



SERPENT

scientific and environmental roV partnership
using existing industrial technology

ROV Information Pack

collaboration... education... research... innovation...



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WELCOME! A BRIEF INTRODUCTION

What's it all about?

The SERPENT (Scientific and Environmental ROV Partnership using Existing iNdustry Technology) Project collaborates closely with key players in the oil and gas industry. Our aim is to make cutting-edge ROV technology and data more accessible to the world's science community, sharing knowledge and progressing deep-sea research. We interact with science and conservation groups globally and transparently communicate our findings to the public to increase the awareness of our fragile marine resources. The project is based at the National Oceanography Centre, Southampton, UK within the Ocean Biogeochemistry and Ecosystems Group.

OUR DEEPWATER MISSION

To explore and examine the vast biodiversity around deepwater assets, identify key species and assess any impact that deep-sea exploration may have on this remarkable and unfamiliar environment.

OUR PRIORITIES

- Catalogue and describe new and novel marine species
- Inform our on- and offshore collaborators about the deep-sea marine life we encounter
- Inform the public about the deep-sea environment and its inhabitants that we are lucky enough to see
- Encourage best practice during offshore activities
- Map any impact footprint that is created when drilling offshore

ROV PACKS

We need your help! We have an increasing network of highly skilled and extremely dedicated ROV teams who already take the time to help, but we always welcome anyone with an interest in taking part.

Participating usually involves collecting information and making observations in your working environment, helping to document local species and survey the seafloor. This can be as easy as taking a video grab of an interesting species, taking close-up stills or video footage of interesting behaviour or running a short video transect when time and workload allows.

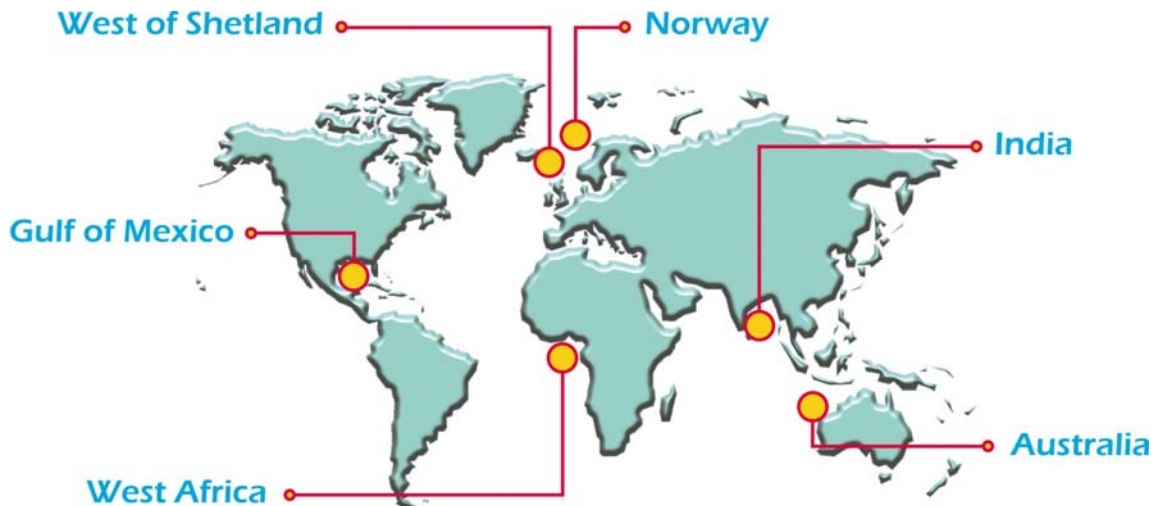
All media sent to us is archived and, when necessary, sent around the world to experts for identification and research. Footage and images also go into the galleries on the SERPENT website so that people all around the world can share in the weird and wonderful creatures you have spotted from the deep.

We have put together this simple pack to help you record any observations, videos, images and transects or general comments. Naturally we understand that normal operation takes priority, and we hugely appreciate any level of involvement from you. You would be surprised how little we know about the ocean depths and its inhabitants, and how important a casual observation may actually be – so if in doubt send it to us or drop us a line! Full postal contact details are included at the top of each page, and contact numbers at the end of the document.

The SERPENT Team

OUR LOCATIONS

We have worked all over the globe and are always keen to receive new information from sites in both existing and new regions. The map below illustrates some of the areas we have worked in so far.



AIMS AND OBJECTIVES

The following apply to both the SERPENT team and our collaborators:

- Use the ROV during standby time or as part of routine observations to assess the marine life on and around our deep water sites
- Enable scientific information to be collected by following simple data collection protocols
- Provide feedback onshore about the environment in which you work
- Identify and document the local biodiversity
- Link the data we obtain to existing project worldwide
- Create a visual record of the environment, where possible both before and after the drilling activity
- Monitor the aggregation of fish and encrusting fauna on seafloor structures as operations progress

TECHNIQUES

VIDEO SURVEY

Short, simple video transects can allow us to categorise and measure populations of species living around the seafloor underneath a drilling rig or vessel. Ideally, six video transects would be conducted within each site and each transect would be at least 100 metres in length, carried out as follows:

1	Set video camera pan to straight ahead
2	Set video camera tilt to the nearest angle to vertical where a clear picture of the seabed is obtained (not obscured by the ROV frame)
3	Set zoom to maximum wide angle (minimum zoom)
4	Adjust lighting to give best possible picture, avoiding glare and over-lighting
5	Start recording, noting time and ensuring ROV position can be obtained
6	Fly ROV at <ul style="list-style-type: none"> a) minimum possible constant altitude, typically around 20-50cms above the seabed b) constant speed, preferably around 0.2 metres/second c) a set heading (preferably using gyrocompass autoheading) d) ignore features of interest and holding straight-line course
7	When you reach 100 metres (or as far as you can go), stop recording and proceed to next transect location



Each transect should take less than 20 minutes including time to set up and get into starting position. So a realistic target of 2 hours per site is achievable.

NON DRILL-RIG OPERATIONS

The six straight-line transects can be undertaken from random start points (within the study area) and at a random heading. Transects should be pre-planned to reduce the time taken to get between transect runs (see figure 1).

PIPELINE AND IRM

On pipeline surveys (pre or post lay) or inspection work, video can also be used for habitat mapping. A survey on a set course and speed as part of the normal routine is also very useful to describe the species present. Nothing in addition to a normal survey should be required, just make a note on the log sheet and save a tape/DVD copy.

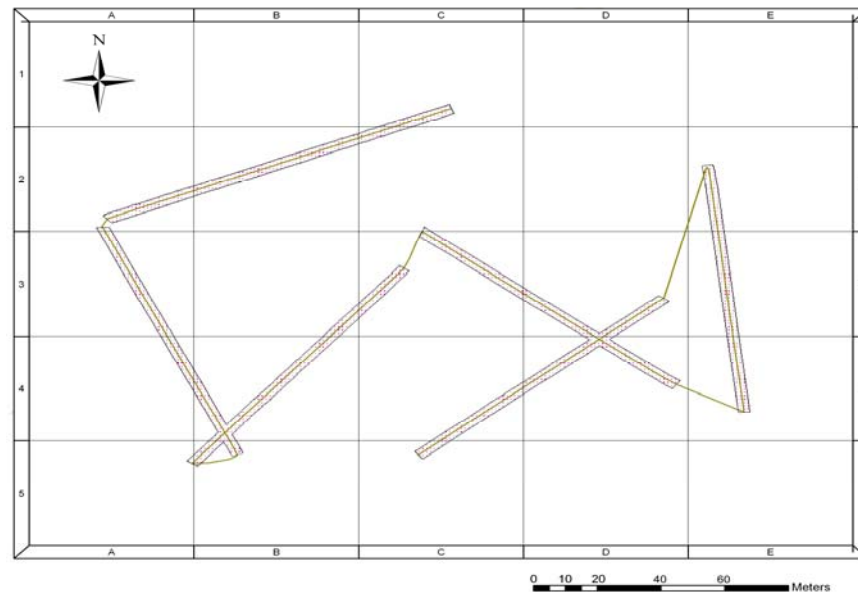


Figure 1: Random transects within an operational area or pre-planned assessment

DRILLING SUPPORT OPERATIONS

Transects can also be run from a know point of reference, such as the BOP, at radiating compass points as illustrated below (Figure 2). This will help to map the extent of species living under the rig and help to assess recovery of recolonisation after drilling is complete. All our scientific information will aid research student projects, PhD's and the overall research goals of SERPENT. Any help is of great importance and widely appreciated by the team!

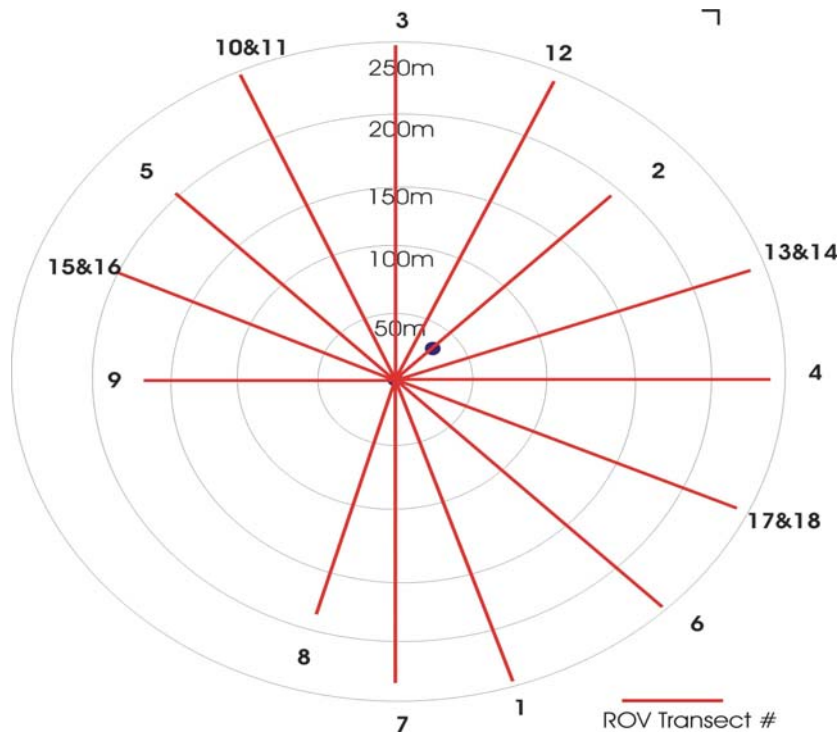


Figure 2: Simple transects from the BOP as a point of reference

SPECIMEN CAPTURE

Capturing specimens is very useful in the identification of fauna. Without a specimen, identification is not always possible, and identification to species-level practically always requires a specimen. Capturing specimens of the dominant type of animal can enhance the quality and value of video surveys, and can be carried out very simply. A suction sampler, such as a zip pump, would take around five minutes per specimen, or a simple scoop would suffice. We can send preservation fluid offshore for storage, or samples can be stored in a freezer!



Figure 3: Species can be collected by suction, scoop or other means

BEHAVIOURAL OBSERVATIONS

Observations of behaviour are often pure chance, but can really improve our understanding of community ecology. If you have time and notice some interesting behaviours, it is worth making detailed observations and collecting video footage. Check out some of our existing video clips in the online SERPENT gallery, www.serpentproject.com.



Footage of animals displaying varying behaviours provides us with unique and valuable insights into the role of a species in its ecosystem.

Figure 4: A crab guarding a fish head (top left) and an anglerfish walking on its adapted fins (bottom left)



By leaving a spare video or DVD in the recorder, you can simply record any interesting bits of behaviour that pass the camera. When it's full, just pop it into the post to us. So far we have published several observations of new, unique and plain bizarre behaviour that have been picked up by the press – local, national and even global. We have seen a lot but it's just the tip of the iceberg – the deep-sea is so unexplored who knows what we could turn up next! Please make a note of anything of interest, what you see every day may turn out to be something really unusual or completely new to science.

OBSERVING LARGE SPECIES



Deep, offshore operations increase our potential for encountering larger marine species. Animals such as Manta Rays, Ocean Sunfish, Whale Sharks and large marine mammals are now being spotted fairly regularly by our staff and collaborators, both from rigs, vessels and platforms and through ROVs.

A recent sighting of a large sperm whale got the science community really excited, providing a first hand encounter at depth with one of these stunning creatures in their natural environment. Your organization may provide guidelines on how to deal with encounters like this, but if you do capture a rare sighting with such a species keep a record of what you doing at the time, make a note of supporting information (if available, position, temperature, external conditions) and then ensure you have a copy of the tape.

INSTRUCTIONS FOR ENCOUNTERS WITH MARINE MAMMALS

“The Marine Mammal Protection Act prohibits industry activities that could kill, harm, or change the behavior of a marine mammal, including whales, porpoises, and manatees. In practice, avoiding behavioral changes means that vessels, divers, and ROVs cannot follow a marine mammal or appear to follow a marine mammal. Passive observations and filming are allowed, provided that they do not require pursuit of a marine mammal and provided they do not change the marine mammal's behavior”

Links to external marine mammal research groups will allow this valuable footage to be used as part of active research programmes. SERPENT has relationships with the WDCCS (Whale and Dolphin Conservation Society – www.wdcs.org) and Conservation International, so that such observations can be dealt with confidentially and can be documented to help improve future guidelines.

In addition to ROV footage, observations from surface operations can also provide valuable behavioral information of larger marine species. Pods of whales and sharks are frequently seen and this information can provide valuable species abundance and distribution data. If you take an image such as the two below, please record all supporting information possible on the submission forms at the end of this pack and send it to SERPENT.

DATA SUBMISSION

Please send your data log sheets, tapes/CD-ROMS/DVD or images to Rob Curry at r.curry@noc.soton.ac.uk, or the address at the top of the page. A sample data log sheet can be found in Appendix 1.

You can now send very large files using Internet Explorer 6 and our new FTP facility. Contact us at <http://www.serpentproject.com/contact.php> to find out how.

FEEDBACK

The SERPENT website is constantly updated with interesting footage, images and stories sent to us. Our gallery section is extremely popular and the more you can send us to flesh it out the better. We provide regular quarterly feedback through our newsletter SERPENT scene, if you would like to be added to the distribution list please contact Rob at r.curry@noc.soton.ac.uk although it is also available for download from the website. We know it is important to know where your information has gone, why it was important and how the analysis has progressed.

We produce regular posters and DVDs for all our collaborating rigs, vessels and ROV crews and we really hope you find the project interesting. We share everything we have found with the public and industry and we also have some friendly competitions for who can capture the best footage, best picture or best sample. Keep an eye on the website for full details.

Please don't hesitate to contact us; we really would like to hear from you! Send your tapes or e-mails to any SERPENT partner on our website contact page, <http://www.serpentproject.com/contact.php>. A representative from the rig operator or client will also be happy to forward your observations or videos.

Thanks for taking time to read this pack; we hope you find it useful! To help you take the very best images and footage, we have included a cameraman's guide from the BBC Blue Planet Team. Copies of posters specific to global areas are available for download from the active projects section of the website. If you would like to receive anything else, please just let us know - we'd be happy to help out!

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APPENDIX 1: SERPENT ROV OBSERVATION LOG SHEET EXAMPLE

Time & Date	ROV / Location / Rig	Tape No.	Observation	Notes / E-mail sent

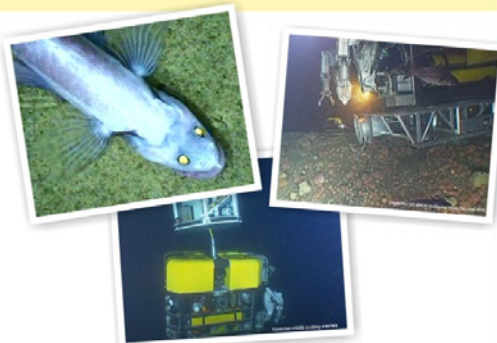


APPENDIX 2: BBC FILMING TIPS

BBC Filming Top Tips

*Tips for a class shot**by Mike Dugray, BBC Cameraman, Blue Planet*

- ❑ Hold the shot still for at least ten seconds
- ❑ Pan, tilt and zoom slowly and smoothly
- ❑ Once the information from the header is not required, try to film without it
- ❑ Try close-ups and wider angle shots to gain an appreciation of scale
- ❑ Experiment with the lighting levels to get the best effect
- ❑ Watch out for small behaviours - fine detail is what often makes a shot special!
- ❑ The more footage the better
- ❑ Darkness may encourage animals to act more naturally - for example, an anglerfish might cast its lure
- ❑ If a prey strike begins, make sure the deck is running and be patient - hold the shot and wait for the animal to strike
- ❑ Anything is better than nothing. What appears to be minor may be something new to science!
- ❑ Think to yourself, 'what would it look like on screen'. That will tell you how good the shot is likely to be to the audience
- ❑ Have fun, enjoy the subject - the shot usually takes care of itself!

**BBC***Multiple vehicles*

- ❑ Try shooting an ROV while it is filming a subject - the scale and presence of the vehicle is really brought home
- ❑ The complex nature of multiple ROVs in the water at once is likely to impress the audience
- ❑ Try lighting shots with other vehicles if the opportunity arises
- ❑ Experiment with the camera - adjust the setting to optimise the picture quality and video feed
- ❑ Keep a simple record of what you have filmed - it helps the review process
- ❑ It's a great chance to show the public what you do - how a real ROV crew operates!