**Offshore Safety Directive Regulator** 



# The Offshore SECE Management and Verification Inspection Guide

# **Open Government Status: Fully Open**

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### **Review History**

Date	Changes
March 2020	Revised for the 2015 Offshore Safety Case Regulations.

### Target Audience: OSDR Inspectors

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When carrying out inspections covered by this inspection guide (IG) inspectors should:

- Assess duty holder responses against the success criteria in Appendices 1 and 2.
- Use the performance descriptors in Appendix 3 to determine:
  - The appropriate performance rating; and
  - The initial enforcement expectation; and
  - Consider how and when the issues raised during an inspection are to be closed out.

### Introduction

- This IG supports the Competent Authority's (CA) programme of regulating major hazards, by establishing a clear framework to inspect safety and environmental critical element (SECE) Management and Verification (SM&V) for offshore installations. It builds on the regulatory requirements set out in the 2015 Offshore Safety Case Regulations, industry guidance and good practice observed through planned interventions.
- 2. The IG will assist all inspection management team (IMT) inspectors when they inspect SM&V aspects of key safety management and risk control systems and provide them with clear guidelines to help decide when topic discipline SECE management and verification support may be required. In addition, it aims to target SECE management and verification specialist resource where it is needed most, by identifying priority topics for inspection by SM&V topic discipline inspectors.
- 3. The IG also enables IMT and SM&V topic discipline inspectors to rate the performance of offshore installation duty holders against success criteria for a number of key SM&V inspection topics.
- 4. Although this IG is aimed primarily at IMT and SM&V topic discipline inspectors, it will help offshore installation duty holders prepare for SM&V inspections and understand the rationale behind SM&V inspections.

### Context

- 5. On 20 April 2010, a blowout of BP's Macondo well in the Gulf of Mexico led to the deaths of 11 workers on Transocean's Deepwater Horizon drilling rig, and the release of an estimated 4.9 million barrels of oil. Following this incident, a UK based inquiry led by the Energy and Climate Change Committee was conducted. It sought evidence as to how such an event could not be realised in the UKCS, in particular for deep water activities conducted on the UKCS.
- 6. Within this inquiry, the then Chief Executive, Oil & Gas UK and the Head of Health and Safety Executive's Offshore Division gave evidence. Both cited independent verification of well design, well equipment and safety critical elements as one of the differences between UK and US regulatory requirements. Independent verification was also given as a reason that would reduce the likelihood of such an event being realised on the UKCS.

7. In a memorandum to the inquiry, submitted by the Department of Energy and Climate Change, Health and Safety Executive, and Maritime and Coastguard Agency, it was said; 'The UK offshore regulatory framework, developed after the Piper Alpha disaster in 1988, implements the relevant European Directive 92/91/EEC on the minimum requirements for improving the safety and health of workers in the mineral-extracting industries through drilling'. In response to the question what are the implications of the Gulf of Mexico oil spill for deep water drilling in the UK? the memorandum said that UK regulations also contain a range of additional safeguards to mitigate the health and safety risks associated with offshore drilling. These measures also reduce the risk of an oil pollution incident occurring and included an independent competent person must verify the suitability and state of good repair of safety critical equipment such as blowout preventers (BOPs) on mobile drilling rigs.

### Purpose

- 8. The primary purpose of the IG is to support IMT and all topic discipline inspectors when they plan, undertake and rate SM&V inspections for offshore installations (by sampling key SM&V elements of a duty holders' systems and arrangements to manage major accident hazards (MAHs)). It will also help IMT inspectors target SM&V specialist resource in a proportionate and effective manner.
- 9. The IG is not intended to be a detailed inspection tool. Rather, it aims to highlight key milestones for SM&V integration and signpost supporting guidance, such as the Offshore Safety Case Regulations, industry guidance or good practice.
- 10. Another aim of the IG is to bring transparency to the Competent Authority's programme of SM&V inspection work. It will help duty holders understand why certain SM&V topics are selected for inspection and how their performance is judged and rated.
- 11. The Competent Authority believes that SM&V inspection work is central to ensuring that major hazard risks are properly managed. This IG provides a structured framework for IMT and topic discipline Inspectors to verify that offshore installation duty holders have selected appropriate risk reduction measures, and that those measures are being implemented effectively.

### Harmonisation with other Inspection Guides

12. It is not intended that this guide be used in place of other guides such as <u>Maintenance</u> <u>Management</u> or <u>Operational Risk Assessment</u>. These guides provide a detailed lead on how

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those topics are to be inspected. The SM&V guide is intended to complement all other guides and describe how all systems employed by a duty holder should come together and provide a demonstration of the ongoing suitability of an installations SECEs.

### Targeting SM&V Topic Discipline Resource in a Proportionate Manner

- 13. It is anticipated that IMT Inspectors will carry out and rate certain topic-based inspections without SM&V discipline support. These visits will typically involve the inspection of key safety management and risk control systems. This IG will help IMT Inspectors identify follow-up work where SM&V discipline support may be required. Further guidance is provided in Appendices 1 and 2.
- 14. IMT Inspectors are encouraged to contact the SM&V team for guidance if they are in any doubt about allocating SM&V resource, or if they require support to plan visits and/or discuss key inspection findings.

### SECE Management and Verification Inspections

- 15. In order to make best use of this guide, and to maximise the effectiveness of the inspection, it is anticipated that there will be three elements to a SM&V inspection. A planning phase, an onshore phase and finally an offshore phase.
- 16. The inspection planning phase should be conducted one month in advance of the inspection. This is to allow time to read any documentation and consider these documents in line with the requirements of the regulations, ACOPs and associated guidance. Initially the following documents should be requested for the inspection.
  - Current safety case (if not already on the Competent Authority Portal)
  - Current verification scheme
  - Performance standards (may just be limited to the standards required for any MAH scenario being inspected)
  - Previous two years of annual status reports provided by the verifier
  - Previous two years of routine verification reports from the verifier
  - Letters of concern, letters of reservation, open remedial action recommendations / findings
- 17. The onshore inspection phase will be conducted at the duty holders' offices to inspect the arrangements in place. This will also include a meeting with the verifier, ideally at the verifiers' Page 5 of 44

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offices without the duty holder in attendance. This time is used to inspect the arrangements described in the verification scheme, or to drill into issues or omissions that were identified in the planning stage. An inspection of the verification outputs is also to be conducted at this point. Are the requirements of the scheme completed as planned? How are activities recovered if not completed? Are the reports completed by the verifier of sufficient quality and how are findings/remedial actions recommended (RARs) managed?

18. Finally, the offshore inspection is to inspect the knowledge of the management offshore on the scheme and its function. Are those with noted responsibilities in the scheme aware of their responsibilities and what information, instruction or training has been provided to allow them to carry out their functions under that scheme.

### Meeting the verifier

- 19. When using this guide to inspect the arrangements in place for verification, a meeting with the verifier should be conducted too. This meeting is to be undertaken at the verifier offices without the duty holder in attendance. This is an opportunity to ask the verifier how their input and findings are received. Also, who do they report to? What are the systems like for dealing with findings/recommendations? Are they dealt with in a timely manner? How are they tracked? How are comments and responses managed? How often do they communicate? How often do they meet?
- 20. The meeting should be used to test how the verifier is notified of changes or significant repairs to a SECE, and how they gain access to the required information to comment on the changes or repairs.
- 21. Information from the verifier and their reports can provide information to take into the inspection. Meeting the verifier also offers an opportunity to discuss information provided in the written reports, the scheme, the contract or the management arrangements that meeting with the duty holder alone may not otherwise allow.
- 22. Finally, the verifier should be invited to the inspection close out meeting with the duty holder. This is to allow both parties to hear the issues raised, as well as any good practice that has been identified.

### Judging Success and Moving On - Performance Ratings for SM&V Topics

- Success criteria for key SM&V inspection topics are defined in Appendices 1 and 2. By comparing key findings from the inspection with the relevant success criteria in Appendices 1 and 2, duty holder performance should be rated in line with the descriptions/scores in Appendix 3.
- 24. IMT inspectors should consider a follow-up inspection with an SM&V discipline inspector whenever they assign a rating score of 40, 50 or 60 to the topic, or if they identify significant shortcomings in a specific key area such as maintenance management or operational risk assessment (ORA).
- 25. The duty holder performance ratings should be entered on the Inspection Rating (IRF) Tab of the relevant installation Intervention Plan Service Order. Findings should be recorded in the post inspection report and letter.

### Enforcement Expectations

- 26. Inspectors should use the <u>Enforcement Management Model</u>, including assessment of factors that are specific to the duty holder, to inform their regulatory decisions. Indicative enforcement expectations are included in Appendix 3.
- 27. If in doubt, IMT inspectors should approach the SM&V team for guidance on SM&V enforcement matters.

### Review and Evaluation of the Inspection Guide

28. The Competent Authority will periodically review and evaluate outcomes of this guide and communicate key lessons learned to relevant parties and stakeholders.

### Health and Safety

29. No specific health and safety issues relevant to this topic that needs to be considered when conducting the inspection. However, where there is no obstruction to an inspector's duty, inspectors are advised to follow site specific assessments and permits when witnessing testing of SECEs.

# Appendix 1 – SECE Management Key Topics for Inspection Topic 1: Organisational Arrangements and Competent Advice

### Topic 1.1: Competent Advice on SECEs

- 30. For SECE management to be effective in the prevention of a major accident, competent technical advice on the integrity of SECEs must be available to the duty holder.
- 31. Success in this area will involve a duty holder being able to demonstrate that those responsible for providing advice on SECEs to duty holder management, are competent to do so. A demonstration should be available on how a duty holder established that those making decisions on SECEs understand the work involved, the principles of risk assessment and prevention, the current legislation and health and safety standards. Duty holders mainly concentrate their efforts on ensuring offshore technical staff are competent for their areas, but a duty holder should be able to demonstrate there is an equivalent competency system in place for those who manage and assess SECEs. Example may include technical authorities, engineers, supervisors and managers.
- 32. This criterion is also applicable to those appointed who may not be employees of the duty holder. For example, individuals who provide professional business services which may have a variety of contractual arrangements. Duty holders must be able to demonstrate how they are satisfied those individuals are able to provide the same level of competence as those in their employment.
- 33. The appointment of any engineering service provider is critical in the management of SECEs. Duty holders must be able to demonstrate how the competence of any service provider that provides SECE assurance has been deemed competent to do so.
- 34. When inspecting competency systems or job descriptions, inspectors should be aware of generic terminology. Words such as "knowledge of", "good knowledge of" or "sound knowledge of" may be used to define different levels of technical responsibility. Questions should be asked to establish if the duty holder has defined meanings for these. If they have, can the duty holder measure these qualitative statements?

- 35. A key requirement for any person providing competent advice on SECEs is a familiarity of the installation and the plant on it. Inspectors should seek evidence that the technical authorities, engineers and managers periodically visit the installation they provide advice on.
- 36. Where technical authorities (TAs) are not located within the UK, i.e. global TAs, the duty holder should be able to demonstrate that those TAs understand UK legislative requirements or are provided with local support engineers with adequate authority to advise the TA.

### Topic 1.2: Organisational Arrangement for Verification

- 37. For verification to be effective, the organisational arrangements should be adequately described in the verification scheme and embedded within the duty holder's safety management system.
- 38. These arrangements should include a policy that can either be a stand-alone document or part of the verification scheme. This policy should outline leadership commitments to the management of major accident hazards and the implementation of the verification scheme. Roles and responsibilities for delivering the requirements of the verification scheme should also be described in sufficient detail. Finally, the competency arrangements for those who have roles and responsibilities defined in the scheme should be described. This includes the competencies for both the verifier and duty holder personnel.
- 39. The duty holder must be assured that those undertaking verification activities are independent and qualified to do so. This will include the technical expertise, qualifications and sufficient experience to undertake specific roles.
- 40. Good practice has seen verifier competence management systems aligned with either generic SECEs or specific to the duty holders own list of SECEs and performance standards. Some verifiers may have their competence management systems UKAS certified.

### Key Legal Requirements and Guidance

Health and Safety at Work etc. Act 1974, Section 2(2) The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015, Regulations 2, 7, 9, 10 and schedule 4. Management of Health and Safety at Work Regulations 1999, Regulations 5 & 7 Managing for Health and Safety, HSG65

# Topic 1: Key Questions

Competent Advice on SECEs	Organisational Arrangement for Verification
<ul> <li>How does the duty holder appoint technical persons responsible for the management of SECEs? For example, technical authorities, system custodians, responsible engineers.</li> <li>Other than any appointment process, how does the duty holder ensure those technically responsible for the management of SECEs are competent in the duty holders' own systems?</li> <li>In any competence management system for technically responsible persons, is there a requirement to demonstrate knowledge of the relevant statutory provisions applicable to offshore installations?</li> <li>How does the duty holder appoint third party service providers into positions for the management of SECEs? Who appoints them and how are they deemed competent for this process?</li> <li>Where generic phrases such as 'knowledge of' or good understanding' have been used to determine the capability of a technically responsible person, has the duty holder defined the differences between these phrases to for consistency?</li> <li>Are management, technical authority or engineers visits to the installation planned, focussed on key objectives (ref: safety leadership agenda), outcomes recorded, analysed and, where appropriate, lessons learned and shared within the organisation?</li> </ul>	<ul> <li>Does the duty holder have in place a verification scheme, is it current, and when was it last revised?</li> <li>Does the verification scheme define the roles and responsibilities of the verifier and personnel within the duty holder for scheme management and implementation? The descriptions should clearly indicate the levels of responsibility and accountability for delivering the requirements of the scheme.</li> <li>Does the verification scheme describe the competency arrangements in place for both the verifier and duty holder personnel responsible for delivering the requirements of the scheme?</li> <li>Are those with noted roles and responsibilities in the verification scheme aware of these? How much time do they dedicate to these responsibilities if management of the scheme is an addition to other responsibilities?</li> <li>Is there more than one verifier? For example, a mechanical, electrical and/or marine verifier? Is there a focal point verifier who acts as the 'project manager' for the verification body? Have their roles been described in the verification scheme?</li> <li>For the verifier, does the duty holder rely on the provision of competencies from the verification body, or do they align the competencies required to the installation SECEs? How does the duty holder satisfy themselves that they are receiving competent advice on SECEs from a verifier? Are the offshore personnel noted in the verification scheme aware of their roles and responsibilities? What information, instruction or training have they been provided with on the verification scheme?</li> </ul>
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### Topic 2: SECE Identification and Initial Suitability

### Topic 2.1: SECE Identification

- 41. Successful management of major hazards requires that initiating events, as well as the barriers (i.e. SECEs), are correctly identified. Furthermore, the required performance of SECEs must be ascertained and assessed to ensure the risks are ALARP. This requires a robust system to ensure that the necessary actions are identified, assigned, undertaken and monitored to ensure that the performance required is delivered.
- 42. For this to be successful, duty holders must have a clear well-defined methodology for identifying SECEs during the design stage of an installation. The identification of SECEs will have been through a major accident hazard assessment in which risks have been evaluated with likelihood and consequences assessed. This should include the environmental, meteorological and seabed limitations on safe operations.
- 43. Major accident assessments may be in the form of quantitative, semi-quantitative or qualitative assessments. They may also involve identifying hazards using checklists (e.g. class and flag requirements), hazard identification studies (HAZID), hazard and operability studies (HAZOP) or failure modes and effects analysis (FMEA). SECE assessment techniques are normally led by an independent chairperson and involves a team made up of suitable disciplines, competent in assessment processes and the offshore industry.
- 44. The assessment should also identify a range of potential measures for further risk reduction; include a systematic analysis of each of these measures to evaluate the safety and the environmental benefits associated with each of them; evaluate the reasonable practicability of the identified measures; and analyse the implementation (or planned implementation) of reasonably practicable measures. The systematic analysis of options for reasonable practicability should refer to relevant good practice and sound engineering judgement. If a measure appears practicable and the cost of the measure is not grossly disproportionate to the benefit gained, then the measure is reasonably practicable and should be implemented.
- 45. A systematic approach is necessary to identify those systems that constitute SECEs. Within such systems many individual components may be SECEs, but others may not. The term 'contribute substantially to a major accident' is intended to include those parts whose failure would not directly initiate a major accident but would make a significant contribution to a chain

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of events that could result in or aggravate a major accident. Typically, these elements will include items of emergency equipment and software that are required to, and must, work only in emergencies and other unplanned abnormal situations.

46. A duty holder may then portray those outputs of those assessments in the form of a barrier model. The most common types are the swiss cheese or bowtie models. A bowtie model identifies the major accident hazard in the centre then identifies the prevention barriers to the left and the mitigation barriers to the right. The swiss cheese model defines the barriers to a major accident of which performance standards, or other control measures, are normally assigned too.

### Topic 2.2: SECE Initial Suitability

- 47. Once SECEs have been defined, and before any SECE is brought into operation on the installation, the duty holder must be able to demonstrate SECE and specified plant suitability. This initial suitability can be demonstrated in several ways but must consider any reports or reservations made by the verifier under the verification scheme.
- 48. For a production installation, this demonstration may be made through the submission of a design notification to the Competent Authority and undertaking the required levels of design, construction and commissioning verification. Confirmation on the suitability of SECEs and their scheme of maintenance is made within the submitted safety case for the installation.
- 49. For a non-production installation (NPI), where there is no requirement to submit a design notification to the Competent Authority, initial suitability of SECEs and specified plant should be demonstrated before it is moved into external waters with a view to it being operated there. Again, confirmation on the suitability of SECEs and their scheme of maintenance is made within the submitted safety case for the installation.
- 50. Though verification requirements for an NPI take effect when it enters external waters to undertake oil and gas operations, duty holders for NPIs must be able to demonstrate the adequacy of verification schemes in all respects, including matters relating to design, construction and the installation's history, before the installation enters external waters. Class and flag state surveys may support, but do not in themselves fulfil, the terms of a verification scheme. As operations in external waters commence, the duty holder should undertake some initial SECE and specified plant examination under the verification scheme as part of pre-spud commissioning and testing. The can include initial examination and testing of safety critical

systems pertinent to the operations being undertaken. As operations continue examination and testing of other plant and equipment shall be undertaken in line with the requirements of the verification scheme.

- 51. The duty holder must invite the verifier to comment on the record of SECEs and specified plant and make a note of any reservations expressed by the verifier as to the contents of that record. The verifier should use their professional judgement, expertise and experience to provide an independent comment that the SECEs identified are suitable. Setting appropriate standards of performance relevant to the life of the installation may assist the verifier in providing a comment on suitability.
- 52. Where modifications or repairs to a SECE are made, the duty holder shall ensure the SECE remains suitable and effective and the changes do not affect safety. While making changes the effectiveness of the SECE may be affected. This will require a review / revision of the original risk assessments to ensure safe operation is possible. Where the effectiveness of the SECE is compromised, additional risk control measures must be implemented.
- 53. It is expected that technical authorities will be involved in all changes to SECEs to ensure suitability is maintained to the appropriate standards. Depending on the extent of the change a full design review process may be required.
- 54. The duty holder should have a system in place as to how modifications and repairs are assessed and managed. This should also refer to the verification scheme to ensure the verifier can comment on any modification or repair. See Appendix 2, Topic 7.

### Key Legal Requirements

The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015, Regulations 2, 9, 10 16, 17(3), 18(3) and schedule 4 The Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995, Regulation 5

# Topic 2: Key Question

<ul> <li>Is there a well-defined process for identifying major accident hazards (MAH) within the duty holder? Are the roles and responsibilities defined as well as the methods for determining the independence and competence of personnel involved in MAH identification?</li> <li>How were the MAHs identified? Checklists, HAZID, HAZOP, FMEA or another means?</li> <li>Does the duty holder understand the strengths and weaknesses of each method and when to apply the correct hazard identification method?</li> <li>In any MAH assessment, including ORA and deferrals, are the words "not reasonably practicable" routinely used without justification as to why the costs were prohibitive?</li> <li>Is grossly disproportionate defined and understood by those responsible for identifying and assessing MAHs.</li> <li>Are gross disproportionalty factors (GDF) noted, and are they credible for use in a MAH industry? The GDF may vary from upwards of 1 depending on the number of factors including consequences. For a MAH industry the GDF is normally higher up the 1 – 10 scale.</li> <li>How has the duty holder established MAH likelihood? Was it through the use of a words the the NHL was a new initial suitability review? Has the review considered without province with the MAH industry the GDF is normally higher up the 1 – 10 scale.</li> <li>How has the duty holder established MAH likelihood? Was it through the use of a words with the the MAH industry the CS for the method indings of the initial suitability review? Has the review considered without is through the use of a words with the method indings of the initial suitability review? Has the review considered without proving the UKCS for the method indings of the initial suitability review? Has the review considered without is the method indings of the initial suitability review? Has the review considered without is the method?</li> </ul>	SECE Identification	SECE Initial Suitability
corporate risk assessment matrix (RAM), or from a set of probability on failure on demand (PFD) tables?	<ul> <li>Is there a well-defined process for identifying major accident hazards (MAH) within the duty holder? Are the roles and responsibilities defined as well as the methods for determining the independence and competence of personnel involved in MAH identification?</li> <li>How were the MAHs identified? Checklists, HAZID, HAZOP, FMEA or another means?</li> <li>Does the duty holder understand the strengths and weaknesses of each method and when to apply the correct hazard identification method?</li> <li>In any MAH assessment, including ORA and deferrals, are the words "not reasonably practicable" routinely used without justification as to why the costs were prohibitive?</li> <li>Is grossly disproportionate defined and understood by those responsible for identifying and assessing MAHs.</li> <li>Are gross disproportionality factors (GDF) noted, and are they credible for use in a MAH industry? The GDF may vary from upwards of 1 depending on the number of factors including consequences. For a MAH industry the GDF is normally higher up the 1 – 10 scale.</li> <li>How has the duty holder established MAH likelihood? Was it through the use of a corporate risk assessment matrix (RAM), or from a set of probability on failure on demand (PFD) tables?</li> </ul>	<ul> <li>Has the duty holder undertaken sufficient levels of initial suitability relevant to the current operational life of the installation?</li> <li>What credible and relevant information has been used to demonstrate initial suitability. Was it based on performance standards derived from the MAH assessments undertaken, or other sources?</li> <li>Are specific initial suitability / design performance standards in place? Or is there linkage between the initial suitability verification activities and the in-service performance standards?</li> <li>For new build NPIs that may have been constructed to the class and flag state requirements of another nation, has the duty holder undertaken any gap analysis between those class/flag rules and the required standard of performance to be attained by a SECE in UK waters?</li> <li>Have initial suitability studies, examination and testing of SECEs been completed? Can the required standards of performance be demonstrated for critical SECEs, given the current operational life cycle of the installation?</li> <li>Has the verifier commented on the list of SECEs, and is there evidence that comments have been received and responded too?</li> <li>What were the findings of the initial suitability review? Has the review considered whether the NPI was a new build or an existing MODU entering the UKCS for the first time? How has its operational history been considered? What maintenance</li> </ul>

Has the duty holder been consistent in their use of PFD tables, or is their	• What are the findings from the above review? How are they being tracked? How
evidence that 'best information' has been used from a number of sources to	will their satisfactory closure be ensured prior to operational commencement?
achieve the best outcome?	• What arrangements are in place to assess, manage and monitor modifications or
• Is the PFD data credible and reputable for the UK's offshore MAH industry?	repairs to installation SECEs?
<ul> <li>evidence that 'best information' has been used from a number of sources to achieve the best outcome?</li> <li>Is the PFD data credible and reputable for the UK's offshore MAH industry?</li> </ul>	<ul> <li>Will their satisfactory closure be ensured prior to operational commencement?</li> <li>What arrangements are in place to assess, manage and monitor modifications repairs to installation SECEs?</li> </ul>

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### **Topic 3: Performance Standards and Alignment**

### Topic 3.1: SECE Performance Standards

- 55. Having identified the SECEs, there should be means of demonstrating SECE suitability, state of repair and condition based on their function, reliability and availability. One method of making this demonstration is through the use of performance standards. The ability of the duty holder to ensure the SECEs meet their performance standards provides some assurance that they are suitable and remain in good repair. By failing to meet either the performance or reliability aspects of a standard the suitability, good condition and repair of SECEs may be harder to demonstrate.
- 56. Duty holders must then define clear pass/fail acceptance criteria to prevent the major accident from occurring or escalating. This pass/fail criterion will be noted in the form of a performance standard and must be clear, measurable and auditable. Performance standards are developed directly from the major accident assessments undertaken during the various lifecycles (design, operation, modification, removal) of a SECE. If each SECE meets its performance standard the likelihood of a major accident occurring is reduced.
- 57. Performance standards are normally split into five sections titled Functionality, Availability, Reliability, Survivability and Interdependence. These are:
  - Functionality What the SECE must do from a safety and environmental critical perspective.
  - Availability Will it be ready and able to perform when required.
  - Reliability Will it function dependably to a given criteria.
  - Survivability What kind of events does it need to survive and for how long.
  - Interdependence What other SECEs does this performance standard interact with.
     Interdependence information is critical when assessing degraded SECEs within any ORA as these interdependent systems should be considered in any ORA.
- 58. A performance standard should also define the goal of the SECE in the prevention of a major accident and define its boundary i.e. what equipment is covered. The duty holder should have a clearly defined process for periodically reviewing performance standards to incorporate modifications, changes in operating conditions or to incorporate new learnings. Reviews may be undertaken after a modification or repair to a SECE, or as part of the thorough review of a safety case.
- 59. Performance standards are directly developed from the major accident assessments undertaken by a duty holder. This will be the case for fixed installations, but classification society's rules may be used as a basis for setting performance criteria for floating installations. While in principal this may be an accepted method of setting performance criteria, there should be a demonstration of how the duty

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holder assessed that the performance criteria are acceptable for their installation. Again, the criteria set in class-based performance standards must be clear, measurable and auditable.

### Topic 3.2: SECE Performance Alignment

- 60. To allow a duty holder to assess the ongoing suitability of SECEs, there must be alignment between performance standards, maintenance/inspection routines and the records made by technicians. There must be a clear line of sight between SECE performance standards and the records maintained within the installations maintenance management system. The required pass/fail criterion discussed above, should be noted within individual maintenance routines to allow personnel at all levels to determine the current condition of the SECE under test.
- 61. There must also be alignment between the performance standard and the verification scheme. Some duty holders may have generic performance standards describing the function of the SECE but maintain the actual standards of performance or pass/fail criteria within the installations maintenance management system. Where this is the case, there must be alignment between the maintenance management system and the verification scheme. Regulation 9 of the 2015 Offshore Safety Case Regulations requires the duty holder to invite comment on the record of SECEs by a verifier. Where the standards of performance for a SECE is located within the maintenance management system, there must be a way of identifying this to the verifier for their comment.
- 62. Duty holders must have a means of notifying the verifier when performance standards have been modified. If the actual standard of performance is contained within the maintenance management system, the alignment between the maintenance management system and verification scheme should allow the verifier to comment on the change of SECE performance.

### Key Legal Requirements

Health and Safety at Work etc. Act 1974, Section 2(2)

The Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995, Regulation 5

The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015, Regulation 9 Management of Health and Safety at Work Regulations 1999, Regulation 7

### Topic 3: Key Questions

SECE Performance Standards	SECE Performance Alignment
<ul> <li>How was the standard of performance set for the SECE? Was it assessed through the duty holder's major accident assessment, classification society rules or industry good practice?</li> <li>What criterion was used in the development of the performance standard? If it is class based or from industry good practice, can a demonstration be made that this is acceptable against the definitions of a major accident?</li> <li>Is there clear pass/fail criteria set within the performance standard and can it be considered measurable and auditable?</li> <li>When was the performance standard last reviewed and why?</li> <li>Are interdependent SECEs considered within ORAs? Can this be demonstrated?</li> </ul>	<ul> <li>Is the standard of performance held within the maintenance management system?</li> <li>If so, is there alignment between the SECE performance standard and the maintenance management system?</li> <li>Is there alignment between the maintenance management system and the verification scheme for standards of performance contained within the maintenance management system?</li> <li>Are technicians and supervisors offshore aware of the performance standards? Have they been involved in the development of any?</li> <li>Can technicians achieve the criteria set out in a performance standard as part of any maintenance routine? For example, is special tooling required that is not available, or requires advanced training to use? Are technicians following recognised and assessed systems of work for undertaking the task?</li> </ul>

### Topic 4: SECE Performance Monitoring and SECE Management Review

### **Topic 4.1 SECE Performance Monitoring**

- 63. Organisations can rely heavily on failure data to monitor performance, so improvements or changes are only determined after something has gone wrong. Discovering weaknesses in control systems by having a major incident is too late and too costly. Early warning of dangerous deterioration within critical systems provides an opportunity to avoid major incidents. Knowing that process risks are effectively controlled has a clear link with business efficiency, as several indicators can be used to show plant availability and optimised operating conditions.
- 64. As noted in the previous section, performance standards should be used as a means of demonstrating SECE suitability, state of repair and condition based on their function, reliability and availability. Duty holders need to pay attention to evaluation of SECE reliability not only to inform future inspection and maintenance strategies, but also to determine if a SECE can be relied on and remain available in an emergency.
- 65. A determination of SECE reliability and availability should involve the capability to monitor SECE performance through suitable reports or key performance indicators (KPIs). These reports or KPIs can come from systems for measuring SECE backlog, SECE deferrals, SECE corrective work orders and SECE impairment risk assessments e.g. ORAs.
- 66. For any monitor on SECE availability and reliability to be effective, the source data used must be effective and not contain subjective matrices. The source data must also have effective monitors on them to guarantee data quality for availability and reliability assessments. NOTE: The use of the <u>ORA</u>, <u>Loss of Containment</u> and <u>Maintenance Management</u> inspection guides will be required for inspecting these arrangements.
- 67. The assessment of availability and reliability should be a formalised process that is more than 'getting around the table and agreeing everything is OK'. This is an overall assessment of the various other assessments undertaken to establish overall risk against the original MAH ALARP arguments.
- 68. The availability and reliability assessments should identify any 'credible line of sight' events where there can be direct communication through impaired safety critical barriers to a major accident event.

- 69. The duty holder should undertake monitoring on the availability and reliability of SECEs on a periodic basis. Intervals should be based on the type of assurance activities undertaken and the criticality of the SECE. For example, if a SECE has a high target reliability set, then testing should be set at a frequency which is sufficient to demonstrate that a meaningful success/failure rate can be proven and that the target reliability is being met. For example, a target reliability set at 99% will require more frequent assurance testing than one set at 90%.
- 70. The senior leadership within the duty holder must be aware of the status and health of an installation's SECEs. They should play an active part in ensuring that the monitors undertaken for SECE availability and reliability are credible.

### Topic 4.2: SECE Management Review

- 71. This topic section also aligns with the inspection guides for <u>ORAs</u>, <u>Loss of Containment</u> and <u>Maintenance Management</u>.
- 72. Once the duty holder has defined the SECEs, developed the required standards of performance to be attained and ensured the scheme of maintenance will be suitable, the duty holder must put in place a system to review how the SECEs are being, or have been managed.
- 73. Good practice in this area has seen TAs undertake 12 monthly reviews of SECE performance. These annual reviews take data from availability and reliability assessments noted in the above section and include metrics from data sources such as maintenance backlog, overdue, deferrals, ORAs, inhibit registers, control of work (e.g. ISSOW) and verifiers findings. A demonstration should be made as to how all the above systems and methods relate back to the MAH assessments described in the safety case and major accident potential.
- 74. A growing number of duty holders also run live dashboards to show the status of a SECE or barrier. These dashboards also take metrics from the same systems noted in the above paragraph.
- 75. There should be a clear set of KPIs for the overall performance of the installation SECEs, and they should be reviewed on a regular basis. For this system to be effective, the review of the KPIs should align with any barrier model / bow tie developed during the SECE identification phase. This review should inform senior managers where key risk control measures have moved away from the ALARP arguments provided in the safety case.

76. Successful SECE management reviews should ensure that any necessary actions have been identified and assigned. Where actions have been identified, the duty holder must have a system in place to undertake and monitor the completion of those actions to ensure that the required performance of safety critical systems continues to be delivered as described within the installation safety case.

### Key Legal Requirements and Guidance

Health and Safety at Work etc. Act 1974, Section 2(2) The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015, Regulations 16 & 29 The Management of Health and Safety at Work Regulations 1999, Regulation 5 HSG254 Developing process safety indicators

# Topic 4: Key Questions

SECE Performance Monitoring	SECE Management Review
<ul> <li>Does the duty holder undertake availability and reliability assessments of the SECEs? If not, then what equally effective assessments do they undertake to demonstrate the availability and reliability of a SECE or barrier?</li> <li>For these assessments, is the data source(s) credible and reliable?</li> <li>Does the duty holder take findings from the verifier into consideration as part of their assessment?</li> <li>For availability and reliability assessments, does the duty holder apply any weightings to different SECEs depending on their role of either preventing, controlling or mitigating a major accident? If so, are these credible and justifiable? Has the duty holder defined why one SECE may carry a higher weighting to another?</li> <li>Does the duty holder have a credible argument as to the periods between monitoring the availability and reliability of a SECE? For example, if it's all annual, then could that allow a SECE to be un-reliable for an extended period before the year is out?</li> <li>Are the senior leadership of the duty holder aware of the availability and reliability of the SECEs on their installation(s)?</li> <li>How are they informed?</li> </ul>	<ul> <li>Has the duty holder defined a system for reviewing the performance of SECEs throughout their life? Is it annual or live?</li> <li>For a given SECE, does the review consider all aspects of SECE condition, for example maintenance deferrals, deviations, interdependent SECEs, ORAs and verifier findings?</li> <li>What checks are in place to ensure the data used is credible?</li> <li>Is the focus on preventing major accidents, and does it align with the information contained within the safety case and original MAH studies?</li> <li>How does the duty holder manage the reports and any actions that are identified?</li> <li>How are senior management informed about the results of such reviews? Is there accountability from the senior management for SECE management reviews?</li> </ul>

# Appendix 2 – Verification Key Topics for Inspection Topic 5: The Verification Scheme and Implementation

### Topic 5.1 Establishing a Verification Scheme

- 77. Duty holders must be able to demonstrate that they have a written record of SECEs, specified plant, and a verification scheme in place. A demonstration should be made that the verification scheme was drawn up by, or in consultation with, the verifier. They must also be able to demonstrate that a verifier was invited to comment on the record and scheme, and where required, able to note any reservation. The duty holder must be able to demonstrate how any comments or reservations from the verifier were taken into account, or why they were discounted.
- 78. Within the safety case, the duty holder must have included a statement that the record of SECEs and their scheme of maintenance are, or will be, suitable. This statement is to be made after considering the initial reports or reservations from the verifier. There may be more than one verifier or verification body involved in initial suitability assessments. The duty holder must be able to demonstrate how SECEs that were verified by differing verification bodies were managed to ensure there were no initial suitability gaps.
- 79. An effective scheme should adequately describe the means for verification as set out in Regulation 9 of the 2015 Offshore Safety Case Regulations. To determine adequacy, the scheme should not only describe what the verifier will do, but how they will do it. The scheme should also describe what arrangements are in place for effective communication between the duty holder and verifier. Examples may be in the form of periodic or annual status report from the verifier as well as the post verification report. There may also be monthly, quarterly or half yearly meetings between the verifier and duty holder, to monitor progress and discuss any upcoming modifications to the scheme.
- 80. A verification scheme should cover all elements of a SECE and not contain generic statements such as 'test all safety critical functions' or 'review documentation'. The scheme should provide the specifics of what is expected to be witnessed, examined and reviewed. There should be no gaps in the required performance of a SECE and the expected verification activities. Examples have been found where elements of a SECE are not being routinely verified because they were missing from the scheme. Examples include:

- Witnessing the starting of rotating equipment from various activation methods, but not the overspeed stop.
- Having critical environmental temperatures noted within the safety case for the operation of a SECE, but not noting these temperatures in the performance standard or verification scheme.
- Identification of pressure switches for a SECE within the safety case, but not referenced in the performance standard or against the verification scheme.
- 81. The scheme should define how the verifier is given suitable authority to carry out the functions of the scheme. Good practice has seen the verifier either located at the duty holders' offices, with direct access to systems such as the maintenance management system, or to have remote access to those systems. Other demonstrations of good practice are providing access to the technical authorities at one of the planned periodic meetings where the verifier has the ability to discuss and comment on the work being undertaken to close out findings.

### Topic 5.2: Implementing a Verification Scheme

- 82. A verification scheme must describe the nature of examinations to be undertaken by the verifier. The nature of the examinations will differ for different plant, depending on such things as its function; complexity; conditions of operation and environment; failure rate; age; running hours and frequency of use. The scheme of examination should take these matters into account. Duty holders may also find it helpful to consider the scope of examinations and their frequency against any standards of reliability and availability established through their risk assessment process and PFEER assessments. The nature of the examination should give details on the extent of the testing of components of SECEs and specified plant (e.g. sample size). Arrangements should be made to ensure the same sample is not repeatedly tested.
- 83. Where sample sizes have been defined, they should be credible and related to the criticality of the SECE with regards to the prevention, detection or mitigation aspects of the SECE. This should also be considered with the requirement to provide the verifier suitable authority to carry out the function of the scheme. Sample sizes should be of an amount that allows the verifier adequate scope to comment on the suitability, condition and repair of that SECE.
- 84. To make the demonstration that SECEs and specified plant are or remain suitable and in good condition and repair, examinations should be undertaken onshore, within the maintenance management system, and offshore by inspecting and testing plant and equipment.

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- 85. As discussed earlier in this guide, there should be a direct link between the verification scheme, installation performance standards and the maintenance management system.
- 86. For successful execution of annual verification activities, a plan should be in place that details the SECEs and specified plant to be verified. As a demonstration of good practice, the plan should also identify sample sizes of examinations or tests to be completed. The plan should also cover onshore and offshore activities. Once the plan is agreed, noted good practice has been to align the plan with testing activities in the installation computerised maintenance management system (CMMS), sometimes identified with a specific marker to ensure that test is witnessed by the verifier.
- 87. Good practice includes a pre-verification meeting held with the offshore staff who will be onboard during the visit by the verifier. Key onshore staff should also be in attendance so the scope of work for the verifier is understood by all before the verification trip is commenced.
- 88. The plan should be developed jointly by the duty holder and the verifier and agreed by both parties. Sample sizes may be defined in the verification scheme, but the verifier should have the ability to select the sample to be verified, i.e. the duty holder does not select the individual elements for the verifier.
- 89. There should be a system in place for monitoring the progress against the plan, including the ability to highlight to senior management when the plan is not being completed. Specifically monitoring for any missed activities at the end of the year. The scheme should define how missed activities are managed and revisited. Good practice has seen any missed activities for a given year rolled into the following year, with an increased sample size.

### Key Legal Requirements

The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015, Regulations 9, 10 and schedule 4

The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015, Regulations 17(3) and 18(3)

# Topic 5: Key Questions

Was the scheme drawn up by, or in consultation with the verifier? Was it	• Does the duty holder use more than one verifier or verification body? If so, can the duty holder demonstrate there are effective arrangements in place to ensure
<ul> <li>consultation or sent to the verifier for information?</li> <li>How were comments or reservations by the verifier considered, or discounted? If they were discounted, is the reason adequate?</li> <li>Does the verification scheme define how the duty holder considers reports from the verifier when undertaking initial suitability assessments? Is there any link in the verification scheme to the duty holder's management of change (MoC) process?</li> <li>Does the scheme provide a description of the means for undertaking verification activities, as described in regulation 9(2)(a)-(c)? Is there sufficient detail within the scheme to provide a description of how these means will be managed and delivered?</li> <li>What levels of communication are there between the duty holder and verifier? Are periodic status reports provided, or are regular meetings held between the duty holder and the verifier managed? What arrangements are in place to ensure that relevant personnel receive appropriate information? Are these systems for communication described in the scheme?</li> <li>Is the verifier given sufficient authority to carry out their role? Are they provided with the required information at appropriate times? Can they speak directly to relevant personnel? Can they undertake the full range of their duties, including examination and testing?</li> </ul>	<ul> <li>there are no verification 'gaps' between connected SECEs? Is this described within the scheme?</li> <li>How did the duty holder establish the nature and frequency of the testing? Are the sample sizes based on risk or criticality of equipment? Are the sizes adequate to allow an opinion to be formed on the condition of the SECE?</li> <li>How do offshore personnel ensure that verification activities are completed as required? Are offshore personnel aware of the sample size requirements within the scheme?</li> <li>Is there a link from the verification scheme to the performance standards?</li> <li>Have the previous year's activities been completed? Are there any trends of verification activities routinely being missed? Examples may be unable to witness testing of equipment year on year, or records for examination not being available.</li> <li>How are any incomplete activities being managed? Are missed tests being routinely substituted for document examinations? If so, why and how is this being justified?</li> <li>Are all the performance requirements of a SECE being verified, or are there examples of SECE elements missing from the scheme?</li> <li>How are offshore personnel informed of the annual verification plan? How do offshore management know when the verifier is attending the installation? What</li> </ul>

How is information communicated offshore about planned verification activities?	informs them of the testing to be witnessed and not to complete any
Is this effective or are there communication issues?	maintenance activity that requires witness by the verifier?

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### **Topic 6: Verification Effectiveness and Review**

### Topic 6.1: Verification Effectiveness

- 90. The verification scheme is an integral part in ensuring that installation SECEs and specified plant are, or will remain, suitable and in good repair and condition. The ability to learn from verifier findings is a key to SECE and specified plant management. To provide those learnings, verifiers must produce a report clearly indicating the nature of the examination/test completed, any findings and any remedial action recommended. It is not sufficient to simply state 'pass' or 'fail' without providing adequate detail of the verification activity undertaken, and the reasons for the conclusions reached. In practice, reports should be clear on the work that was undertaken, the results of any examination or test, as found, and conclusions on the condition of the SECE. It is important that the report provides a demonstration on the health of the SECE against its dedicated performance standard. Generic statements such as 'satisfactory as seen' or 'no concerns noted' do not provide a clear description of the condition of the SECE.
- 91. Where sample sizes have been defined within the scheme, the reports from the verifier should demonstrate that the required sample size was met. Where there is evidence that sample sizes are not being met, there should be justification as to why they were not met.
- 92. The duty holder must establish adequate arrangements to ensure that verification reports reach the appropriate personnel. Any concerns and comments raised by the verifier must be considered by a representative of the duty holder with an appropriate level of authority when determining the action required. The term 'findings' relates to the broad spectrum of comments made by the verifier and is not restricted to higher level concerns only. Consideration of all comments raised provides a holistic view of the condition of SECEs and associated plant. This information should allow the duty holder to determine any action to be taken. Verification findings should also play a key role in any duty holder assessment of continued SECE/barrier health.
- 93. To allow a holistic view to be taken, as described in the paragraph above, good practice in this area has seen the verifier not only comment on the direct testing witnessed, or the documentation reviewed, but has also included:
  - Whether the assurance process adequately addresses and demonstrates that the performance standard criteria have been assessed and is being completed and recorded in a timely manner.

- If the performance standard criteria are adequate and all required items are included within the assurance process.
- Whether all failures are recorded, risk assessed and followed up adequately.
- 94. The category of findings should be clearly set out in the scheme, these can be either numerically or alphabetically categorised or follow a traffic light system. Highlighting significant verification issues to the duty holder should also be described within the scheme, this may be through the issuing of notes of concern or letters of reservation. Notes of concern or letters of reservation are issued by the verifier where they have significant concerns on the suitability, condition or repair of a SECE. They can also be issued where there have been significant non-compliance issues with the scheme. Examples may include, but not limited to, repeated non-completion of activities within the scheme.
- 95. The scheme should also make reference to the <u>EU Commission Implementing Regulation No.</u> <u>1112/2014</u>. In particular the reporting requirements of Part 3, Section C: Failure of a Safety and Environmental Critical Element.
- 96. It should be clear from verifiers reports what the category of findings is, and it should be consistent with the category description in the scheme. Comments or observations can also be defined within the scheme that allows the verifier to identify issues that cannot be categorised as a finding. These could be issues on the lack of data available to undertake a verification activity, the condition or state of the maintenance system or a performance standard.
- 97. Poor practice has seen comments and observations raised by the verifier instead of a finding because an ORA is in place, or it is a repeat failure of a finding that is currently open. If that is the case, good practice is that the category of the finding be escalated. Verification activities have also been marked as 100% complete even though a comment or observation has been raised by the verifier due to the lack of information available to undertake the verification activity.
- 98. The scheme should describe how the verifier can escalate findings, concerns or reservations to senior management within the duty holder. Where there are instances of non-compliance by the duty holder with the standards of the scheme, there should be a line of escalation to ensure persons within the duty holder, who have an appropriate level of authority, can take the required course of action to resolve the finding, concern or reservation.

99. Verifiers findings are normally managed through web-based data bases that both the verifier and duty holder have access too. Findings can be input by the verifier with action parties assigned either by the verifier, or the duty holder. Closure of a finding should be based on evidence on the return of SECE functionality rather than an indication to do something via a workorder or ORA.

#### Topic 6.2 Review and Revision of the Scheme

- 100. The verification scheme must outline the principles for keeping the scheme under review, and the duty holder should ensure that the scheme is reviewed as often as may be appropriate. These arrangements could include the requirement for a review or a more fundamental revision, in line with safety case reviews and revisions. A need to review the scheme could be timebased or because of a change in circumstances.
- 101. The following examples may trigger a review of the scheme; matters arising from verifier's findings; the introduction of temporary equipment that is a SECE or specified plant; major repairs; modifications or replacements to SECE temporary equipment or specified plant; findings of an accident or incident investigation; findings of a thorough review; where the nature of operations on the installation undergoes a fundamental change (e.g. from drilling to combined drilling and production); where a review of the risk assessments pertaining to major hazards is undertaken; developments in industry standards or new findings from industry-wide experience.
- 102. The scheme should also be subjected to periodic audits as defined within the duty holder's corporate major accident prevention policy (CMAPP) and safety and environmental management system (SEMS). Such audits should be a systematic assessment of the management systems in place for verification. The outputs of which may also direct a review and revision of the scheme.
- 103. A fundamental revision of the scheme may also be required when the operation of the installation or plant changes in a manner that requires different duties from the SECEs. For example, SECEs that are about to undergo major repair; SECEs modified, replaced, introduced or removed even for short periods of time, as with safety-critical temporary or mobile equipment; changes to the operating envelope and parameters of plant associated with the SECE; or changes to the operation of the plant that require changes to performance standards.
- 104. During any reviews and revisions of the verification scheme, the duty holder shall ensure that the verifier is consulted and given the opportunity to comment on any reviews and revisions.

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Owner:ED4.8 Version:2 There should be a mechanism by which the verifier can officially feedback comments to the duty holder.

105. Good practice would be to highlight any lessons learned since the previous review that may impact on the nature and frequency of any required examinations by the verifier.

### Key Regulations

The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015, Regulations 9(2)(d)(e)(f)(g); Schedule 4(4)(a)(b)(c)(d); Schedule 4(5) and Regulation 16

### Topic 6: Key Questions

Verification Effectiveness	Review and Revision of the Scheme
<ul> <li>Verification Effectiveness</li> <li>Has the verifier raised any letters of concern or notes of reservation to the duty holder? How were they resolved by the duty holder?</li> <li>Does the scheme define the reporting requirements from the verifier, and are the levels of finding defined?</li> <li>Do verifier reports clearly indicate the activities undertaken, the findings and any remedial actions recommended? Do reports provide reasons for the conclusions reached?</li> <li>Do the findings raised by the verifier align with the categorisation defined in the scheme?</li> <li>Is an escalation process defined in the scheme and is it being utilised when required?</li> <li>Are findings from the verifier being appropriately managed, and is there a system in place that formally manages verifier finding? Are findings closed out in time scales that reflect the level of risk, and are findings being closed out on completion of work?</li> </ul>	<ul> <li>Review and Revision of the Scheme</li> <li>Does the verification scheme describe the arrangements in place for keeping the scheme under review? Does it consider the examples noted above?</li> <li>Does the verification scheme describe the arrangements in place for revising the scheme? Does it describe how the verifier is consulted?</li> <li>Does the scheme describe how the verifier is notified of when the operation of the installation or plant changes in a manner that requires different duties from the SECEs?</li> <li>When was the last review / revision of the verification scheme? Why was this undertaken?</li> <li>Who was involved in the review / revision, and why were they involved, and is there a demonstration of how the verifier was consulted?</li> <li>Were any notes of reservation expressed by the verifier during the review? How were these taken into account, or discounted, by the duty holder?</li> <li>Are any offshore personnel involved in the review / revision of the verification</li> </ul>
<ul> <li>How do offshore personnel review findings from the verifier?</li> <li>How are findings from the verifier prioritised and, where required, scheduled into the maintenance management system? Does the duty holder apply the same levels of criticality to resolve verifier findings as they would with a corrective work order?</li> <li>Are the findings from the verifier used as part of the duty holder's assessment of SECE/barrier health? Is there a demonstration that outputs from verification</li> </ul>	<ul> <li>scheme?</li> <li>Were historical findings raised by the verifier taken into account during the review to establish if the nature and frequency should change?</li> </ul>

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### Topic 7: Management of Change to the Scheme

- 106. The verification scheme must provide a description of how the verifier is informed of any SECE repairs, modifications or new SECEs and specified plant. It must also describe how the verifier examines work in progress. Such means include the examination of documentation/certification, physical testing of equipment, witnessing of testing activities or review of associated maintenance records. In some circumstances, it may also be appropriate for the verifier to examine work during various stages of completion, including fabrication, construction and repair.
- 107. Where there is a material change to a design notification, a relocation notification, the safety case or a notification of combined operations, the duty holder must refer the material change to the verifier for further comment in accordance with the verification scheme. The scheme should provide a description of this process and how it is initiated and managed. The duty holder must be able to communicate the outcome of the referral of the material change to the competent authority.
- 108. The duty holder may repair, modify or install new SECEs or specified plant as part of a project. This may be managed by personnel within the duty holder who are not involved in the management of 'day to day' operational verification. Project work may also be managed by engineering service providers contracted to the duty holder. As such, different verifiers may be involved from the one appointed for operational verification. Examples may be specialist or project verifiers within the same body, or different verification bodies altogether. Those who manage such projects should be aware of, and competent in, the requirement to involve a verifier. A demonstration of the competence of all verifiers must also be made. See Appendix 2 for inspecting the utilisation of multiple verifiers.
- 109. In practice there should be some form of cross reference between the duty holder's system for repair and/or MoC system and the verification scheme. Good practice has seen a gateway or milestone within the MoC process that requires some form of confirmation that there will be a change to a SECEs standards of performance and/or the verification scheme. This should ensure that the verifier has time to comment on the change being proposed, together with the levels of input required from the verifier.
- 110. Either the scheme or the repair/MoC system should define the levels of verification required against the category of change. Categories of change may be defined as 'like for like', 'minor',

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Owner:ED4.8 Version:2 'major' or 'significant', with each carrying a different level of associated risk and verification requirements. A duty holder may define that category before sending to the verifier, but the verifier should be given the opportunity to agree or disagree with the repair/MoC categorisation. It may be that the duty holder leaves the categorisation level decision to the verifier, if this is the case then the verifier must be given sufficient detail of the change to allow them to make that decision.

111. Communication of such repair or changes can be either verbally at periodic verification meetings, or through emails sent by the duty holder to the verifier. Be aware of emails sent to the verifier. One concern with this method is ensuring that the mail is received and read, especially if the verifier is on leave.

### Key Legal Requirements

The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015, Regulations 9(2)(a)-(c), 10(4) & (5) and 17(3) & 18(3).

#### Management of Change to the Scheme

- Does the verification scheme describe how the verifier is informed of repairs, material changes to a design notification, a relocation notification, the safety case or a notification of combined operations? How is this put into practice in reality? How is any change presented to the verifier in due time before a change is due to take place?
- Does the duty holders repair/MoC system cross reference with the verification scheme? Are the levels of repair/change categorised and is the verifier given the opportunity to comment on those levels? Is there sufficient information contained within the communication to the verifier to allow them to comment on the repair/change in line with the scheme?
- Does the scheme define the roles and responsibilities for duty holder personnel or verifiers involved in project work? Does the verification scheme describe the interfaces between differing verifiers if different verification bodies are used for project work? If there are different verifiers being used, how is this being managed at the hand over phase between projects and operational verifiers? Are punch list items expected to be completed by the operational verifier or the project verifier?
- Are comments from a project verifier managed in the same system as the operational verifier, or is it a different system? Is this system visible and open or can comments or reservations from the verifier be hidden from the duty holder through uncontrolled documentation?
- How does any project team either within the duty holder or a third-party engineering services provider ensure verifiers comments are visible to the installation operations team? On completion of project work, how are any unresolved comments from the verifier communicated to the operations team and subsequently managed?
- Is there evidence that comments from the verifier are considered and actioned?
- For any modifications that resulted in a material change to the safety case, how was the verifier involved pre and post submission of the case to the Competent Authority? If the case was submitted to the Competent Authority before any comment was sought from the verifier, are there any subsequent comments from the verifier that may materially change the case submitted?

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### Topic 8: Verification, Well Examination and Classification

#### Topic 8.1: Well Examination Interface

- 112. The interface between the verification and well examination schemes must be properly managed. It is an aspect of the schemes that can be frequently overlooked. There is a potential for gaps to occur between the two schemes. The intent of well examination is to parallel an installations verification scheme. They may not be merged because of the different duty holder structure for the installation and the wells. Nonetheless some well equipment such as the Xmas trees and blowout prevention equipment are suitable for inclusion in either scheme.
- 113. The verification scheme should consider the interface with well examination scheme and should capture the boundaries between examination and verification.
- 114. It should be remembered that the duty holder must produce a written record of SECEs and specified plant that are in place to prevent or mitigate the potential for a major environmental incident. This will include equipment to prevent the loss of well control.
- 115. In some instances, well control equipment may be temporarily used on an installation. In such cases this should also be identified as safety critical and be included within the verification scheme and the verifier invited to comment on its suitability, repair and condition. In particular, how this temporary well control equipment interfaces with existing SECEs and specified plant.
- 116. Some duty holders may refer to this equipment as 'temporary equipment' but it should be recognised that its primary purpose is the prevention or mitigation of a major accident. As such, any temporary well control equipment shall have appropriate standards of performance set for the conditions likely to be encountered during any well operations or interventions.
- 117. Where this is the case, a revision to the scheme must be considered. Where there has been no revision of the scheme, a suitable justification shall be provided to demonstrate why temporary well control equipment will not be verified as suitable, in good condition and repair.

#### Topic 8.2: Classification

118. Floating installations generally still maintain a certificate of class issued by a society such as Lloyds Register of Shipping (LRS), Det Norske Veritas (DNV), Bureau Veritas (BV) or the American Bureau of Shipping (ABS). However, such a certificate does not imply, and should not be construed as, a warranty of safety, fitness for purpose or seaworthiness. It is an attestation only that the vessel is in compliance with the rules that have been developed and published by the society issuing the classification certificate<sup>1</sup>.

- 119. Surveys by a class surveyor include extensive examinations of marine structures and plant that include witnessing of tests as specified in that societies rules, and as deemed necessary by the attending surveyor, to assess that the structural condition remains effective and to help identify substantial corrosion, significant deformation, fractures, damages or other structural deterioration<sup>1</sup>.
- 120. Duty holders may wish to combine class surveys with verification examinations to demonstrate they meet the requirements of regulations 9, 10 and schedule 4 of the Offshore Safety Case Regulations 2015. While this can be acceptable, care needs to be taken to ensure that class surveys are independent of the duty holders own assurance routines. If, as described in the above paragraph, the class surveyor is assessing the structural condition or directing and prioritising inspection work, the independence of that surveyor as a verifier may be in question.
- 121. Duty holders must own and assess the assurance activities that are undertaken to establish either initial or on-going suitability of a SECE. Where class surveys have been used to demonstrate SECE suitability, then those technically responsible for that SECE must understand what this means. It is not acceptable to produce a certification of class and claim the SECE is or remains suitable.
- 122. The class surveyor for an offshore installation must be independent of the assurance activity itself. If it is found that the class surveyor has undertaken or directed any inspection or assessed the results of that inspection or provided assurance for that SECE, then independence is likely to have been compromised. In this instance the class surveyor cannot then be the verifier for that SECE.
- 123. Where a duty holder has used a class societies rules as a basis for assurance activities and performance standards, the duty holder must be able to demonstrate how they have assessed this as acceptable against preventing or mitigating against a major accident. Standards of performance must be defined for a SECE derived from the class societies rules, and a demonstration the SECE meets that standard.

<sup>&</sup>lt;sup>1</sup> IACS Information Paper Classification Societies – What, why and how?

- 124. As described in previous sections of this guide, any reports from a class surveyor also acting as the verifier must provide the same levels of detail on the verification activity undertaken and the reasons for the conclusions reached.
- 125. If a duty holder re-tenders the contract for classification services to another society, then there should be a gap analysis undertaken to assess how the outgoing and incoming society rules affect SECE performance standards. This should identify how any changes in the new societies rules impact on any SECE standards of performance.
- 126. As noted in Appendix 1, Topic 2.2, a new mobile non-production installation designed and built in a foreign shipyard will normally be built to their appointed classification societies rules. There can be little consideration to the requirements of verification and performance standards. Where this is found, an inspection of the arrangements for initial suitability should be undertaken. The same may be true for FPSOs that are relocated into the UKCS from a ship yard or other waters.
- 127. Where class and flag requirements are maintained by a duty holder, conditions of class (CCs) may also be used to record issues with a SECE. These issues will normally be maintained in a different system from the findings raised by the verifier. The arrangement for the recording of findings against any class or flag requirements must be defined in the verification scheme. During any inspection of this topic, a request for the CCs and conditions of authority (CAs) should also be made.

### Key Legal Requirements

Health and Safety at Work etc. Act 1974, Section 2

The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015, Regulation 10(2), 17(3) and 18(3).

### Topic 8: Key Questions

Verification / Well Examination Interface	Verification and Class
<ul> <li>Does the verification scheme interface with the well examination scheme?</li> <li>Does it define the boundaries between the two?</li> <li>Is the primary focus of the plant and equipment provided for well control understood for the prevention and mitigation of a major accident?</li> <li>Is well control equipment contained within the verification scheme, has the verifier commented on the suitability, condition and repair of the equipment?</li> <li>Is temporary equipment defined within the verification scheme?</li> <li>Is the verifier given enough time and information to comment on the suitability, condition and repair of the temporary well control equipment?</li> <li>Are there performance standards for the temporary control equipment?</li> <li>Has the interface with existing SECEs and specified plant been considered?</li> <li>How is the duty holder monitoring the performance of any temporary well control equipment if it is not contained within the installations main maintenance management system?</li> </ul>	<ul> <li>Does the duty holder maintain a certification of class from a classification society?</li> <li>Does the duty holder also utilise the class surveyor as the verifier?</li> <li>Are the reports from the class surveyor/verifier providing adequate detail of the verification activity undertaken and the reasons for the conclusions reached (see topic 6: Verification Effectiveness and Review).</li> <li>Does the duty holder maintain two systems to manage findings from the verifier and the conditions of class/authority from the surveyor? Are SECE failures being managed across different systems? Are conditions of class subject to any formal assessment such as ORA, if that condition is in relation to a degraded SECE?</li> <li>Within the verification scheme, has the duty holder defined how independence is assured between the verifier and any assurance activities undertaken by the class surveyor?</li> <li>Have performance standards for the installation SECEs been developed from class rules? If so, has there been any gap analysis between those rules and the outputs of the major accident assessments?</li> <li>Is there alignment between the performance standards and the assurance activities, and for reliability and availability purposes, is that standard of performance measurable and auditable?</li> <li>In particular, for marine SECEs (hull, mooring systems, DP systems etc.), is the duty holder assessing the initial or ongoing suitability, good condition and</li> </ul>

repair? The duty holder must own the assurance routines and assess the
installation's SECEs. It is not acceptable to rely solely on a certification of class
to demonstrate SECE suitability, condition and repair.

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### Appendix 3 - Application of EMM and Duty Holder Performance Assessment

When inspecting SECE management and verification, duty holder compliance is to be assessed against the relevant success criteria.

The success criteria have been determined from specific regulatory requirements, defined standards, established standards or interpretative standards.

This assessment will determine the: EMM Risk Gap, the associated topic performance score together with the Initial Enforcement Expectation as shown in the table below.

EMM RISK GAP					
Extreme	Substantial	Moderate	Nominal	None	None
TOPIC PERFORMANCE SCORE					
60	50	40	30	20	10
Unacceptable	Very Poor	Poor	Broadly	Fully	Exemplary
			Compliant	Compliant	
EMM Initial Enforcement Expectation					
Prosecution /	Enforcement	Enforcement	Letter/Verbal	None	None
Enforcement	notice / Letter	notice /	warning		
Notice		Letter			

Note: actual enforcement may differ depending on local factors.

### Further guidance can be found at: http://www.hse.gov.uk/enforce/emm.pdf

It should be noted that:

- the Inspection Guide and hence the allocated scores may not cover all the matters that were considered during the intervention.
- the intervention may not necessarily have used every part of the inspection guide consequently the score only reflects what was inspected.

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- the allocated performance score only reflects regulatory judgements about a duty holder's degree of compliance at a particular point in time.
- HSE uses the performances scores as one among many inputs to target, prioritise and plan regulatory interventions.

### Use of performance scores

HSE uses the performance scores as one of the many inputs to prioritise and plan future regulatory interventions. Prioritising intervention's is fundamental to ensuring HSE delivers its major hazards regulatory strategy whilst supporting businesses and the GB economy. HSE aims to ensure that regulatory activity is proportionate to the risk to people taking account a duty holder's performance in controlling risks. In general, this means the HSE will inspect major hazard installations and duty holders with relatively poorer risk management performance more frequently and in greater depth than lower hazard installations and duty holders where there is evidence of higher risk management performance.

### Appendix 4 - References and Supporting Information

- 1. The Health and Safety at Work etc. Act 1974
- 2. The Offshore Installations (Offshore Safety Directive) (Safety Case etc) Regulations 2015
- The Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995
- 4. The Management of Health and Safety at Work Regulations 1999
- 5. Enforcement Management Model (EMM) http://www.hse.gov.uk/enforce/emm.pdf
- 6. Step Change Guidance
- 7. IACS Information Paper Classification Societies What, why and how?
- 8. <u>Research Report 397 An evaluation of current legislative requirements for verification of</u> elements critical to the safety of offshore installations