JIP RESEARCH
PROTECTING MARINE LIFE

E&P **SOUND**
& MARINE LIFE
PROGRAMME

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Significant progress in exploration and production risk assessment

A major oil & gas industry research programme has been studying possible effects on marine life of sound generated by exploration and production (E&P) activity. In its 11-year history, research funded by the Sound and Marine Life Joint Industry Programme (JIP) has resulted in the publication of more than 45 reports and over 100 peer-reviewed papers by independent scientists.

For the first time, we have now mapped the outcomes of individual JIP studies against a general risk assessment framework. We found that over 90 per cent of all projects that were assessed either have or will provide information relevant to the framework. This means that:

- JIP research contributes significantly to understanding of how to reduce risks to marine life that may be posed by E&P activities
- oil & gas companies, contractors and regulators all have additional information to improve the quality of risk assessment using scientifically based research
- there are potential benefits for informing risk assessment activities outside the oil & gas sector, such as shipping, fishing and pile-driving for windfarms.

The Joint Industry Programme and its objectives

The JIP was founded in 2005 by leading oil companies and the International Association of Geophysical Contractors. Our research programme has a simple, yet important goal – to improve our understanding of potential risks of E&P activities to marine life.

Our objectives are to support planning of E&P projects and risk assessments, to provide the basis for operational measures that protect marine life and to inform policy and regulatory development. So far we have committed US $55 million to support research in this area. Our main focus has been on understanding potential risks to marine life of sound generated by oil & gas E&P activities, such as seismic surveys.

The E&P risk assessment model

'Risk' is broadly defined in terms of both consequence or impact and the likelihood or probability of the impact happening. So, it is important to note that while some level of impact may be predicted because of a particular activity, such an impact may be highly unlikely to happen.

A risk assessment is a systematic process of evaluating the potential risks of an activity. For any proposed marine E&P activity, a typical first step during the planning phase is to carry out a screening process to determine whether it presents a potentially low, medium or high risk to known marine life sensitivities. Impacts of sound are typically categorised as either physical injury or behavioural response.

The higher the potential risk, the more complex the risk assessment would be. This may be reflected, for example, in the level of information needed about marine life that the project team anticipates may be present, and about the likelihood animals would be exposed, at harmful levels, to sound associated with the activity. A company may decide to delay or not to continue activities in that area if the risks are considered to be too high.

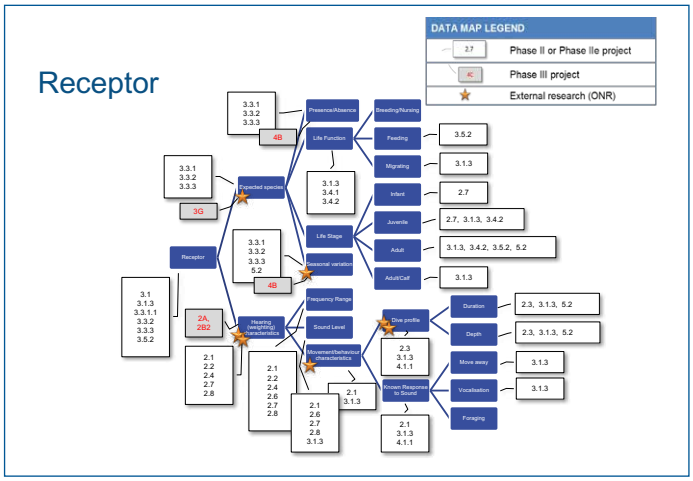
A source-pathway-receiver framework is commonly used for sound-related risk assessment. We can break this down into six stages and broadly explain these as follows:

- What is the sound source?
- How does the sound move towards a potential receiver?
- What are the characteristics of the marine life that may be present in the area?
- What are the potential consequences for that marine life?
- How likely is it that animals will be exposed to various sound levels and for how long, and how likely is it there actually would be an impact on them?
- What mitigation methods would reduce the risk of harm and are there any residual risks?

The amount of assessment necessary for each stage depends on whether the initial screening process rates the potential risk as low, medium or high, and the regulatory setting. Using this framework helps oil & gas companies choose mitigation methods best suited for reducing the level of risk to acceptable levels.

The results of the JIP mapping exercise

Our mapping exercise aimed to show to what extent JIP-supported research can contribute to improving risk assessment. We first identified the kinds of information that could contribute to the source-pathway-receiver risk assessment process. We then assessed to what extent the research programme projects could inform the framework. We did this by preparing flow block diagrams showing the information needs of each stage, then mapping the outcomes of the studies against these needs to create detailed individual data maps. The mapping exercise found over 90 per cent of the JIP projects mapped produced outcomes which inform one or more of the risk assessment stages.



The types of information that may be used to identify the characteristics of marine species that may be present in the area and how JIP study outcomes inform these areas

How the data maps can reduce risk and improve regulation

Every E&P project is different. Outcomes of JIP-supported research projects will help JIP member companies, and contractors, identify information relevant to risk assessment for a given E&P project. This points to better focusing of environmental impact assessments and more effective use of mitigation measures to protect marine life.

Regulators also have a valuable new resource as a result of the JIP mapping exercise. Referring to the data maps and publications related to the various projects should aid them in the process of moving from precautionary regulations to a more scientifically supported regulatory framework.

Next steps

The JIP has provided a wealth of information about potential impacts of E&P on marine life, but we still have more to learn. The JIP research programme continues to conduct more projects. This should provide further valuable information to improve the generic E&P risk assessment model, bringing benefits within and beyond the oil & gas sector.

For more information about the mapping exercise, see *'A quick guide to the data maps'* http://gisserver.intertek.com/JIP/dmsJIP.php

ABOUT THE JIP

One of the most extensive environmental industry research programmes bringing together the world's foremost experts across industry, academia and independent research centres.

This fact sheet has been produced by the IOGP E&P Sound and Marine Life Joint Industry Programme (JIP). The JIP was founded in 2005 and supports research to help increase understanding of the potential effect of sound generated by oil and gas exploration and production activity on marine life.

To learn more about the JIP and our research, please visit www.soundandmarinelife.org

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