



Marine and Engineering Specialists to the Renewable Energy Sector

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BWEA Marine

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“Managing health and safety risks in marine operations”

Captain Peter Hodgetts

HSE view....



- For a non prescriptive regime to work, duty holders must have a clear understanding of what they must do to comply with their legal obligations
- ..there is overwhelming evidence that, properly used, the results of risk assessment often provide an essential ingredient in reaching decisions on the management of hazards

HSE publication r2p2

..from the start



“ Designers are in a unique position to reduce the risks that arise during construction work, and have a key role to play in CDM 2007.”

And further...

“[Designers] also need to consider the health and safety of those who will maintain, repair, clean, refurbish and eventually remove or demolish [the installation] as well as the health and safety of users of workplaces.”

Managing Health and Safety in Construction: CDM Regs 2007, ACOP

Principles of Prevention



“[CDM] Duty holders should use these principles to direct their approach to identifying and implementing precautions which are necessary to control risks associated with the project”

- a) Avoiding risks;
- b) Evaluating the risks which cannot be avoided
- c) Combating the risks at source;

.....etc

Managing Health and Safety in Construction: CDM Regs 2007, ACOP



HSE require

Active Risk Management process
for construction projects
from design to demolition

Steps to H&S Risk Management

- Hazard Identification
- Hazard Log
- Risk assessment
- Identification of risk controls
- Ownership
- Review
- Audit
- Certification

Hazard Identification

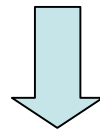


“You can’t risk manage a hazard if you don’t know it exists”

Uncertainty

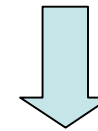


Ignorance



• Hazards Identified, but likelihood or effect (risk) not known

- Confidence Limits
- Limits of Predictability
- Precautionary Principle



• Lack of knowledge of potential hazards

- Limited prior experience due to novel technology
- Lack of engagement of appropriate expertise

Example



Hazard: Design requires diving operations for installation and O&M

Uncertainty:

Past data available for met ocean parameters has poor spatial or temporal reference

- Increase confidence limits by in situ measurement (if tidal obtain measurements across the water column)
- Seek best practise to understand environmental constraints
- Seek expert knowledge from local commercial divers
- Precautionary principle

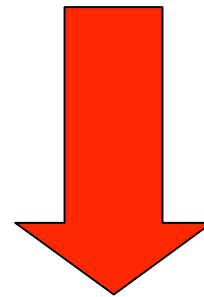


Ignorance:

- Hold a PADI certificate and plan summer time operations
- Assume diving operations will be similar to those for O&G and therefore are easily sub contracted.



Be uncertain, not ignorant



Manage the uncertainty

Managing the uncertainty: Risk Assessment



	A	B	C	D	E
	Not credible, team have never heard of event occurring in industry	Conceivable but would require multiple failures of systems and controls	Less than average, however easy to postulate a scenario for accident but considered unlikely	More than average. The team do not have direct knowledge but suspect that the event may have occurred and presents a credible scenario	Likely to occur and the team have knowledge of a similar event
SEVERITY 0	1	2	3	4	5
1	6	Low Risk 7	8	9	10
2	11	12	Medium Risk 14	15	16
3	13	17	18	High Risk 22	23
4	19	20	24	25	26
5	21	27	28	29	30

Qualitative RA



- **Appropriate expertise**
- **Best practise**
- **Precautionary Principle**



- **Worst credible scenario**
- **Most likely outcome**

Risk Control/Management



- As low as reasonably possible (ALARP)
- So far as is reasonably practicable (SFAIRP)

Conclusion



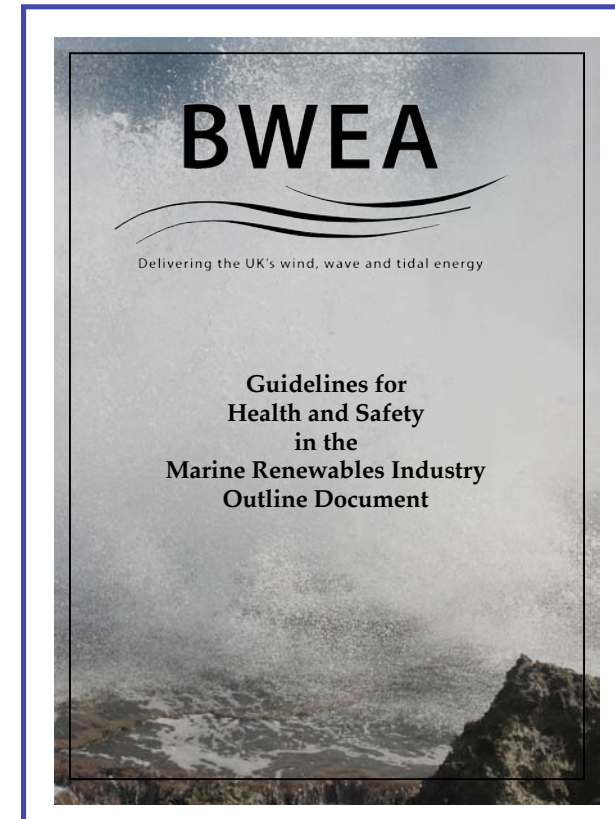
- Good Health and Safety risk management, in place from the design conception, WILL deliver a more viable, more economic, more attractive project
- Uncertain, not ignorant
- Its not optional

Guidelines



“Guidelines for Health and Safety in The Marine Renewables Industry”:

- Based on successful Wind Energy guidelines
- Consultation period: Q2 2008
- Publication: Q3 2008





Thank You



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