

DeadSet™ Active Ranging Intercept System

The Industry's Most Advanced No-Access Ranging Technology

THE MOST ADVANCED INTERCEPT TECHNOLOGY ON THE MARKET - PERIOD

Gunnar Energy's DeadSet™ Active Ranging Intercept System has set a new standard for accuracy, range, and efficiency.

Without the burden of legacy technology architecture, the DeadSet™ system was developed from the ground up, with every feature engineered to deliver superior performance. With the introduction of a completely MEMS/Solid State platform, the DeadSet™ system has achieved a reliability, ruggedness, and simplicity that no other system currently presents, without any sacrifice in precision or speed of service delivery. The DeadSet™ system guarantees the highest probability of first-time intersection currently available on the market today, all while presenting industry leading cost efficiency.

DESIGN FEATURES

The DeadSet™ system presents numerous design features which contribute to best in class accuracy and cost effectiveness. System features include:

- Solid state platform delivering precise, accurate and repeatably results
- Completely modular design, which allows sensor packages to be interchanged depending on the stage of the intercept operation
- Proprietary software automatically interprets ranging data and generates a new well plan to intersect the target well. This feature reduces the need for onsite personnel typically required for data interpretation

GYRO COMPATIBLE FOR VERTICAL INTERSECT

Gunnar's Gyro module is fully compatible with the DeadSet™ sensors' communications protocol, allowing the magnetic sensor/gyro assembly to be deployed on a common run, without sacrificing range, speed of service delivery, or accuracy. The inclusion of gyro compassing at vertical orientations eliminates the ambiguity commonly seen in other systems operating on magnetic referencing alone. When vertical gyro orientation is not needed, the gyro module can be simply unscrewed from the bottom hole assembly and omitted. This flexibility allows for the service provider to minimize electronics downhole, thereby generating a cost savings that can be passed on to the customer.

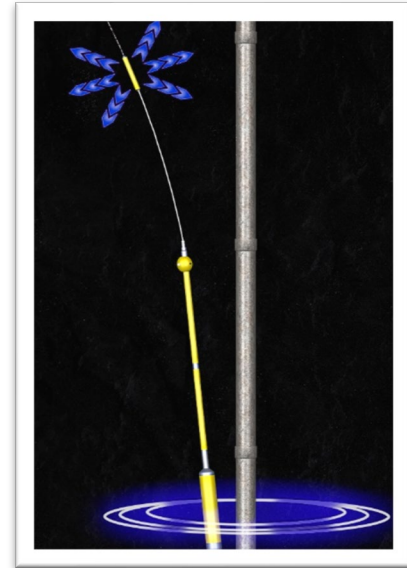
FIT FOR PURPOSE APPLICATIONS

Wellbore Intercept

- Plug and Abandonments
- Relief Wells
- Fish Bypass
- Below Fish Open Hole Re-entry
- Milling and Re-Entry

Wellbore Separation

- Collision Avoidance
- Ghost Hole Detection



UNMATCHED SOPHISTICATION IN DATA INTERPRETATION

The Gunnar Energy Services team presents an unrivaled understanding and dedication to the craft and science of magnetic ranging. To ensure that this deep knowledge can be operationalized on every job, Gunnar has embedded these learnings into the DeadSet™ system software which analyzes, reports on and actions the magnetic ranging data automatically by providing a new well plan to intersect the target after every ranging measurement.

GENERAL SPECIFICATIONS

NOMINAL OD	1.875 in [47.6 mm]
MAX TEMPERATURE	347°F (175°C)
MAX PRESSURE	15,000 psi
LENGTH (with gyro add on)	8.67 ft (2.62 m)
DETECTION RANGE	200 ft (61 m)
DISTANCE ACCURACY	5%
DIRECTION ACCURACY	3°
WIRELINE COMPATIBILITY	7 - Conductor
CONNECTION	Any multi-conductor wireline
SENSOR PACKAGE SIZES	1.875 in [47.6 mm] and 4.5 in [114.3 mm]
GYRO LENGTH	33 in [0.84 m]
GYRO OD	1.875 in [47.6 mm]
SOFTWARE	Proprietary software automatically generates a new intersect well plan after each ranging shot, an industry first

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