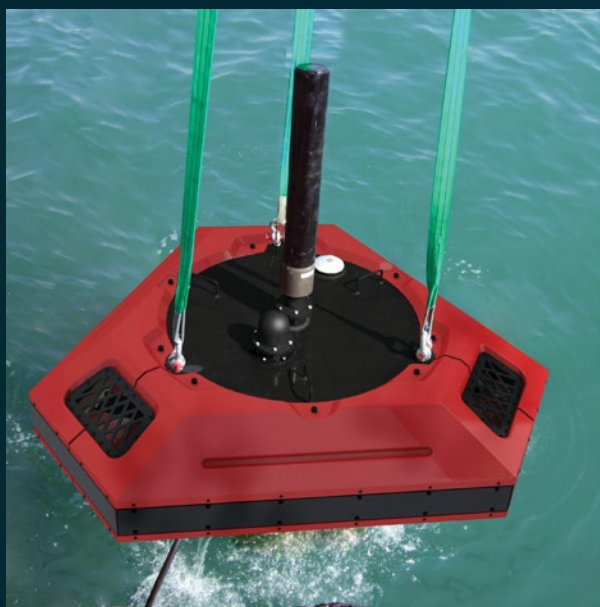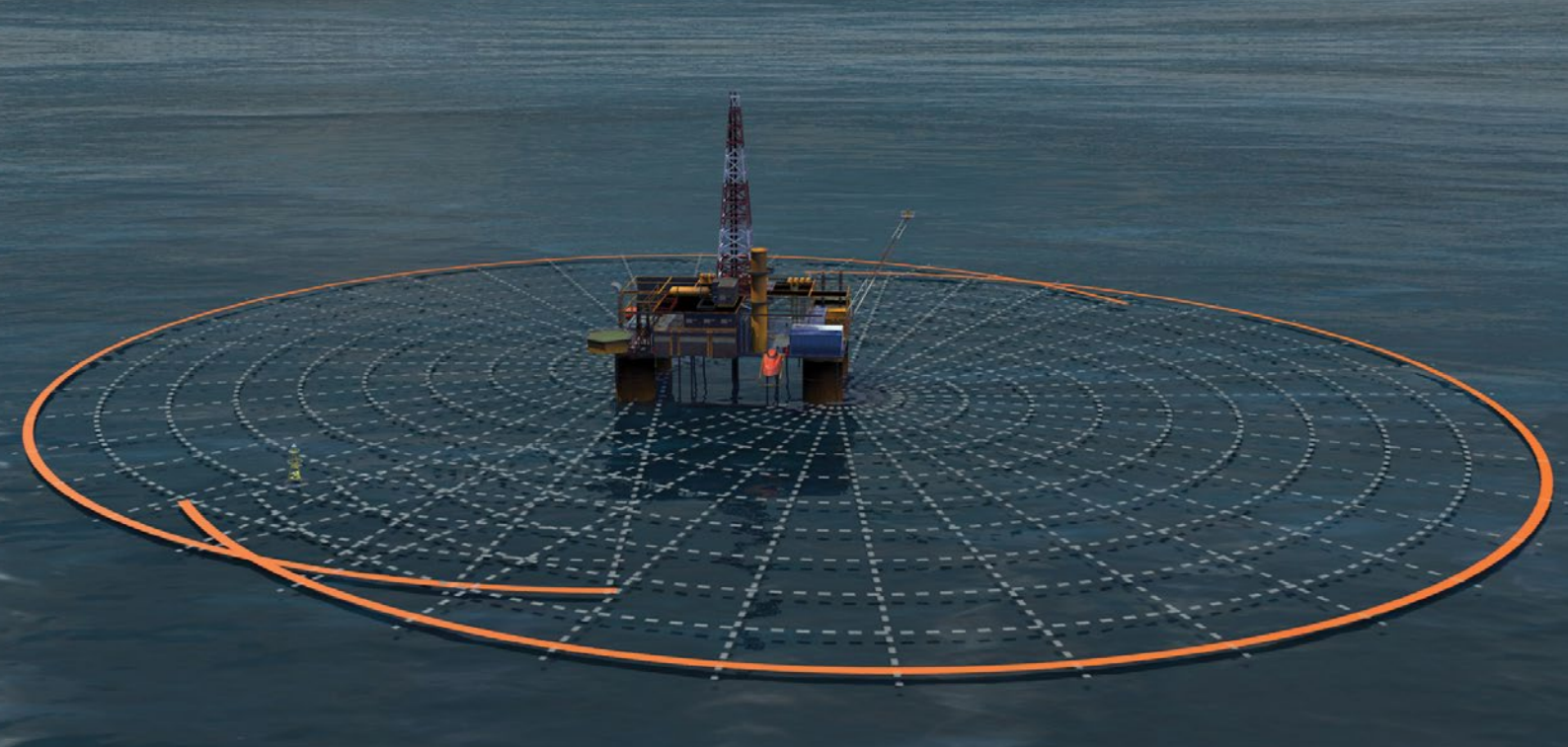# AQUASHIELD™

DIVER DETECTION SONAR

DSIT's AquaShield™

The AquaShield™ is an advanced Diver Detection Sonar (DDS) system, incorporating years of experience accumulated from continuous operation at multiple sites around the world. The system is operational in-the-water, protecting naval bases, energy terminals, commercial ports, off-shore platforms and other high value assets from underwater intrusion.

AquaShield's unique modular design enables tailoring of the system to customer requirements and site specific geography. The AquaShield™ offers a long range of detection for even the weakest of targets, and can easily handle over 1,000 contacts simultaneously. The combination of a fully automatic mode of operation, very low maintenance requirements and high system reliability create a highly cost-effective system. AquaShield™ DDS - the best underwater security system available.

Main Features

* No operator required – fully automatic (from detection through tracking and classification to alert)
* Capable of handling more than 1,000 sonar contacts simultaneously
* Highly accurate positioning of the threat
* Built to operate 24/7/365 in all weather and water conditions
* Robust design - can withstand an explosion of 0.2kg TNT at a distance of 5 meters only
* Built in redundancy
* 3 sector coverage options: 120°, 240°, 360°

* Open architecture supports easy integration with any C&C and other sensors
* Display includes multiple display formats, target data, exclusion zones and more
* Proven high reliability – systems operating in the water for years with zero malfunctions
* Very little maintenance needed

The AquaShield™ System Units

Processing Unit

Command & Display Unit

Junction Box

Underwater Unit

Underwater Hailer

The AquaShield™ Applications

The AquaShield™ is designed to guard the following coastal and offshore sites from underwater intrusion and sabotage:

* Naval Bases
* Energy terminals
* Offshore platforms
* Ports and Harbors
* Nuclear power facilities

* Underwater pipelines and cables
* Borders
* VIP Sites
* Other critical coastal/offshore asset

Underwater Threats

Any underwater intruder, including:
* Divers with closed circuit breathing apparatus
* Divers with open circuit breathing apparatus
* Diver Propulsion Vehicles (DPV)
* Unmanned Underwater Vehicles (UUV)

Closed circuit diver

UUV

Open circuit diver

AquaShield™ Specifications

The AquaShield™ Main Units

>> Underwater Unit
>> Processing Unit
>> Control and Display Unit
>> Junction Box

The Underwater Unit

>> Underwater Front-end Electronic unit (UFE)

>> 1 Transmit Array (Tx) with 360° coverage

>> 1 – 3 Receive Arrays (Rx) depending on the required coverage:

- 1 Rx array for coverage of 120°
- 2 Rx arrays for coverage of 240°
- 3 Rx arrays for coverage of 360°

Interface & Integration

LAN Interface	TCP/IP
Integration	with any C&C system

Special Processing Algorithms

>> Performance Optimization
>> Coherent and Energy Detection
>> Bearing Interpolation
>> CFAR Processing
>> Two Dimensional Normalization
>> Adaptive Threshold
>> Automatic Detection
>> Automatic Tracking
>> Automatic Classification
>> False Alarm reduction
>> Automatic Alert
>> Automatic Elimination of Wakes
>> Static Target Suppression

Display Formats

>> Sonar Data

>> Tactical Picture on:
- Aerial photo
- Satellite Image
- Nautical Chart

>> Overlay of Sonar Data on any type of Tactical Picture

Recording & Playback

Several modes of data recording and playback enable debriefing of special events

Detection Ranges

Diver with open circuit breathing apparatus	1,000m
Diver with closed circuit breathing apparatus	700m

Transmit / Receive Parameters

Source Level (Max)	220 dB re 1µPa @ 1 meter
Center Frequency	60 KHz
Transmission Modes	CW and LFM
Pulse Width	1- 40 ms
Range Accuracy	better than 0.5 meter
Bearing Accuracy	0.1°
Transmit Array	40 cm
Receive Array X 3	125 cm

Built In Test (BIT)

>> Constant monitoring of all modules
>> Automatic alert in case of failure

About DSIT

DSIT Solutions Ltd., a subsidiary of Acorn Energy (NASDAQ: ACFN), develops and produces sonar and fiber optic applications for the defense, commercial, energy and homeland security markets.

The company employs a world-class multi-disciplinary team of professionals that are skilled in the latest sonar and Real-Time technologies. DSIT products include: SeaShield™ Submarine Detection Sonar, AquaShield™ Diver Detection Sonar (DDS), PointShield™ Portable Diver Detection Sonar (PDDS), Portable Acoustic Range (PAR), Underwater Acoustic Signal Analysis (UASA), and a wide variety of Sonar Simulators and Trainers.

Discover what's down there