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The Offshore Safety Regulations – Third Party Validation, Verification and Classification.

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- Lloyd's Register is a global organisation with a mission to protect life and property and advance transportation and engineering education and research
- We work in the marine, transportation, energy and management systems sectors
- Our parent entity is a charity, Lloyd's Register Foundation. Our operating company, Lloyd's Register Group Limited, generates the profits that fund our public benefit activities.
- Our reputation as an independent body – with safety, integrity and high standards as its guiding principles. We are uniquely placed to offer advice free from commercial constraints and to finding ways to improve how businesses operate, whether by carrying out our own research, funding others or providing training.

Lloyd's Register services to the energy industry

Lloyd's Register Group Overview



Energy



Marine



Transportation



Management systems

**7,885
employees
worldwide**

**237 cities
and towns
with
Group
offices**

**Established
in 1760**

**LRET
distributed
more than
£26M**

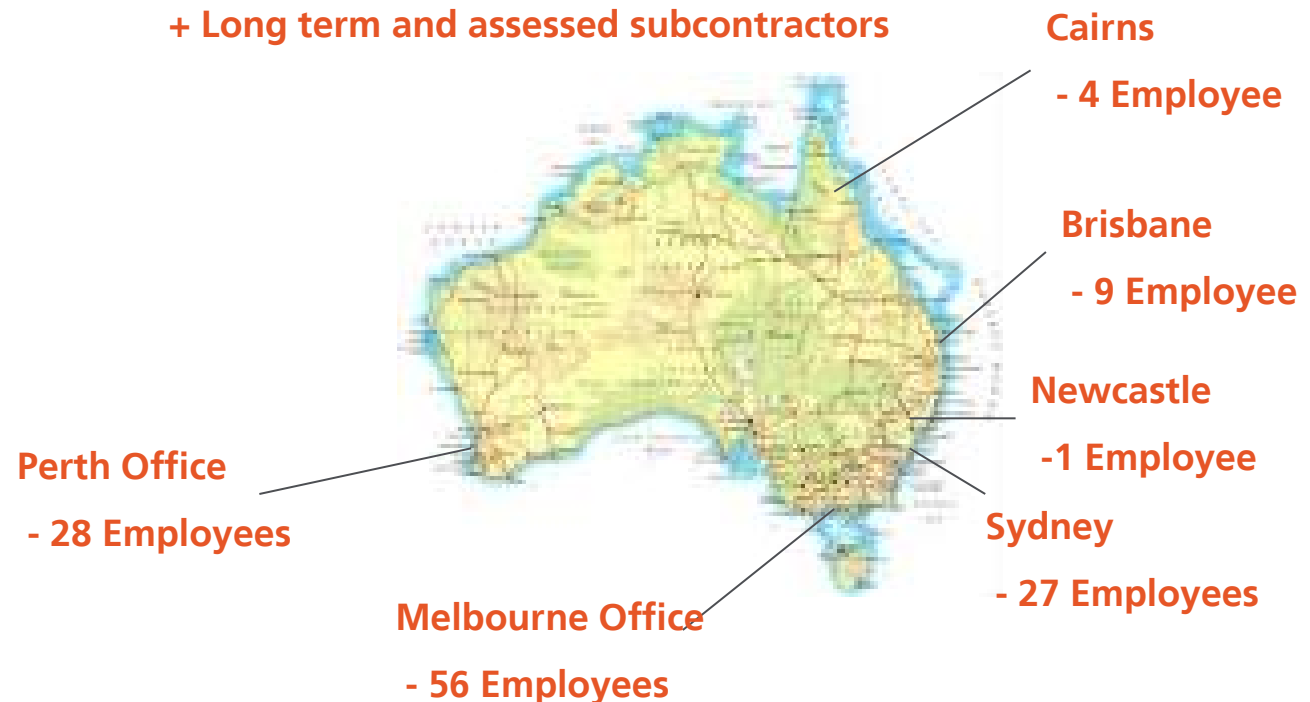
Lloyd's Register Energy

Lloyds Register Australia

- Sustained presence in Australia since 1871
- Operating in Australian Energy Market 1955
- Projects throughout:
 - Offshore Bass Strait and North West Shelf
 - Large multi nationals in Australia
 - Onshore manufacturing / refining
 - Onshore oil and gas
 - Onshore and offshore fabrication market

+ 33 Drilling Integrity Services Staff

+ Long term and assessed subcontractors



Australian Offshore Requirements – Validation, Verification and Classification.

Agenda

- A summary of Australian offshore regulatory requirements as administered by NOPSEMA, the various States and Territories Regulators.
- A focus on NOPSEMA requirements.
- What is Validation?
- Where do Verification, Classification and Flag state requirements come in?

Australian Regulatory Summary 1 of 2

NOPSEMA's Legislation and Regulations web page:

<http://www.nopsema.gov.au/legislation-and-regulations/>

For offshore "facilities" there may be Commonwealth, State, Territory (or Timor Sea JPDA) waters requirements applicable to location of the particular facility.

For facilities in Commonwealth waters the applicable safety regulations are:

Offshore Petroleum & Greenhouse Gas Storage (Safety) Regulations 2009 - OPGGS(S)R.

State and Territory regulations generally mimic OPGGS(S)R requirements, however most have their own export Pipeline Regulations which may include reception plant onshore.

Australian Regulatory Summary 2 of 2

For new offshore facilities (and for significant modifications to existing facilities), the regulations generally require

- A new safety case, or modifications to an existing safety case.
- For OPGGS(S)R and equivalent State or Territory regs, a "Validation", conducted by an independent competent party, where required by the Regulator. Verification (and, where applicable, Classification) activities are required in addition (to support the safety case) and these will effectively underpin Validation.
- Under State or Territory Pipeline regulations, independent "Verification" (but typically governed by similar processes to those for Validation and Verification).

NOPSEMA's Validation web page:

[http:// www.nopsema.gov.au/safety/safety-case/validation/](http://www.nopsema.gov.au/safety/safety-case/validation/)

Validation process

Process to be followed by the operator of every “offshore facility” associated with a project requiring Validation comprises:

- HAZID to identify Major Accident Events (MAE) – multiple fatality events
- identify Safety Critical Elements (SCE) that prevent or mitigate MAEs
- establish suitable codes and standards/performance standards for each SCE which are consistent with the formal safety assessment
- appoint an independent Validator
- prepare a Scope of Validation (SOV) for all SCEs documenting the above for the project design, construction and installation phases
- plan and implement Validation and ensure deliverable clear of caveats
- submit Validation Statement to the Regulator in good time to support safety case approval.

Validation applicability

Regulator's decision - applicable to offshore facilities as defined by the OPGGS(S)R and equivalent State and Territory regulations, but "Validation" does not currently appear as a definition or concept in State and Territory Export Pipeline regulations.

Typical "offshore facilities" expected to require validation by virtue of identified MAEs and SCEs:

- FLNG, FPSO, FOI, FPU and TLP facilities, risers and mooring system
- fixed platforms (GBS and Piled) and risers
- Safety critical subsea equipment and flowlines (e.g. in close proximity to the above)
- export pipelines
- critical well controls and subsea equipment forming a key part of the ESD system
- remote subsea equipment lifting arrangements (padeyes, etc.)
- field installation and construction vessels, where defined as "facilities" in **OPGGS(S)R**
- drilling and workover vessels – Semis, Jackups, Drillships.

Operator for each facility holds the legal responsibility

Validation Policy and Guidelines

A statement in writing by an independent validator regarding the agreed matters (design, construction, installation) to the extent covered by the scope of validation developed by the operator and agreed by NOPSEMA.

NOPSEMA's Validation Guidelines N-04200-GL0525, include the following.

- Validation definition versus verification and classification (the latter being clarified as required as part of the safety case)
- Formal "Scope of Validation" required by NOPSEMA
- Selection and agreement of codes and standards to be used
- Validation deliverables
- Validation sequencing versus safety case
- Relationship of Classification to Validation
- Independence of the Validator and Conflict of interest policy

Scope of Validation

- As per NOPSEMA Guidance Notes to Validation N-04200-GL0525 the deliverable of Validation should be assurance that:
 - a) For all safety critical elements covered by the agreed scope of validation, the design, construction and installation codes and standards applied in relation to a facility are appropriate;
 - b) That if these codes and standards are used then the design, construction, and installation of the facility will incorporate measures that will protect the health and safety of person at the facility and are consistent with the formal safety assessment for the facility, where appropriate.
- Review of Safety Assessments comprising the “Formal Safety Assessment”.
- Review of List of Safety Critical Elements and associated design, construction and installation Codes and Standards (which may or may not include formal Performance Standards, since these are not mandatory for design) .
- Full review of Basis of Design, high level specifications and philosophies for design, construction and installation to ensure the specified codes and standards for each SCE have been carried through and correctly interpreted into the top level of the design.
- Review selected detailed design, construction and installation deliverables (drawings, analyses, datasheets, etc) to further ensure application of the specified codes and standards to the level of detailed design (should include documents defining how construction and installation will be controlled).

Verification, Classification and Flag

- Current NOPSEMA guidance makes the distinction that the process of physically checking the design, construction, installation and commissioning of a facility for compliance with agreed codes and standards and against formal safety assessment requirements is a separate activity from Validation. This process is required to establish the compliance of the facilities with the formal safety assessment as a part of the safety case and is termed verification in NOPSEMA guidelines.
- Classification and flag state certification can be regarded as a form of verification.
- Independent verification and classification activities can deliver Validation, provided independence from project design, construction and installation activities is maintained by the body concerned.
- Notwithstanding the above, Independent Validation still includes a review of selected design data as detailed in the previous slide.
- State and Territory pipeline regulations generally require independent Verification only but do not define the scope of work required.

The role of Classification and Flag, 1 of 2

When agreeing the scope of validation for facilities subject to marine classification, the marine classification certification may be accepted as providing the reasonable level of assurance that those elements of the vessel to which they apply incorporate measures to protect the health and safety of the facility, as required by the regulations.

(NOPSEMA Validation Guideline, Ref. N-04200-GL0525)

- The hull and the primary marine systems will be included in list of Safety Critical Elements (SCEs) - however, it is likely that classification will not capture all SCEs
- All SCEs will require suitable design codes and standards
 - Are there really suitable alternative standards for hull and marine?
- Class is the recognised hull and machinery standard for regulators, financiers and marine underwriters
- For disconnectable offshore installations, Classification and Flag is mandatory
- For fixed non-disconnectable offshore installations, Classification and Flag is not mandatory. However, we understand that AMSA as the responsible coastal state will require the installation to remain MARPOL compliant.

The role of Classification and Flag, 2 of 2

Class rules and IMO regulations will help to address the following primary concerns:

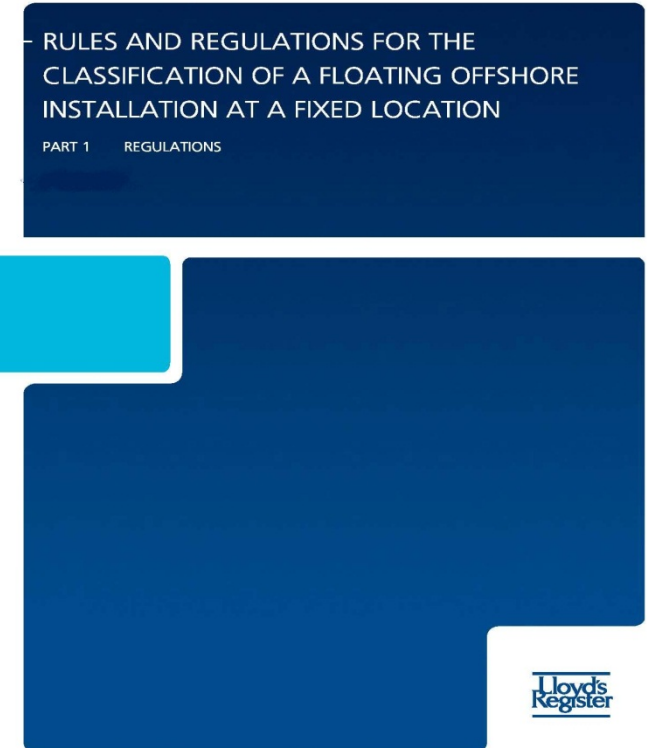
- Is the hull strong enough to withstand all foreseeable loads, considering it will be in a fixed location?
- Is the hull design tough enough to withstand the high and low cycle fatigue loadings?
- Will the containment system achieve the required service life free from failure
- In the event of a major incident, are there adequate means of protecting personnel, allowing them to escape and ultimately to evacuate the installation
- Will the hydrodynamic performance protect the topside equipment from green water and from undue loadings?
- Can the unit maintain a benign orientation for efficient cargo offtake?
- Navigation (propulsion and steering) for disconnectables.

What is included in Classification (and Flag)

- Hull Structures and Cargo Containment Systems.
- Topsides Supports structure/Interface (Strength/Fatigue).
- Mooring System.
- Essential marine equipment (bilge, ballast, power, propulsion and steering).
- Fire Protection, Active and Passive.
- Marine essential Emergency generators and UPS.
- Essential marine Shutdown, Control and Detection Systems.
- Stability, Intact and Damaged.
- Control of discharges (MARPOL)
- Nav aids.
- Life Saving equipment, PPE, escape and evacuation.
- Essential marine cranes and lifting appliances.
- Optionally – Topsides Process Plant, Production Risers, Offloading systems, non-essential Control Systems, Cranes and lifting appliances, Helidecks, etc

LR Rules Development

- The LR Rules for Floating Offshore Facilities are currently being revised and are due for release April 2013.
- The LR FLNG Rules will form part 11 of the LR Rules for “Floating Offshore Installations”. They will be based on the new IGC Code due for release in the next couple of years.
- New LR FLNG rules will be accompanied by a guideline section for topside, utilities and interfaces systems
- FLNG Rules are currently on their way to the external peer review committee which is composed of senior experts from the international community.



Harmonising Classification Rules with the Regulatory Regime – LR Risk based Classification Approach

LR supports a Risk-based approach to offshore facilities, in the “LR Rules and Regulation for the Classification of a Floating Offshore Installation at Fixed Location” part 1A:

Risk assessment may be used to define the basis of classification, by:

- (a) identifying the hazards to safety and integrity of the installation, and evaluating them considering both consequence and frequency;
- (b) identifying systems or elements of the installation that are critical in relation to the hazards; and
- (c) defining performance standards which the critical systems or elements must meet to prevent, detect, control, mitigate or recover from, the identified hazards.

Lloyd's Register services to the energy industry

Thank you for your attention.
Any Questions?



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