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Observations and lessons learned from UK oil & gas decommissioning projects

As installations move towards decommissioning and final dismantling, Alison McKay, senior safety consultant at ABB Ltd, shares some of the key lessons gathered by the six companies that participated in compiling a new safety case guidance.

A fresh look at identifying and managing hazards is required during decommissioning and final dismantling of key oil and gas assets. Recording this information in the installation's safety case is critical and is required by the UK Safety Case Regulations (SCR 2015).

ABB led a Joint Industry Project (JIP) in conjunction with Genesis Oil & Gas UK and Industry Technology Facilitator, which was recently Highly Commended at the IChemE Global Awards 2017 in the 'Team' category. The JIP enabled operators to share and learn from each other on how best to plan and manage the final safety case for an installation. This resulted in a document entitled: *'Guidance for UK Safety Case Management during End of Life (EoL), Decommissioning and Dismantling'*.

The content is based on the shared experiences of companies which have already dismantled their installations, and those still in the EoL and pre-cessation of production phases which are planning their decommissioning activities. The document offers guidance to duty holders in maintaining compliance with the Safety Case Regulations (SCR 2015) during EoL, decommissioning and dismantling.

Here we take a detailed look at some of the key lessons that emerged from the technical exchange meetings held between six operators: Centrica E&P, CNR International UK Ltd., Marathon Oil, Repsol Sinopec Resources UK Ltd., Shell UK Ltd. and TAQA Bratani Ltd.

While not all of the following lessons are directly related to offshore safety cases, they are, nevertheless, useful for decommissioning:

1. Be pro-active in communicating with the regulator. Engage with the regulator early on, sharing plans for decommissioning to get feedback.

Being pro-active helps the duty holder to understand the regulatory regime for their installation. For instance, it is important that the duty holder understands the regulator's interpretation of what constitutes a material change, and, therefore, a safety case submission. The benefits from sharing decommissioning plans with the regulator early on, inviting the regulator to comment or query, can lead to feedback with partial approval prior to a formal proposal, or acceptance by the regulator of a particular methodology.

2. Ideally plan for decommissioning early, developing a baseline plan to try and reduce wasted effort and costly mandatory revisions to Operational Safety Cases and supporting studies.

Operators typically start to develop their decommissioning plans two to three years before cessation of production. It is essential that the duty holder's safety case submission is complete and addresses all de-commissioning activities such as vessel movements. If changes are made, for example due to changes in the number of vessels involved, the duty holder may have to make



multiple safety case submissions to the regulator, incurring additional effort and costs.

3. The high level 'decommissioning programme' plan should be supplemented by a safety case plan. The rate of change of drawings and documents (safety case, risk assessments, emergency route drawings etc.), which can be rapid, should be planned for.

The safety case includes documents and drawings, such as risk assessments and emergency route drawings. It is important to anticipate which of these drawings and documents are likely to change as manning levels change, hydrocarbons are removed from the installation, or platform equipment changes. For instance, escape routes, and therefore drawings on which they are shown, can change rapidly as location of equipment for decommissioning, including storage containers, alters during decommissioning. Identifying the likely changes and when they will occur, ensures that reviews are correctly scheduled to avoid delays to safety case submissions.

4. Align decommissioning phases with the project gates / work breakdown structure.

Company projects have a series of gates or a work breakdown structure. At each gate, decisions need to be taken or questions answered that will secure funding to proceed to the next gate. Decommissioning may have a number of different phases defined by project gates, which are not necessarily sequential, but may occur in parallel. Aligning the decommissioning phases with the project gates minimises the number of stages through which the decommissioning project has to pass. It is important to have a detailed understanding of the requirements needed to proceed from one stage to the next.

5. Decommissioning should be viewed as part of the operational life cycle of the asset, not as a separate project in isolation.

Considering decommissioning as an

element in a facility's operational life cycle is vital for its success. The decommissioning team may be separate from the operations team, so success depends

on effective communication and collaboration throughout between those operating the plant and those involved in decommissioning the installation. For example, well plug and abandonment - part of decommissioning - can start while the installation is still producing from other wells. So, some early phases of decommissioning, involving preparatory work, can proceed in parallel with operation of the installation. Not viewing decommissioning as part of the operational life cycle can result in the creation of project-specific procedures for decommissioning which may conflict with the corporate operational procedures. (See lesson 7 below)

6. Engage contractors early to avoid last minute changes in how activities involved in decommissioning are carried out (e.g. number of vessels) as these might require a safety case rewrite. (The challenge is to freeze the engineering scope).

Freezing the engineering scope allows the appropriate risk assessments to be carried out. This is key to smooth submission of the safety case changes.

7. Try and alter corporate procedures to include decommissioning aspects rather than creating project-specific procedures for decommissioning which may be in conflict with the corporate operational procedures.

8. It is important to maintain the correct safety culture and awareness of process safety risks during decommissioning when there may be significant changes in POB and crews. (Weekly sessions can provide a mechanism for engagement and communication, particularly about process safety hazards).

As personnel leave an installation to join other operating platforms, and decommissioning contractors are employed, there is a risk that the safety culture, ingrained in the operator's personnel is not adequately transferred to the new personnel. While contractor personnel will be familiar with their own safe systems of work, they need training in the duty holder's safety regime. Conversely, if the duty holder adopts the contractor's safe systems of work, then they must ensure their own personnel



are trained in the contractor's systems. Also, the process safety hazards present during operation will be different from those encountered in decommissioning.

9. Duty holder-ship may be transferred to contracted parties during decommissioning, but a high level of due diligence is required to ensure that the contractor is fulfilling the duty holder's obligations. The duty holder remains legally responsible.

Duty holder responsibility may be transferred to a contracted party during decommissioning. However, should this happen, the duty holder retains legally responsibility regardless of the management system being used. As such the duty holder retains the duty of care and must demonstrate that this is being fulfilled even when, for example, the contractor's work systems are being used.

10. Ensure there is interaction between the different verifiers (ICP, marine warranty surveyor etc.) so that all equipment is covered by verification and there are no gaps.

The independent competent person (ICP) is responsible for verifying the safety and environmental critical elements (SECEs) being used during normal operation of the installation. The ICP can continue to verify these SECEs during the different phases of decommissioning. However, the SECEs will change through the different phases of decommissioning: they may be removed or their scope may change, or additional SECEs may be required. The ICP must be made aware of these changes.

As SECEs are added, it is important to be clear who is responsible for verification so that none are overlooked. For example, additional vessels will be required during decommissioning which may introduce additional SECEs relating to dynamic positioning, anchoring, gangway etc. These would normally be verified by the marine warranty surveyor.

11. It can be advantageous to have

fully autonomous platform Technical Authorities who are dedicated to (and therefore focused on) the asset / decommissioning.

Technical Authorities (TAs) are normally assigned to different areas of an installation, such as process safety or structures. TAs will be called upon to give their technical input when changes to an installation are being proposed. However, a TA may cover several installations, with some still operating and others having ceased production. To ensure that a TA is focused on decommissioning it can be beneficial to have one that is dedicated to a particular platform, so they are readily available when required.

12. Avoid adopting a lesser standard for different phases in the lifecycle of an installation.

For instance, helicopter flights in later phases may be from a different regulatory sector, where there are different standards for emergency breathing systems for offshore helicopter occupants. They must comply with the UK regulations regardless of where they are flying from.

As the hydrocarbon inventory is removed from the platform, the area classification may be changed, reducing the extents of some of the hazardous areas. This can enable non-Ex rated equipment to be used in areas which were previously classified as hazardous. While this is not an example of adopting a lesser standard, some offshore workers may be reluctant to remove this layer of protection in spite of the removal of the initiating hazards.

13. A report listing obsolescent equipment and what is available for resale can be useful if an operator wishes to reuse equipment on one of its other assets.

Equipment which is being removed from an installation during decommissioning may be used on another one of the operator's assets. However, unless a list is made of which equipment is available for other assets, it may have been sold or disposed of before these other assets have had the opportunity to consider reusing the equipment.

14. Rigorously test emergency response arrangements ahead of offshore campaigns, recognising that for the operators' ERP the arrangements during dismantling may be quite different from the producing installations they support.

Emergency response exercises on a vessel being brought alongside a platform during decommissioning can be carried out when the vessel is in port, before it is alongside the platform. ■

About the author



Alison McKay is Senior Safety Consultant at ABB Consulting and is a Chartered Chemical Engineer with many years process safety experience. She has been involved in writing safety cases for several offshore facilities, has conducted thorough reviews including updating the offshore safety cases, and has updated safety cases in line with the 2015 EU Safety Case Directive.

She is an accredited Hazard Study Leader (including HAZIDs, Rig Move risk assessment, and HAZOPs and ALARP workshops for Oil and Gas) and has several years experience of preparing COMAH Safety Cases.

She also has considerable experience in helping clients achieve DSEAR/ATEX compliance, including Hazardous Area Classifications (offshore and onshore) and DSEAR risk assessments, in a wide range of industries including oil and gas, chemicals, pharmaceuticals, aerospace and food.