typically not explicitly stated, and so over time form the shared basic assumptions of the organisation. The implications of these decisions and actions, when successful, are embedded in systems, leadership practices, and the working environment. These organisation-level factors represent the espoused values and artefacts of the organisation. As systems, leadership practices, and the working environment deliver consistent and expected outcomes, the decisions and behaviour of executives are reinforced, and so basic assumptions are strengthened and reinforced.
This model is designed to be used as a common standard by which to design and evaluate safety culture improvement initiatives. Essentially, safety culture improvement initiatives should target each element of the safety culture model proposed above. The way that this is done will necessarily vary between organisations. Each organisation is unique and so requires a fit-for purpose strategy which is appropriate to its culture, history, strategy and people. However it is critical that there is some degree of consistency in the way in which safety culture improvement initiatives are designed, if the concept of safety culture is to successfully deliver improvements in safety outcomes over time.

Note that operators are not obliged to use the model or definition presented above. These have been developed as a means of facilitating continuous improvement in the application of safety culture concepts to safety performance improvement, and do not represent a regulatory requirement. Operators preferring to utilise their own model or definition of safety culture are free to do so.
References


### Appendix 1 – Published measures of safety culture and/or climate

<table>
<thead>
<tr>
<th>Reference</th>
<th>Climate or Culture?</th>
<th>Theory or Model used</th>
<th>Measure</th>
<th>Triangulation?</th>
<th>Construct Validity?</th>
<th>Concurrent validity?</th>
<th>Predictive validity? (safety)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarke (2010)</td>
<td>Climate</td>
<td>Climate as employees’ evaluations of their work environment, a collective variable.</td>
<td>Meta-analysis and structural equation modelling.</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>Correlation</td>
</tr>
<tr>
<td>Cox &amp; Cheyne (2000)</td>
<td>Both</td>
<td>Climate as a temporal manifestation of culture; through shared perceptions.</td>
<td>Questionnaire, Interview, Focus group, Observation.</td>
<td>Yes</td>
<td>No</td>
<td>Identified differences between drilling teams (contractors) and operator personnel.</td>
<td>Not attempted.</td>
</tr>
<tr>
<td>Diaz-Cabrera, Hernandez-Fernaud, &amp; Isla-Diaz (2007)</td>
<td>Culture</td>
<td>Culture as shared organisational values and practices.</td>
<td>Questionnaire</td>
<td>No</td>
<td>No</td>
<td>Different types of companies were differentiated.</td>
<td>Not attempted.</td>
</tr>
<tr>
<td>Reference</td>
<td>Climate or Culture?</td>
<td>Theory or Model used</td>
<td>Measure</td>
<td>Triangulation?</td>
<td>Construct Validity?</td>
<td>Concurrent validity?</td>
<td>Predictive validity? (safety)</td>
</tr>
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</tr>
<tr>
<td>Flin, Mearns, O’Connor, &amp; Bryden (2000)</td>
<td>Climate</td>
<td>Climate as the surface manifestation of culture.</td>
<td>Theme analysis.</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Grote &amp; Kunzler (2000)</td>
<td>Culture</td>
<td>Sociotechnical systems.</td>
<td>Questionnaire</td>
<td>Yes</td>
<td>No</td>
<td>Some relevant between-site findings.</td>
<td>Correlation</td>
</tr>
<tr>
<td>Harvey, Bolam, Gregory, &amp; Erdos (2001)</td>
<td>Culture</td>
<td>Unclear</td>
<td>Questionnaire</td>
<td>No</td>
<td>No</td>
<td>Shop floor and management identified as different cultures.</td>
<td>Not attempted.</td>
</tr>
<tr>
<td>Harvey et al. (2002)</td>
<td>Culture</td>
<td>Unclear</td>
<td>Questionnaire</td>
<td>No</td>
<td>No</td>
<td>Shop floor and management groups identified as different cultures.</td>
<td>Not attempted.</td>
</tr>
<tr>
<td>Kennedy &amp; Kirwan (1998)</td>
<td>Culture</td>
<td>Culture as amalgamated individual and group perceptions, thought processes, feelings and behaviour.</td>
<td>HAZOP approach.</td>
<td>NA</td>
<td>No</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Kongsvik, Johnsen, &amp; Sklet (2011)</td>
<td>Climate</td>
<td>Shared perceptions regarding safety policies, procedures, and practices.</td>
<td>Questionnaire (General perceptions, not a climate tool).</td>
<td>No</td>
<td>No</td>
<td>Number of leaks between facilities negatively correlated with climate scores.</td>
<td>Percentage of variance.</td>
</tr>
<tr>
<td>Reference</td>
<td>Climate or Culture?</td>
<td>Theory or Model used</td>
<td>Measure</td>
<td>Triangulation?</td>
<td>Construct Validity?</td>
<td>Concurrent validity?</td>
<td>Predictive validity? (safety)</td>
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<td>-----------------------------</td>
</tr>
<tr>
<td>Lawrie, Parker, &amp; Hudson (2006)</td>
<td>Culture</td>
<td>Capability Maturity Model.</td>
<td>Questionnaire</td>
<td>No</td>
<td>No</td>
<td>Not attempted.</td>
<td>Not attempted</td>
</tr>
<tr>
<td>Zohar &amp; Luria (2005)</td>
<td>Climate</td>
<td>Multilevel model of climate as perceptions about policies, procedures and practices as indicators of desired role behaviour.</td>
<td>Questionnaire</td>
<td>No</td>
<td>Identifies meaningful qualitative differences between their measure and other leadership measures (discriminant).</td>
<td>Between-groups variance and within-group homogeneity when correlated to outcome criteria.</td>
<td>Correlation</td>
</tr>
</tbody>
</table>
Appendix 2 – Online survey questions

Introduction and Information

This survey forms part of a National Program aiming to understand the ways in which safety culture is operationalised across the Australian offshore oil and gas industry. Culture is frequently identified as a contributing factor to major incidents across the industry, with strategies targeting safety culture improvement becoming increasingly popular. However there is little published evidence indicating whether such strategies have succeeded in improving safety outcomes.

As an independent regulator, NOPSEMA is in a position to objectively challenge ideas and practices as a means of improving industry’s approach to risk management. Within the offshore oil and gas industry, if things go wrong they can do so catastrophically. As such, it is critical that safety resources are focused on strategies that have the best chance of succeeding in protecting the workforce.

As part of NOPSEMA’s promotion and advice functions, and through its powers to conduct research, we are seeking to establish how duty holders apply the concept of safety culture, and how this has influenced safety outcomes. Research findings will be made available across the industry as a way of promoting best practice and innovation.

Please respond to this survey even if you have not introduced any strategies relating to safety culture within your organisation. In addition to questions about safety culture, this survey also seeks to gather information about the use of more traditional safety improvement strategies, such as KPIs, training, coaching, systems and equipment. Respondents may be contacted for further information. Interviews will be conducted to gather more detailed information about strategies, measures, outcomes and challenges.

All responses will be treated with strict confidentiality. Anonymity will be assured through the reporting of aggregated data only. Survey responses will be used solely for the purposes of this National Program, described above, and will not result in compliance-related action.

As with any research, for results to be meaningful and useful they must be drawn from representative data. A larger response rate provides more reliable data, which means that conclusions can be made with greater confidence. Your participation is critical to the achievement of practical findings and recommendations to foster continuous improvement in safety performance across the industry.

If you would like further information about this National Program, please contact Joelle Mitchell - joelle.mitchell@nopsema.gov.au
Contact Information

Personal and company identity information will not be reported or published in any format, and is requested for the purposes of data integrity assurance only. That is, to ensure that only one survey is completed per company. In the case of multiple responses from one company, NOPSEMA will contact you to identify which response is the appropriate one.

Q1. Please provide your preferred contact information (note above regarding use of this information).

Q2. On which company’s behalf are you responding?
[Set response options provided]

Company Information

Q3. How many employees work for your company within Australia, in divisions / business units directly related to offshore petroleum? Please include those located at facilities within state and Commonwealth waters.

- <50
- 51-100
- 101-300
- 301-500
- 501-750
- 751-1000
- 1001-2000
- 2001-5000
- >5000

Q4. At how many locations does your company operate within Australia, where work is directly related to offshore petroleum (including corporate support functions)? Please include corporate offices and individual offshore facilities.

Q5. How many of each facility type does your company operate within Australia? (select all that apply)

- Production Platform (with drilling)
- Production Platform (no drilling)
- Not Normally Manned Platform
- Pipeline
- MODU
- Accommodation Vessel
- Multi-Service Vessel
- Construction Vessel
Q6. How many of each onshore workplace type does your company operate within Australia? (select all that apply)
- Onshore Processing Plant
- Onshore Offices
- Other (please specify)

Q7. Which of the following best describes your company’s management system structure?
- Multinational company with an Australian Business Unit (or similar) operating within a global management system
- Multinational company with an Australian Business Unit (or similar) operating within a Business-Unit-specific management system
- Multinational company with an Australian Business Unit (or similar) operating with site-specific management systems
- Australian company only with a company-wide management system
- Australian company only with site-specific management systems
- Non-Australian company operating within Australia with a company-wide management system
- Non-Australian company operating within Australia with site-specific management systems
- Other (please specify)

Q8. Which of the following best describes your company’s safety / OHS personnel (excluding HSE Representatives / Committee Members)?
- No dedicated safety resource
- One part time safety resource
- One full time safety resource
- Two or more full time safety resources
- Other (please specify)

Safety Team Information

Q9. Which of the following best describes the reporting lines for your safety team/person?
- No reporting line to the most senior position (such as CEO, Owner, Director, or similar)
- Reporting to the most senior position via a non-safety line (e.g. Operations, Human Resources, etc.)
- Direct reporting line to the most senior position
- Indirect (i.e. ‘dotted-line’) reporting line to the most senior position
- Other (please specify)
Q10. Please identify how many safety personnel are allocated to each location type: (please enter a number for all applicable location types)

- Corporate offices
- Offshore
- Other site-based locations
- Office-based with regular site-based requirements
- Office-based with ad-hoc site-based requirements

**Safety Improvement Initiatives – Safety KPIs**

Q11. Does your company use Key Performance Indicators (KPIs) to measure safety performance?

- Yes
- No
- Unsure

Q12. Please describe any lag indicators (e.g. injury frequency rates) used to measure safety performance.


Q13. Please describe any lead indicators (e.g. action closeout status) used to measure safety performance.


Q14. Does your organisation set KPI targets for injury and incident frequency rates (e.g. TRIFR, LTIFR, etc.)?

- Yes
- No
- Unsure

Q15. Please identify the strategies used to drive and reinforce achievement of KPI’s for reduced injury and incident frequency rates (select all that apply).

- Financial bonus for team/department performance
- Financial bonus across the organisation
- Site/team/department prize, trophy, award, or similar
- Global frequency rates communicated across the organisation
- Site/team/department frequency rates communicated across the organisation
- Formal recognition of site/team/department performance from executives
- Informal recognition of site/team/department performance from leaders
- None
- Other (please specify)
Safety Improvement Initiatives – Personal Safety Training

Definition: ‘Personal Safety’ focuses on injuries such as slips, trips, falls, struck-by incidents and strains. Personal safety programs place an emphasis on personal behaviours and the wearing of personal protective equipment.

Q16. Does your organisation provide training in personal safety as a way of improving safety performance?
   o Yes  o No  o Unsure

Q17. Please identify the positions within your company receiving personal safety training (select all that apply).
   o Frontline site-based employees Offshore
   o Frontline site-based labour-hire personnel
   o Site-based supervisors
   o Site-based managers
   o Frontline office-based employees
   o Frontline office-based labour-hire personnel
   o Office-based supervisors requirements
   o Office-based managers
   o Executives
   o Site-based third party contractors and vendors
   o Office-based third party contractors and vendors
   o Other (please specify)

Safety Improvement Initiatives – Process Safety Training

Definition: ‘Process Safety' refers to the prevention of unintentional releases of hydrocarbons, chemicals, energy, or other potentially dangerous materials (including steam) during the course of facility processes and which can cause major accident events. Process safety involves, for example, the prevention of leaks, spills, equipment malfunction, over-pressures, over-temperatures, corrosion, metal fatigue and other similar conditions. Process safety programs focus on design of facilities, maintenance of equipment, alarms, effective control points, procedures and training.

Q18. Does your organisation provide training in process safety as a way of improving safety performance?
   o Yes  o No  o Unsure
Q19. Please identify the positions within your company receiving process safety training (select all that apply).

- Frontline site-based employees
- Frontline site-based labour-hire personnel
- Site-based supervisors
- Site-based managers
- Frontline office-based employees
- Frontline office-based labour-hire personnel
- Office-based supervisors
- Office-based managers
- Executives
- Site-based third party contractors and vendors
- Other (please specify)

Q20. Does your organisation provide safety leadership training as a way of improving safety performance?

- Yes
- No
- Unsure

Q21. Please identify the positions within your company receiving safety leadership training (select all that apply).

- Leading hands (site-based)
- Frontline site-based supervisors
- Site-based middle managers
- Site-based senior management
- Office-based acting supervisors
- Office-based supervisors
- Office-based middle managers
- Office-based senior management
- Executives
- Other (please specify)

Q22. Does your organisation provide safety leadership coaching as a way of improving safety performance?

- Yes
- No
- Unsure

Q23. Please identify the positions within your company receiving safety leadership coaching (select all that apply).

- Leading hands (site-based)
- Frontline site-based supervisors
- Site-based middle managers
- Site-based senior management
- Office-based acting supervisors
- Office-based supervisors
- Office-based middle managers
- Office-based senior management
- Executives
- Other (please specify)
Safety Improvement Initiatives – Safety Culture/Climate Perception Survey

Q24. Does your organisation conduct safety culture/climate perception surveys?
   - Yes
   - No
   - Unsure

Q25. Please select the option that best describes your safety culture/climate perception survey.
   - Survey developed internally
   - Survey developed fit-for-purpose by an external provider
   - 'Off-the-shelf' survey purchased through an external provider
   - Unsure
   - Other (please specify)

Q26. Has your perception survey been subject to psychometric evaluation for reliability, validity, and/or factor structure?
   - Yes
   - No
   - Unsure

Q27. How regularly is your perception survey administered?
   - We haven’t decided yet
   - Monthly
   - Quarterly
   - Six-monthly
   - Annually
   - Every two years
   - Every three years
   - Unsure
   - Other (please specify)

Q28. How is the perception survey administered?
   - Administration and data collection conducted internally
   - Administered internally with data collected by an external provider
   - Administered by an external provider with data collected internally
   - Administration and data collection conducted through an external provider
   - Unsure
   - Other (please specify)

Q29. How is the perception survey data analysed?
   - Internally
   - By an external provider
   - Unsure
Q30. Are results provided to the workforce?

- Yes, all results are provided
- Yes, but results are vetted first
- No, results are not provided to the workforce
- We haven’t decided yet
- Unsure

Q31. How are perception survey results communicated to the workforce? (select all that apply)

- Detailed report of findings made available, personnel advised of its availability and location
- Summary report of findings made available, personnel advised of its availability and location
- Presentation of detailed findings delivered across the organisation, the same presentation for all teams
- Presentation of detailed findings delivered across the organisation, with team-specific data provided
- Presentation of summarised findings delivered across the organisation, the same presentation for all teams
- Presentation of summarised findings delivered across the organisation, with team-specific data provided
- Email, memo, or similar sent to all personnel outlining summary findings
- Supervisors communicate findings to their teams
- No global strategy - left to individual team managers to decide
- We haven't decided yet
- Unsure
- Other (please specify)

Q32. What is done with the perception survey results? (select all that apply)

- Nothing
- Tracking results over time
- Comparisons between sites/departments/teams
- Comparisons with safety lag indicators
- Comparisons with safety lead indicators
- Prompting further investigation into specific areas of concern
- Development and implementation of integrated improvement plans across the organisation
- Sites/teams/departments expected to act on results, but this is not followed up
- Sites/teams/departments expected to act on results, followed up periodically
- Safety department/personnel develop and implement actions
- Disciplinary action against individuals/departments/sites/teams
- We haven't decided yet
- Unsure
- Other (please specify)
Safety Improvement Initiatives – Safety Culture

Q33. Has your organisation implemented a safety culture improvement strategy?

- Yes
- We are currently developing a strategy but have not yet commenced implementation
- Not yet, but we have a formal plan in place to develop a strategy in the near future
- Not yet, but we have informally agreed to develop a strategy in the near future
- No, and we have no plans to do so
- Unsure

Q34. Please describe your safety culture improvement strategy.

___________________________________________________________________________

Q35. What changes or improvements in safety performance have been observed as a result of your safety culture improvement strategy?

___________________________________________________________________________

Q36. NOPSEMA will be commencing a series of information-gathering interviews with industry personnel regarding their safety culture improvement strategies. Please provide the name and contact information for the appropriate interviewee within your organisation. (Note, the nominated interviewee should be the person responsible for the implementation of the strategy.)

___________________________________________________________________________

Safety Improvement Initiatives – Traditional Strategies

Q37. Which of the following additional safety improvement initiatives have been utilised within your organisation over the last two years? (please select all that apply)

- Safety Management System improvements
- Procedure improvements
- Workplace design improvements
- Equipment upgrades
- Use of safety-specific personality inventories or similar during recruitment
- Behavioural safety observation and feedback programs
- None
- Other (please specify)
Third Party Contractor Safety Culture Improvement Strategies

Q38. Are you aware of safety culture improvement initiatives being run by major third party contractors/vendors working at your facilities?

- Yes
- No
- Unsure

Q39. Please provide contact details for those major third party contractors/vendors implementing safety culture improvement strategies (Please note, contractors/vendors may be contacted and asked to participate in this research project).

Survey Completed!

Thank you for taking the time to complete this survey.

Initial survey results will be published in aggregated and anonymous format on NOPSEMA’s web page.

Following the interview phase of the National Program, a final report will be published outlining key findings and recommendations.

To receive an alert when the reports are published, please provide your email address below.
Appendix 3 – Email to interview participants

Hi [participant],

Thanks for making the time for this interview. Broadly, the research aims to answer two questions:

1. How does the Australian offshore petroleum industry conceptualise safety culture?
2. How does the industry operationalise safety culture?

The interview format will be semi-structured to ensure consistency across the research whilst allowing for flexibility within each case. Core interview questions are provided below. The research is exploratory in nature, so there is no ‘ideal’ or ‘correct’ response to any of the questions.

Theme analysis will be conducted once all interviews have been completed. To allow for accurate analysis, the interview will be recorded (audio only) and transcribed. Transcripts will be kept in a secure folder with access limited to the researchers. Additionally, transcripts will not contain identifying information, rather they will be coded to maintain confidentiality.

The final report will describe common or significant themes identified across a number of interviews – no identifying information will be reported, nor will individual cases be described. The report may include anonymous quotes to provide evidence for the existence of a theme. If a quote from your interview is selected, you will be asked to review the quote, and either approve or reject its inclusion in the final report.

All information provided will be used solely for the research purposes identified above, and will not result in compliance-related action.

Interview questions:

Regarding how industry conceptualises safety culture:

- How does your organisation define safety culture?
- What does a good safety culture look like?
- What factors facilitate a good safety culture?
- What factors detract from a good safety culture?

Regarding how industry operationalises safety culture:

- What are the main elements of your safety culture improvement strategy?
- How was it developed?
- Is it based on a theory or model of safety culture?
- What has been done so far?
- How do you measure the success of the strategy?
- Do you have a goal or target that you aim to reach?
- Does the strategy have an end point?
- What changes have been observed since the strategy began?
- How will you know that the strategy is successful?