Australian Guideline for Temporary Equipment Assurance & Compliance on MODUs

australian petroleum production & exploration association limited

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the voice of Australia's oil and gas industry

PREFACE

This guideline has been developed by industry to provide context and further definition of local requirements for Temporary Equipment that is installed on a Mobile Offshore Drilling Unit in Australian waters.

Industry participants include Oil & Gas Companies through APPEA Drilling Industry Steering Group (DISC), IADC members and Specialised Service Providers.

DISCLAIMER

APPEA and its participants disclaim any liability of whatsoever nature for any damage (including injury or death) suffered by any company or person whomsoever as a result of or in connection with the use, application or implementation of this guideline or any part there of contained in this document.

CONTRIBUTORS

The authors would like to acknowledge the industry contributors who were instrumental in writing this Guideline:

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REVIEW & UPDATES

This publication is intended to be a 'living' working document with feedback welcomed and incorporated into a regular review process and the guidelines updated where necessary or desirable.

A feedback form to the editorial committee to provide comments, suggestions for additions or changes or new information on the document can be found in Appendix D.

HYPERLINKS

To improve the readability of this publication it contains hyperlinks to various documents. The reader should be aware that documents and webpages may be revised or superseded over time and should ensure that the correct version is being viewed.

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DETAILED REVISION INFORMATION				
Rev	Description	Date	Prepared by	Approved by
0	Issued for use	01/09/2023	APPEA DISC	APPEA DISC

1 DEFINITIONS AND ABBREVIATIONS

1.1 Definitions

Key Definitions	
Temporary Equipment (routine)	Equipment or modules, temporarily installed on a MODU for drilling and/or completion operations, which are auxiliary to the MODU fixed equipment. These are considered routine installations for drilling operations; for example, Cementing Unit, Mud Logging Unit, Wireline Unit, ROV, Tubular Running Equipment, Mud Treatment, Cuttings handling equipment. Note: **Temporary Equipment** also includes **Specialised Service Systems** (see below). Note: **Temporary Equipment** does not include Drilling, Completion or Subsea tools, or equipment that does not connect to or interface with MODU services; for example, drilling jars, e-line and slick line tooling, running and handling tools, non-powered offshore containers etc.
Specialised Service System (involving hydrocarbon handling)	A system or equipment package temporarily installed on a MODU to perform a specialised service involving hydrocarbon handling. The systems are generally considered safety-critical, installed to perform a specific operation such as **Well Intervention**, **Well stimulation** or **Well testing**. Note: **Specialised Service Systems** is a subset of **Temporary Equipment** (see above).

Term	Definition
API Spec Q2	Specification for Quality Management System Requirements for Service Supply Organisations for the Petroleum & Natural Gas Industry. This specification establishes the API Quality System requirements necessary for organisations to consistently and reliably provide services that meet customer, legal, and other applicable requirements. This specification applies to service-related activities in oil and gas well construction, intervention, production and abandonment, as well as equipment repair/maintenance.

Term	Definition
Certification Scheme	Also known as Product certification or product qualification is the process of certifying that a certain product has passed performance tests and quality assurance tests, and meets qualification criteria stipulated in contracts, regulations, or specifications (typically called "certification schemes" in the offshore Drilling industry.
Classification of Drilling Systems	Drilling systems, related subsystems, equipment, and/or components that have been built, installed and commissioned to the satisfaction of the Surveyors to the full requirements of a Class notation by a Class Society e.g. ABS, DNV GL.
Codes	A code is a standard that has been enacted into law by a local, regional, or national authority having jurisdiction so that it is a legal obligation to comply with the code.
Competent Technical Authority	A competent and technically qualified person or organisation with evidence to demonstrate the expertise, skills, and experience regarding quality and manufacturing processes necessary to perform the required verification or validation. A Competent Technical Authority provides independent oversight in line with the regulatory requirements.
FSS Code	A standard that regulates the design, development and construction in industry. Codes generally provide a set of rules that specify the minimum acceptable level of safety for manufactured, fabricated or constructed units. Codes may also incorporate regulatory requirements and will often refer out to standards or specifications for specific details on additional requirements not specified in the Code itself.
Hazardous Area (Hazardous Location)	Hazardous areas are all those areas where a flammable atmosphere may be expected to exist continuously or intermittently. Refer IEC Publication 60079-10-1, API RP 500 and API RP 505 as applicable.
Major Accident Event	A Major Accident Event (MAE) is an event connected with a facility, including a natural event, having the potential to cause multiple fatalities of persons at or near the facility.
Marine Orders	Issued by AMSA, Marine orders are regulations made under Commonwealth legislation.

Term	Definition
Mobile Offshore Drilling Unit	Mobile Offshore Drilling Unit (MODU). This can also include Offshore Support vessels (also known as a Well Intervention Vessel) capable of engaging in various well operations.
Operator	Operator of the MODU as per NOPSEMA definition.
Performance Standard	A standard established by the MODU Operator, of the performance required of a system, item of equipment, person or procedure which is used as a basis for managing the risk of a major accident event.
Powered Unit	Equipment requiring power or generates power for example Hydraulic Power Units.
Recommended Practices	Recommended practices provide guidelines for performing operations or functions.
Regulation	Regulations are generally issued by a state or federal agency when public safety is an issue.
Safe Systems	Essential Systems to MODU Safety including Electrical, Fire Detection, Emergency Shutdown.
Safety Critical Equipment (SCE)	Equipment identified by criticality risk assessment determined to be safety critical in a safety case and described in a performance standard.
Scope of Requirements	Documented statement of the requirements as determined by the Titleholder, also known as a scope of work. The document describes requirements specified by the Titleholder, including equipment specifications, requirements for service planning, execution, and evaluation.
Service Module	A unit built and equipped for a special service task, mainly for temporary installation on a MODU

Term	Definition
Specialised Service Provider	Provider of Temporary Equipment in used as part of a Specialised Service system. That is a System that involves hydrocarbon handling. These organisations are typically contracted to perform a specific well site activity or provide a supporting service.
Specification	Specifications provide specific requirements for materials, components or services and are often generated by private companies to address additional requirements applicable to a specific product or application.
Stakeholders	Active participants in offshore well operations, inclusive of Titleholder, MODU operator and Temporary Equipment service or supply organisations.
Standard	Standards are documents that establish engineering or technical requirements for products, practices, methods or operations.
Temporary Equipment Provider	Provider of Temporary Equipment. These organisations are typically contracted to perform a specific well site activity or provide a supporting service.
Third Party Equipment	Generally, equipment supplied that is in addition to Rig Contractors equipment (per IADC Equipment list for example) and supplied by a party other than the Rig Contractor.
Titleholder	Holder of the exploration or production permit as per NOPSEMA definition.
Validation	A process undertaken by an independent competent party, namely the Validator, to provide assurance to NOPSEMA that the design, construction and installation of safety-critical systems incorporate measures that will protect the health and safety of persons at or near the facility, and (in the case of a proposed facility) are consistent with the formal safety assessment for the facility.
Verification	Verification is intended to check that a product, service, or system meets a set of design, maintenance and testing specifications

Term	Definition
Well Intervention Systems	A **Specialised Service System**. Well intervention systems are the equipment and facilities installed on a MODU for the purpose of altering an oil or gas well geometry and/or state; providing well diagnostics; or managing the production of the well. It may involve re-entry into a well and/or retrieval of a tree. Typical well intervention operations may include pumping, wellhead and Christmas tree maintenance, slickline, braided line, coiled tubing, snubbing, workover, etc.
Well Stimulation System	A **Specialised Service System**. Well stimulation systems are the equipment and facilities installed on a MODU to conduct an intervention performed on an oil or gas well to increase production by improving the flow of hydrocarbons from the drainage area into the wellbore. Typical Well stimulation operations may include acidizing equipment, fracturing blenders, pumping units, hydration and chemical additive systems, supporting equipment such as coiled tubing, lifting equipment, well control equipment, pressure vessels, piping and electrical components, control systems, etc.
Well Test System	A **Specialised Service System**. Well test systems are the facilities installed on a MODU for the purpose of evaluating the quality and/or quantity of the well fluids and reservoir characteristics. Typical Well test systems may include well control equipment, process pressure vessels, piping and electrical components, control systems, burners and gas flares and burner/flare booms.

1.2 Abbreviations

Abbreviation	Definition
ABS	American Bureau of Shipping
ALARP	As Low As Reasonably Practicable
AMSA	Australian Maritime Safety Authority
API	American Petroleum Institute
APPEA	Australian Petroleum Production & Exploration Association
AS	Australian Standard
ASME	American Society of Mechanical Engineers
ATEX	ATEX is the name commonly given to the two European Directives for controlling explosive atmospheres. These directives relate to equipment and workplaces are allowed in an environment with an explosive atmosphere. ATEX derives its name from the French title of the 94/9/EC directive: *Appareils destinés à être utilisés en ATmosphères EXplosives*
BOD	Basis of Design
CAD	Conformity Assessment Document
CDS	Classification of Drilling Systems (ABS)
CSC	IMO Convention for Safe Containers
DISC	Drilling Industry Steering Committee
DNV GL	Det Norske Veritas Germanische Lloyd
DROPS	Dropped Objects Prevention Scheme
EDP	Emergency Disconnect Package
ESD	Emergency Shut Down
FMECA	Failure Modes, Effects, and Criticality Analysis
FSS Code	The International Code for Fire Safety Systems is a set of international treaties organised by the IMO under the SOLAS Convention that are designed to reduce the risk of fire, and aid in emergency response aboard ships.
HAZID	Hazard Identification
HAZOP	A hazard and operability study
IACS	International Association of Classification Societies
IADC	International Association of Drilling Contractors

Abbreviation	Definition
ICAP	Inspection & Condition Assessment Plan
IEC	International Electrotechnical Commission
IECEx	IECEx is an international system for certification of equipment for use in explosive atmospheres. Its quality assessment specifications are based on standards prepared by the International Electrotechnical Commission (IEC).
IMO	International Maritime Organisation
IRC	Independent Review Certificate
ISO	International Organisation for Standardization
ITP	Inspection & Test Plan
LRP	Lower Riser Package
MAE	Major Accident Event
MCOC	Manufacturers Certificate of Conformance
MOC	Management of Change
MODU	Mobile Offshore Drilling Unit
MRR	Material Release Record
MSDS	Material Safety Data Sheet
NDT	Non-Destructive Testing
NOPSEMA	National Offshore Petroleum Safety & Environmental Management Authority
OEM	Original Equipment Manufacturer
OPGGS	OPGGS Act - Offshore Petroleum and Greenhouse Gas Storage Act 2006
PMITP	Preventative Maintenance, Inspection & Test Program
PRV	Pressure Relief Valve
ROV	Remotely Operated Vehicle
RP	Recommended Practice (API)
SCE	Safety Critical Equipment
SC	Safety Case
SCR	Safety Case Revision
SFT	Surface Flow Tree
SME	Subject Matter Expert

Abbreviation	Definition
SOLAS	International Convention for the Safety of Life at Sea (SOLAS)
QP	Quality Plan

1.3 Use of Language

Term	Definition
Consider	Refers to risk-based mitigation activities identified in this guideline that may be applied when implementing this guideline.
Recommended	Refers to risk-based mitigation activities identified in this guideline that ought to be applied when implementing this guideline.
Highly Recommended	Refers to risk-based mitigation activities identified in this guideline that ought to be applied when implementing this guideline. Justification should be documented where the recommended activity is not adopted.
May	Compliance is discretionary and is to be considered.
Should	Compliance is discretionary but is recommended.
Shall/Must	Compliance with the requirement is mandatory.

2 INTRODUCTION

Described below is guidance on the process of installing Temporary Equipment on a MODU operating in Australian waters.

In 2018 NOPSEMA held a workshop with industry to review a series of significant safety risk gaps that were found with third party equipment installed on MODUs for the handling hydrocarbons at surface. As an opportunity for improvement identified during the workshop APPEA has agreed to produce and publish this guideline to promote a more effective approach toward Temporary Equipment preparation and installation on a MODU operating in Australian waters.

The purpose of this document is to provide:

- context and further definition of local requirements
- consistent definitions in relation to temporary equipment installations
- clear understanding of roles and responsibilities
- an example workflow that will promote effective assurance that equipment and systems are suitable for the intended use.

2.1 Key Definitions and Concepts

This document uses the following terminology: **Temporary Equipment**, referring to any equipment that is installed on a MODU for a specific project and that is not part of the original MODU design. Examples of this are routine equipment that are commonly used in drilling and completions operations such as a Mud Logging unit, Remotely Operated underwater Vehicle (ROV) installations, and Tubular Running Services. (Note: Mooring related equipment is not included in the scope of this document).

For the purposes of this guideline **Temporary Equipment** also includes equipment that is installed on a MODU for a specific project that's involves the handling of hydrocarbons. These are typically activities such as Well Intervention, Well Stimulation or Well Testing. The equipment utilised in these systems are generally considered safety critical as a failure or malfunction would cause a significant increase in the safety risk for the people on the MODU and as such require a higher level of assurance and compliance. In this guideline these systems are referred to as **Specialised Service Systems** and they are treated as a subset of **Temporary Equipment**.

Typically, all **Temporary Equipment** will undergo the same process of assurance and compliance, but **Specialised Service Systems** are subject to further assurance and compliance**. Specialised Service Systems** are further described in Part 1, Section 6.1 of this guideline.

Temporary Equipment Examples

- Cement Unit
- Mud Logging Unit
- Wireline Unit
- ROV (Remotely operated underwater vehicle)
- Tubular Running Services
- Mud Treatment/Cuttings handling
- **Specialised Service Systems** (involving hydrocarbon handling)
    - Well Intervention
    - Well Stimulation
    - Well Testing

2.2 How to use this document

The guideline is made up in three parts:

Part 1 Background and introduction to the framework

- Overview of assurance and compliance requirements applicable to offshore operations in Australia.
- Relationship of standards and codes, classification society requirements and legislation applicable to offshore Drilling/Well activities in Australia
- Further explanation of Specialised Services Systems

Part 2 Guidance for Temporary Equipment

- Recommended items to be considered when selecting, installing and operating Temporary Equipment.
- Discusses Service Provider capabilities, including planning controls.

Part 3 Guidance for Specialised Service Systems

- Recommended workflow with explanation for the additional assurance and compliance required for Specialised Services Systems

Appendices (provided for informative purposes).

- Guidance on general offshore Temporary Equipment requirements
- Example of a MODU Temporary Equipment Checklist and PMITP Verification matrix
- Overview of ISO and API Standards

The selection, installation and operation of **Temporary Equipment** follows a process that is essentially a subset of the more rigorous process of assurance and compliance required for **Specialised Service Systems.**

Part 1 provides general introduction information and Australian specific information suitable for new entrants and people and/or companies working for the first time under the Safety Regime present in Australia.

Part 2 presents areas of assurance and compliance that should be considered for routine **Temporary Equipment** and examples of existing systems.

Part 3 presents guidance on establishing a process for Stakeholders to ensure that **Specialised Service Systems** (systems which involve hydrocarbon handling) to be installed and used on a MODU, undergoes a process of assessment in terms of design review, fitness for use evaluation or testing and compliance verification.

The guideline is to be read in conjunction with the relevant international conventions, codes, industry standards, Australian Regulations (referenced in Section 5) as well as the NOPSEMA guidance and presentations on Operational integrity of contracted equipment as listed below in Sections 2.3, 2.4, 2.5 and 2.6.

2.3 Relevant international conventions, codes, industry standards

IMO requirements:

- CSC, IMO Convention for Safe Containers
- IMO FSS, International Code for Fire Safety Systems
- IMO FTP, International Code for Application of Fire Test Procedures
- MSC.1/Circ. 1275 – Unified Interpretation of SOLAS Chapter II-2 on the number and arrangement of portable fire extinguishers on board ships
- MODU, IMO Code Mobile Offshore Drilling Units
- SOLAS, IMO Convention Safety of Life at Sea.

IEC publications:

- IEC 60079 Series - Explosive atmospheres
- IEC 60092 Series - Electrical installations in Ships
- IEC 61892 Series - Mobile and fixed offshore units – Electrical installations

ISO and API standards for use in the Oil & Gas industry

- See Appendix D

2.4 Relevant Maritime and Classification Societies

- DNV GL — DNVGL-RU-OU-0101 Offshore Drilling and support units
- ABS — ABS Rules for Conditions of Classification – Offshore Units and Structures
- IACS — International Association of Classification Societies

2.5 Relevant Australian Legislation and Responsible Agencies

- AMSA — Navigation Act 2012
- NOPSEMA — Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act)
  Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009

2.6 Relevant NOPSEMA guidance

NOPSEMA Guidance notes

- GN0060 - The safety case in context - an overview of the safety case regime
- GN1661 - Vessels subject to the Australian offshore petroleum safety legislation
- GN0107 - Hazard identification
- GN0165 - Risk assessment
- GN0166 - ALARP
- GN0271 - Control measures and performance standards

NOPSEMA Guideline

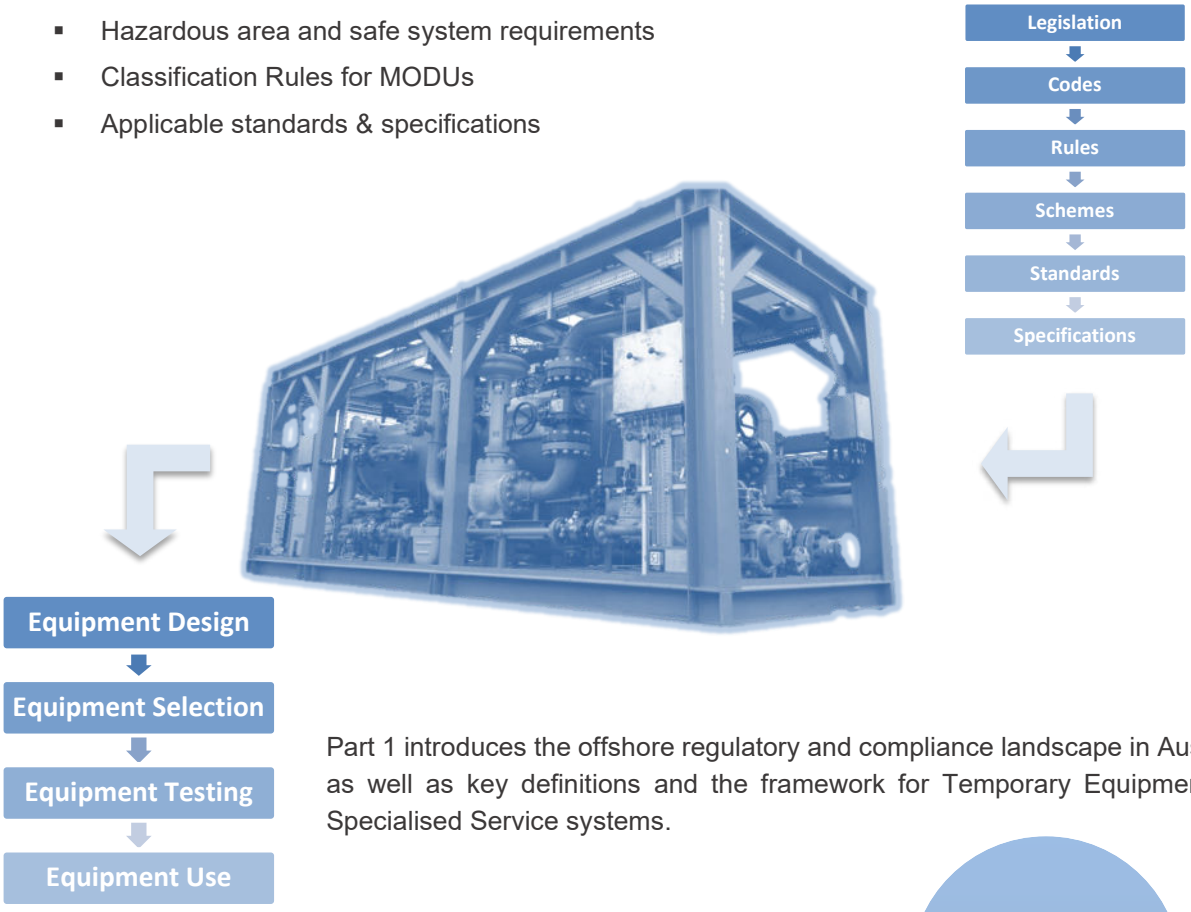
- GL0525 Validation

PART 1 BACKGROUND

3 INTRODUCTION

Temporary Equipment installed and used on MODUs is subject to the regulations applicable to an offshore installation. This guideline describes a recommended approach to assurance and compliance, for equipment identified as safety critical in a Performance Standard and/or subject to compliance with the following:

- Legislation for the offshore petroleum and maritime industry
- Hazardous area and safe system requirements
- Classification Rules for MODUs
- Applicable standards & specifications

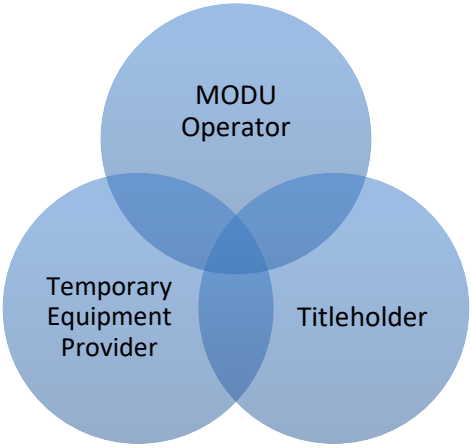


Part 1 introduces the offshore regulatory and compliance landscape in Australia, as well as key definitions and the framework for Temporary Equipment and Specialised Service systems.

Who should become familiar with this guideline?

The guideline is intended for use by the following Stakeholders:

- MODU Operator – MODU Owner
- Titleholder – generally the end user
- Temporary Equipment Provider (which includes Specialist Service Providers)

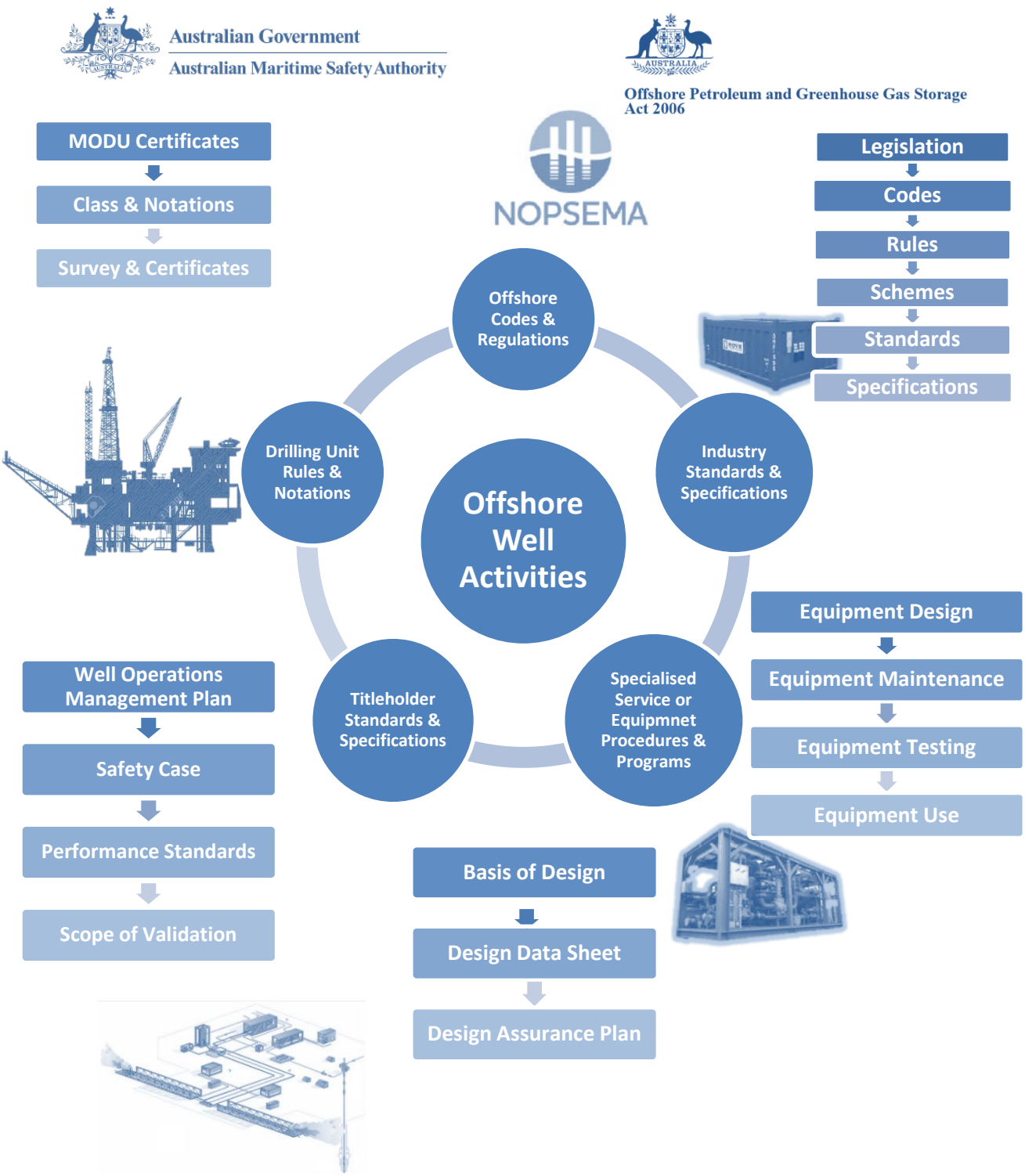


Interface between stakeholders is key to identifying applicable requirements, each being responsible for aspects of assurance and compliance with regulations, codes and standards. It is important for stakeholders to understand their legal obligation and legislated duties.

4 OFFSHORE ASSURANCE & COMPLIANCE COMPEXITY

The guideline is intended to address some of the assurance and compliance complexities within the offshore drilling industry.

Temporary Equipment is commonly used in well site activities on MODUs. Often supplied by a Specialised Service Provider as a system or package, Temporary Equipment is subject to a wide range of requirements. Stakeholders including Specialised Service Providers are required to understand the regulatory environment in which they operate, as well as interface and determine a process to establish a suitable level of assurance and compliance. The diagram below illustrates some of these requirements:



5 RELATIONSHIP WITH STANDARDS, CODES AND REGULATIONS

Equipment intended for offshore petroleum exploration, production and greenhouse gas activities in Commonwealth waters is subject to the OPGGS Act and supporting regulations related to occupational health safety and structural integrity of wells.

The regulations oblige MODU Operators to specify which codes and standards are applicable to the facility in their Safety Case. This is the overarching document governing MODU operations within Australian Commonwealth waters whilst the facility is on location.

With reference to NOPSEMA guidance note GN1661 'Vessels subject to the Australian offshore Petroleum safety legislation'; it is important to be aware that when a MODU is not a facility on location, it is subject to AMSA requirements under Maritime law which is explained in the section that follows.

AMSA and NOPSEMA have in place a Memorandum of Understanding to facilitate cooperation on safety and environmental management for the offshore sector. This includes information sharing with respect to:

- Audits, Inspections and Investigations
- Consultation and cooperation in regard to assessments of Safety Cases and/or Environmental Plans, and
- General management of the matters related to the transition from one regulator to another

Supply vessels and port operations are also subject to AMSA requirements under Maritime law.

5.1 Maritime law

Australia as a member state of the International Maritime Organisation (IMO) has implemented legislation under the Navigation Act 2012, which requires any MODU in Australian waters to be built, maintained and operated to the relevant IMO MODU Code.

The Australian Maritime Safety Authority (AMSA) is the regulator empowered by the Navigation Act, and it applies the legislation as regulations which are detailed in Marine Orders.

Australia and other member states of IMO (known as Flag States) delegate and license certain survey and certification functions to recognised organisations, known as classification societies. For a MODU these classification societies are typically the American Bureau of Shipping (ABS) or Det Norske Veritas-Germanischer Lloyd (DNV GL).

Classification societies establish and maintain technical standards for the construction and operation of MODUs (as well as ships and other offshore structures). The primary role of a classification society is to classify vessels and verify that their design and calculations are in accordance with the published standards. They also carry out periodical survey of vessels to ensure that the MODU (vessel) continues to meet the parameters of set standards.

Equipment and systems designed for specific offshore service functions, intended for temporary installation onboard vessels, are required to meet the requirements of these standards and may, at the MODU owners request, obtain certification by the classification society, depending on the Class (and any optional class notations).

Importantly for Temporary Equipment installed and used on MODUs, the standards describe the following requirements - Structural deck and sea fastening requirements, Safety Systems (including process monitoring, gas detection, fire fighting equipment, component arrangement and layout), Hazardous Area Classification and zone requirements (related to hatches, ventilation and companionways; electrical equipment; diesel driven equipment and hydrocarbon storage tanks). They also specify additional standards applicable to Temporary Equipment installed and used on MODUs.

AMSA is also the national administrator of requirements for offshore containers which are covered by the IMO Circular 860 and SOLAS. IMO MSC/Circ.860 requires certification of offshore containers “by national administrations or organizations duly authorized by the Administration” (e.g. classification societies), which should take account of both the calculations and the testing, “taking into account the dynamic lifting and impact forces that can occur when handling such equipment in open seas”.

For the purposes of providing information related to the subject of this guideline the following is a brief overview of each classification society.

5.2 Det Norske Veritas-Germanischer Lloyd (DNV GL)

For a MODU the primary technical standard is *DNV GL Rules for Classification of Offshore Units, Drilling and Support Units* DNVGL-RU-OU-0101. This document, and its normative references (for the purposes of this guideline), covers the classification requirements for column-stabilised and ship-shaped units providing drilling or well intervention services. Additional specific requirements for self-elevating units are covered in *DNV GL Rules for Classification, Self-elevating Units* DNVGL-RU-OU-0104.

Temporary Equipment is defined by DNV GL as equipment intended for use on board for a period not exceeding 30 months (with some exceptions e.g Cementing Unit) and which is covered by Class, requires hook-up to systems covered by Class and/or is a significant deck load and/or may pose a risk for fire, explosion and escape routes and/or equipment which will need to be shut down in case of an ESD as a result of a significant gas release.

Optional notations for Drilling Plant, Well Testing Facilities and Well Intervention Systems are also available, and the technical requirements are included in DNVGL-RU-OU-0101.

DNV GL also provides rules for classification of modular systems for MODU well test systems, plug & abandonment units and well intervention units in DNV GL Rules for Classification, Modular Systems for Drilling and Well DNVGL-RU-OU-0294.

DNV GL have also published standards for offshore containers (DNVGL-ST-E271) and portable offshore units (DNVGL-ST-E273) relating to the design, manufacturing and testing of offshore containers. DNVGL Offer product scheme and certification services in accordance with eth requirements of these standards.

5.3 American Bureau of Shipping (ABS)

For a MODU the primary technical standard is ABS Rules for Building and Classing Mobile Offshore Drilling Units as a supplement to ABS Rules for Conditions of Classification – Offshore Units and Structures (Part 1). This document, and its referenced ABS Rules and Guides cover the classification requirements for all MODU types.

ABS do not define Temporary Equipment; however the rules specify the requirement to certify equipment and machinery for marine systems and propulsion system (for self-propelled MODU) as well as Industrial Equipment and Components used solely for the operation of drilling systems. If a MODU owner has not requested ABS Classification of Drilling Systems (CDS) notation then industrial equipment for drilling needs to comply to applicable recognised standards. All industrial equipment installed on a MODU does however need to be in accordance with the requirements of the Rules in relation to the following areas.

- Hazardous area classification
- Electrical system circuit protection
- Electrical installations in classified areas
- Paint lockers, laboratory spaces and flammable material storerooms
- Emergency services
- Fire water system
- Fixed fire fighting systems, as applicable
- Portable and semi-portable extinguishers
- Emergency control stations
- Fire detection and alarm systems

ABS Rules for Building and Classing Mobile Offshore Drilling Units also details structural requirements for Portable Modules used to support various functions onboard a MODU.

The *ABS Guide for Well Test Systems* details the additional requirements for the design, construction, installation and survey of well test systems on a MODU classed with ABS. The Guide covers both permanent and Temporary Well Test Systems (where Temporary is installed on a MODU for less than 30 months), with an optional notation being available. Even where notation has not been requested by a MODU owner the Guide details the minimum mandatory requirements that an installed well test system is required to comply with. These requirements concern the Structural, Safety Systems (regarding gas detection, fire fighting equipment and arrangement of components) and Classified Area requirements for the Well Test System.

5.4 Australian Petroleum Industry regulatory requirements

The National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) is an independent statutory authority established by the Australian Federal Government under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act) to regulate offshore safety, integrity and environmental management in Australia.

Any MODU that conducts drilling or servicing of a petroleum well in Australian Commonwealth waters (and currently Victorian State waters), from an Occupational Health and Safety perspective is regulated by NOPSEMA. As such the Safety division of NOPSEMA is the regulator of MODUs and for all aspects of Temporary Equipment installed and operated on MODU's.

For any individual or company new or unfamiliar with the regulatory requirements of operating in Australia the NOPSEMA web page has a comprehensive explanation of its role, the regulations and guidelines available on its web page. (www.nopsema.gov.au/safety).

Areas of importance to the subject of this guideline are discussed below.

5.5 Responsibilities under the legislation

Although the MODU Operator is responsible for their facility and everyone on the facility, under the legislation, the Titleholder and Temporary Equipment Providers also have responsibilities.

It is important for stakeholders to understand their legal obligation and legislated duties. Under clauses 10, 11 and 13 of Schedule 3 of the OPGGS Act, Titleholders and Temporary Equipment Providers have duties and responsibilities, and contravention of these may result in NOPSEMA taking enforcement action under the legislation.

5.6 Safety Case workforce involvement considerations

One of the key safety foundations of the Australian Safety Case Regime is the MODUs Safety Case and its project specific Safety Case Revision (SCR). The SCR describes the Temporary Equipment (including Specialised Service Systems), including their safety features. The SCR also identifies and assesses the hazards associated with installing and operating the equipment.'

As effective workforce involvement in the development of a Safety Cases is a requirement of the OPGGS regulations it is important that Specialised Service Providers personnel are appropriately involved in the development of a Safety Case Revision. This is particularly important for Specialised Service Providers who are involved in the supply, installation and operation of Specialised Service Systems on a MODU.

These Specialised Service Systems providers must be involved in the development and review of the SCR as well as being involved in a HAZID and HAZOP workshops. Where the SCR is reviewed by the MODU Operators offshore personnel, review by the Specialised Service Systems key personnel is also recommended.

Additionally, the SCR, once accepted by NOPSEMA must be shared with the Specialised Service System providers and their workforce (both onshore and offshore).

MODU Operators and Titleholders are expected to have a process to inform personnel offshore of their responsibilities under a Safety Case. For those personnel involved in the installation and operation of Specialised Systems on a MODU it is recommended that a similar process is considered for implementation to ensure that these members of the workforce are also aware of their responsibilities in relation to the SCR which describes the use of the Specialised Systems.

Note, it is recommended that the HAZID should involve a suitable representative for Third Parties who provide routine Temporary Equipment for a project (not just Specialised Service Providers).

5.7 Safety Case Operational Boundaries considerations

In Section 12.2 of this document the defining of Operation Boundaries in the workflow is discussed. It is a regulatory requirement that these be documented in the SCR so that the workforce is aware of the planned scope and envelope that the Specialised System is intended to be operated in.

Depending on the type of operation intended for the Specialised System, these Operational Boundaries should include expected Well Conditions, the range of well conditions, as well as specifying maximum limits around pressures, temperature, flow rates, volumes and solids content for different fluids types.

5.8 Safety Cases and Performance Standards

Safety Cases and their Revisions include descriptions of control measures employed at the MODU that eliminate, prevent, reduce or mitigate the risk of a Major Accident Event (MAE) and other hazardous events. Performance standards are the parameters against which control measures for MAEs are assessed to ensure they reduce the risks to ALARP on an on-going basis.

Performance standards may also need to be developed if a Temporary Specialised Service System is intended for use as part of the well site activities. Section 13 of this document discusses the role of Performance Standards in the workflow for Specialised Service Systems.

The NOPSEMA web page has comprehensive guidance on control measures and performance standards available on its web site under Guidance Note GN0271.

5.9 Validation

Validation is an assurance process undertaken by an independent competent party, namely the Validator, and is a desk top documentation review. It ensures the design, construction and installation of safety-critical hardware, firmware and software (including instrumentation, process layout and process control systems) of the facility incorporate appropriate measures that will protect the health and safety of persons at the facility and these measures are consistent with the Formal Safety Assessment in the Safety Case/Safety Case Revision.

The Validation Statement is a written statement by the independent validator that the documents reviewed, which describe the design, construction and installation of the Specialised System on the MODU, cover these matters in the Scope of Validation agreed with NOPSEMA.

The Scope of Validation, and intended independent Validator, needs to be agreed with NOPSEMA prior to the submission of a Safety Case (SC) or Safety Case Revision (SCR). A SC or SCR will not be accepted until the Validation statement has been received.

Under the OPGGS Act a Validation is required if a significant change is made to an existing facility (e.g. the installation of a Specialised Service System on a MODU). Validation is also required for any changes other than installation of a Specialised Service System on a MODU (i.e. changes that affect Safety Critical equipment), this document is not intended to address other changes to a MODU.

Refer to NOPSEMA Guideline (N-04200-GL0525) for a detailed explanation of Validation under the regulations.

Verification and Validation have different but important roles in the workflow. Verification is addressed in Section 15 of this document.

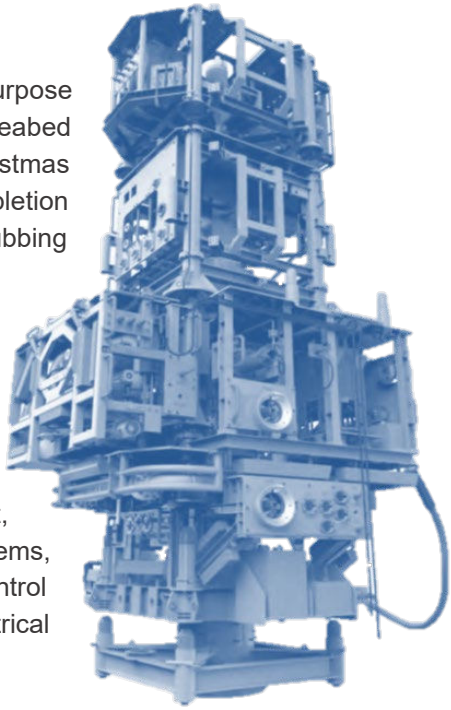
6 DEFINITION OF SPECIALISED SERVICES

Temporary Equipment is often supplied by a Specialised Service Provider. Generally, the equipment is manufactured to an industry standard or specification. This section identifies categories of Temporary Equipment where specific recommendations are made, and additional assurance and compliance requirements may apply.

6.1 Specialised Service Systems

Temporary Equipment can be part of a system installed on a MODU to perform a Specialised Service involving hydrocarbon handling. Below are recognised Specialised Service systems where Basis of Design applies, HAZOP & HAZID, and a Performance Standard are required to describe equipment assurance:

6.1.1. Well Intervention



Well intervention systems are the facilities installed on MODUs for the purpose of well diagnostics, managing the production of the well and seabed equipment. It may involve re-entry into a well and/or retrieval of a Christmas tree. Typical well intervention operations include workover, Completion Workover Riser System, slickline, cased hole wireline, coiled tubing, snubbing etc.

6.1.2. Well Stimulation

Well stimulation is a type of well intervention performed to increase production by improving the flow of hydrocarbons from the drainage area into the wellbore. Well stimulation systems installed on MODUs for the purpose of stimulation typically include acidizing equipment, fracturing blenders, pumping units, hydration and chemical additive systems, supporting equipment such as coiled tubing, lifting equipment, well control equipment, tanks and pressure vessels, pressure piping and electrical components, control systems etc.

6.1.3. Well Test

Well test systems are installed on MODUs for the purpose of handling reservoir fluids (gas / condensate / oil / water) at surface. The design of a well test system can often vary depending on requirements. For example:

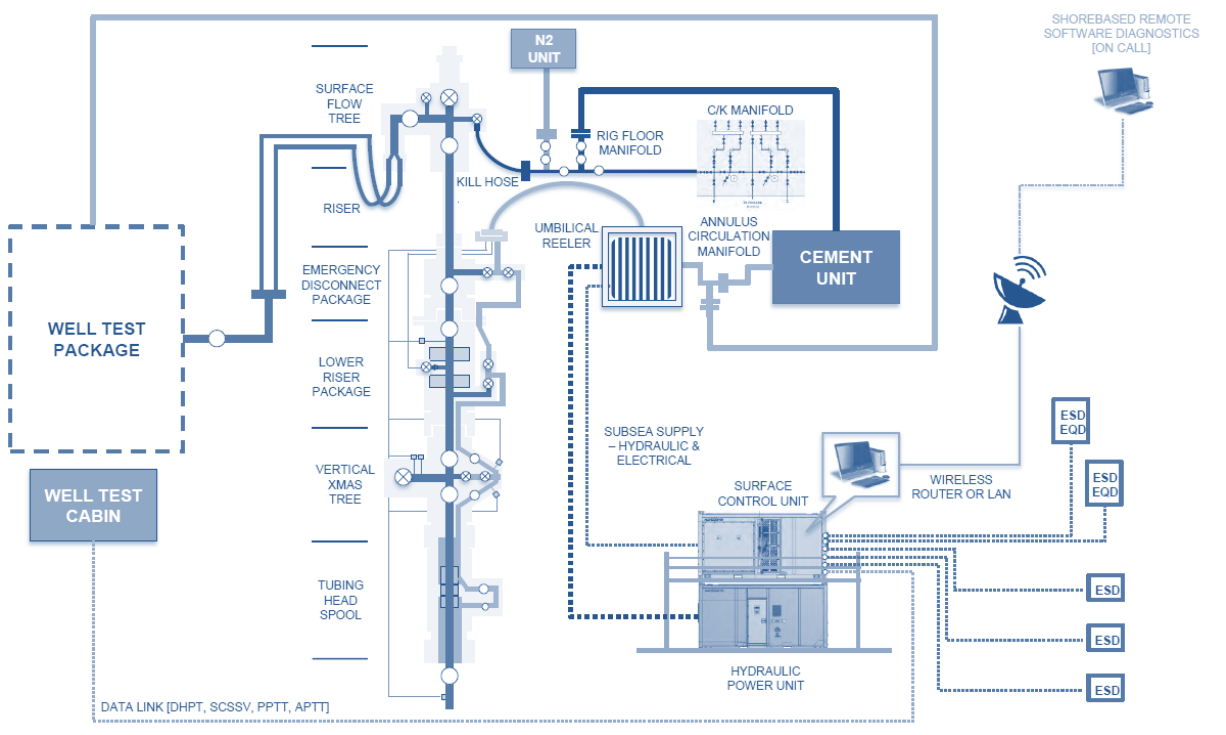
a) For evaluating the quality and/or quantity of the reservoir fluids or for well clean-up of the near wellbore region of a completed new production well a full well test package is utilised. This system will include well control equipment, sand filters, heat exchangers, test separator, tanks (pressurised & atmospheric), compressors and steam generators, pressure piping, ESD, ESD Valves, burners and burner booms, etc.

b) Bleed-off packages (also referred to as fluids handling packages) are utilised to process fluid returns, during Well Intervention, Well Stimulation and Completion operations to handle wellbore fluids which constitute mainly liquids (hydrocarbon and aqueous). Bleed-off Packages often only include well control equipment, tanks (pressurised & atmospheric), pressure piping and ESD etc.

These systems also include packages to handle reservoir fluids at surface during decommission operations.

Example of a system application

Diagram below shows an overview of a well intervention system:



System includes the following as examples of Temporary Equipment:

- Emergency Disconnect Package (EDP)
- Lower Riser Package (LRP)
- Surface Flow Tree (SFT)
- Umbilical Reeler
- Hydraulic Power Unit
- Offshore service module

The example well intervention system is recognised to have exposure to potential risk of hydrocarbon release, a Major Accident Event (MAE). Due to the potential MAE and the Temporary Equipment system including the EDP (well control equipment) the system is described in the safety case along with a supplementary performance standard. The performance standard describes performance and assurance system design considerations.

PART 2 GUIDANCE FOR TEMPORARY EQUIPMENT

7 TYPICAL MODU TEMPORARY EQUIPMENT REQUIREMENTS

7.1 General Guidance

MODU Operators must have a process, procedure or plan to assess Temporary Equipment is suitable for installation and operation on the MODU. The objective is to ensure that all Temporary Equipment installed and operated at the well site is technically compliant and certified in accordance with:

- Legislative requirements for the Offshore Industry in Australian waters
- Legislative requirements for the maritime industry (FSS Code, MODU Code/Class, Marine Orders)
- Hazardous area and safe system requirements.

The MODU Operator also needs to ensure Temporary Equipment that is installed on the MODU is maintained to a level that will safeguard its technical integrity. The process should determine:

i. Intended use, location or access assessment, system interface requirements
ii. Assess hazardous zone and safe system requirements
iii. Services needs for power, water, air etc.
iv. Install procedures, survey or site visit reports, validation requirements
v. Functional install checks, system design verification or validation
vi. Continuation of maintenance programs.

The following are areas (depending on the type and installation location on the MODU) may be required or considered when assessing Temporary Equipment:

a) Description of the equipment, proposed use and proposed location.
b) Hazardous Area suitability for the proposed location.
c) Size dimensions and weights so that deck loading can be assessed.
d) If the equipment is required to support loads suitable engineering calculations may need to be provided.
e) If Confined Space is present
f) General Condition of the equipment and copies of specialised inspections
g) Electrical requirements and condition
h) Purge/positive pressure functionality
i) Fire Fighting/Safety Equipment/Gas Detection
j) Lifting requirements for the equipment.
k) If the equipment will create excessive Noise or Heat
l) If the equipment creates a DROPS risk, how is it incorporated into the DROPS management system on the MODU.
m) If Asbestos is present.
n) What pre-mobilisation checks are done.
o) Status of planned maintenance of the equipment.
p) What the maintenance requirements will be for the equipment once installed (see Sections 7.5 and 18.6).

Continued over…

q) What Standards and Codes is the equipment constructed to and evidence that it does meet this.

r) Necessary information to determine if the installation and operation of the equipment will require Risk Assessment or impact the MODU Safety Case.

s) Necessary information to determine if the installation and operation of the equipment will require and satisfy Class Notation

The MODU Operators process should specify what documentation should be provided as evidence of compliance.

The collection and assessment of this information typically commences prior to the equipment's arrival offshore but must be completed prior to the installation and operations of the Temporary Equipment.

Temporary Equipment is often contracted directly by the Titleholder, in such cases the Titleholder must ensure MODU requirements for Temporary Equipment are passed on to the Temporary Equipment provider and a process established to verify compliance with requirements (requirements can be verified as part of a PMITP verification matrix for example, see section 16.1 PMITP verification matrix).

7.2 MODU Operator Temporary Equipment onboarding checks

The MODU Operator's procedure shall include verification on the MODU that the Temporary Equipment is as described and has been installed correctly.

Appendix B provides an example of Temporary Equipment onboarding process checklist.

Other examples of onboarding procedures can incorporate management of change, where the changes are assessed against the commitments in the safety case and any other applicable permissioning documents.

7.3 Competence of Specialised Service Providers Personnel

Competency requirements are part of the MODU Operators Safety Management System and are described in the Safety Case. The SCR describes how the Titleholders or MODU Operator verifies competency of Specialised Service Providers personnel

In Section 17.5 of this document some areas to consider in relation to competency are covered.

7.4 Equipment operations

Temporary Equipment installed on an MODU shall have operating instructions, procedures for use.

Onboarding planning requirements must include suitability assessment of procedures for safety critical equipment. The output of the review should include identification of any special operational requirements as well as limitations to performance, identified in operating instructions, procedures for use.

7.5 Ongoing Maintenance & Periodic Inspection

Temporary Equipment installed for an extended period of time will be subject to periodic or preventative maintenance for reliability purposes.

This guideline recommends review of periodic maintenance requirements for Temporary Equipment during planning phases and interface with the MODU operator. Routine or periodic survey inspection and/or certification requirements should also be considered during the planning stage and managed as an ongoing quality plan activity.

Temporary Equipment providers must make the MODU Operator (and Titleholder depending on contract arrangements) aware of safety equipment product certification scheme or survey inspection requirements. Planning or scheduling of recertification may identify conflict due to operations, in such cases changes must be captured.

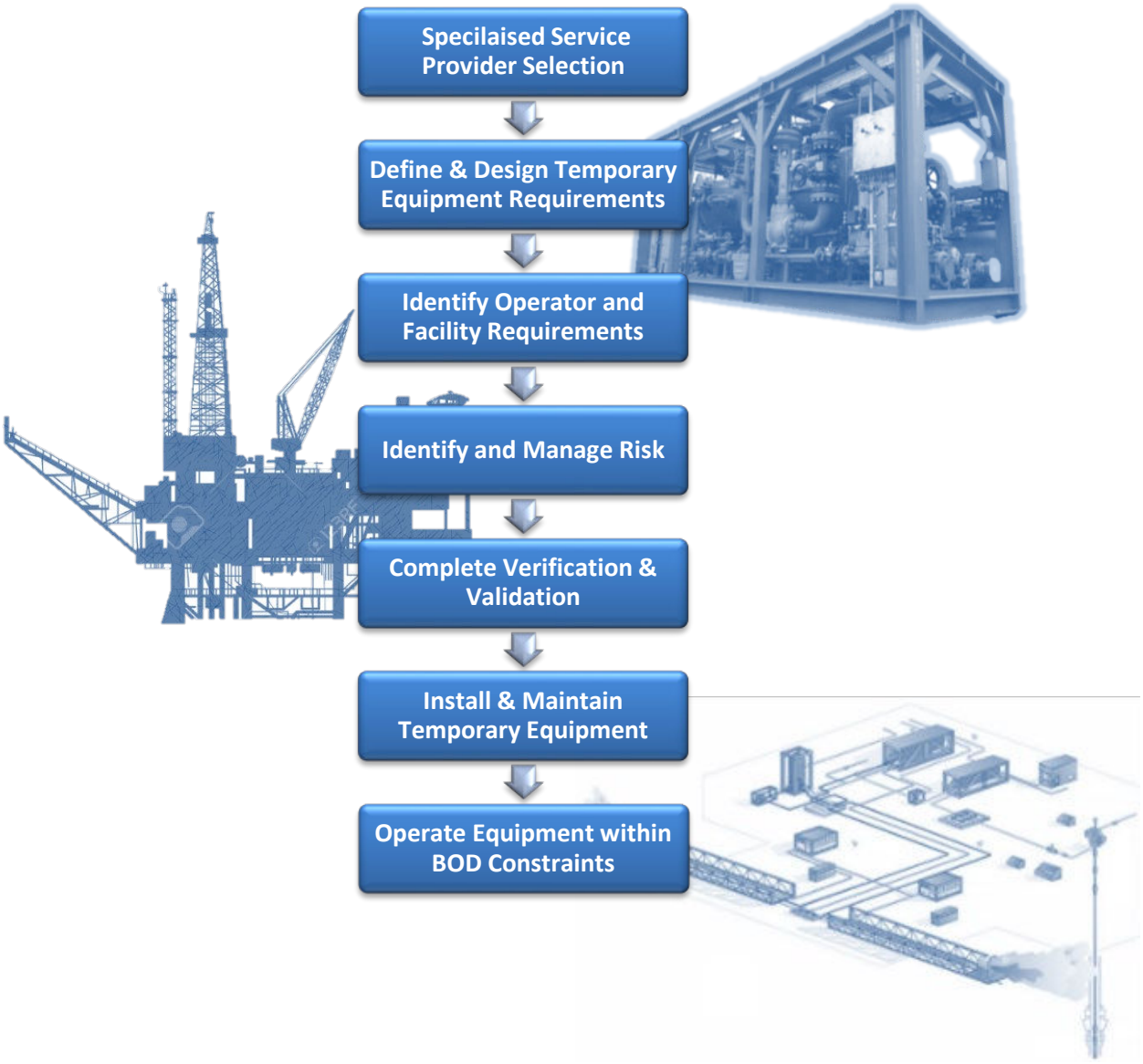
MODU Operators shall identify Temporary Equipment intended to be installed for an extended period. It is highly recommended that Temporary Equipment is logged in a MODU maintenance schedule or planning program, system or software, to ensure Temporary Equipment is maintained accordingly.

PART 3 GUIDANCE FOR SPECIALISED SERVICE SYSTEMS

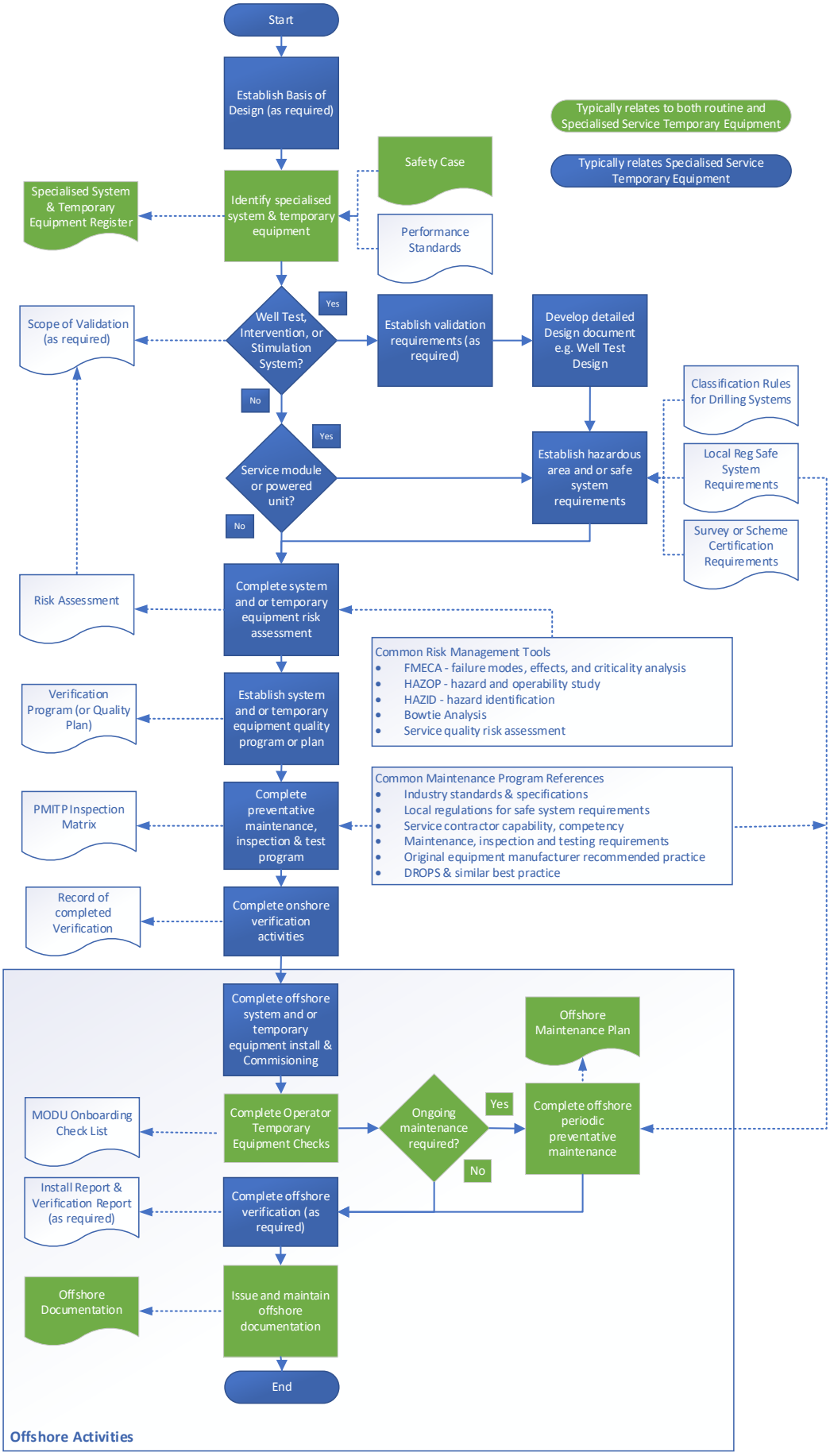
8 SPECIALISED SERVICE SYSTEMS EQUIPMENT ASSURANCE & COMPLIANCE

This Part 3 of the guideline provides guidance on establishing a process for Stakeholders to ensure that **Specialised Service Systems** (systems which involve hydrocarbon handling) to be installed and used on a MODU, undergoes a process of assessment in terms of design review, risk assessment, obtaining the various permissioning documents, fitness for use evaluation or testing and compliance verification.

The process described in Part 3 of this guideline, depending on the complexity of the system, would typically be expected to take a minimum of 6 to 8 months to complete. In the 2018 Workshop held with NOPSEMA a common finding by the parties presenting instances of identified safety gaps in **Specialised Service Systems** was that sufficient time be allowed for the planning and assurance for the systems prior to mobilisation offshore.



9 SAMPLE WORKFLOW



9.1 Recommended Responsibility Assignment Matrix

Task	MODU Operator	Titleholder	Temporary Equipment Provider
Onshore Activities			
a) Develop Basis of Design or Scope of Requirement (as required)	I	R / A	C
b) Identify Specialised Systems & Temporary Equipment	R / C	R / A	C
c) Establish validation requirements (as required)	A	R	C
d) Develop detailed design document e.g. Well Test Design (as required)	C	C	R / A
e) Establish hazardous area and/or safe system requirements	R / A	R	C
f) Complete Specialised System and/or Temporary Equipment risk assessment	R / A	R	C
g) Establish Specialised System and/or Temporary Equipment verification activities	A	R	C
h) Complete Preventative Maintenance, Inspection & Test Program (PMITP)	I	A	R
i) Complete onshore verification activities	R / C	R / A	R
Offshore Activities			
j) Complete offshore Specialised System and or Temporary Equipment install and commissioning	A	C	R
k) Complete MODU Operator on-boarding Temporary Equipment assessment (TE checklist)	A	I	R
l) Complete offshore periodic preventative maintenance	C	A	R
m) Complete verification requirements (as required)	A	R	C
n) Issue and maintain offshore documentation (prior to operation of equipment)	C	A	R

R = Responsible (assigned to do the work or complete the task)

A = Accountable (ultimately answerable for the correct and thorough completion of the deliverable or task)

C = Consulted (input and opinions are sought, typically technical or subject matter experts)

I = Informed (kept up to date on progress, often only on completion of the task or deliverable)

For some activities Joint responsibility exists and is denoted as such.

Activity noted as “as required” are typically related to Specialised Service Systems

10 BASIS OF DESIGN (BOD)

The Titleholder shall issue a controlled document that defines the primary and secondary objectives of the planned operations and the design requirements that the Specialised Service System should be based on.

This document should be developed at the earliest stage of planning and is developed by the Titleholder, and should include the following:

a) General Information (Well/Permit, timing, water depth and relevant elevations, MODU name)

b) Objectives of the Operation (for example, the Well Test objectives, including sampling requirements)

c) Design requirements including all possible fluid types, fluid compositions, maximum expected pressures and if applicable maximum expected flow rates, volumes and stimulation fluids types

d) Potential for sand, H_2S or CO_2 (or any other contaminants) in well fluids

e) System design data & assumptions

Additional design inputs may also be included as determined by the Titleholder.

It is not the scope of this guideline to detail the content of the BOD. From the perspective of this guideline, it is highly recommended that the pertinent details of the design requirements are specified and that any material change is reviewed, risk assessed and approved under a formal MOC process or Document revision process.

In the 2018 Workshop held with NOPSEMA the importance of defining the operational boundaries for Specialised Service Systems was clear. Allowing for the worst-case conditions and all probable scenarios for an operation avoids situations where the Temporary Equipment is not suitable for the operations.

11 IDENTIFY SPECIALISED SERVICE SYSTEMS & TEMPORARY EQUIPMENT

From the perspective of this guideline, it is recommended that the MODU Operator and Titleholder have processes to identify, select and assess the suitability of a Specialised system and/or Temporary Equipment, as well as Specialised System Provider capability.

All Stakeholders must have management system processes that identify the following design inputs:

a) Legal requirements;

b) MODU facility requirements; and

c) Titleholder or End User design requirements

Stakeholders must conduct review of the requirements related to the provision of a Specialised Service System and/or Temporary Equipment.

11.1 Specialised System Provider Capability

The provision of Specialised Systems to the Petroleum and Natural Gas Industries requires significant capital resources, knowledge and expertise. Temporary Equipment Providers must also have the capability to sufficiently manage assurance and compliance requirements, as described in this guideline.

11.2 Quality Assurance

Quality Management System certification to API Spec Q2 is recommended, providing assurance that a management system encompasses compliance requirements.

API Spec Q2 'Quality Management System Requirements for Service Supply Organizations for the Petroleum and Natural Gas Industries' promotes detailed planning between the Specialised Service Provider and the customer or end user. There are also specific requirements that address assurance and compliance.

With reference to Section 5 Realization of Service and Service-related Product of API Spec Q2 it is important that processes are followed to determine scope requirements and a review takes place to ensure capability to meet requirements for design and development, planning and risk management, as well as equipment maintenance (a more common compliance focus area).

ISO 29001 or ISO 9001 quality management systems are generally accepted, provided they are no less effective.

11.3 Quality Plan

For Temporary Equipment and Specialised Service Systems this guideline recommends equipment providers establish and maintain a Quality Plan or Service Quality Plan specific to the Titleholders project or well site activities. Quality plans should be established during the planning phase – refer to recommended workflow in Part 3.

API Spec Q2 defines a quality plan as a document that establishes procedures, resources, processes, and any required sequence of activities identifying and controlling the quality requirements. API Spec Q2 establishes quality plan content - to address the following:

a) personnel training and competence;

b) defined contract requirements;

c) risk assessment and management;

d) information that describes the characteristics and control of service and service-related products design;

e) contingency planning and output;

f) identification of equipment, including required testing, measuring, monitoring, and detection devices;

g) activities and controls necessary for ensuring that purchased service and service-related product meets specified purchase requirements;

h) service performance validation;

i) identification of nonconforming service execution and;

j) management of change notification.

The primary purpose of the document is to provide visibility of the key process, procedures and deliverables, and allow stakeholders to mark up the plan with their intended verification activities.

11.4 Temporary Equipment Selection

In planning and equipment selection, it is recommended that Temporary Equipment Providers adhere to the requirements of API Spec Q2 Chapter 5 Realization of Service (see 7.1 Quality Assurance). That is, a review takes place to determine whether equipment selected meets specified performance requirements and design acceptance criteria.

The review must include assessment of selected equipment against the nominated specification (including variations, versions and/or revisions as applicable) and account for maintaining requirements for the duration of planned activities.

In general, changes and revisions to original equipment manufacturer's specifications are captured by the Temporary Equipment Provider, as part of a quality management system (reference API Spec Q2 section 5.11.2 MOC Implementation).

Where the relevant codes and standards relating to original equipment manufacture have been revised, the Temporary Equipment provider shall evaluate the impact of the revision change to ensure the equipment meets specified performance requirements and design acceptance criteria. In such cases, the Temporary Equipment Providers shall utilise MOC to capture any deviations to requirements (see section 16.2 Non-Conformance, Waivers, Exemption).

In cases where the Temporary Equipment Provider is unable to demonstrate compliance in managing changes and revisions to original equipment manufacturer's specifications, it is recommended that an audit or gap analysis on selected equipment is performed to verify equipment specifications are in accordance with the BOD.

12 DETAILED SPECIALISED SERVICE SYSTEM DESIGN & OPERATIONAL BOUNDARIES

12.1 Detailed Specialised Service System Design Document

Typically, the Specialised Service Provider will produce a Detailed Design Document containing relevant design inputs i.e. engineering, modelling and simulations, used to develop the design of a Specialised Service System e.g. Well Test package.

The topics covered are typically around safety critical elements, hazardous area classification, safety shut down systems, heat and noise simulations, deck loading, equipment placement, hazardous materials identification, assurance and compliance requirements, system integration testing, communications and competency to name the common items.

It is not the scope of this guideline to detail the content of a Detailed Well Test Design Document.

From the perspective of this guideline, it is highly recommended the document that details the Specialised Service System installed on the MODU is reviewed and signed by both the MODU Operator and the Titleholder.

Whilst the MODU Operator and the Titleholder do not necessarily have subject matter expertise for all areas covered in a detailed design document, the information contained within the document is considered important where it may be referenced in the development of regulatory approvals e.g. Safety Case and a Performance Standard.

12.2 Operational Boundaries

Operational boundaries should be clearly defined at the earliest stages of planning and included in the BOD to mitigate the risk of “scope creep” as planning progresses.

It is highly recommended that the operational boundaries are included in the Detailed Well Programme and any relevant regulatory approvals, including the Safety Case Revision.

Detailed procedures for implementing contingency plans, within the operational boundaries, should be in the Detailed Well Program and available to operational personnel.

Personnel responsible for installing and operating the Temporary Equipment must have a clear understanding of the operational boundaries and the actions required from them in the event that activities are at risk of exceeding boundaries due to unforeseen events.

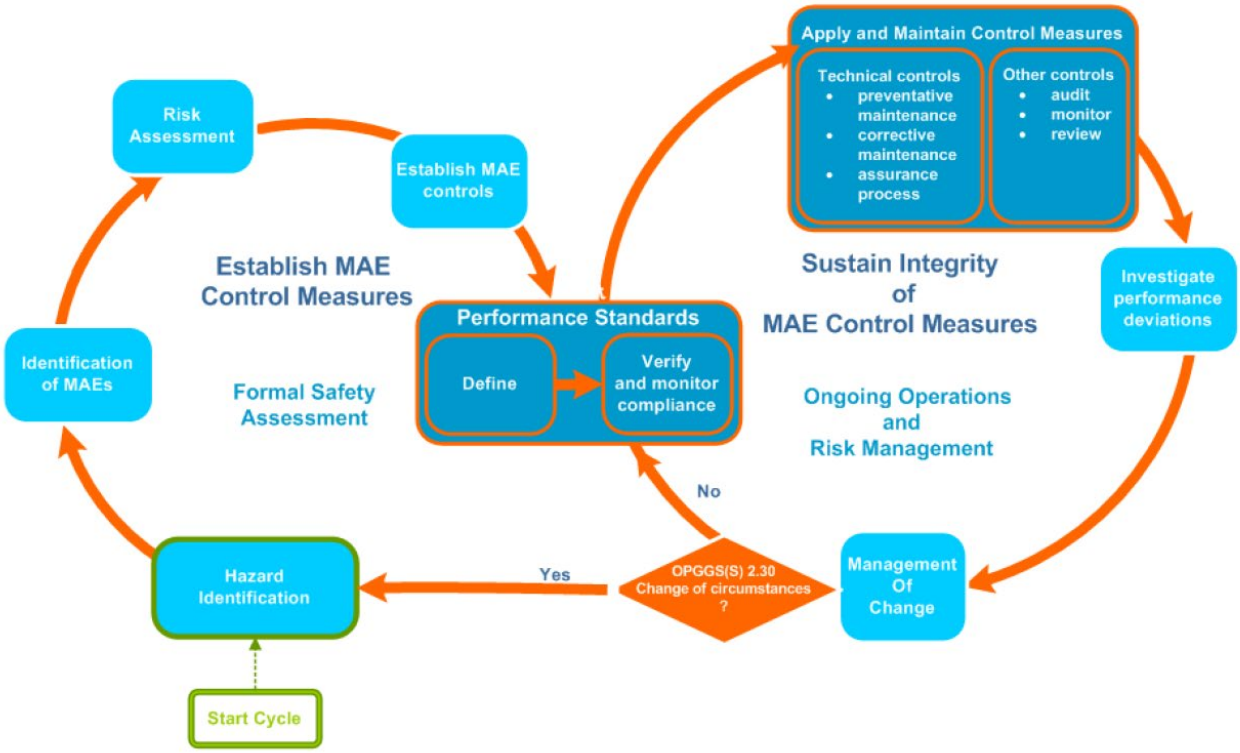
A procedure for communicating when activities have exceeded the approved operational boundaries, and immediate actions to be taken, should be available to operational personnel.

13 PERFORMANCE STANDARDS

Specialised Service Systems (which are installed to handle hydrocarbons) introduce additional potential MAE's to a MODU. Under the Safety Case legislation in Australia , MAE's are identified during the Formal Safety Assessment process. MAE's are identified as part of the various hazard identification process (HAZID and HAZOP workshops).

The identified MAE's are then the subject of risk assessment (refer to the next section for details). MAE controls are then established and Performance Standards for these control measures are established.

These Performance Standards are important as they are the basis of verifying (both upon initial installation and on an ongoing basis) that the MAE controls are in place and functioning as intended.



The NOPSEMA website has comprehensive guidance on control measures and performance standards available on (Guidance note N04300-GN0271).

14 RISK ASSESSMENT

Risk assessment supports the identification and evaluation of failure modes and their associated risks (consequences and the frequency of occurrence). Its primary aims are to understand the underlying causes of failure, the inter-dependencies in a system, and actions to manage risk to ALARP.

14.1 HAZOP & HAZID

HAZID study is the systematic method of identifying hazards with the goal of preventing and/or reducing any adverse impact that it could lead to, either in terms of injury to personnel, damage or loss of property, environment and production. HAZOP's are focused on identification of hazards and deficiencies in design which may lead to operability problems applicable to a Specialised Service System (hydrocarbon handling equipment) and establish actions to mitigate risks. These studies must be undertaken in advance of the operational procedure implementation and with enough time to implement any preventive measures identified from the analysis.

14.2 Equipment Criticality Risk Assessment

Failure Modes, Effects, and Criticality Analysis (FMECA) studies are typically undertaken to identify system or equipment failure risks and prioritize actions to reduce the likelihood of a failure or reduce its consequences. FMECA analyses is usually performed after an FMEA which can be based on the probability that the failure mode will result in system failure, or the level of risk associated with the failure mode, or a risk's priority. Source: ISO 16530-1:2017, Petroleum and natural gas industries — Well integrity – Part 1: Life cycle governance, First Edition, March 2017. The process is in addition to a safety hazard identification and is specifically assessing risks at a functional level. Typical considerations:

a) Assessment of any system design inputs and interface with other systems
b) Equipment design, type, capability, limitations etc.
c) Assessment of maintenance program, fitness for use testing
d) Applicable codes, rules, standards and specifications
e) Equipment hazardous zone and safe system requirements
f) Contingency, such as critical spares
g) Identify certification requirements
h) Verification and validation requirements (if required)

Equipment criticality risk assessment should generate information useful for establishing assurance requirements and planning verification activities.

The NOPSEMA website has comprehensive guidance on Hazard Identification available on (NOPSEMA Guidance note N-04300-GN0107). The Institution of Chemical Engineers (IChemE) *HAZOP: Guide to Best Practice*[1] is considered as the definitive reference for a HAZOP.

[1] F. Crawley and B. Tyler, *HAZOP: Guide to Best Practice*, 3rd Edition, Elsevier, 2015

15 VERIFICATION

Verification and validation are independent procedures that are used together for assuring that a Specialised Service System or Temporary Equipment meets requirements and specifications and that it fulfils its intended purpose.

Verification activities generally cover physical equipment inspection and surveillance programs during the preparation (or manufacture) and installation and commissioning e.g. both onshore (prior mobilisation) and offshore at the MODU of Specialist Service Systems.

Verification activities are established to determine whether Temporary Equipment design, maintenance, and testing status (and records) are in compliance with the nominated specifications, as well as scope specific requirements e.g. BOD.

Verification can be in accordance with Quality Plans (QPs), manufacturing Inspection and Test Plans (ITPs) and/or Preventive Maintenance Inspection and Test Program (PMITP) Verification Matrix. See Section 16 for further explanation of PMITPs and the PMITP Verification Matrix.

The Titleholder and MODU operator have a joint responsibility to ensure Specialist Service Systems (and auxiliary equipment) are supplied as specified and, in some cases, installed as designed. The Titleholder and MODU operator shall have a procedure that describes verification activity requirements. The contract holder with the Specialised Service System provider, should be responsible and accountable for Temporary Equipment verification activities both onshore and offshore.

Temporary Equipment providers shall interface with Titleholder and the MODU Operator to facilitate verification of reports that document usage history, repairs or redress, modifications, remanufacturing, inspection, and test activities – including for any subcontracted work scopes. Refer to Section 16 of this document for further information.

Verification activities should be completed by a competent inspection body i.e. a body servicing the offshore drilling industry. The Titleholder or the MODU Operator may elect to use in-house quality personnel or subject matter experts. Refer to Section 16 of this document for further information.

16 PREVENTATIVE MAINTENANCE, INSPECTION & TEST PROGRAM

Preventative Maintenance, Inspection & Test Program (PMITP) is a term referenced from API Spec Q2 'Specification for Quality Management System Requirements for Service Supply Organizations for the Petroleum and Natural Gas Industries'. Preventive maintenance is planned action to minimize the likelihood of equipment failure and unscheduled interruptions. Temporary Equipment providers are responsible for having a maintenance program, and the program should reference as a minimum:

a) actions which address preventive maintenance;

b) reports that document usage history, repairs or redress, modifications, remanufacturing, inspection, and test activities that allow direct verification for reuse of product;

c) list of critical spare parts requirements by the customer and/or technical requirements including those recommended by the original equipment manufacturer;

d) controls that ensure equipment integrity to original performance requirements and design acceptance criteria are maintained and;

e) required certification from applicable testing, schemes and/or classification, as well as conformance to applicable standards.

The program can be based on risk, system reliability, usage history, experience, industry recommended practices, relevant codes and standards, original equipment manufacturing guidelines, or other applicable requirements.

Typical inputs to Temporary Equipment performance requirements:

- Common Program References
- Industry standards & specifications
- Local regulations for safe system requirements
- Service contractor capability, competency
- Maintenance, inspection and testing requirements
- Original equipment manufacturer recommended practice
- DROPS & similar best practice

Equipment may have periodic certification requirements linked to an industry schemes or specification, providing additional quality assurance, and are responsible for integrating the periodic survey requirements into the program.

See A10 Temporary Equipment PMITP records and certification for an explanation of the outputs.

16.1 PMITP Verification Matrix

With reference to Appendix C 'Sample PMITP Verification Matrix', the matrix is an example of an Inspection & Test Plan for rental Temporary Equipment identifying quality verification inspection activities to be completed by the Titleholder or Operator. The verification is of planned preventative maintenance, inspection and testing of Temporary Equipment. The PMITP matrix lists equipment and applicable maintenance processes. Processes can be marked up with inspection activities, such as witnessing a function test and checking maintenance documentation, as determined by the Titleholder or Operator to verify compliance with requirements.

Verification of assurance controls for safety critical equipment is a requirement. It is recommended that the Titleholder or Operator and the Temporary Equipment Provider establish a PMITP verification matrix in order to document the agreed plan of verification activities.

16.2 Non-Conformance, Waivers, Exemption

During routine PMITP quality control and or verification activities, a non-conformance may be identified. A non-conformance is a condition that does not conform to requirements specified in a contract, scope of work, design, drawing, standard, specification, or another approved document.

Temporary Equipment providers (including Specialised Services) shall have a process to capture and correct non-conformance. In some cases, it may not be possible to correct a non-conformance, and a process of evaluation to accept is undertaken. This evaluation process is commonly referred to as a deviation, concession or waiver request and should include review by a technical authority. Importantly, the process must establish a step to notify the end user of a non-conformance to requirements, and provide justification for use and approval by the end user to proceed.

Non-conformance that impacts the end user are generally dealt with as part of a Management of Change (MOC) process. API Q2 Spec defines MOC requirements and establishes the need to incorporate risk assessment, to mitigate potential to cause a safety related event, non-productive time or a risk to well integrity.

It is important to note for Temporary Equipment providers that notification of non-compliance may in turn result in a MOC by the other stakeholders (TitleHolder or Operator) to a governing requirement.

16.3 Records of the results of verification

On completion of verification activities, the inspection body or the authorised in-house quality or subject matter experts shall issue a report on the results. The person responsible for verification release can sign the document that authorises release of the equipment. This record or report is often called an Inspection Release Certificate (IRC) or Material Release Record (MRR).

The records of the results of verification shall be maintained by the Titleholder and made available to the MODU operator, refer to Section 17.2 Offshore documentation requirements.

17 TEMPORARY EQUIPMENT INSTALL

Specialised Service Systems installed for use on a MODU for a specific well site activity shall undergo an acceptance process (i.e. PMITP).

Part 2 of this document provides guidance for the installation and acceptance for routine Temporary Equipment.

This section outlines additional recommendations for interface in order to establish Temporary Equipment well site requirements, verify install and the continuation of maintenance programs for periods of extended service (if applicable). This section is further to Part 2 of this document, as a MODU Operator will typically apply their base procedure to all types of Temporary Equipment, including Specialised Service Systems.

17.1 MODU Operator requirements

This guideline recommends the MODU operator routine procedure for Temporary Equipment be applied to Specialised Service Systems. This will allow the MODU Operators, equipment providers and the Titleholder to determine and optimise:

a) Intended use, location or access assessment, system interface requirements
b) Assess hazardous zone and safe system requirements
c) Services needs for power, water, air etc.
d) Install procedures, survey or site visit reports, validation requirements
e) Functional install checks, system design verification or validation
f) Continuation of maintenance programs.

It is important that process requirements are established during planning phases to allow proper review and assessment.

17.2 Offshore documentation requirements

In order to facilitate proper assessment of system or equipment installation the following documentation should be made available by the Temporary Equipment Providers:

a) Operating instructions, procedures
b) Hazardous zone, safety system certification (if applicable)
c) Verification scheme, survey or product conformity certification (if applicable)
d) Records of the results of verification from inspection body or competent technical authority
e) Intended maintenance program (for periods of extended service).

Full technical manuals, design dossiers and material data records should be verified as part of the PMITP process and confirmed as available, should the Titleholder or MODU Operator require and as such copies are not expected to be present on the MODU. However, the information is expected to be accessible and available electronically upon request.

17.3 MODU on boarding checks

The MODU Operator's Temporary Equipment management procedure shall include verification on the MODU that the Temporary Equipment is as described, and has been installed correctly. This requirement shall also be applied to Specialised Service Systems.

Additionally, the MODU Operator and the Titleholder and Specialised Service Systems provider should consider including in their procedures a final commissioning or verification. This verification should be detailed and specific to the project scope. As a basic example of a Well Test Specialised Service System, the verification would typically include:

a) The surface Specialised Service System is rigged-up in accordance with its P&IDs.

b) The surface Specialised Service System deck securing, including piping and hoses is complete

c) All equipment pressure tests have been conducted, and witnessed with suitable records

d) Specialised Service System ESD and well shut-in function tests have been conducted, and witnessed with suitable records

e) Verifying that the temporary gas detector units and portable fire monitors are positioned in accordance with the layout drawing

f) The surface Specialised Service System process instrumentation is calibrated in accordance with the well test contractor's policies and procedures. This should include all PSV's, Hi-Lo pilots set pressures, digital pressure and temperature sensors, mechanical chart recorders and bourdon tubes.

g) The projects PMITPs are all completed and approved.

Additional operational verifications regarding other areas such as escape route verification, fire team briefings, crane movement restrictions and any other operational conditions are important but are not included in the scope of this guideline.

17.4 Equipment operations

Temporary Equipment installed on an MODU shall have operating instructions, procedures for use.

This guideline recommended the MODU Operators and Titleholders planning requirements include review and assess the suitability of procedures for safety critical equipment. The output of the review shall include identification of any special operational requirements as well as limitations to performance, identified in operating instructions, procedures for use.

17.5 Competence and training

Personnel involved in the design, maintenance, install & operation of Specialised Service Systems shall be competent in accordance with their organisation's internal training & competence management system requirements.

Providers of Specialised Service Systems shall have a competence management system which specifically addresses formal and on-the-job or task-based training requirements for personnel (equipment operators) on each specific type of Temporary Equipment.

The organisation's training and competency system should be externally audited on a regular basis by an independent auditor, as part of a quality management system audit. Providers of Specialised Service Systems must be able to demonstrate compliance with this requirement upon request by the Titleholder or MODU Operator.

Personnel involved in the inspection & certification of well testing and related Specialised Service Systems shall be competent in accordance with their organisation's internal training & competence management system requirements.

Providers of inspection & certification personnel or verification of Specialised Service Systems and Temporary Equipment shall have a competence management system which specifically addresses formal and on-the-job or task-based training requirements for personnel on each type of Temporary Equipment.

Inspection & certification personnel should have a sufficient level of knowledge and experience with the Temporary Equipment which they are required to inspect or certify.

The training & competence systems of providers of inspection & certification personnel should be capable of recording the field personnel's experience with providers of Specialised Service Systems to ensure that the appropriate personnel are assigned to work within their capability.

The providers organisation's training and competency system should be externally audited on a regular basis by an independent auditor. If an independent inspection body is required, this guideline recommends the body is certified in accordance with ISO 17020 Conformity assessment -- Requirements for the operation of various types of bodies performing inspection. Providers of Inspection & certification personnel must be able to demonstrate compliance with this requirement upon request by the Titleholder or MODU Operator.

ISO 17020 specifies requirements for the competence of bodies performing inspection and for the impartiality and consistency of their inspection activities.

17.6 Ongoing Maintenance & Periodic Inspection

Temporary Equipment installed for an extended period of time will often be subject to periodic or preventative maintenance for reliability purposes.

This guideline recommends review of periodic maintenance requirements for Temporary Equipment during planning phases and interface with the MODU operator. Survey inspection and/or certification requirements should also be considered during the planning stage and managed as part of quality plan activities.

Equipment providers must make the Titleholder and MODU aware of scheme or survey inspections. Planning may identify conflict due to operations, with planned periodic maintenance or inspection, in such cases changes must be captured.

APPENDIX A: TEMPORARY EQUIPMENT ASSURANCE - INFORMATIVE

This Appendix provides guidance on typical assurance requirements for common types of Temporary Equipment or modules, temporally installed for drilling and completion operations, auxiliary to MODU fixed equipment.

A1 Offshore Service Modules

Offshore Service Modules are purpose built and equipped for a special service task, primarily intended for temporary install on a MODU. When offshore Service Modules are installed, they are subject to subject to the regulations applicable to an offshore installation.

This guideline recommends that Service Modules are designed, built and certified to standard DNVGL-ST-E272 Offshore service modules, a single source of safety requirements from Codes i.e., SOLAS/IMO MODU, Class, flag state and national regulations. The standard addresses technical requirements for the following:

a) Ignition prevention
b) Fire and gas
c) Communications
d) Fire fighting
e) Fire protection
f) Escape
g) Ventilation
h) Over-pressure

A2 Offshore Service Modules with Combustion Engines

Offshore Service Modules powered by a combustion engine require significant modification including water-cooled exhaust system, temperature sensors, air inlet shutdown valves, flame arresters and spark arresters. A summary of requirements for combustion engines intended to meet the SOLAS, IMO MODU Code can be found in standard DNVGL-ST-E272 Offshore service modules.

It is important to note that all equipment is required to be made safe in case of accidental release of gas. This means that any equipment, including equipment located on open deck, which remains energised or has the potential to have surface temperatures in excess of 200°C following shutdown on gas detection, is designed, built and installed to meet hazardous area requirements, minimum zone 2.

When hydrocarbon gasses or liquids are not expected the maximum surface temperature of a combustion engine shall be 220°C and spark arrestors are not required (reference DNVGL-ST-E272).

A3 Offshore Service Modules with Electrical Systems

Offshore Service Modules with electrical systems is subject to compliance with MODU safe systems and electrical standards (e.g. IEC 61892 series for Mobile and fixed offshore units – Electrical installations). Requirements are based on functional design and the operational environment.

The 2009 IMO MODU Code recommends that electrical installations in hazardous areas be tested and certified in accordance with IEC 60079 Electrical apparatus for explosive gas atmospheres, or other internationally recognised equivalent standards with equipment testing by an independent laboratory.

Electrical systems can have IECEx and ATEX dual certification. ATEX certification (only) is common with equipment manufactured in Europe. The main variation between IEC 60079 and ATEX is the need for independent certification. ATEX equipment with "EC Type Examination Certificate" from an ExNB (Notified Body) is generally accepted.

It is important to note the variation for Temporary Equipment built to Zone 2 requirements, where ATEX EC-type examination certificate from an ExNB is not mandatory for Equipment Category 3. To meet the intent of the MODU Code, ATEX Category 3 components for Zone 2 compliance must have "EC Type Examination Certificate" from an ExNB.

Deviations can be dealt with by Conformity Assessment Document commonly referred to as a CAD. This is a documented assessment of the alternative (ATEX, FM, UL or CSA) and conformance with corresponding IEC standards by a competent person.

A4 Electrical Equipment in Hazardous Areas

Temporary Electrical Equipment in Hazardous Areas (EEHA) is subject to IEC 60079-17 electrical installations and periodic ‘detailed’ inspection (every 3 years) and ‘close’ inspection (every 12 months). Note: Equipment with frequently opened battery enclosures require inspection every 6 months.

This guideline recommends maintaining a consolidated register of all Temporary Equipment recognised as EEHA, complete with equipment classification, location and status of inspections. For longer term projects, an annual EEHA compliance audit is recommended. For further understanding of local requirements refer to the article published in the Regulator | Issue 3: 2017 ‘Inspecting and maintaining Ex equipment’: Failure to undertake detailed (internal) inspection is a contravention of clause 9(2)(c) of schedule 3 of the Offshore Petroleum and Greenhouse Gas Storage Act 2006.

Temporary Equipment, regardless of location in a hazardous area, the MODU Operator may require Emergency Shut Down (ESD) arrangements to be provided for disconnection or shut down either selectively or simultaneously of all electrical equipment and devices.

A5 Well Intervention, Well Stimulation, Well Test Equipment

Temporary Equipment elements which interact with isolation of a well, and or hydrocarbon containing equipment, is required to meet a relevant API or ISO specification. A manufacturers API licence, and Manufacturers Certification of Conformity, provides assurance that the equipment is designed and manufactured in accordance the applicable specification.

This category of Temporary Equipment can range from Pressurised Control Equipment (PCE) manufactured and certified to API Spec 6A Specification for Wellhead and Tree Equipment, to more complex Service Modules such as a Coiled Tubing Unit designed to meet the particulars of API RP 16ST Coiled Tubing Well Control Equipment Systems and certified to API Spec 6A Specification for Wellhead and Tree Equipment, API Spec 5ST Specification for Coiled Tubing, API Spec 16C Specification for Choke and Kill Systems, for example.

Where this category of equipment is safety-critical, the End User, Equipment Owners and Operators (through MODU Classification e.g. ABS Classification of Drilling Systems) may require independent design review and certification by a competent certification body. This higher level of assurance comprises of independent review certificate or ‘type approval’, certifying design meets the selected

standards, verification of manufacturing and acceptance testing, and ongoing periodic maintenance and recertification.

Maintaining OEM requirements and compliance to standards is necessary for this category of Temporary Equipment. It is important for Equipment Owners to engage with the OEM for continuity of requirements related to maintenance, upgrades, technical alerts and safety bulletins. API Spec Q2 requires Management of Change (MOC) for 'changes to the original equipment manufacturer's specifications, applications, and/or software for SRP' see also Section 16.2 Non-Conformance, Waivers, Exemption.

A6 Pressurised Equipment / Systems

Temporary Equipment identified as pressure containing and constructed with a pressure vessel, pressure piping and pressure-retaining accessories, must be of a design adequate for the intended service and comply with nominated recognised pressure equipment Code and standards i.e. manufactured and certified to comply with Code such as ASME Boiler and Pressure Vessel Code (BPV) or European Union – Pressure equipment directive (PED). Manufacturers Certification of Conformity provides assurance that the equipment is designed and manufactured in accordance the applicable Code and standards.

Pressurised equipment / systems must have protection against excess pressure. Pressure relief and safety valves are inspected and bench-tested every twelve (12) months, to ensure function per design.

Pressure vessel are generally subject to periodic inspections. The frequency of inspections is performed accordance applicable standard. As a rule, pressure vessels are inspected at least once every five (5) years by a competent person.

Before any Temporary Equipment identified as pressure containing is deployed, it is tested to expected working pressure.

Auxiliary equipment such as pressure pipe work including pup joints, loops, swivels & valves also known as flow control equipment or treating iron should be supplied with manufacturers certification identifying the piping component complies with the standard to which the component is designed, fabricated and tested. In addition, the component must have permanent identification, such as manufacturer's name or trademark, standard of compliance, material identity, pressure rating, etc., as required by the standard of compliance or the manufacturer's specification. Such markings may be cast or forged integral with, stamped on, or securely affixed by nameplate on the component, and are to serve as a permanent means of identification of the component throughout its service life.

A tank is a pressure vessel, and applicable regulations also include IMDG Code (international code for the maritime transport of dangerous goods). Portable tanks, constructed to transport dangerous goods are usually constructed to meet the requirements of IMDG and subject to an intermediate inspection and test every two and half (2.5) years and five (5) years. Note: Offshore Service Module diesel fuel tanks are subject to the IMDG Code.

A7 Lifting Equipment (Offshore Containers & Portable Units)

Offshore containers and portable units for repeated use in the transport of goods or equipment, handled in open seas, to, from or between a MODU are subject to IMO MSC/Circ. 860. Marine Order 44 (Safe containers) 2019 has specific requirements applicable to Offshore Containers passing through an Australian Port. In order to meet these requirements, it is recommended that Offshore containers are certified to DNVGL-ST-E271 for offshore containers and DNVGL-ST-E273 for all other types of portable offshore units, or ISO 10855 Offshore Containers and Lifting Sets.

ISO 10855 Offshore container standard came into effect in 2015. As of 2023, the IMO Circular 860 references EN 12079 as being acceptable and there is no reference to ISO 10855. It is not known when the circular will be updated, however in the foreword for ISO 10855 it specifically states that it supersedes EN 12079 which is acceptable, pending the update.

In any case, it is required that Lifting certification is issued by a recognised classification society with expertise in the certification of offshore containers. Acceptable classification societies for Australia are currently listed on the International Maritime Organisation (IMO) website and include American Bureau of Shipping (ABS), Det Norske Veritas (DNV), Lloyds Register and Bureau Veritas (BV).

Periodic surveys of Lifted Equipment, including non-destructive testing and visual inspections, must be performed by a recognised lifting inspection body certified to ISO 17020 'Requirements for the operation of various types of bodies performing inspection', by NATA. The National Association of Testing Authorities (NATA) is the recognised national accreditation authority for analytical laboratories and testing service providers in Australia.

A8 Lifting Appliances (for on-board lifts)

Except for offshore containers and portable units that will be lifted to and from the MODU, all other lifting equipment (items to be lifted or used in lifting operations on the MODU) shall be certified to a recognised standard such as DNVGL-ST-0377 Standard for shipboard lifting appliances or AMSA Marine Order 32 Cargo handling equipment.

Slings are generally wire-rope type. Locally, wire-rope sling assemblies are manufactured and certified to AS1666.1 Wire-rope slings - Product Specification, and ongoing maintenance in accordance with AS1666.2 Wire-Rope Slings Care & Use. Recommended periodic inspection by a competent person is twelve (12) monthly, subject to usage. Note: MODU lifting inspection frequency for lifting appliances can be six (6) months based on a higher volume of lifts.

All Soft Slings must comply with Australian Standard AS 4497 Round Slings—Synthetic fibre or AS 1353.1 Flat synthetic-webbing. Note: Soft Sling have three (3) month periodic inspection requirement.

As a rule, all lifting appliances are to be provided with an identification plate affixed showing the test specification, working load limit and dates of load test and inspection. A tag is required for sling sets, with the same information.

Lifting inspection certification is issued by an ISO 17020 NATA accredited lifting body.

A9 Dropped Objects Prevention Scheme (DROPS)

DROPS is an industry-wide initiative focused on preventing dropped objects. The scheme sets out the basic requirements and minimum recommended practices for Dropped Object Prevention that can be incorporated into existing lifting and safe work systems.

The following are key elements of DROPS:

a) Incorporation of Dropped Object Prevention Scheme Recommended Practice into existing Safety Management Systems;

b) Offshore personnel are recommended to be DROPS competent, capable of identifying existing and predictable hazards in the surroundings or working conditions and have authority to take prompt corrective measures to eliminate them;

c) Equipment that can be lifted, hoisted, used at height have incorporated the best practices identified in the DROPS Securing Methods publication, latest revision;

d) Equipment that can be lifted, hoisted, used at height or operated on or around the rotary table come with a DROPS picture book, a detailed visual infographic showing specific equipment identify relevant characteristics, features and proper methods of retention;

e) Containers and Portable Units shall have DROPS check lists, to be completed prior to mobilizing or backloading.

A10 Temporary Equipment Records and Certification

The below is a graphical explanation of the typical PMITP records and certification provided by an OEM and the Temporary Equipment provider, with an introduction to Product Certification, issued by an independent verification body or certification agency:

Preventative Maintenance Inspection and Test Program (PMITP) Records

Routine maintenance activities intended to assess condition, implement upgrades, inspect, test the functionality of equipment, prevent equipment failure by restoring equipment condition. component test certificates.

Maintaining traceability to the Original Equipment Manufacturer

It is important to maintain traceability to the OEM in terms of:

Manufacturers Certificate of Conformance (MCOC) or Manufacturers 'COC'
Demonstrates equipment is manufactured to the required specification.

Mill Test Report (MTR)
Demonstrates material chemical and physical properties, and finish states comply with the manufacturing specification.

Maintenance Procedures and Recommended Practices
Use of the latest procedures and manuals, of which can be subject to change from improvement, lessons and or failures.

Technical bulletins or modifications
To incorporate component upgrades or guidance to improve performance or mitigate failure.

Extreme conditions and usage
In some circumstances it is important to consult the OEM when use or application is out with equipment specification, in order to determine any special preventative maintenance.

Substantial or Major Repairs
OEM must be consulted with significant repairs, where sub-contractors may require approval or qualification.

The OEM or their qualified sub-contractor must complete major re-manufacturing scopes.

Typical Records and Certification

Manufacturers Certificate of Conformance (MCOC) or Manufacturers 'COC'
Conformity statement specific to equipment or materials issued by the Original Equipment Manufacturer and states that the product meets the required standards or specification, inclusive of design, material selection and testing plus manufacturing quality

History & Usage Record
Operational history and significant events e.g. out of spec conditions.

Maintenance and Assembly Record
Preventative maintenance and rebuild, as prescribed in a program or schedule.

New or Replacement Part MTR
Log of consumables and replacement, traceable to manufacturing MTR.

Equipment Repair Record
Significant repair or rework to a component, generally confirming compliance to OEM requirements.

Inspection Record
Record of routine NDT program to detect defects from usage and fatigue. The Inspection report or certificate shall state the relevant inspection procedure, acceptance criteria and include a conformity statement.

Acceptance Testing Certificate
Final product testing conducted to determine if the manufacturing specification are met typically include performance testing e.g. proof-load testing, hydro-static pressure testing.

Final Inspection Certificate
Final quality control inspection, of which can include non-destructive testing (NDT) post proof-load testing.

Product Certification is the process of certifying a product to an approved design, through quality assurance and performance tests to criteria stipulated in industry standards, codes, or regulations. In most cases, certification requirements are focussed on the safety impact to the offshore installation, where the equipment is installed.

Safety Critical Equipment Certification

Independent Design Review and Certificates of Conformance certifying a product has been designed, manufactured and tested in accordance with a scheme, standard or code. Recertification can also occur across a series of scheduled maintenance events. An independent certification body accredited by the appropriate administration will oversee the process.

Electrical System Certification

Electrical equipment certification per IEC series of standards – of which include IECEx as well as requirements for "non-hazardous areas" also known as "safe areas". IECEx also includes periodic inspection requirements.

Pressure Equipment Certification

Pressure vessels, pipework, fittings and their safety devices may require Product Certification. For example, per the IMDG Code offshore portable tanks require certification and periodic inspection.

Lifted Equipment Certification

The Offshore lifted equipment, handled in open seas, requires independent certification by a competent authority per IMO SC/Circ.860.

APPENDIX B: SAMPLE MODU TEMPORARY EQUIPMENT CHECKLIST

Temporary Equipment Form
(to be completed by the equipment provider prior to load out)

1. Temporary Equipment Details:

MODU:	Date:	New ☐ or Previously installed ☐						
Company:	Address:	Serial number:						
		To be located:						
Email:	Contact name:	24hr Contact N°:						
Equipment description:		Manufacturer:						
Operating range or rating:		Design code:						
Country of origin:		Equipment is 'Free' placement:	☐	Yes	☐	No		
Layout plan complete:	☐ Yes ☐ No	Equipment is Lifted Equipment:	☐	Yes	☐	No		
Schematics available:	☐ Yes ☐ No	Anticipated duration on MODU:						
Install verification required:	☐ Yes ☐ No	Date to be installed:						

2. Equipment Dimensions:

Items	Dimensions			Weight	Typ. Deck / Op. Load
	L	W	H	(Kg) / (lbs.)	(kg/m^2) / (lbs/ft^2)

3. Required Services:

☐ N/A	Electrical Services:	
	Voltage (V):	
	Frequency (F):	
	Amperage (A):	
	Connection details:	
	Earthing details:	
	Lighting supply V/A:	
	Instrumentation supply V/A:	
	Expected load KW/HP:	

☐ N/A	Other Services:				
	Pot/wtr:		gpm		psi
	Drill/wtr:		gpm		psi
	Sea/wtr:		gpm		psi
	Fire/wtr:		gpm		psi
	Fuel:		gpm		psi
	Hydraulic:		gpm		psi
	Comp. air:		cfm		psi
	Other:				

4. Equipment Assessment:

☐	Equipment is part of Well Test, Intervention, or Stimulation System	☐	Pressure Equipment with Rating
☐	Equipment is a Service Module (Includes all Workshops)	☐	Classified Safety Critical Equipment

ABS Rules for Temporary Equipment that forms part of a Drilling System or Well Test System Notation are supplied with:	Independent Review Certificate (IRC) or	☐
	Manufacturers Certificate of Conformance (MCOC)	☐

Hazardous rating of proposed operating location	☐ Zone 1	☐ Zone 2	☐ Safe Area
Equipment certified for use in zone	☐ Zone 1	☐ Zone 2	☐ Safe Area
Ex Rating:	Certificate N°:		
Will Equipment remain operational after MODU Emergency Shut Down (ESD) is activated?	☐ Yes ☐ No	Certified Zone 2 suitable	☐ Yes ☐ No

Combustion engines (≥100 kW / 135 hp) situated in a Safe Area have been fitted with:	Automatic engine air intake shut-off valve (ABS 4-1-2/1.5)	☐
	Crankcase with explosion relief valves (MODU Code)	☐
	Automatic shutoff arrangements or alarms (MODU Code)	☐
	Starting-air reservoirs (2) with relief valves (ABS 4-2-6 9.3)	☐
Electrical equipment supplied with certificates for IEC compliance:	IECEx Assessment Certification (ABS MODU Part 4):	☐
	IEC 'Detailed' inspection conducted within 3 years	☐

	IEC 'Close' inspection conducted within 12 months	☐
	Operator approved alternative Electrical certification or Conformity Assessment Document (CAD)	☐
Service modules safe systems have:	DNVGL-ST-E272 Service Module Certification	☐
	Local means of Emergency Shut Down (ESD) (ABS MODU Part 4):	☐
	Battery or UPS requiring special shutdown:	☐
Is the Unit manned when hooked-up to MODU:	Permanently manned ☐ Normally unmanned ☐	

5. Identification of Safety System Features:

☐	Has signage	☐	Used at height or lifted overhead	☐	Has radioactive sources or explosives
☐	Has sound proofing	☐	Complies with DROPS Reliability Securing	☐	Has fire detection
☐	Has safety stop	☐	Has Emergency Shut Down (ESD)	☐	Has fire protection and fighting equip.
☐	Requires earthing	☐	Has own ventilation (incl. Aircon)	☐	Has gas detection
☐	Has confined space(s)	☐	Has public address system	☐	Has guarding or hand rails or fall arrest
☐	Has escape hatch	☐	Contains chemicals with MSDS	☐	Requires permit to work to operate
☐	Has spark arrestor	☐	Has flame arrestors & flame protection	☐	Requires periodic Lifting inspection
☐	Has cooling system	☐	Has safety valve or pressure relief valve	☐	Has overspeed protection

Equipment owner to identify - and Operator to highlight safe systems to check on install

6. Operator and End User Verification (and Validation) Requirements:

☐	System Validation by (IVB or SME):		Attachment	☐
☐	Equipment Verification Inspection by:		Attachment	☐
☐	Risk Assess, Improve, Safer Equipment (RAISE) Inspection by:		Attachment	☐
☐	DROPS Lifting Inspection by:		Attachment	☐
☐	Offshore Container Lifting Inspection by:		Attachment	☐
☐	Training & Competency checked by:		Attachment	☐

7. Compliance Documents Supplied:

☐	Operating instructions, procedures	
☐	Hazardous zone, safety system certification (if applicable)	
☐	Verification scheme, survey or product conformity certification (if applicable)	
☐	Intended maintenance program (for periods of extended service)	Must provide ongoing evidence.
☐	Key Certificates e.g. lifting cert, pressure vessel cert, PRV calibration etc.	

8. SCE Continued Suitability Assessment Plans (MODU Scope):

☐	Planned Assurance Activity (Incl. Validation)	Attachment	☐
☐	Planned Maintenance / Overhaul / Change-out	Attachment	☐
☐	Periodic Inspection / Survey / Test	Attachment	☐

9. Competent Technical Authority Declaration (if applicable):

☐ *I confirm the design criteria, risk assessment, certifications, maintenance history and supporting document for this equipment have been verified, on behalf of ____ ___.*

Name	Company Name	Job Title	Date	Signature

10. Equipment Owner Declaration:

☐ *I confirm that the information provided in this checklist is accurate and demonstrates the equipment has been inspected, maintained and certified in accordance with the applicable requirements.*

Name	Company Name	Job Title	Date	Signature

11. MODU (Operator) Authorisation:

☐ *Based upon the information provided by the Equipment Owner described above, this equipment is accepted for transport to, and use on board this MODU.*

Name	Company Name	Job Title	Date	Signature

☐ ***Flagged safe systems have been checked as part of the install***

APPENDIX C: SAMPLE PMITP VERIFICATION MATRIX

Temporary Equipment Provider				Preventative Maintenance, Inspection & Test Program (PMITP) - Verification Matrix																																Document No.		
				1.0 Source				2.0 Notices		3.0 Manufacturing			4.0 NDT			5.0 Maintenance					6.0 Assembly			7.0 Testing					8.0 Product Certification								9.0 Release		References
				Critical Equipment (C), Safety Critical Equipment (SCE)	Supplied New or Used	Sub Contracted or Externally Prepared	Critical Spares	Manifest and Serial Number	Deviation / Waiver / Exemption	Manufacturers Certificate of Conformance (MCoC)	Material Test Reports (MTR)	Material Data Report (MDR)	Referenced Procedure	Non Destructive Testing (NDT)	Critical Measurements	Modification / Technical or Safety Alert	Preventative Maintenance Level	Replacement Parts and Elastomers	Repair / Hot Work	Fluids and Lubricants	Assembly Procedure / Work Instructions	Assembly / Build	Make Up / Applied Torque	Function Testing	Pressure Testing	Calibration / Software	Acceptance Testing / System Integration Testing	Final Inspection	Independent Design Certification	Pressure Vessel or Pressurised Equipment Certification / Inspection	Hazardous Area Certification / Inspection	Electrical Certification	Dangerous Goods / Safety Certification	Lifting Certification / Inspection	DROPS Inspection	MODU Temporary Equipment	Lifting Release Certificate	Inspection Release Certificate	1. Manual 2. Procedure 3. Job Card, Work Order 4. Acceptance Criteria
Item	Equipment Description	Part No.	Serial No.	1.1	1.2	1.3	1.4	2.1	2.2	3.1	3.2	3.3	4.1	4.2	4.3	5.1	5.2	5.3	5.4	5.5	6.1	6.2	6.3	7.1	7.2	7.3	7.4	7.5	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	9.1	9.2	
1	Example Temporary Equipment			SCE	USED	V		V	H			D				V	V	X	X	V		V		V	V		D	D	D	D	D	D	D	D	D	H	H	
2	Example Tool			C	USED	V		V	H	V	V	V	V	W	D		V	V		X				D	W	V		W				D		D				H	
3	Example Container			SCE	USED	V		V	H																				D					D	V		H		

Legend

V = Verify	Customer verification of quality control record
D = Verify and document record	Customer verification of quality control record and retain
H = Hold point for attendance	Verification activity must be attended by Customer (48 hours notice required) and cannot proceed unless authorised, approved or released by Customer
W = Witness activity	Verification activity intended to be witnessed by Customer (48 hours notice required)
S = Sample verification	Random sample record verification by Customer, or sample as applicable
X = No action required	No quality control verification required by Customer

APPENDIX D: ISO AND API STANDARDS

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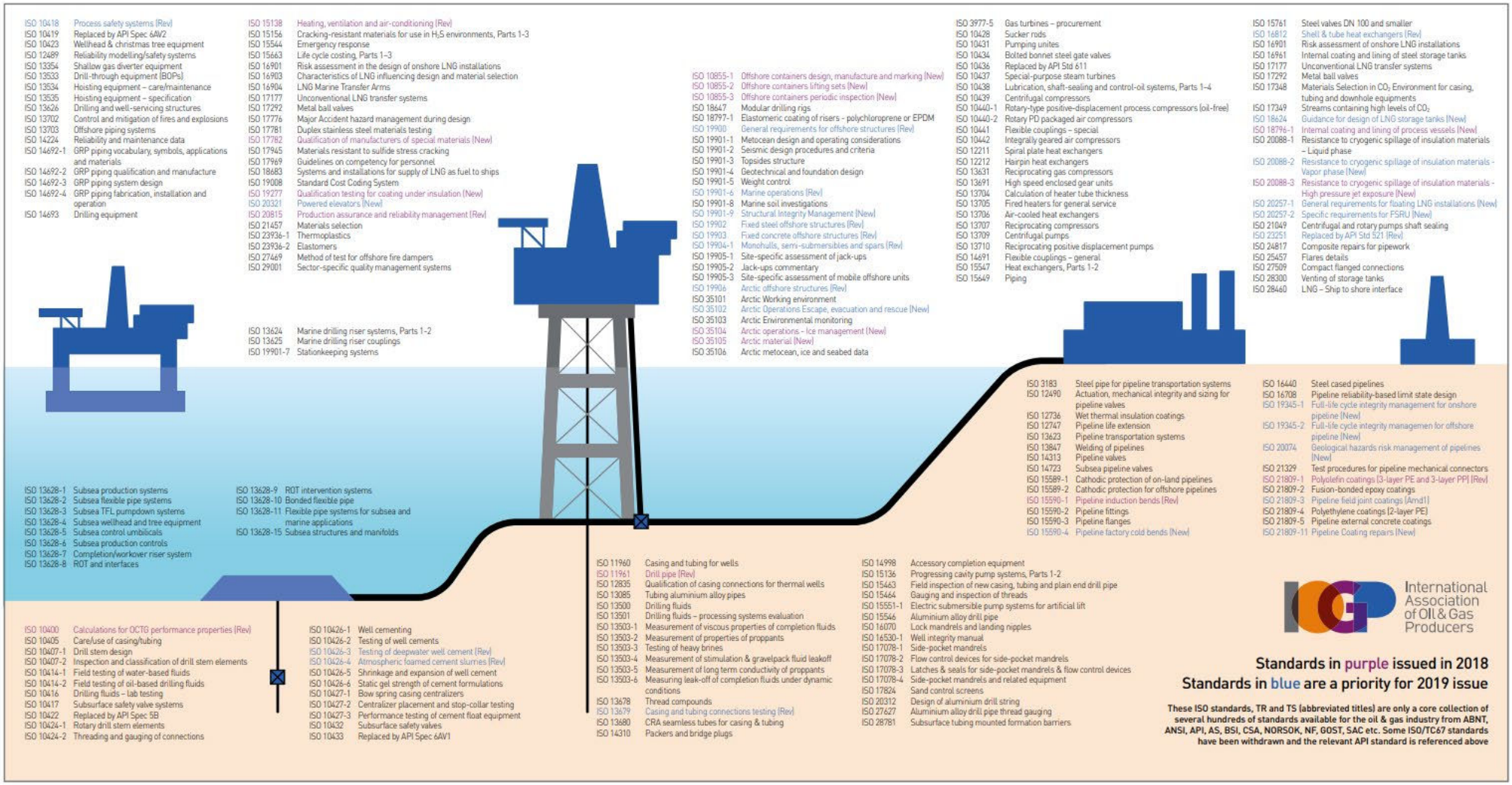
ISO Standards for use in the oil & gas industry



APPENDIX D: ISO AND API STANDARDS

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APPENDIX E: FEEDBACK FORM

Please complete details below and email to:

Jason Medd
Director Environment, Health & Safety
jmedd@appea.com.au

Name:		**Position/Title**:	
Email:		**Company**:	
Phone:		**Date**:	

Page	Section no.	Comments/Feedback