

SHEARWATER

Clearly Better.

Revealing possibilities
shearwatergeo.com



Marine Acquisition





SHEARWATER

Marine Acquisition

A powerful fleet, complete with modern technology, manned by experienced crews with advanced Fast Track processing capacity.

Work safely and efficiently, in all operating conditions
- delivering a cost-effective, high-quality service.

Marine Acquisition

The combination of a modern fleet, advanced technologies and experienced crews makes Shearwater the reliable choice for marine acquisition.



Safety

Hands-on risk management and our strong safety culture guarantees high performance acquisition even in the most challenging conditions.

Capability

We have a strong track record of working safely, efficiently, and responsibly in the most challenging exploration provinces around the globe.

Flexibility

Modern vessels, combined with experienced staff enable us to provide flexible high volume surveys all from the same acquisition platform.



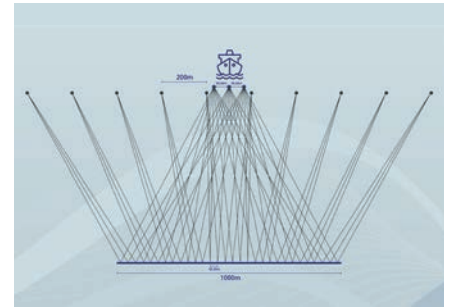
Survey Planning

Onshore project management and support staff work closely with client project teams, regular subcontractors and our offshore crews to deliver the most complex and bespoke acquisition projects, on time and within budget.



Onboard Processing

Experienced and well supported Onboard Processing & Imaging teams use Reveal software to carry out everything from Real Time QC to full Fast Track processing.



FlexiSource

FlexiSource is a combination of overlapping sources, continuously recording, and advanced techniques to separate data into individual shot records. This provides opportunities for higher quality data, lower cost and faster acquisition.

QHSE

Without compromise, we will continue to allocate both human and material resources to ensure our QHSE culture and performance meet your expectations.

Our Industry has always placed an overriding importance on Health and Safety. At Shearwater we acknowledge the duty of care that we hold for the Health and Safety of our employees and contractors.

We demand safe behavior from all of our stakeholders and encourage it as both a personal and a professional value.

focus places safety at the forefront of the company's ethos and is a priority factor in every employee's daily routine as well as company appraisal criteria. Shearwater's management systems are aligned to IOGP guidelines, certified to ISO9001 and compliant with ISO14001 and OHSAS18001 standards.

We have implemented best-in-class Integrated Management System software to actively facilitate and transparently communicate QHSE compliance.

Marine seismic acquisition projects can be exposed to unique and variable hazards depending on where in the world prospects are located. Shearwater promotes the use of proactive, leading

indicators. These have been specifically configured to provide our employees with the tools required to identify and manage potential hazards. They also reflect the level of QHSE effort from the workforce. Calculation and publication of such indicators can be used, for example, to actively monitor trends in the safety culture of each crew over the duration of a project, or between two vessels.

Continually improving upon the performance of these indicators drives our ongoing effort towards our goal of zero loss, zero harm and zero rework. Shearwater's Employees and Assets are well proven. We are ideally placed to understand your concerns, meet your expectations and to deliver safe, efficient projects.

Shearwater is a Governing Member of IAGC.

For more information on Shearwater's commitment to employee development and QHSE visit:

[shearwatergeo.com](https://www.shearwatergeo.com)



Efficiency with Shearwater

Our integrated approach ensures maximum benefits for our clients and allows a carefully tailored service to precisely match the needs of each project.

Power and redundancy separate Shearwater's vessels from the majority of the world's seismic fleet. We can consistently and safely tow large and wide streamer spreads in harsh frontier environments. It also allows us to operate confidently in obstructed areas, high current environments and in shallow water.

Working together, our acquisition and processing teams provide you with the highest quality seismic data and Fast Track deliverables for every type of survey and for all acquisition techniques.

Our assets, experienced crews, and maritime managers have a strong track record of working safely, efficiently and responsibly in the most challenging exploration provinces around the globe.

Shearwater is fully ISO9001:2008 certified, with offshore operations managed under the ISO14001 environmental standard through our maritime technical managers GC Rieber Shipping.

We Deliver

Global Operational Experience

Modern, proven vessels with experienced crews

Powerful and Reliable Platforms

Capable of operating safely and efficiently in all environments

Uniform yet Flexible Spreads and Technology

Including **SHarp** Broadband, **FlexiSource**, and **SHarpSig**

Powered by Reveal

RTQC, Onboard Processing and Fast Track service



Power and Redundancy

The Shearwater fleet has both the power and redundancy to operate in the most challenging environments. They separate themselves from the worldwide seismic fleet with their high transit speed, enabling us to travel efficiently to wherever our clients require us to be.

These purpose built vessels are ready to achieve the highest standard of acquisition projects regardless of complexity, area or environmental conditions.



Safety

Safety, for Shearwater, is about hands-on risk management, continual improvement and a strong culture shared by all employees. Safe behavior is expected of every employee, with very clear line management accountability.



Flexibility

Flexibility at Shearwater comes not just from great vessels, equipment and expertise, but also from our attitude and willingness to adapt in order to achieve and exceed our client's needs.

Our standard equipment inventories and configurations allow the acquisition of a large range of innovative acquisition techniques, providing high-quality broadband data designed to meet our client's geophysical objectives.





Polar Empress

The Polar Empress is one of the most capable seismic vessels in the world.

Our youngest vessel and flagship of the Shearwater fleet.

The Polar Empress is one of the most advanced, powerful and efficient vessels in the world, designed to meet the industry's future exploration needs.

- Highest Ice Class 1A*
- Cost efficient
- Flexible towing configurations
- Extended capacities for high latitude survey areas
- Experienced crews & support organisations, including multi-vessel/undershoot operations
- Onboard Processing & Imaging Services, integrated Instrumentation, QC and Processing Department

Built	2015
Total Propulsion	2 x 9289kW
Bollard Pull	>250 T
Cruising Speed	18 knots
Seismic Cable Configurations	Up to 22 streamers
Airguns	Bolt LL up to 10,000 cu. in @2000 psi
Compressors	3 x LMF 1695 SCFM
Signature Estimation	Far field from near field
Streamer Type	Sercel Sentinel





Polar Duchess

The Polar Duchess delivers ultra-wide tow, broadband and long offset configurations.

The Polar Duchess has a strong track record of working in frontier exploration areas, safely managing the HSE exposure associated with multiple deployment and recovery operations.

This means the Polar Duchess can efficiently acquire large survey programs in harsh operational conditions minimising standby time for our clients.

- Cost efficient
- Flexible towing configurations
- Fully steerable and acoustically braced solid streamers
- Experienced crews & support organisations, including multi-vessel/undershoot operations
- Onboard Processing & Imaging Services, integrated Instrumentation, QC and Processing Department

Built	2011
Total Propulsion	2 x 7100kW
Bollard Pull	Approx. 200 T
Cruising Speed	17 knots
Seismic Cable Configurations	Up to 12 streamers
Airguns	Bolt LL up to 10,000 cu. in @2000 psi
Compressors	3 x LMF 1695 SCFM
Signature Estimation	Far field from near field
Streamer Type	Sercel Sentinel





Polar Duke

The Polar Duke offers clients the ability to design cost efficient bespoke surveys.

The Polar Duke's high transit speed ability to acquire data efficiently in harsh weather environments has benefited many clients with tight acquisition windows.

This capability is particularly useful in remote, seasonal oil provinces, where mobilising and completing acquisition on time within a finite acquisition window are key to our client's success in meeting licencing commitments.

- Cost efficient
- Flexible towing configurations
- Fully steerable and acoustically braced solid streamers
- Experienced crews & support organisations, including multi-vessel/undershoot operations
- Onboard Processing & Imaging Services, integrated Instrumentation, QC and Processing Department

Built	2010
Total Propulsion	2 x 7100kW
Bollard Pull	Approx. 200 T
Cruising Speed	17 knots
Seismic Cable Configurations	Up to 12 streamers
Airguns	Bolt LL up to 10,000 cu. in @2000 psi
Compressors	3 x LMF 1695 SCFM
Signature Estimation	Far field from near field
Streamer Type	Sercel Sentinel





Polar Marquis

The Polar Marquis wide-tow capacity is comparable with Polar Empress flagship.

Originally built in 2000 with significant capacity and machinery upgrades in 2014, she provides clients with seismic configurations of up to 16 streamers.

The Polar Marquis has a long track record of completing everything from large challenging surveys in remote environments, to high density surveys with narrow streamer spacing in congested shallow water areas.

- Cost efficient
- Fully steerable and acoustically braced streamers
- Extended capacities suitable for remote areas
- Experienced crews & support organisations, including multi-vessel/undershoot operations
- Onboard Processing & Imaging Services, integrated Instrumentation, QC and Processing Department

Built	2000 / 2014
Total Propulsion	2 x 6480kW
Bollard Pull	Approx. 200 T
Cruising Speed	15 knots
Seismic Cable Configurations	Up to 16 streamers
Airguns	Bolt LL up to 10,000 cu. in @2000 psi
Compressors	3 x LMF 1695 SCFM
Signature Estimation	Far field from near field
Streamer Type	Sercel Sentinel



Survey Planning

Our integrated approach ensures maximum benefits for our clients and allows a carefully tailored service to precisely match the needs of each project.

We engage with clients and all other relevant stakeholders during the project planning stages. This ensures the Shearwater surveys benefit from thorough planning and project risk assessment; from remote, harsh, deep water offshore environments, to shallow water surveys with complex interfaces, oilfield infrastructure and SIMOPS, local fishing communities, and sensitive marine life considerations.

Detailed planning performed by our experienced personnel onshore and offshore identifies project specific risks. Appropriate controls are implemented to manage risk down to the lowest possible level.

Shearwater also employ dedicated geophysical staff to support our client's needs in order to identify the best acquisition techniques and parameters to meet their geophysical objectives and provide the best quality dataset within their budget.

Contact the Marine team to discuss your requirements:
sales@shearwatergeo.com



Onboard Processing

Agile, responsive teams of industry-qualified experts, available when, where and for however long you need them. Get high-quality data rapidly, reduce costs and build in flexibility at the heart of your project.

Our interactive software, Shearwater Reveal, together with our expert offshore and onshore processing teams provide you with the highest quality 2D and 3D imaging of seismic data from all geological environments.

The same processing software is used both on our vessels and in our offices. This allows our teams the flexibility to process your data using the same interface for fully interactive testing and batch processing from Real Time QC through to model building and depth imaging.

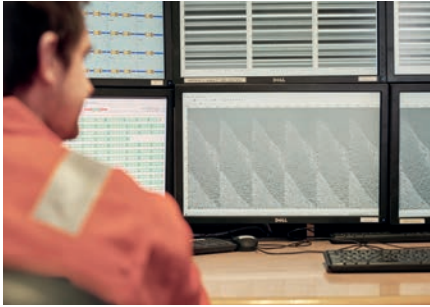
Integrated and experienced acquisition and processing teams consistently provide you with the highest quality seismic data and Fast Track deliverables for every type of survey and for every type of acquisition technique. This allows us to produce a wide range of Fast Track products, from Post-Stack Migrations to full 3DSRME PSTM/PSDM sequences.

Quality Control

The Shearwater Reveal processing software provides the tools for Real Time QC, onboard time imaging and the estimation of the far field signature using near field hydrophone data that then allows for directional designature, Shearwater **SHarp**Sig technology.

Onboard QC provides Real Time analysis of the recorded data quality thus allowing issues to be flagged and addressed promptly, enabling optimal decisions on costly standby. This ensures a high-quality data set is acquired with maximum efficiency.

We provide both Real Time Quality Control (RTQC) and Offline Quality Control (Offline QC).



RTQC

Displays are monitored by highly trained staff which, combined with our advanced techniques, means that even minor data quality issues are picked up quickly.

- Integrated geophysicist teams
- Shot-by-shot far field estimation from near field hydrophones
- Seismic Interference monitoring
- Swell Noise removal in real time
- Fully customisable displays
- Goal Zero approach to QC errors



Offline QC

Offline QC products provide a comprehensive view of the data for our experienced Geophysicists to ensure all details of the data have been recorded and addressed fully.

- Experienced processing geophysicists
- Ready immediately at the end of each line
- Specialist QC products available
- Efficient and detailed QC and analysis using Shearwater Reveal processing software
- Selected QC data synchronised and plotted via web based portal
- Start up checks for each survey



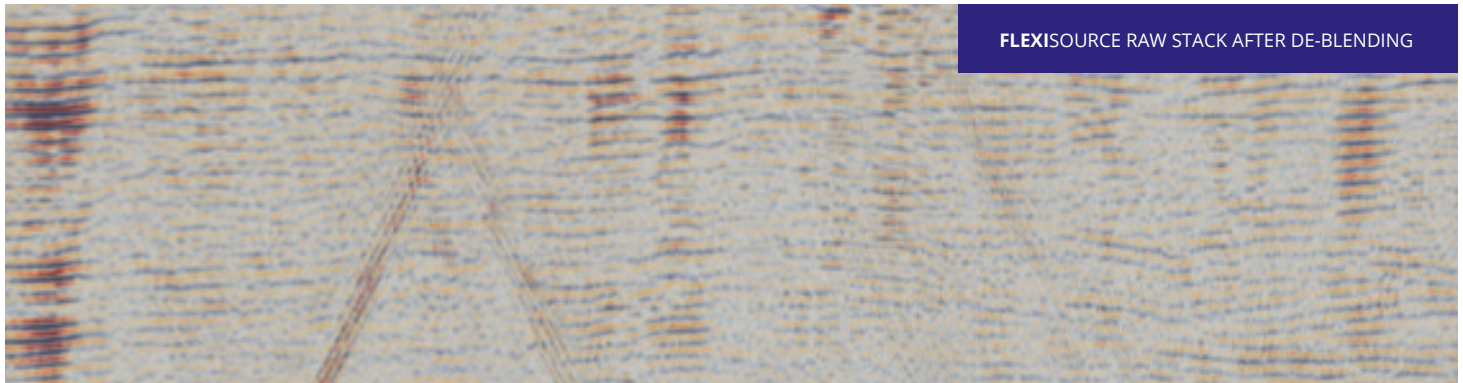
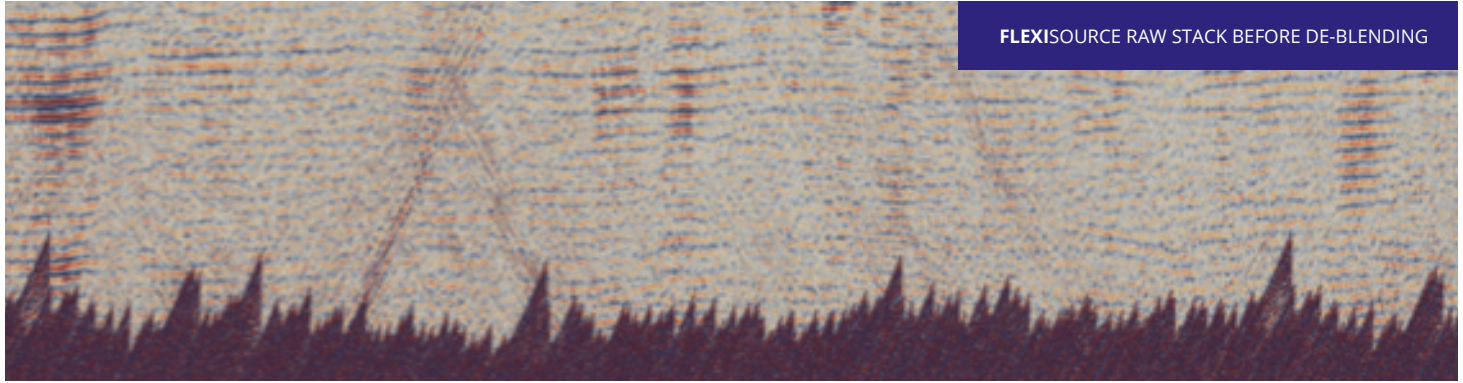
Fast Track

Onboard and onshore Processing & Imaging teams work closely together to ensure we deliver the same quality on our vessels as in our offices.

- Dedicated supervision
- Receiver deghosting
- Linear and swell noise removal
- Seismic Interference removal
- Advanced demultiple including 3D-SRME
- Source deghosting, designation and debubble derived from the near field hydrophones



The Shearwater business lines work together to produce the highest quality result for your survey.



The examples show how **FlexiSource** can be adapted to a wide variety of geologic conditions, without compromising efficiency. Acquiring 12.5m CMP lines, with no interpolation, opens up imaging and operational possibilities that were out of reach just a few years ago.



FlexiSource

Using the same equipment, multiple source arrays, continuous recording and advanced deblending techniques provide quality data and faster acquisition at a lower exploration cost.

The Shearwater **FlexiSource** is a combination of multiple, overlapping sources, continuous recording and advanced deblending techniques to separate the data into individual, non-overlapping shot records. **FlexiSource** can be deployed with three or more source arrays providing opportunities for higher quality data or lower cost and faster acquisition.

The continuous recording and deblending used in **FlexiSource** provide a renaissance in multiple source acquisition. You no longer have to wait for one record to finish before activating the next source - the shot records can be allowed to overlap.

The overlap, with deblending, means you no longer sacrifice fold for efficiency. One way to think of this is as an increase in source effort.

This extra effort gives a dividend that can be used to improve cross-line sampling, or to improve efficiency, or both.

The Shearwater standard **FlexiSource** acquisition configuration deploys 6 gun strings arranged as 3 two string source arrays.

If even greater flexibility is your priority, **FlexiSource** can be deployed with up to 9 gun strings providing, for example, no compromise, triple source acquisition with each source having 3 gun strings. Alternatively, the additional gun strings provide you with the flexibility to go beyond 3 source arrays.

Moreover, all Shearwater's source arrays have ultra long, digital umbilicals meaning that even with multiple sources and ultra wide tow streamer configurations, we still provide in line near offsets below 100m.

The Benefits of **FlexiSource**

- Continuous recording
- Deployed with three or more source arrays
- Increased source effort
- Advanced deblending techniques
- Efficient data recording
- Superior results

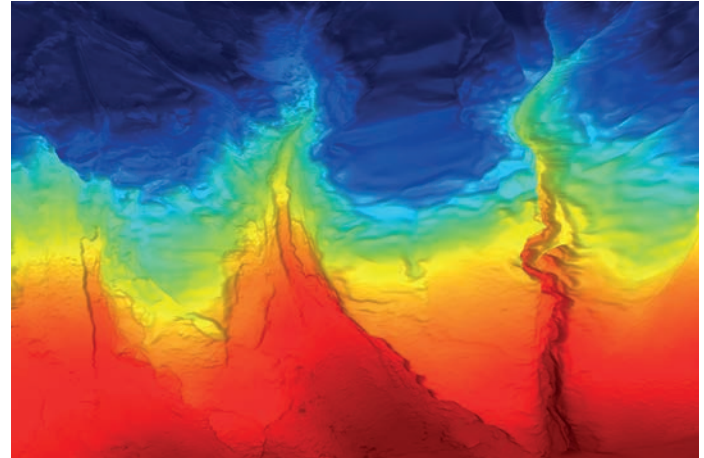


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Clearly Better.

Our modern fleet, expert imaging teams and innovative software combine to offer exceptional results. Fast, flexible and cost-effective, Shearwater is the cutting edge geophysical services company.

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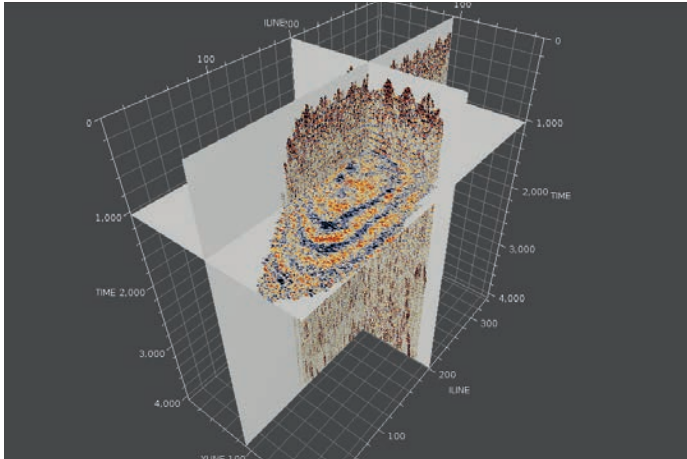
Marine Acquisition

A powerful fleet, complete with modern technology, manned by experienced crews with advanced Fast Track processing capacity. Work safely and efficiently, in all operating conditions - delivering a cost-effective, high-quality service.



Processing & Imaging

Agile, responsive teams of experts, available when, where and for however long you need them. Get high-quality data rapidly, reduce costs and build in flexibility at the heart of your project.



Reveal Software

A modern, powerful and intuitive solution for demanding seismic data analysis, Reveal is a full processing software that can scale to run from a laptop in the field through to the largest data centre.



Multi-Client

Our full service Multi-Client business offers refreshing flexibility and clarity. Reduce financial exposure and maximize your exploration returns.

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