

Challenge(s) posed by Man-Made Structures in the Marine Environment

- and the case for a better Engineering/Scientific Mix in order to deliver Sustainable Solutions



Marine Alliance for
Science and Technology for Scotland



MASTS : VISION & IMPLEMENTATION

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MASTS was launched on 4 November 2009 in Edinburgh following the award of seven years funding by the Scottish Funding Council (SFC).

This pooling of marine research talent has a constituency of some 700 researchers.

MASTS will promote the following primary goals:

- To support a healthier environment as a result of better informed policies to manage human activity based on the best available scientific knowledge (BASK)
- To promote wealth creation and environmental protection facilitated by sound science supporting industries such as renewable energy, marine fisheries and aquaculture



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Cross-sector...wet salvage, dry salvage, oil & gas sector, 'renewables' as each sector (and the marine environment) are subject to the same principles of physics, regardless of the activity.

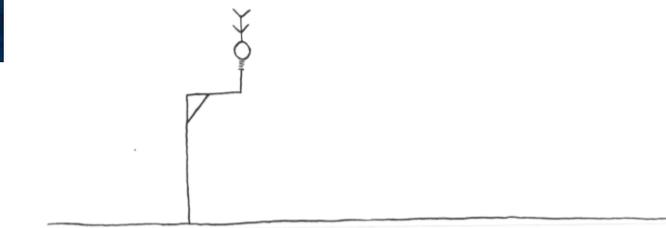
Discussion Document:

Developing a Consistent, Cross-Sector Approach for Assessing the Impact of Man-Made Objects, Materials and Substances

(MMOMS)

on the Marine Environment

IF YOU BREAK THE LAW OF GRAVITY THE PENALTY IS HANGING



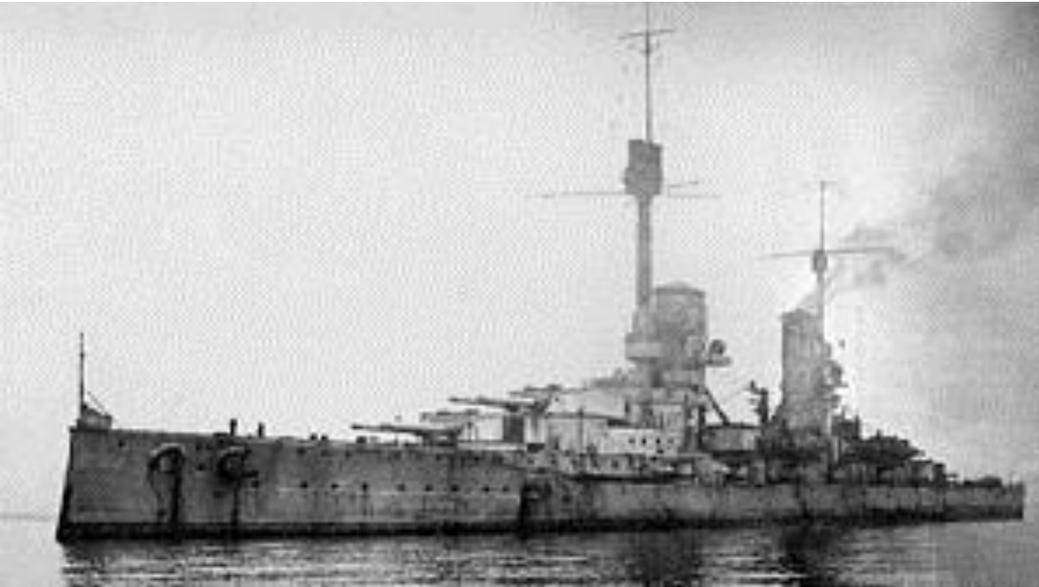
Great Lies to Tell Small Kids
by Andy Riley

Terms of Reference

- (a) The encouragement and creation of framework for the development of **technologies and sciences** involved in the:
salvage, removal and/or stabilisation of man-made structures, objects and property in the marine environment
- (b) The encouragement and creation of framework for the development of **technologies and sciences** involved in the recovery, removal, remediation and containment of hazardous and noxious materials or substances in the marine environment .

Regardless of how these structures, objects, property, materials or substances entered into the marine environment, i.e. as part of a planned build/operation or accidentally.

QUEST FOR CONSISTENCY



Kronprinz: 177.7 m x 29.5 m - deliberately scuttled...
Nominal Displacement: 25,797 tonnes
Fuel Capacity: 700 Tonnes Coal/700 tonnes oil
Fuel still onboard: unknown
Location: Scapa Flow

Designated as a 'National Monument' by Historic Scotland



Brent Spar: 147 m x 29 m diameter
Weight: 14,500 tonnes
Displacement: 66,000 tonnes
Hydrocarbons onboard: Shell Estimate 50,700kg
DNV Estimate 75,000 - 100,000kg

Location: in a Norwegian fjord 'sliced into rings on the seabed to form the foundation of a quay for roll-on/roll-off ferries

Q1: What evidence is there to suggest that the partial removal of an offshore installation will be less environmentally harmful than the complete removal of an installation?

- ii) Our company has experience of working over 70 wrecks around the British Isles, ranging from 50 tons to 17,000 tons, and lying at all depths down to 400ft.

We would concur with Dr Picken of Aberdeen University* that offshore installations, like wrecks, are *de facto* artificial reefs, and our experience would support his findings that wrecks, like installations, sustain a far higher population of marine life than the surrounding areas.

On all the wrecks we have worked there have been considerable numbers of fish, most notably the species saithe. In addition, our cargo recovery work (during which we have excavated hundreds of tonnes of steel and all sorts of cargo) has revealed extremely high levels of lower marine life living on and within the wrecks.

Therefore, our conclusion from what we have observed, is that installations, like wrecks, have a beneficial effect on the marine environment; and that their complete removal would be 'harmful' in so much as it would remove the structures that conferred the benefit.

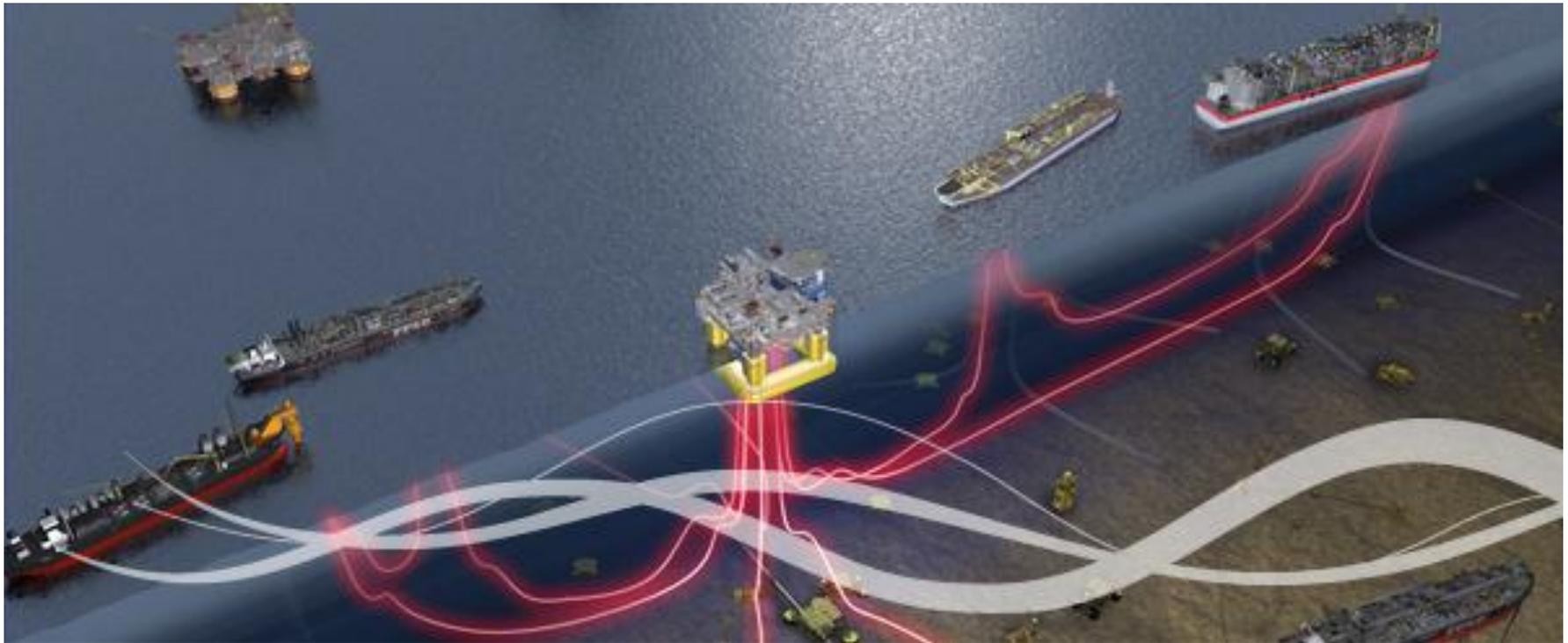
Programmes and Measures

2. **The dumping, and the leaving wholly or partly in place, of disused offshore installations within the maritime area is prohibited.**
3. By way of derogation from paragraph 2, if the competent authority of the relevant Contracting Party is satisfied that an assessment in accordance with Annex 2 shows that there are significant reasons why an alternative disposal mentioned below is preferable to reuse or recycling or final disposal on land, it may issue a permit for
 - a. all or part of the footings of a steel installation in a category listed in Annex 1, placed in the maritime area before 9 February 1999, to be left in place;
 - b. a concrete installation in a category listed in Annex 1 or constituting a concrete anchor base, to be dumped or left wholly or partly in place;
 - c. any other disused offshore installation to be dumped or left wholly or partly in place, when exceptional and unforeseen circumstances resulting from structural damage or deterioration, or from some other cause presenting equivalent difficulties, can be demonstrated.

ROLE OF SCIENCE?/ROLE OF MASTS?

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This is not just a local, historical issue. It is global and also concerns every piece of infrastructure that is being and shall be placed in the marine environment in the oil and gas sector.



Must be more than just monitoring and counting of species – a fundamental understanding of the processes that are occurring has to be gained...these begin the moment structures and equipment are put into the environment.

- Formation of the International Science Advisory Board by Oil & Gas UK – Funding of its JIP
- MoD has contracted for research to produce a methodology for the assessment of ecology and impact on the marine environment posed by ship wrecks
(Note: Potentially Polluting Wrecks Database includes 23,500 post 1870 wrecks around world. 1,500 are MoD's responsibility which excludes small wrecks e.g. trawlers pulled into military service. Dept. of Transport has 6,000 wrecks)
- SOI /MASTS/DNV discussions on the development a DNV Recommended Practice for the *Collection and Analysis of Data related to the Impact of Steel and Concrete Structures in the Marine Environment*

Go as far as you can see and then you'll see further....Thomas Carlyle

- **WORKSHOP TODAY!**