

GN Outline - Vessel facilities exposed to external hydrocarbon hazards

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- Introduction
- Facilities, AOPs and Vessels
- GN Outline

Introduction

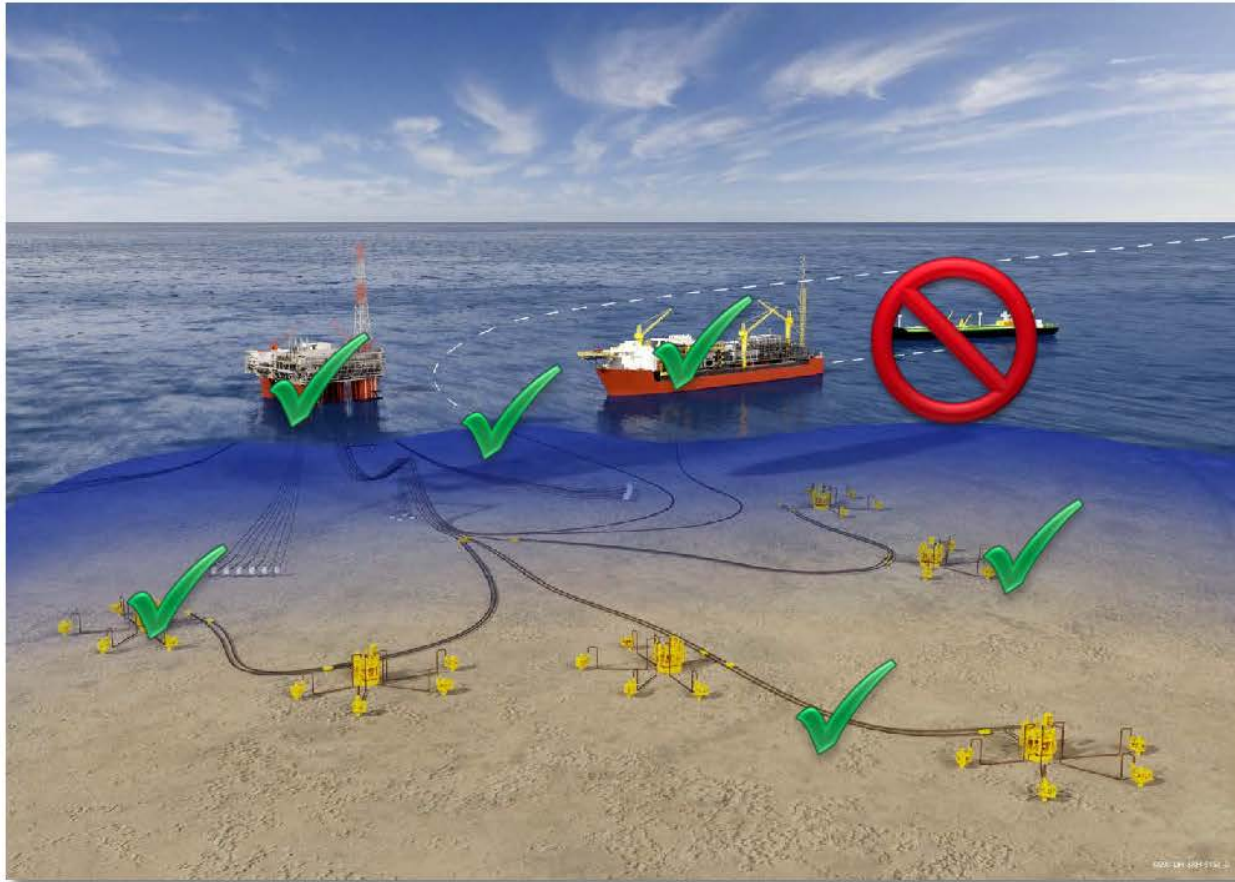


- Specifically for vessel facilities exposed to external hydrocarbon hazards
- Focus on activities, HAZID, FERA, EERA and hydrocarbon emergency control measures
- Links to existing SC GNs

Facilities, Associated Offshore Places and Vessels

OPGGSA Schedule 3, clause 4

- (1) A vessel or structure is taken to be a facility for the purposes of this Schedule while that vessel or structure:
 - (a) is located at a site in Commonwealth waters; and
 - (b) is being used, or prepared for use, at that site:
 - (i) for the recovery of petroleum, for the processing of petroleum, or for the storage and offloading of petroleum, or for any combination of those activities
- (4) A vessel or structure used for a purpose referred to in subparagraph (1)(b)(i) includes:
 - (a) any wells and associated plant and equipment by means of which petroleum processed or stored at the vessel or structure is recovered; and
 - (b) any pipe or system of pipes through which petroleum is conveyed from a well to the vessel or structure; and
 - (c) any secondary line associated with the vessel or structure.



OPGGSA Schedule 3, clause 4

- (1) A vessel or structure is taken to be a facility for the purposes of this Schedule while that vessel or structure:
 - (a) is located at a site in Commonwealth waters; and
 - (b) is being used, or prepared for use, at that site:
 - (ii) for the provision of accommodation for persons working on another facility, whether connected by a walkway to that other facility or not; or
 - (iii) for drilling or servicing a well for petroleum or doing work associated with the drilling or servicing process; or
 - (iv) for laying pipes for petroleum, including any manufacturing of such pipes, or for doing work on an existing pipe; or
 - (v) for the erection, dismantling or decommissioning of a vessel or structure referred to in a previous subparagraph of this paragraph

- OPGGS(S) Reg 1.6 – activities that exclude a vessel or structure from being a facility
- OPGGS(S) Reg 1.7 (1) – activities that exclude a vessel or structure from being an AOP
- Diving and dumb barge hipped up to facility not excluded from being an AOP
- Reg 1.7(1) **does not apply** where **“a facility is causing a risk (other than an ordinary marine risk) to the vessel or to persons on the vessel”**, e.g. from hydrocarbon hazards

GN Outline

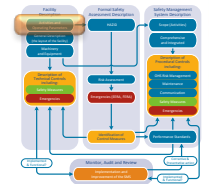
- What
 - Activities
- Where
 - Location and associated features
- When
 - Time of year and associated met ocean implications
- How
 - Techniques, equipment and people



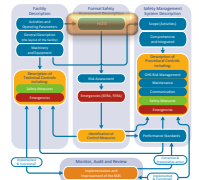
- Project Specific scope
 - Operational boundaries well defined, access to actual data from facility operator
 - Likely to be a simpler case with less uncertainty >> less conservatism anticipated
 - Should result in the incorporation of only additional control measures that will be required
 - Revisions on a per project basis as required



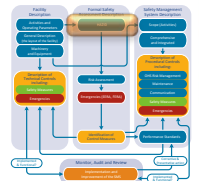
- Generic (non-project specific) scope
 - Requires operational boundaries to be assumed and associated data sourced or estimated
 - Potentially more complex case with higher levels of uncertainty >> more conservatism expected.
 - May result in the incorporation of additional control measures that are seldom required.
 - Revisions based on proposed work vs operational boundaries of case, requires review for each project



- Hazards with the ***potential*** to cause an MAE
- Hydrocarbon hazards associated with **vessel facility activities, and;**
- Hydrocarbon hazards from concurrent activities by **other facilities and / or vessels** with the potential to impinge on vessel facility



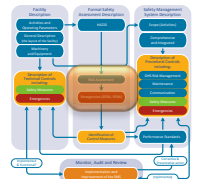
- Hydrocarbon inventories:
 - Wells
 - Risers
 - Flowlines/Pipelines
 - Topsides facilities
 - Platforms
 - FPSO/FSO
- Fluid compositions



- Fires & explosion that could occur at the facility
- Consider a range of measures for:
 - Detection, Elimination & Risk reduction
 - Manual and automatic detection, control & extinguishing fires and leaks or escapes of petroleum
 - Isolating & storing hazardous substances
- Consider the EERA for fires and explosions
- Identify measures to reduce risks to ALARP



- Considerations:
 - Jet fires from a production facility
 - Sea fires
 - Pool fires on the vessel facility
 - Gas and vapour cloud explosions
 - At an adjacent facility
 - At the vessel facility



- Considerations:
 - Provision of fixed gas detection at key locations such as:
 - Around outer decks and elevated locations,
 - Moon-pools,
 - large cranes,
 - ventilation inlets for engine room(s), machinery spaces, emergency generators and accommodation spaces and muster areas.



- Vessel ESD systems typically:
 - focused on containing internal fires (engine rooms & machinery spaces, accommodation, cargo holds).
 - do not address redundant systems used to contain and control such internal fires

- Production facility ESD systems typically:
 - Focused on minimising fires & explosions
 - Cascaded from local to entire facility black-out



- Considerations:
 - What to shutdown (deck loads, cranes, → everything except emergency systems)
 - Where (local, Bridge, Bridge & local)
 - When (inputs, criteria)
 - How (Manual, Semi-Automatic, Automatic)
 - Why (fire & explosion prevention)



- Considerations
 - EX rated emergency equipment, lighting, PA etc
 - Isolation of cranes and other vessel equipment
 - Isolation of 3rd party deck equipment
 - Emergency disconnect/release systems
 - Ventilation Shutdowns & damper closures



- Client provided controls
 - How do you assure yourself they are functional
- Details of fluids
 - composition, pressure, volume
- Dispersion modelling
 - Input into FERA



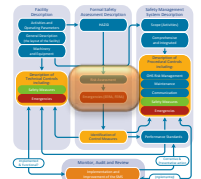
- Emergencies that could occur at the facility
- Consider a range of measures for:
 - Primary & secondary evacuation & escape routes
 - Procedures for managing evacuation, escape & rescue
 - Means of, & equipment for, evacuation, escape & rescue
 - Amenities and emergency communication for TR
 - Life saving equipment
- Identify measures to reduce risks to ALARP



- Considerations:
 - Vessel position vs hydrocarbon hazards
 - Drift-on, drift-off
 - Drive-off
 - Black ships + drift-off
 - TEMPSC



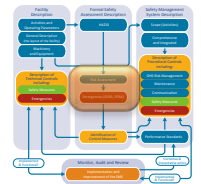
- Considerations:
 - Emergency disconnect/fail-safe
 - Soft tethers
 - Cranes with Manual Override Protection Systems
 - TEMPSC vs lifeboat



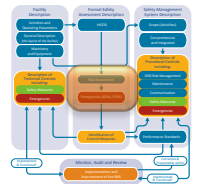
- Considerations:
 - Location with respect to hydrocarbon hazards and means of evacuation
 - Level of protection from hydrocarbon events
 - Capacity
 - Communications
 - Ventilation



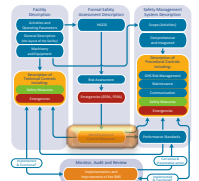
- ESSA - A technique for demonstrating that equipment intended to function, or to be used, in an emergency— is fit for its function or use in the emergency (OPGG(S) Reg 2.14 (2) (b))
- Dispersion modelling – commonly used for subsea releases.



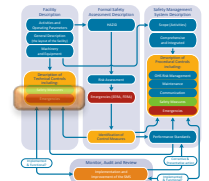
- Considerations
 - Clear linkage to emergencies identified in FSA
 - Unambiguous descriptions of hydrocarbon event emergency responses
 - Drills and exercises for hydrocarbon related events
 - Timeliness of hydrocarbon related event drills
 - Interface with production facility plan
 - Performance standards



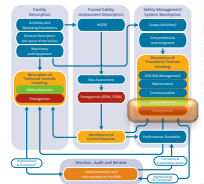
- Considerations
 - Existing vessel controls & new additions
 - Prevention vs mitigation
 - Uncertainty & conservatism
 - Client provided controls
 - Risk reduction & ALARP



- A description that gives details of facility:
 - Layout
 - Technical control measures
 - Activities
- Specific provisions eg:
 - Safety related machinery and equipment
 - Medical and Pharmaceutical supplies
 - Emergency comms, control systems



- A detailed description of the SMS, that is:
 - Is comprehensive and integrated
 - Provides for risk management
 - inspection testing and maintenance of control measures
- Specific provisions for:
 - Command structure
 - Workforce competency
 - Emergency preparedness and medical services



Any further questions or suggestions?