

An offshore oil rig is shown at sunset, with the sun low on the horizon, creating a warm orange and yellow glow. The rig's structure, including its derrick and various platforms, is silhouetted against the bright sky. The rig is illuminated with its own lights, and the scene is reflected in the dark water below. The overall mood is industrial and dramatic.

# GeoGLIDER®XTREME

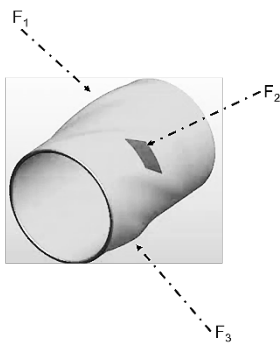
Ultra-Low Friction Solid Body Centralizers

GGX-2024-CAT-REVO  
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Peveril Square, Douglas, Isle of Man, IM99 1RZ

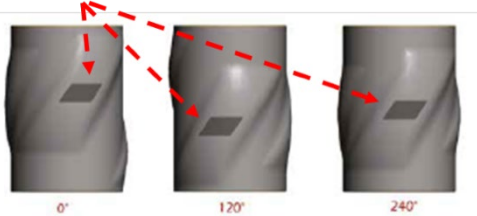
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## Description

The GeoGLIDER® XTREME centralizer is a unique, three bladed centralizers designed specifically to improve tubular deployment in all well types and downhole conditions. The GeoGLIDER® XTREME boasts the smallest footprint of any centralizers at only 5 in<sup>2</sup> of total contact area with the borehole walls without compromising stand-off due to the staggered axially offset contact points. Each contact point is < 1.6 in<sup>2</sup> in size irrespective of tubular-to-hole size. Friction is directly related to the coefficient of friction, the mass of an object and gravity. However, the coefficient of friction,  $\mu$ , is dependent on surface roughness which in turn makes contact area important in resolving centralizer frictional losses. In the case of the GeoGLIDER® XTREME Lite, composite centralizers, open-hole friction factors as low as 0.05 have been observed with the highest recorded at 0.16, making it arguably the slickest centralizer available in the market.



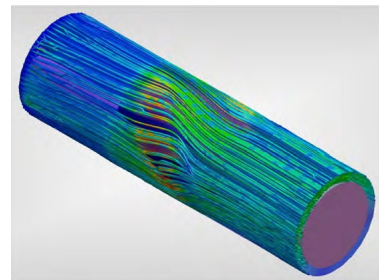
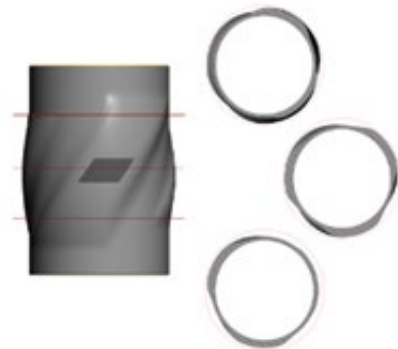
Touch point(s)



Furthermore, the GeoGLIDER® XTREME centralizer offset touch points ensure each centralizer is constantly re-aligning to forces as each contact point will respond differently from the other, making it “dynamically transient”. Unlike traditional solid body centralizers where each blade is an exact replica of the other, the three blades on the GeoGLIDER® XTREME are all different. Also, the effective diameter across each contact point is slightly smaller than the apparent diameter (stand-off) making it easier to work the tubular string through tight spots than other competing products.

## Features and Benefits

- Three (3) bladed solid body.
- Axially offset and 120° radially offset contact points.
- 30° -35° skewed spiral blade profile.
- No sharp edges ensuring the centralizer blades do not dig into the borehole walls.
- Smoothened out leading edge that is the same diameter as the body of the centralizer to reduce drag.
- Smaller apparent diameter across each contact area than effective gage diameter compared to conventional solid body centralizers.
- Stand-off is typically 0.125 inch – 0.25 inch or as requested by the customer.
- Unique position of contact points and the eccentric design of the blades enhances the dynamic nature of the centralizer to optimally align to reduce friction.
- Up to 10% higher flow-by area compared to other solid body centralizers.
- Computational Fluid Dynamics simulation show fluid velocities across the centralizer body with near turbulence across the blade face.
- Available as composite (Lite), aluminum, zinc or steel. Full length composite centralizers come with metal end caps to provide axial rigidity.

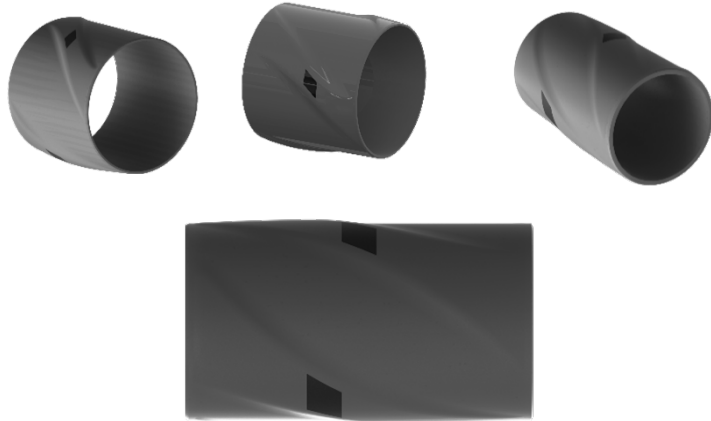


- Also available as a precision machined sub suitable for completions and drilling with casing applications.
- The GeoGLIDER® XTREME composite centralizer is available in sizes ranging from 3½ inch to 13¾ inch casing. Bespoke tubular to hole size combinations are also available and can be provided in relatively short time. Typically, less than 60 days in most cases depending on volume.



### Mechanical Properties for the GeoGLIDER® XTREME Lite

The GeoGLIDER® XTREME Lite centralizer is made by injection molding from glass fibre reinforced resin. To improve friction factor, the finished product may be coated with a thin layer of Teflon (PTFE) which bonds with the resin to improve self-lubrication and lower friction characteristics. The dynamically transient characteristic of the GeoGLIDER® XTREME reduces the effective of transitioning through abrasive formations.



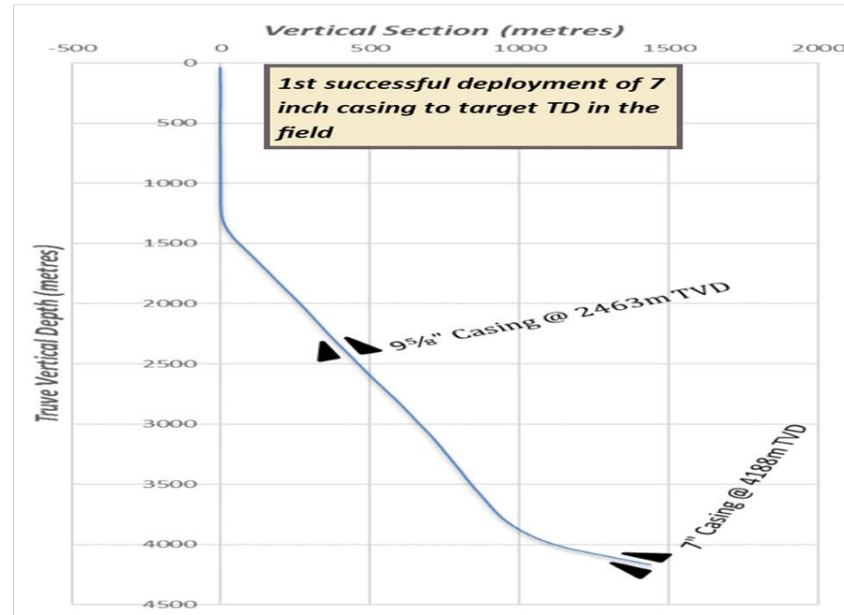
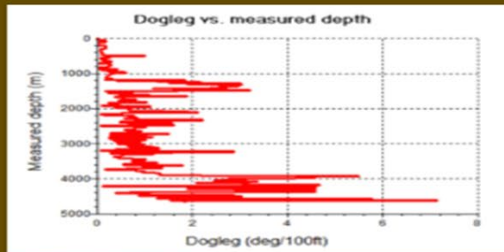
| MECHANICAL PROPERTIES |                  |                   |                           |                     |                     |                       |
|-----------------------|------------------|-------------------|---------------------------|---------------------|---------------------|-----------------------|
| MATERIAL CODE         | TENSILE STRENGTH | FLEXURAL STRENGTH | CHARPY IMPACT STRENGTH    | MINIMUM TEMPERATURE | MAXIMUM TEMPERATURE | MANUFACTURING PROCESS |
|                       | (PSI)            | (PSI)             | (FT-LBS/IN <sup>2</sup> ) | ( F )               |                     |                       |
| Composite             | 28,282           | 40,610            | 40.4                      | -22                 | 464                 | Injection molding     |



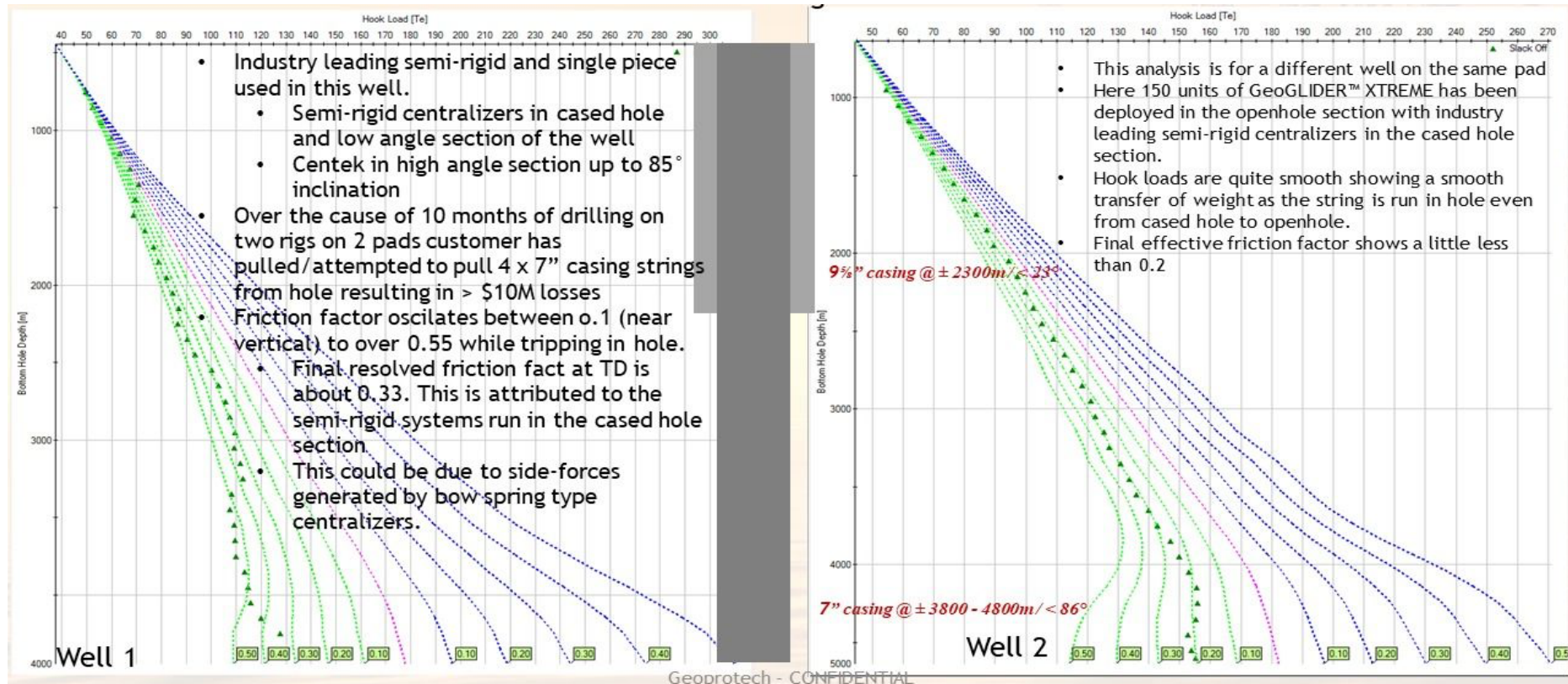
## Case Histories

### Northwest Russia – Murmansk Region

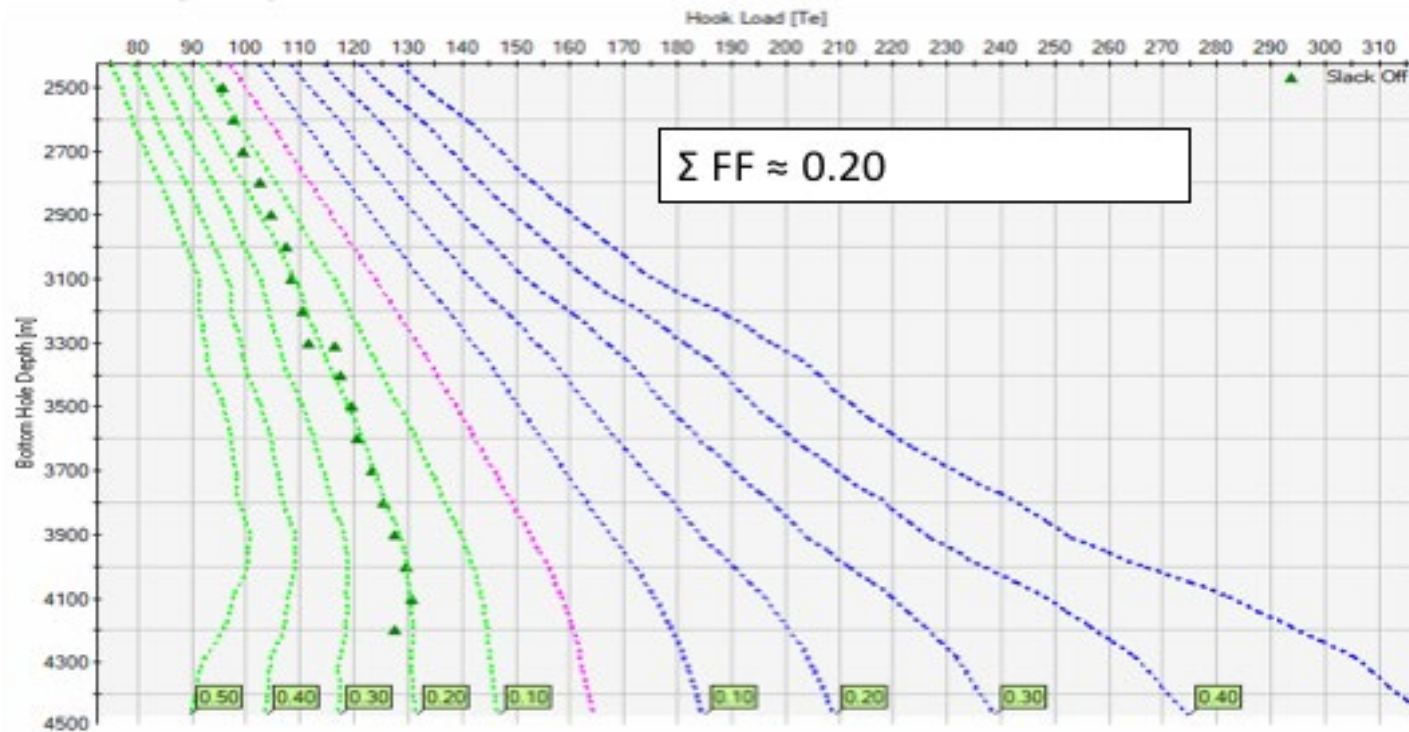
- ⇒ Pulled competitor semi-rigid centralizers and single piece centralizers from hole due to excessive drag and buckling after cutting and retrieving casing.
- ⇒ Second well where casing has been pulled due to excessive drag resulting in broken centralizers.
- ⇒ Geopro designed a centralizer placement program incorporating only 50 GeoGLIDER™ XTREME Lite thermoplastic centralizers with exceptional ultra-low friction factors with exceptional results
- ⇒ Client affirmed the superior solution in no significant drag or issues running casing to TD successfully.



## North-West Siberia



## North-West Siberia



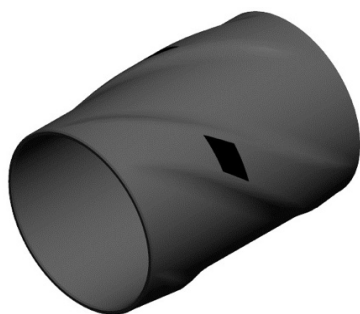
- OBM
- 150 GGXL
- Circulation:
  - ✓ 3300 m
  - ✓ 4100 – 4465 m
- FF:
  - ✓ GGXL 0.05
  - ✓ Casewell 0.25





## Specification Sheets

| Product Number | Brand      | Model       | Casing Size | Hole Size |
|----------------|------------|-------------|-------------|-----------|
| GGXL-0450-0600 | GeoGLIDER™ | XTREME Lite | 4½ in       | 6 in      |



### Design Features:

- 3 distinctly different blade profiles
- Non-concentric offset touch points on each blade
- Smoothened profile all around to ensure little or no disturbance to the borehole walls
- Smallest contact area in the industry
- Spiral bladed profile
- Steel end caps

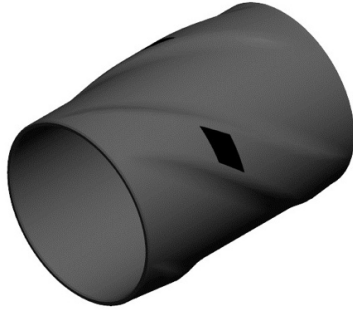
| Dimensional Information                   | Oilfield        |         | Metric          |           |
|-------------------------------------------|-----------------|---------|-----------------|-----------|
| Casing/Tubular size                       | in              | 4.500   | mm              | 114.300   |
| Internal/pass through diameter            | in              | 4.625   | mm              | 117.475   |
| Outer body diameter                       | in              | 5.125   | mm              | 130.175   |
| Maximum blade diameter                    | in              | 5.875   | mm              | 149.225   |
| Length                                    | in              | 10.00   | mm              | 254.0     |
| Weight                                    | lbs             | 3.301   | kg              | 1.50      |
| Number of blades                          | #               | 3       | #               | 3         |
| Blade width                               | in              | < 1.250 | mm              | < 31.75   |
| Maximum contact area (entire centralizer) | in <sup>2</sup> | < 5     | mm <sup>2</sup> | < 3,225.8 |

| Operational Information        |                 |                             |                 |                |
|--------------------------------|-----------------|-----------------------------|-----------------|----------------|
| Operating Temperature          | °C              | -40 to 243                  | °F              | -40 to 469     |
| Flow-by area                   | in <sup>2</sup> | 8.71                        | mm <sup>2</sup> | 5619           |
| Static Coefficient of Friction | Non-coated      | 0.13                        | Coated          | 0.03           |
| Material                       |                 | Glass fibre reinforced PA66 |                 | + PTFE coating |

Design dimensions are for presentation purposes only. Final dimensions of the end product may vary slightly to suite customer objectives.



| Product Number | Brand      | Model       | Casing Size | Hole Size |
|----------------|------------|-------------|-------------|-----------|
| GGXL-0500-0600 | GeoGLIDER™ | XTREME Lite | 5 in        | 6 in      |



#### Design Features:

- 3 distinctly different blade profiles
- Non-concentric offset touch points on each blade
- Smoothened profile all around to ensure little or no disturbance to the borehole walls
- Smallest contact area in the industry
- Spiral bladed profile
- Steel end caps

| Dimensional Information                   | Oilfield        |         | Metric          |           |
|-------------------------------------------|-----------------|---------|-----------------|-----------|
| Casing/Tubular size                       | in              | 5.00    | mm              | 127.00    |
| Internal/pass through diameter            | in              | 5.125   | mm              | 130.175   |
| Outer body diameter                       | in              | 5.625   | mm              | 142.875   |
| Maximum blade diameter                    | in              | 5.875   | mm              | 149.225   |
| Length                                    | in              | 10.00   | mm              | 254.0     |
| Weight                                    | lbs             | 3.52    | kg              | 1.60      |
| Number of blades                          | #               | 3       | #               | 3         |
| Blade width                               | in              | < 1.250 | mm              | < 31.75   |
| Maximum contact area (entire centralizer) | in <sup>2</sup> | < 5     | mm <sup>2</sup> | < 3,225.8 |

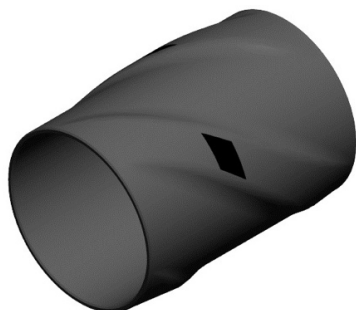
| Operational Information        |                             |            |                 |            |
|--------------------------------|-----------------------------|------------|-----------------|------------|
| Operating Temperature          | °C                          | -40 to 243 | °F              | -40 to 469 |
| Flow-by area                   | in <sup>2</sup>             | 2.81       | mm <sup>2</sup> | 1812       |
| Static Coefficient of Friction | Non-coated                  | 0.13       | Coated          | 0.03       |
| Material                       | Glass fibre reinforced PA66 |            | + PTFE coating  |            |

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| Product Number | Brand      | Model       | Casing Size | Hole Size |
|----------------|------------|-------------|-------------|-----------|
| GGXL-0500-0650 | GeoGLIDER™ | XTREME Lite | 5 in        | 6½ in     |



#### Design Features:

- 3 distinctly different blade profiles
- Non-concentric offset touch points on each blade
- Smoothed profile all around to ensure little or no disturbance to the borehole walls
- Smallest contact area in the industry
- Spiral bladed profile
- Steel end caps

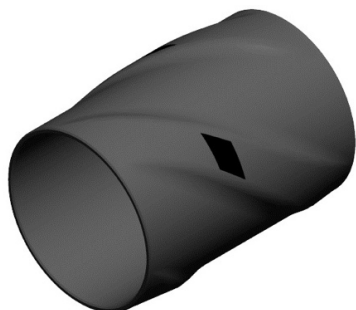
| Dimensional Information                   | Oilfield        |         | Metric          |           |
|-------------------------------------------|-----------------|---------|-----------------|-----------|
| Casing/Tubular size                       | in              | 5.00    | mm              | 127.00    |
| Internal/pass through diameter            | in              | 5.125   | mm              | 130.175   |
| Outer body diameter                       | in              | 5.625   | mm              | 142.875   |
| Maximum blade diameter                    | in              | 6.250   | mm              | 158.750   |
| Length                                    | in              | 10.00   | mm              | 254.0     |
| Weight                                    | lbs             | 3.72    | kg              | 1.691     |
| Number of blades                          | #               | 3       | #               | 3         |
| Blade width                               | in              | < 1.250 | mm              | < 31.75   |
| Maximum contact area (entire centralizer) | in <sup>2</sup> | < 5     | mm <sup>2</sup> | < 3,225.8 |

| Operational Information        |                             |            |                 |            |
|--------------------------------|-----------------------------|------------|-----------------|------------|
| Operating Temperature          | °C                          | -40 to 243 | °F              | -40 to 469 |
| Flow-by area                   | in <sup>2</sup>             | 6.80       | mm <sup>2</sup> | 4384       |
| Static Coefficient of Friction | Non-coated                  | 0.13       | Coated          | 0.03       |
| Material                       | Glass fibre reinforced PA66 |            | + PTFE coating  |            |

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| Product Number | Brand      | Model       | Casing Size | Hole Size |
|----------------|------------|-------------|-------------|-----------|
| GGXL-0550-0850 | GeoGLIDER™ | XTREME Lite | 5 ½ in      | 8 ½ in    |



#### Design Features:

- 3 distinctly different blade profiles
- Non-concentric offset touch points on each blade
- Smoothened profile all around to ensure little or no disturbance to the borehole walls
- Smallest contact area in the industry
- Spiral bladed profile
- Steel end caps

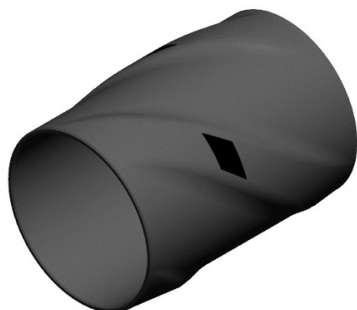
| Dimensional Information                   | Oilfield        |         | Metric          |         |
|-------------------------------------------|-----------------|---------|-----------------|---------|
| Casing/Tubular size                       | in              | 5.500   | mm              | 139.7   |
| Internal/pass through diameter            | in              | 5.625   | mm              | 172.875 |
| Outer body diameter                       | in              | 6.125   | mm              | 155.575 |
| Maximum blade diameter                    | in              | 8.250   | mm              | 209.55  |
| Length                                    | in              | 11.00   | mm              | 279.4   |
| Weight                                    | lbs             | 5.798   | kg              | 2.635   |
| Number of blades                          | #               | 3       | #               | 3       |
| Blade width                               | in              | < 1.250 | mm              | < 31.75 |
| Maximum contact area (entire centralizer) | in <sup>2</sup> | <5      | mm <sup>2</sup> | 3,225.8 |

| Operational Information        |                             |            |                 |            |
|--------------------------------|-----------------------------|------------|-----------------|------------|
| Operating Temperature          | °C                          | -40 to 243 | °F              | -40 to 469 |
| Flow-by area                   | in <sup>2</sup>             | 25.44      | mm <sup>2</sup> | 16,412     |
| Static Coefficient of Friction | Non-coated                  | 0.13       | Coated          | 0.03       |
| Material                       | Glass fibre reinforced PA66 |            | + PTFE coating  |            |

Design dimensions are for presentation purposes only. Final dimensions of the end product may vary slightly to suite customer objectives.



| Product Number | Brand      | Model       | Casing Size | Hole Size |
|----------------|------------|-------------|-------------|-----------|
| GGXL-0700-0850 | GeoGLIDER™ | XTREME Lite | 7 in        | 8 ½ in    |



#### Design Features:

- 3 distinctly different blade profiles
- Non-concentric offset touch points on each blade
- Smoothened profile all around to ensure little or no disturbance to the borehole walls
- Smallest contact area in the industry
- Spiral bladed profile
- Steel end caps

| Dimensional Information                   | Oilfield        |         | Metric          |           |
|-------------------------------------------|-----------------|---------|-----------------|-----------|
| Casing/Tubular size                       | in              | 7.00    | mm              | 177.8     |
| Internal/pass through diameter            | in              | 7.125   | mm              | 180.975   |
| Outer body diameter                       | in              | 7.625   | mm              | 193.675   |
| Maximum blade diameter                    | in              | 8.250   | mm              | 209.55    |
| Length                                    | in              | 11.00   | mm              | 279.4     |
| Weight                                    | lbs             | 6.672   | kg              | 3.033     |
| Number of blades                          | #               | 3       | #               | 3         |
| Blade width                               | in              | < 1.250 | mm              | < 31.75   |
| Maximum contact area (entire centralizer) | in <sup>2</sup> | < 5     | mm <sup>2</sup> | < 3,225.8 |

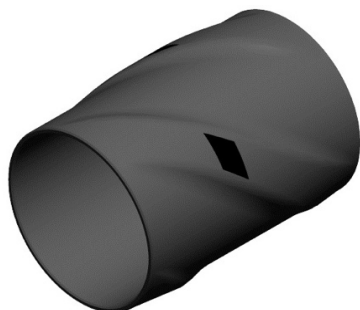
| Operational Information        |                             |            |                 |            |
|--------------------------------|-----------------------------|------------|-----------------|------------|
| Operating Temperature          | °C                          | -40 to 243 | °F              | -40 to 469 |
| Flow-by area                   | in <sup>2</sup>             | 9.54       | mm <sup>2</sup> | 6158       |
| Static Coefficient of Friction | Non-coated                  | 0.13       | Coated          | 0.03       |
| Material                       | Glass fibre reinforced PA66 |            | + PTFE coating  |            |

Design dimensions are for presentation purposes only. Final dimensions of the end product may vary slightly to suite customer objectives.





| Product Number | Brand      | Model       | Casing Size | Hole Size |
|----------------|------------|-------------|-------------|-----------|
| GGXL-0963-1225 | GeoGLIDER® | XTREME Lite | 9⅝ in       | 12¼ in    |



#### Design Features:

- 3 distinctly different blade profiles
- Non-concentric offset touch points on each blade
- Smoothened profile all around to ensure little or no disturbance to the borehole walls
- Smallest contact area in the industry
- Spiral bladed profile
- Steel end caps

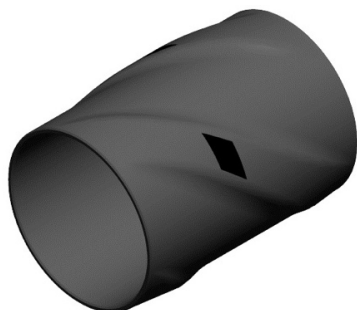
| Dimensional Information                   | Oilfield        |         | Metric          |           |
|-------------------------------------------|-----------------|---------|-----------------|-----------|
| Casing/Tubular size                       | in              | 9⅝      | mm              | 244.48    |
| Internal/pass through diameter            | in              | 9.75    | mm              | 247.65    |
| Outer body diameter                       | in              | 10.25   | mm              | 260.35    |
| Maximum blade diameter                    | in              | 12.00   | mm              | 304.80    |
| Length                                    | in              | 12.00   | mm              | 304.80    |
| Weight                                    | lbs             | 11.44   | kg              | 5.2       |
| Number of blades                          | #               | 3       | #               | 3         |
| Blade width                               | in              | < 1.250 | mm              | < 31.75   |
| Maximum contact area (entire centralizer) | in <sup>2</sup> | < 5     | mm <sup>2</sup> | < 3,225.8 |

| Operational Information        |                             |            |                 |            |
|--------------------------------|-----------------------------|------------|-----------------|------------|
| Operating Temperature          | °C                          | -40 to 243 | °F              | -40 to 469 |
| Flow-by area                   | in <sup>2</sup>             | 31.07      | mm <sup>2</sup> | 20,045     |
| Static Coefficient of Friction | Non-coated                  | 0.13       | Coated          | 0.03       |
| Material                       | Glass fibre reinforced PA66 |            | + PTFE coating  |            |

Design dimensions are for presentation purposes only. Final dimensions of the end product may vary slightly to suite customer objectives.



| Product Number | Brand      | Model       | Casing Size         | Hole Size |
|----------------|------------|-------------|---------------------|-----------|
| GGXL-1338-1600 | GeoGLIDER™ | XTREME Lite | 13 $\frac{3}{8}$ in | 16 in     |



#### Design Features:

- 3 distinctly different blade profiles
- Non-concentric offset touch points on each blade
- Smoothened profile all around to ensure little or no disturbance to the borehole walls
- Smallest contact area in the industry
- Spiral bladed profile
- Steel end caps

| Dimensional Information                   | Oilfield        |                  | Metric          |           |
|-------------------------------------------|-----------------|------------------|-----------------|-----------|
| Casing/Tubular size                       | in              | 13 $\frac{3}{8}$ | mm              | 339.73    |
| Internal/pass through diameter            | in              | 13 $\frac{1}{2}$ | mm              | 342.90    |
| Outer body diameter                       | in              | 14.00            | mm              | 355.60    |
| Maximum blade diameter                    | in              | 15 $\frac{1}{4}$ | mm              | 400.05    |
| Length                                    | in              | 12.00            | mm              | 304.80    |
| Weight                                    | lbs             | 24.860           | kg              | 11.300    |
| Number of blades                          | #               | 3                | #               | 3         |
| Blade width                               | in              | < 1.250          | mm              | < 31.75   |
| Maximum contact area (entire centralizer) | in <sup>2</sup> | < 5              | mm <sup>2</sup> | < 3,225.8 |

| Operational Information        |                             |            |                 |            |
|--------------------------------|-----------------------------|------------|-----------------|------------|
| Operating Temperature          | °C                          | -40 to 243 | °F              | -40 to 469 |
| Flow-by area                   | in <sup>2</sup>             | 42.82      | mm <sup>2</sup> | 27,626     |
| Static Coefficient of Friction | Non-coated                  | 0.13       | Coated          | 0.03       |
| Material                       | Glass fibre reinforced PA66 |            | + PTFE coating  |            |

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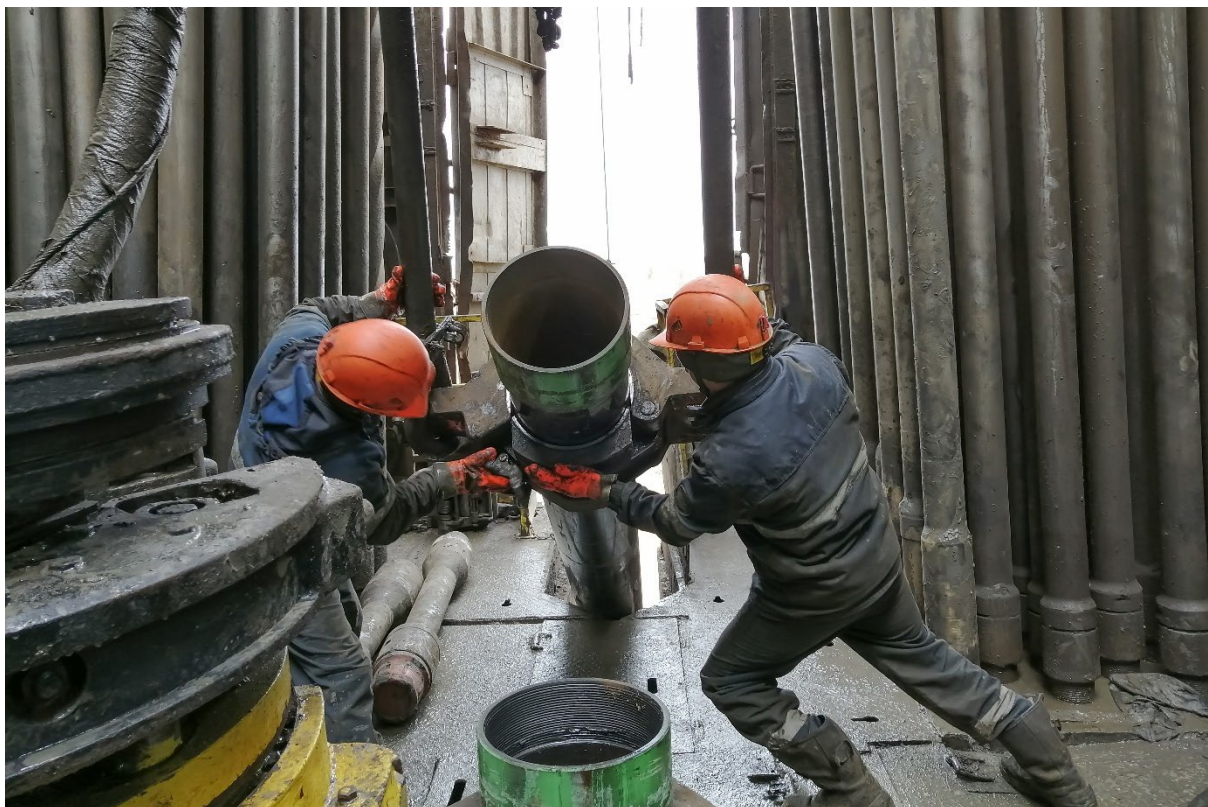
## SUMMARY AND REMARKS

The GeoGLIDER® XTREME Lite composite ultra-low friction centralizer is a product of several years torque and drag analysis to manipulate both drill strings, casing and liner strings so they can be successfully deployed at target depth. From basic build and hold J-shaped wells in the Bight of Biafra, to deep-water applications in Sub-Sahara Africa, horizontal wells in South-East Asia and ERD wells in the Arctic Circle of Russia, the GeoGLIDER® XTREME is in class of its own. It provides the benefits of a hydroformed centralizer as well as most benefits of epoxy pads, both of which are only deployable at considerable cost. It does this at a fraction of their prices.

The first deployment of the GeoGLIDER® XTREME Lite (GGXL) was for a 7 inch long-string to the heel of a horizontal well in the Murmansk Region of Russia in 2016. Historically, single piece and semi rigid centralizers have been used in the field at the behest of a major service provider. Each deployment required considerable effort to work the string to setting depth. In 30% of the wells the 7-inch casing was either stuck requiring a sidetrack or had to be pulled and an extensive clean out operation carried out. On the first well, 50 pieces of the 7-inch casing GGXL were deployed at the toe of the string and for the first time the casing went to bottom on its own weight without the need to work the string.

Recently, a major service company has been deploying the GGXL in the Middle East and sub-Sahara Africa since 2021 in Bahrain, Saudi Arabia and Nigeria respectively. In the first deployment in an unconventional field application running PTFE coated GGXLs for 5½ inch liner in 8½ inch hole, the client drilling team stated that the GGXL was smoother than the industry gold standard composite from a leading supplier. In Nigeria the GGXL (uncoated) was combined with GeoMOLE static reamer shoes to deploy 13¾ inch and 9½ inch casing offshore in a field where being able to rotate the casing string had been challenging with comparative offerings from other suppliers.

Like every other technology from Geopro, the GeoGLIDER® XTREME centralizer is a culmination of extensive well engineering experience within Geopro and our understanding of well engineering, drilling, directional drilling, torque and drag, hydraulics and tubular design. In conclusion, to us at Geopro, centralizers are not “just” a commodity, but a solution that makes a difference.





## CONTACT INFORMATION

Find below regional contact information to discuss your requirements.



|                            |                             |                                                                                                                                                                                                                             |
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