



Long term sponsor:



The Approval Process to Support Subsea Dispersant Use

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Cefas

Interspill, London, 14th March 2012

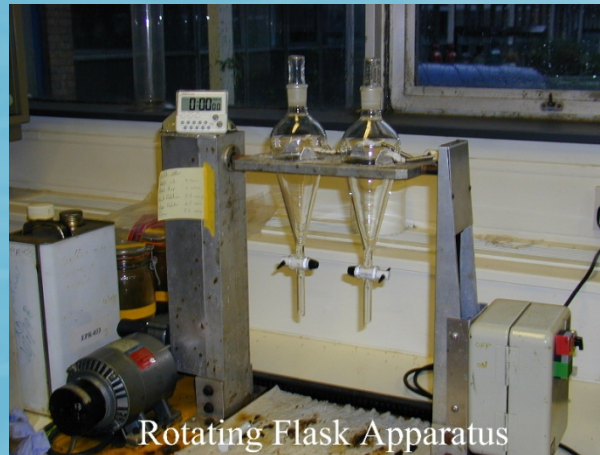
The Current Process

- Important Distinction:
 - An ‘approved’ product
 - An ‘approval’ to use a product during an incident.

The Current Process

To appear on the UK approved list a product has to be assessed through a scheme administered by the Marine Management Organisation:

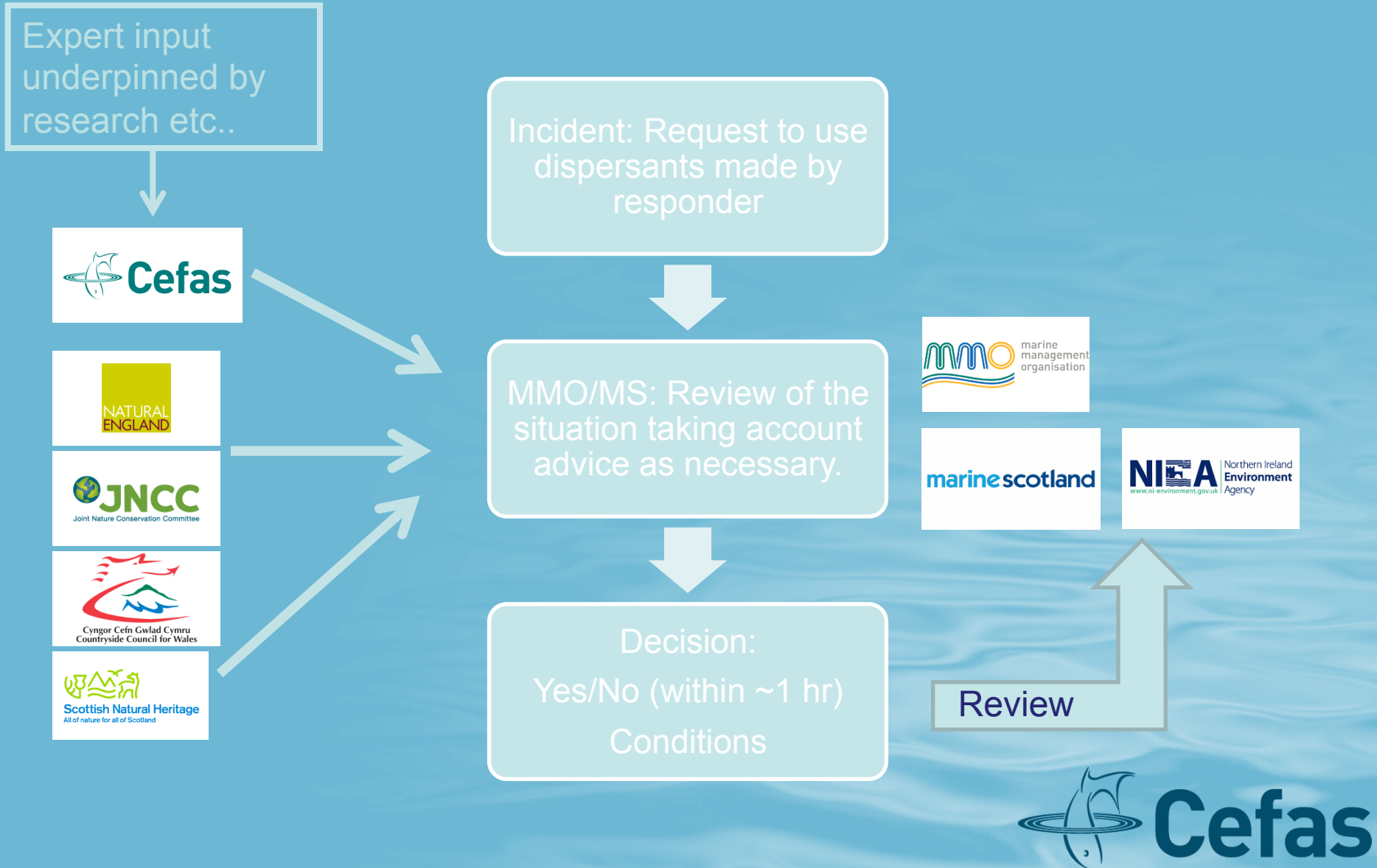
- The assessment process involves toxicity and efficacy assessments



The Current Process

Approval to use a product is granted on a case by case basis by the regulators (MMO or Marine Scotland) taking account of scientific and conservation advice.

The Current Process



The Current Process

Expert input
underpinned by
research etc..



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**NATURAL
ENGLAND**



JNCC
Joint Nature Conservation Committee



Cyngor Cefn Gwlad Cymru
Countryside Council for Wales



Scottish Natural Heritage
All of nature for all of Scotland

Incident: Request to use
dispersants made by
responder



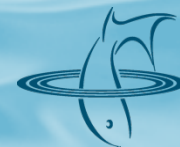
MMO/MS: Review of the
situation taking account
advice as necessary.



Decision:
Yes/No (within ~1 hr)
Conditions



Review



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Sufficient knowledge,
understanding and information
for subsea events?

OSPRAG/OSRF Review



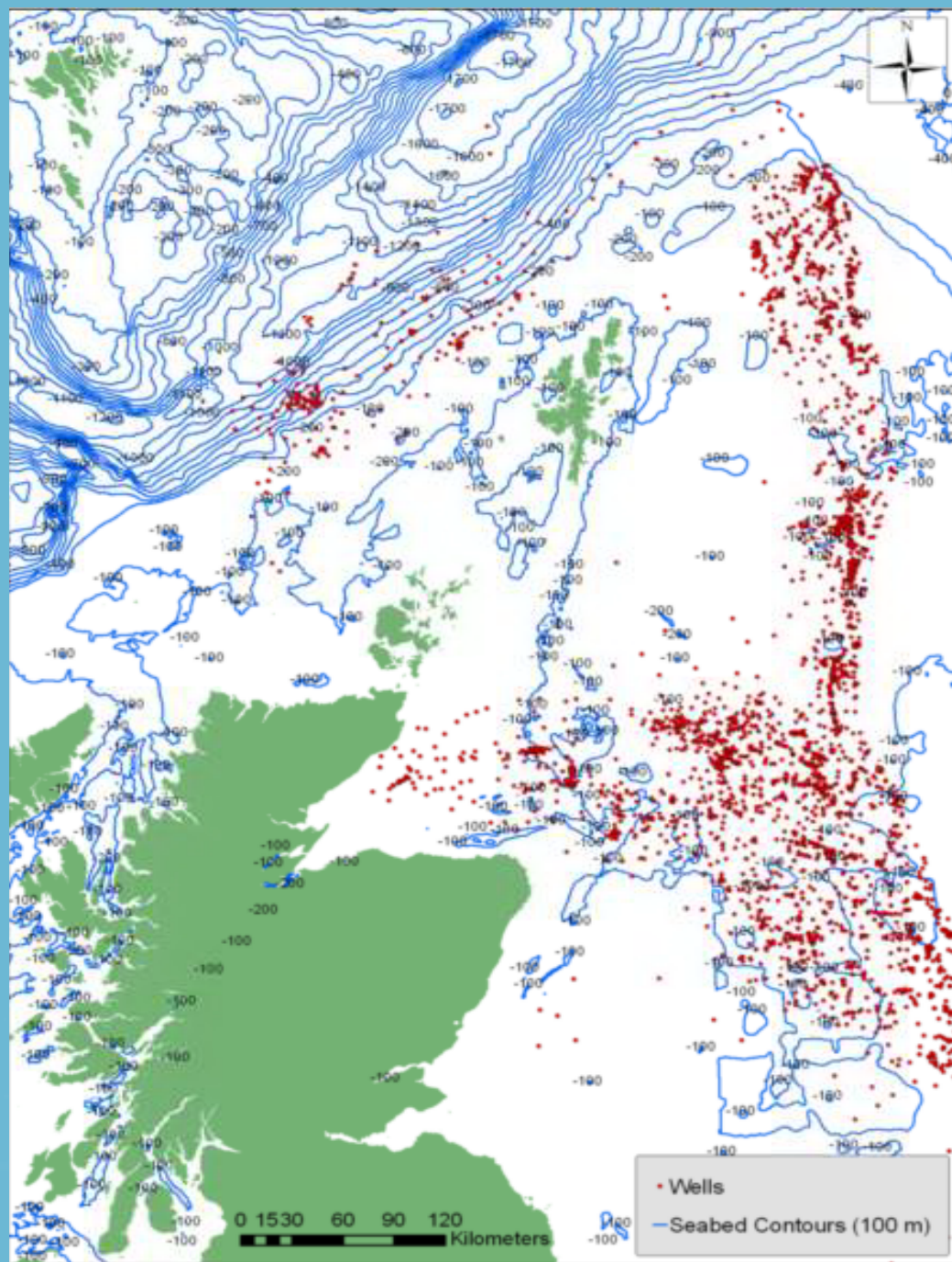
Under Review

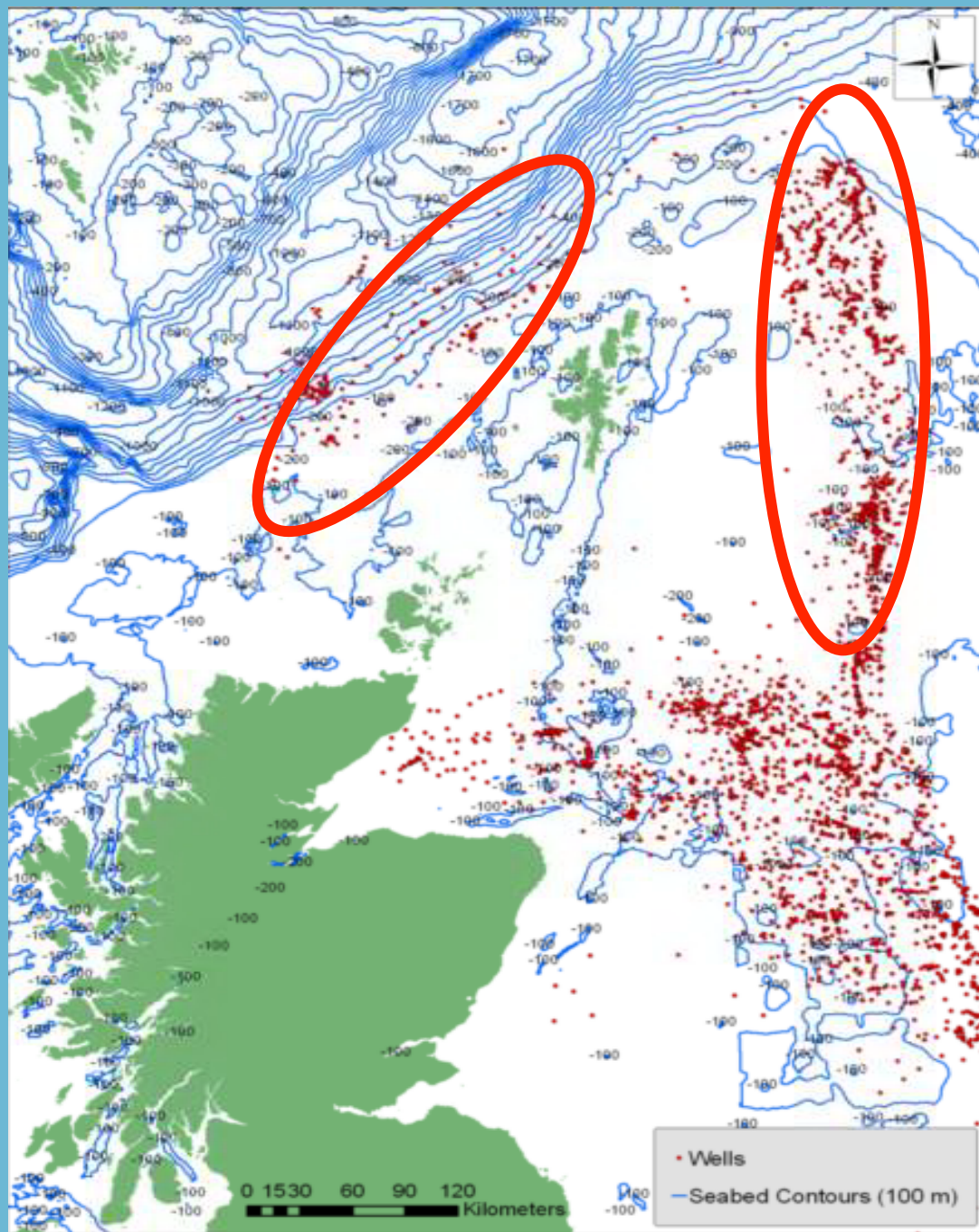
Aims

- To produce a report (scoping study) outlining the current state of knowledge, gaps in understanding and proposed research needs pertaining to the use of dispersants to treat subsea releases of oil from well blowout scenarios.
- The report aims to address the specific priority issues as raised by the regulators for dispersant use in UK waters (Marine Management Organisation and Marine Scotland)

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Dispersant application issues

- *Efficiency under subsea conditions*
- *Necessary dispersant/oil ratios*

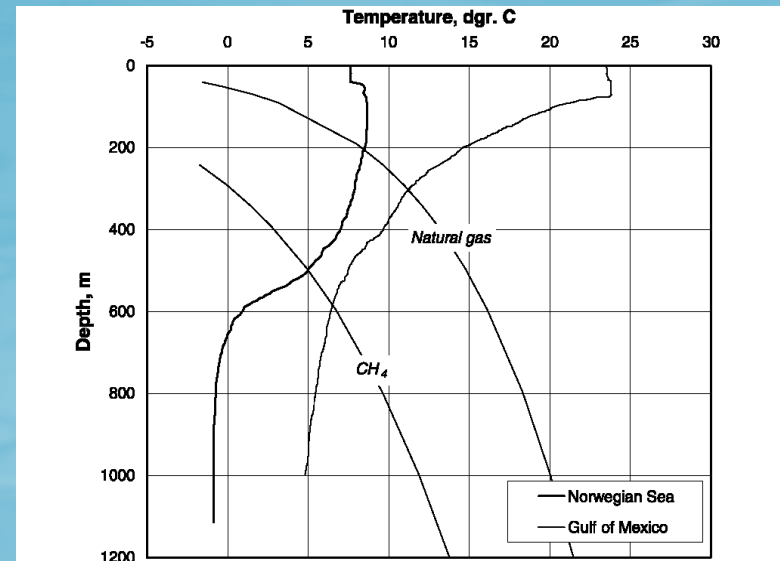
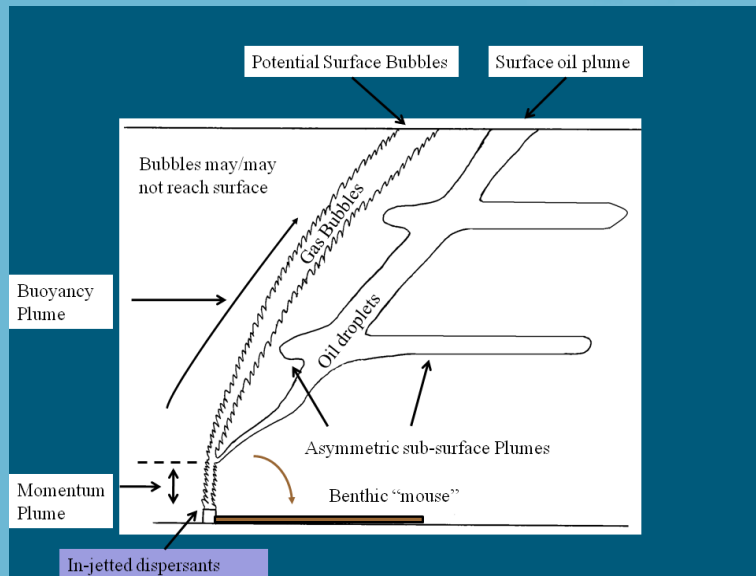


Dispersant application issues

- KR1** To review and, if necessary, develop methods for the assessment of dispersant efficiency when used in subsea incidents in UK waters. Options to be considered could include predictive techniques, in-situ measurements and laboratory testing or field-based verification.
- KR2** To research whether current dispersant formulations are the most effective for subsea use with respect to toxicity and efficiency. To investigate the case for dispersants formulated specifically for subsea use and how these might differ with respect to composition, performance and toxicity compared to conventional products.
- KR3** To establish whether current UK dispersant testing practices are appropriate for the approval of products for subsea use. This may require the development of testing procedures to mimic subsea use and comparison with conventional test results.

Plume characteristics

- *Droplet size/buoyancy*
- *Effects of physical environment (temperature, pressure, salinity etc.)*
- *Effects of release (pressure, flow, turbulence, mixing etc.)*

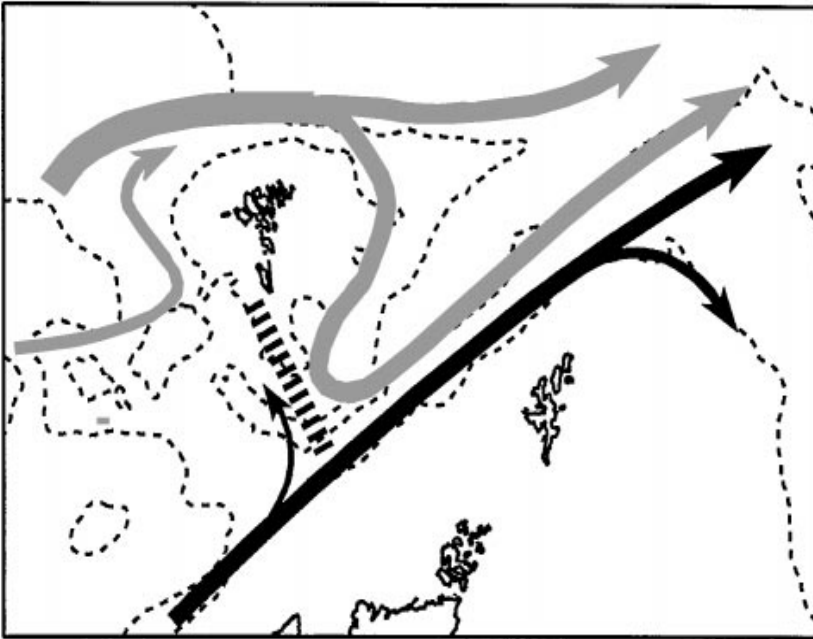


- Note: Issues may become a higher priority dependent on any modelling capability review

Hydrodynamic factors influencing transport

- *Currents and tides*
- *Stratification*

Surface Waters



Intermediate and Bottom Waters



Hydrodynamic factors influencing transport

- No high priority Key Recommendations
 - Hydrodynamic uncertainties unlikely to hinder the decision making process from a regulatory perspective.
-
- Note: Issues may become a higher priority dependent on any modelling capability review

Modelling

- *Modelling capability*
- *Data availability for relevant areas*
- *Grid definition for relevant areas (spatial and depth profiles)*

	Shallow coastal spill	Deep water spill
Main drivers	Tides and surface wind	Tides, deeper wind driven currents, density currents, oceanographic eddies
Currents	Typically 2D + imposed wind driven surface layer	Complex with Coastal Boundary Currents, eddies, deep water incursions
Vertical structure	Generally assumed to be mixed	Complex density structure
Rise velocities	Can be considered “instantaneous”	Highly variable depending on variety of parameters

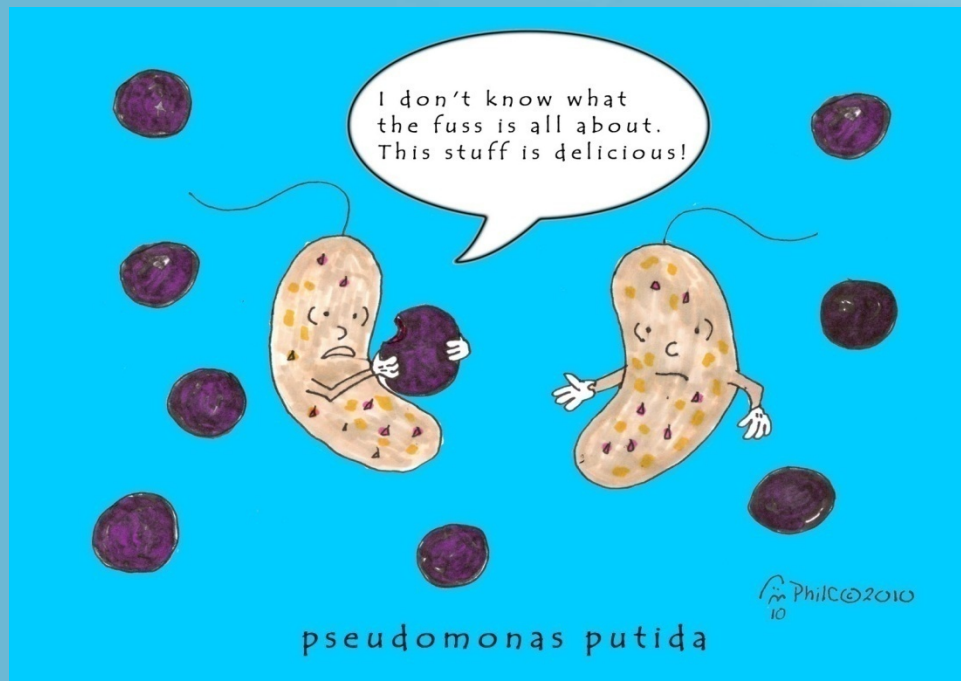
Modelling

KR4 A full review of currently available spill models and their ability to provide effective transport predictions of oil and dispersed oil from subsea wellhead releases on the UK continental shelf.

KR5 A trial of selected predictive models using a range of scenarios and operational data in order to establish the need for improved or higher resolution hydrodynamic data to ensure that models are available to effectively predict oil and/or dispersed oil fate for future incidents.

Environmental persistence of dispersed oil

- *Physical degradation potential*
- *Biological degradation potential*
- *Microbiological environment (Oleophile presence, proliferation and effects on microbial ecology)*



Environmental persistence of dispersed oil



KR6 Research to establish the toxicity and inhibitory effects of dispersants and dispersed oil on oleophilic microbial communities and whether these significantly impact their ability to degrade hydrocarbon residues following spills.

- Still a lot of information to emerge from DWH. General consensus is that oil and dispersants are degradable, there are oleophilic bacteria present and dispersant will likely improve degradation potential.

Wider Ecological Issues



- *Species/habitats at risk and relative vulnerability*
- *Plankton/water column*
- *Benthic communities*
- *Fisheries*
- *Mammalian issues*
- *Avian issues*
- *Potential routes for contaminants in foodchain*



Wider Ecological Issues

Plankton

- No high priority Key Recommendations
- Generally, planktonic communities are highly seasonal and mobile with currents. Any effect likely to be localised and shorter term

Wider Ecological Issues

Benthic Community

KR7 Research to establish the type, extent and diversity of benthic habitats in the vicinity of deepwater drilling areas on the UKCS.

KR8 Research to investigate the interaction of dispersant/dispersed oil with benthic sediments and organisms. This work will also need to investigate the toxicity of dispersant/dispersed oil to key benthic organisms and assess the potential for impact and subsequent recovery.

Wider Ecological Issues

Fisheries

- KR9** Research to investigate the threat of dispersant and dispersed oil to fish species of commercial and ecological value. To include an understanding of the differing sensitivities of eggs and different life stages and what this could mean at the population level.
- KR10** Research to investigate the potential for hydrocarbon bioaccumulation and depuration in commercial fish species both directly and from uptake from contaminated feed and how this is affected by dispersant usage. Also to investigate avoidance behaviour and to use this information to investigate the potential for hydrocarbon contamination to enter the human foodchain as a result of a subsea oil spill and consequent dispersant use.
- KR11** Research into the socio-economic impact (for example on the fishing industry) of subsea oil spill scenarios on the UKCS and how this might be affected by dispersant use.

Wider Ecological Issues

Mammals & Birds

- No high priority Key Recommendations
- Note: Unlikely to be under significantly greater threat as a result of subsea dispersant use because of avoidance behaviour or absence. Substantial amounts known re populations. Unlikely to have large influence on regulatory decision.

Environmental Monitoring

- *Chemistry*
- *Ecology*
- *Overall assessment approach*



- *Informed by previous sections on required information*

Environmental Monitoring



KR12 A review of skills/techniques, capabilities and equipment availability relevant to the environmental monitoring of a subsea spill following treatment with dispersants.

KR13 The production of environmental monitoring guidelines (aligned to the overarching Premium principles) specifically for use following subsea oil releases and any subsequent treatment (e.g. the subsea application of dispersants).

- Note: Was accepted that if effective decisions are to be made regarding dispersant use the regulators need to be assured that appropriate methods are available and can be deployed/managed. This would enable them to understand the impacts and effectiveness of those decisions via environmental monitoring and thus improve future practices.

Under Review

- The report and recommendations is only at a DRAFT stage.
- These are not the final recommendations of the OSRF.
- The OSRF is currently reviewing the report and recommendations and they are subject to change/amendment.

Thank you

Acknowledgement goes to 17 contributors
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Mark Kirby, John Aldridge, Chris Barrio Frojan, Aonghais Cook,
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