Seatronics Overview

✓ Industry leading supplier to the Oil and Gas Sector established for >40 years

✓ Part of the Acteon Group since 2007

✓ Widely acknowledged as leading sensor integrator / solution provider within this sector

✓ Global footprint, considered number 1 in our field

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The Road to VALOR

✓ Seatronics acquire Predator ROV IP in 2010

✓ Purpose to offer advanced survey solutions from a small ROV platform

✓ Not our intention to become an ROV manufacturer

✓ Moderate success, O&G markets, reluctance to adopt new technology, tried and tested = safe

✓ Fast forward to September 2014 – Global Oil & Gas Crash

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The Road to VALOR - New Markets

✓ Invited to by US Law Enforcement / Public Safety Dive Team

✓ Primary task – Remove divers from potentially explosive threats

✓ Successful demonstration results in a working group to further develop the platform

✓ Simplify operator input / increased reliance on automation

✓ Successfully completed NIST Testing

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Introducing The VALOR

- ✓ VALOR Development Program – 2017
- ✓ Actively disrupt existing markets
- ✓ Undertake tasks typically associated with work-class platforms
- ✓ More connectivity than any other platform available
- ✓ Standardise on cutting edge technology
- ✓ Offer a flexible / configurable platform
- ✓ Do more with less
- ✓ Truly reusable capability

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VALOR Defence Applications

✓ Mine Identification & Destruction System (MIDS)

✓ Explosive Ordnance Disposal (EOD)

✓ Unexploded Ordnance (UXO) Survey

✓ Expeditionary & Special Forces Operations

✓ Anti-Terrorism & Force Protection

✓ Intelligence Surveillance and Reconnaissance (ISR)

✓ Port & Harbor Security

✓ Swimmer Detection

✓ Hull and Infrastructure Survey / change detection

✓ Search & Rescue / Diver Support

VALOR
Versatile and Lightweight Observation ROV

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Courtesy of Advanced Navigation

Advances in Sensor Technology

✓ GPS Technology – Widely recognisable

✓ Environmental Monitoring Techniques

✓ Doppler Velocity Log

✓ Inertial Navigation Solution

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Technology = Big Data

√ Sensor technology has improved

  √ HD cameras

  √ Multibeam sonar

  √ Inertial Navigation

  √ Laser scanning solutions

  √ Photogrammetry packages

√ Produces a new challenge

  √ ROV systems limited connectivity

  √ Advanced work class systems ~3/4GB bandwidth

√ Gigabit Ethernet connectivity increasingly required

  √ Localised PPS timing

  √ Sensor bandwidth requirements exceed availability

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VALOR – Technology

✓ 40GB Multiplexor

✓ Supports 10 x User configurable sensor ports
  ✓ Configurable through simple to use software
  ✓ 10 x GB ethernet channels – if required

✓ HD Camera technology supplied as standard

✓ INS embedded in system design

✓ Solved the bandwidth problem

VALOR – Control System

√ Syntonic Control System

√ Vehicle sensors updating at 1Htz

√ Ability to utilise 100% of available power from thruster package

√ Increases payload capacity / current handling capability

√ Flexibility of the platform

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VALOR – Power

√ Ability to harness full potential from thruster package

√ Combined bollard pull of 98kgf

√ Nothing in this class that offers this level of power

√ Provides the user with a truly flexible range of solutions

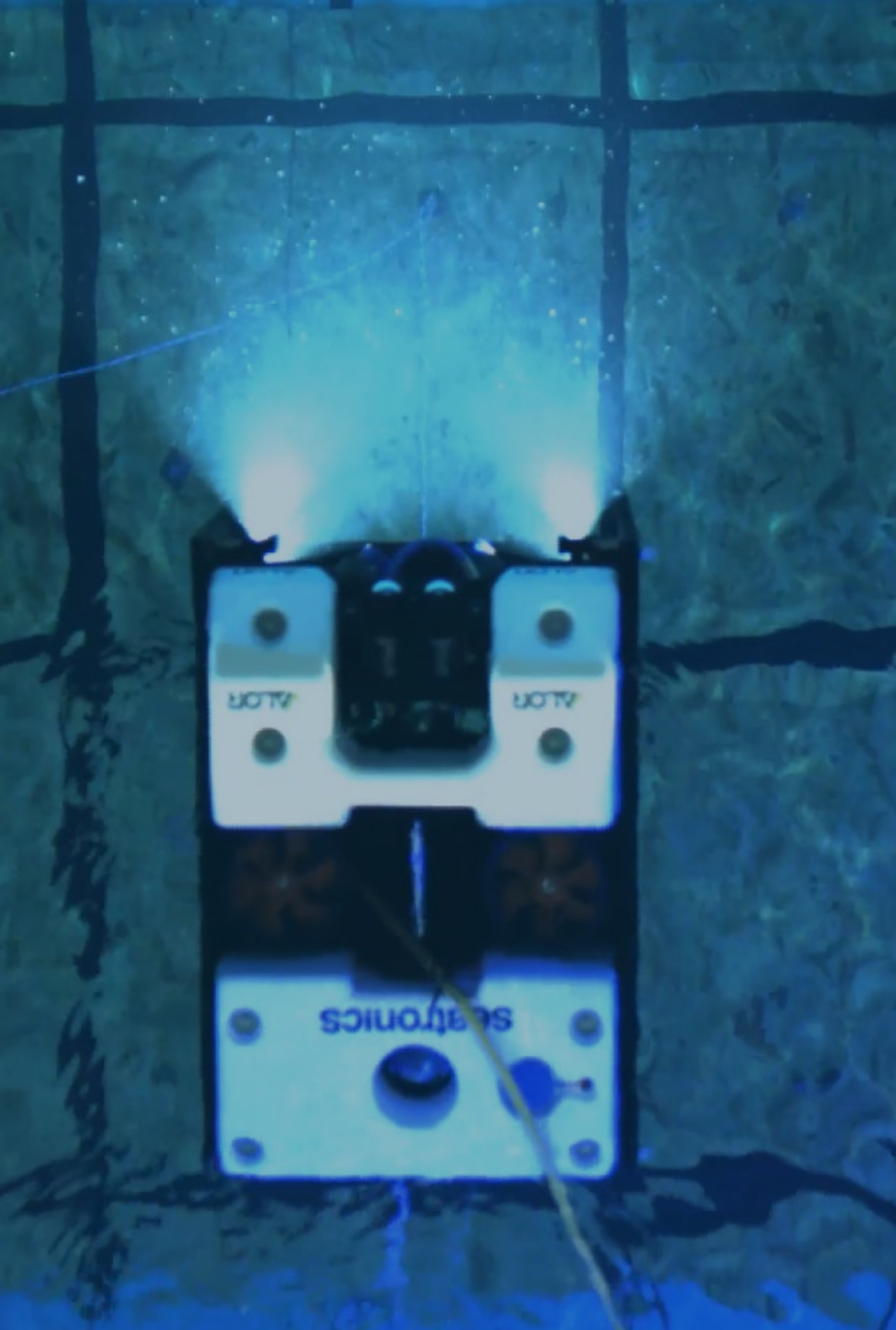DEFENDING WITH VALOR

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VALOR - MIDS Configuration

✓ Belgian Navy MIDS ROV Toolbox – Elbit Systems

✓ Truly multi shot / multi mission capability

✓ Flexibility of payload

✓ Advanced machine learning algorithms for mine identification

VALOR – MIDS Configuration

✓ 2 x MIDS ROV Systems installed onboard Seagull ASV

✓ Ability to be rapidly deployed with a configurable payload

  ✓ Sea state 3

✓ Multiple sensory packages embedded into the solution

  ✓ Locate / Classify / Neutralise

✓ Advanced Machine learning Target Tracking / Image Classification Software

 ✓ Enabling truly autonomous flight

  ✓ Target classification software

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Engineered Solutions

√ Detailed engineering analysis

- √ Vehicle performance / current handling capabilities
- √ Proposed deployment solution
- √ Meet and exceed specifications adding capability and an enhanced operational window
- √ Conduct environmental trials
    - √ Edinburgh University Flow Wave Facility
    - √ Independent verification of performance
   - √ Comparison trials

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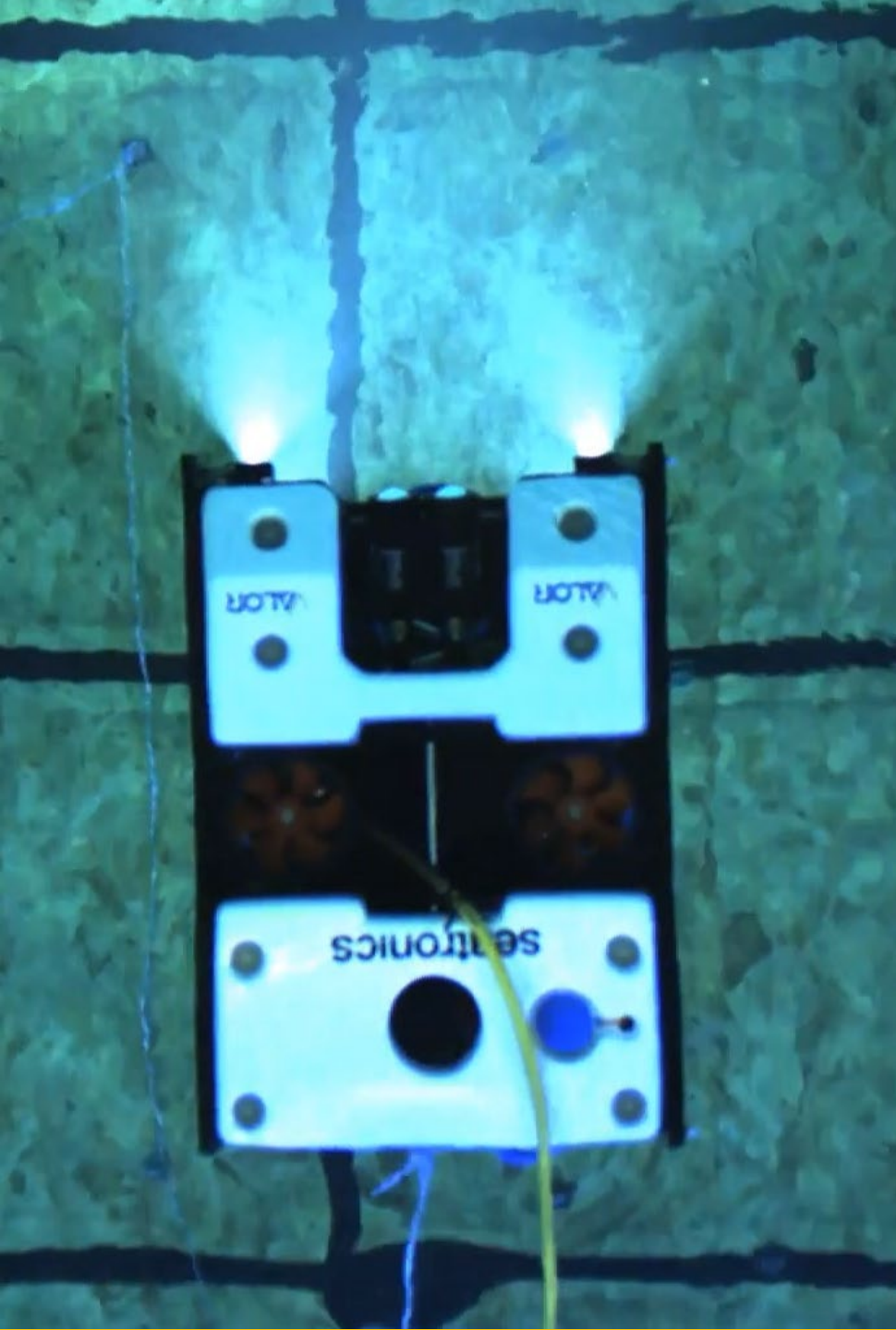
Enhanced Payload Capability

✓ Truly Multi shot solution

    ✓ ECS Cobra Mine Disposal Solution

        ✓ Enhanced acoustic fire control solution

    ✓ Multiple charges

    ✓ Selectable from fire control console

Acoustic bowl of the TRANSDEC facility
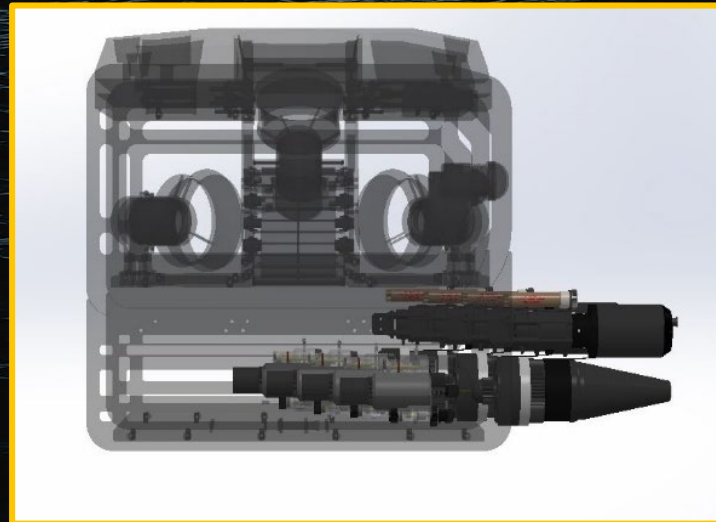
Intelligent Detection and Tracking

√ Advanced vehicle tracking

√ Object classification

    √ Advanced computer vision techniques

    √ AI Deep learning

√ Extensive testing carried out to ensure operational suitability
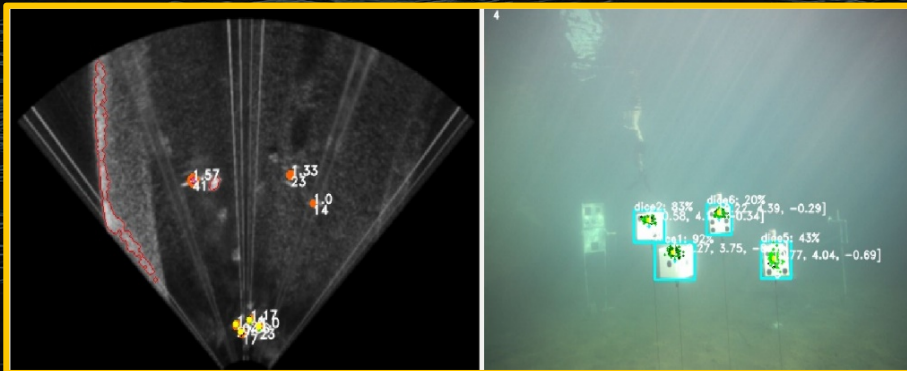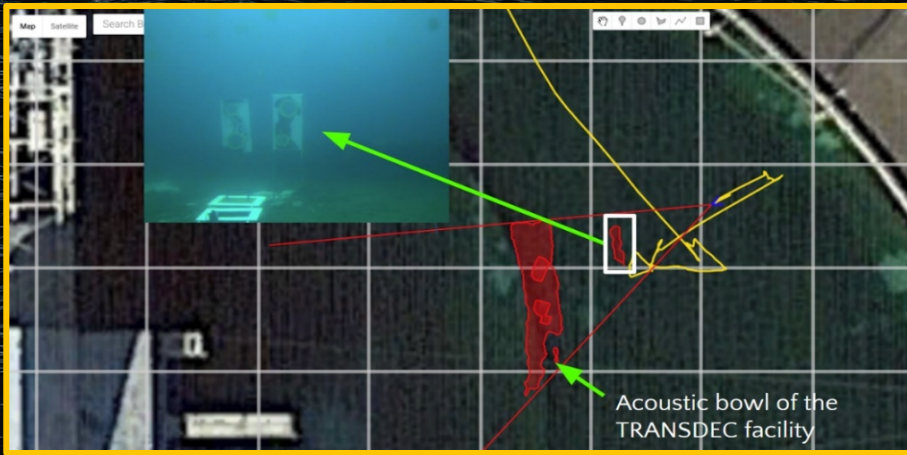
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CONCLUSIONS

✓ Use of advanced sensor technology

✓ Simplified operations

✓ Increased automation / system autonomy

✓ Ability to complete complex tasks using less skilled personnel

✓ Highly configurable multi purpose tool box

VALOR
Versatile and Lightweight Observation ROV

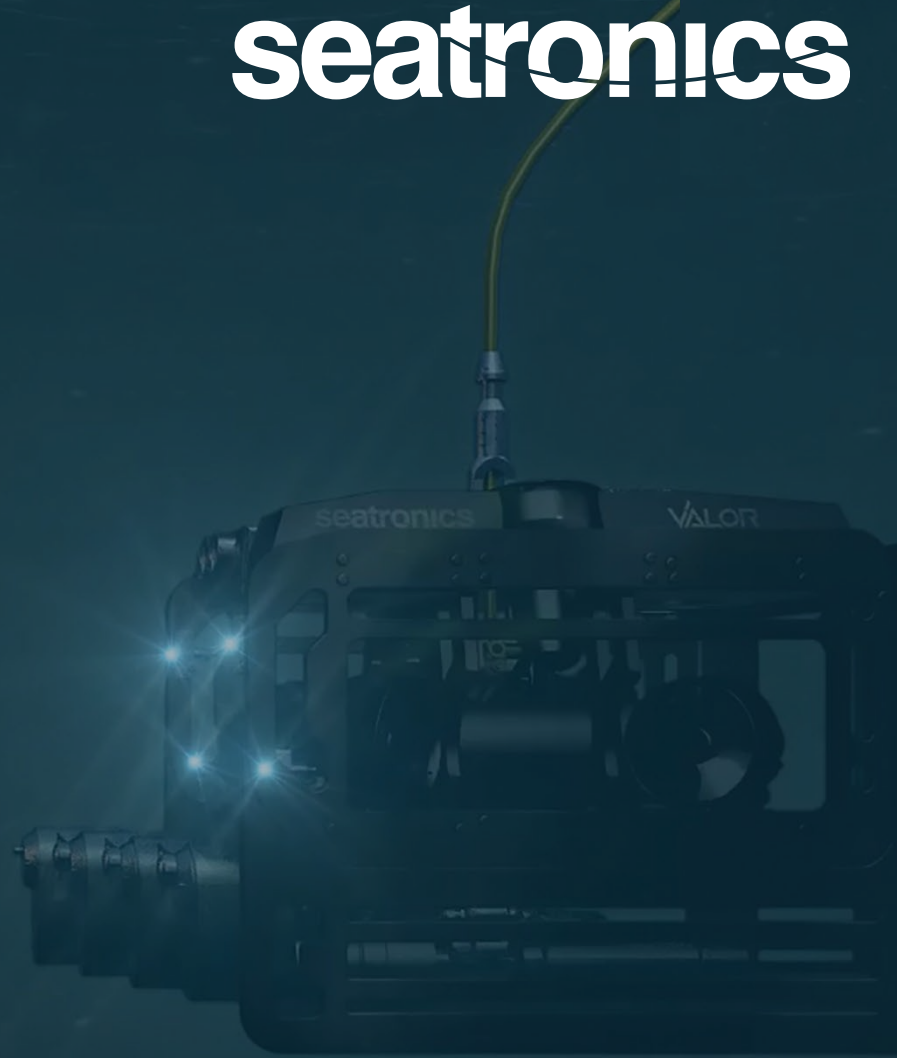**Thank you for your time.**
Derek Donaldson – VP Global Operations

an **ACTEON** *company*

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