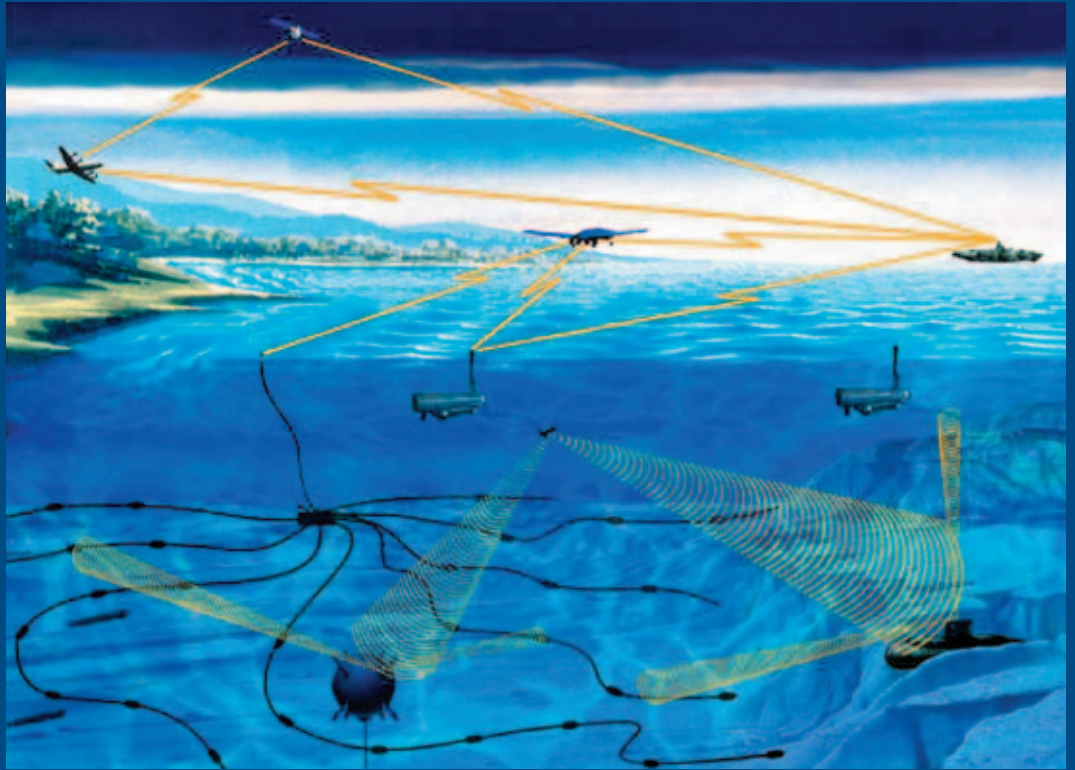


Autonomous Unmanned Vehicles Symposium

# PACIFIC 2006

INTERNATIONAL MARITIME EXPOSITION

31 JANUARY – 3 FEBRUARY 2006  
SYDNEY CONVENTION AND EXHIBITION CENTRE, AUSTRALIA



*Lockheed Martin Corporation - Sea Talon UUV*

## **AUTONOMOUS UNMANNED VEHICLES SYMPOSIUM**

**DEVELOPMENTS, CAPABILITIES & MARITIME APPLICATIONS**

**2-3 February 2006**

**2.00pm-5.00pm Thursday 2 February 2006 and  
8.30am-4.30pm Friday 3 February 2006**

Admission free to accredited trade visitors to Pacific 2006  
Symposium numbers limited. Registration essential.

**REGISTER ON LINE NOW. DON'T MISS OUT!**

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## DEVELOPMENTS, CAPABILITIES & MARITIME APPLICATIONS

### Autonomous Unmanned Vehicles (AUV)

Autonomous Unmanned Vehicles (AUV) have been developed and used by the navies of Australia, Canada, Europe, UK and US since World War II.

The value of AUVs has become increasingly recognised due to the potential loss of vessels and personnel in peace keeping roles, anti terrorism operations and border security.

Defence, customs and industry agencies are now investing heavily in the development and use of various Unmanned Marine Vehicles (UMV) for tactical surveillance and defence roles.



*Nulka - Anti-Ship Missile Defence Decoy*

### Unmanned Maritime Vehicles (UMV)

The proven success of the Unmanned Aerial Vehicle (UAV) in both military and civil applications has led to increased levels of interest and investment in R&D and applications in the marine environment with Unmanned Maritime Vehicles (UMV) including:

- Unmanned Aerial Vehicles (UAV)
- Unmanned Underwater Vehicles (UUV)
- Unmanned Surface Vehicles (USV)

#### UMV Roles:

- ☆ Defence & border security
- ☆ Littoral water reconnaissance
- ☆ Coastwatch
- ☆ Infrastructure security & maintenance
- ☆ Fisheries
- ☆ Maritime safety
- ☆ Meteorological
- ☆ Environmental
- ☆ Hydrographical
- ☆ Oceanographical

#### UAV Maritime applications:

- ☆ Persistent high & low altitude ISR (Mariner)
- ☆ Ship launched & recovered small teamed UAVs (Scan Eagle, Aerosonde, Silver Fox)
- ☆ Sonar Buoy deployed small UAVs for covert or teamed surveillance of identified targets (Coyote)
- ☆ Hand launched UAVs for quick & easy over the horizon operations (Avatar).



*General Atomics Aeronautical Systems - Mariner*

UUVs extend the range and stealth capabilities of naval ships and submarines, especially in mine detection and surveillance roles in harbours or littoral waters.

In civil applications UUVs can support covert data collection, deepwater scientific and oceanographic activities, as well as the monitoring and maintenance of marine vessels and undersea infrastructure.

USVs are highly maneuverable and stealthy craft with a wide range of capabilities to operate in high risk environments: target drones; ISR; covert estuarine operations; mine & anti-submarine warfare; stabilised weapons platform.



*RAFAEL - Protector USV*

The Pacific 2006 International Maritime Exposition and the associated Autonomous Unmanned Vehicles Symposium are organised by Maritime Australia Limited (ABN 31 091 148 837) in the interest of promoting the development of Australian maritime and defence industrial, manufacturing and communications technology resources.

#### Delegate and Visitor Accreditation

Strict entry criteria apply to Trade Visitors at the Pacific 2006 International Maritime Exposition and delegates at the Autonomous Unmanned Vehicles Symposium.

Both are exclusive industry-only events intended as serious professional and business occasions. All visitors and delegates must have a professional, commercial or operational involvement in maritime, naval, defence, technology, government or related fields.

All visitors and delegates will be required to complete a Trade Visitor application form. Business card, company identification, applicable association membership card or similar evidence of qualification may be required as part of the accreditation process.

The presentation of official photographic identification (passport, drivers licence, Defence ID, etc.) will be required. Photo ID must be carried at all times.

Other conditions of attendance also apply.

**PRIVACY STATEMENT** We collect personal information about individuals to enable us to manage and market our activities and to promote products and services. We may disclose personal information to our insurers, mailing houses, suppliers and contractors. Individuals have the right to access and correct their personal information held by us. If you do not wish to continue receiving marketing communications from us or do not want your personal information disclosed to third parties please contact us at the following address.

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## PROGRAM AND SPEAKERS

**2.00pm-5.00pm Thursday 2 February 2006**

**9.00am-10.00pm Australian Research Council, Centre of Excellence for Autonomous Systems - Inspection Tour**

**10.00am-2.00pm Pacific 2006 Exhibition Viewing**

**2.00pm Introductory Remarks from the Chair Dr Salah Sukkarieh - Australian Research Council Centre of Excellence for Autonomous Systems**

**2.05pm Welcome - Rear Admiral David Holthouse, AO RAN (Rtd) - Chairman, Maritime Australia Limited.**

**2.15pm Keynote Address - AUV Industry Opportunities & Capabilities The Hon Warren Entsch MP - Parliamentary Secretary to the Minister for Industry, Tourism and Resources**

The Australian Government is committed to the development of a vibrant AUV industry in Australia. Australia has a long and successful history with AUVs, dating back to the 1950s, something that has continued with the current generation of high technology Australian AUV companies.

The Australian Government recognises the potential value of AUVs and there are many opportunities available to industry, including as part of the Coastwatch and Securing Australia's NW Shelf initiatives. These opportunities are the perfect chance for overseas and Australian technology suppliers to cooperate and work together to support Australia's AUV needs.

**2.45pm UAV Coastal & Maritime Surveillance Roles Anthony Patterson - Director Business Development, National Air Support**

National Air Support, current provider of civil maritime surveillance to the Australian Customs Service, has teamed with US based General Atomics Aeronautical Services to offer the Mariner UAV for persistent high or low altitude surveillance of Australia's extensive coastline and vast territorial waters.

**3.15pm Ship Launched/Recovered UAVs - ISR from the Sea - Recent Experiences & the Way Forward Steve Krause - Manager, Unmanned Systems Program, The Boeing Corporation**



Boeing is committed to the development and deployment of a range of UAVs that share one common characteristic, point launch and recovery. This makes them eminently suitable for ship-based operations and this presentation will examine recent operational and development experiences with platforms such as the fixed wing ScanEagle and rotary wing A-160, MD5XX and Canard Rotor Wing.

*Boeing/Insitu - ScanEagle UAV*

The primary focus of this presentation will be on the ScanEagle, which has been jointly developed for military seaborne operations with the Insitu Group. A small, long endurance UAV, ScanEagle is capable of being launched and recovered on vessels from as small as 50 feet through to platforms the size of an LPD. The presentation will examine recent operational and R&D experiences with the ScanEagle and also look at plans for future development across the range of ship launched and recovered UAV systems.

**3.45pm VTOL UAVs in the Littoral Sense Keith Carroll - Schiebel**

Austrian UAV company Schiebel and Australian UAV operator Helimetrex have teamed to offer a VTOL UAV for both civil and military applications. The Camcopter® S-100 has been designed and produced to operate in maritime environments, incorporating materials and coatings to prevent corrosion in saltwater environments. The vehicle's VTOL capabilities, combined with precision navigation systems makes it ideal for maritime roles including ship-based targeted surveillance and search and rescue.



*Schiebel - VTOL UAV Camcopter S-100*

**4.15pm Unmanned. Unmatched - Aerial Vehicles for the Future - John VanBrabant, Business Development Manager, Target Programs, Northrop Grumman Unmanned Systems.**

Northrop Grumman has a strong track record in the development and production of unmanned vehicles. Since the end of World War Two it has delivered more than 100,000 units into service. The latest and most advanced of these are Global Hawk, Fire Scout, and BQM-74F.

Comprising a vast majority of the 100,000 deliveries are aerial targets. The latest, the BQM-74F, is being developed under contract to the US Navy. Building on success of the 74E, the F series boasts significant improvement in speed, range, maneuverability and payload capacity.

The recently developed Navy Fire Scout provides situation awareness and precision targeting support for the navy of the future.

**4.45pm Closing Remarks from the Chair**

**5.00-6.00pm Pacific 2006 Happy Hour & Exhibition Viewing**

**Program and speakers are subject to change without notice.**

## PROGRAM AND SPEAKERS

**8.30am-5.00pm Friday 3 February 2006**

**8.30am Welcoming Remarks from the Chair**

**8.45am Sonar Buoy Launched UAVs** *Matt Pobloske - Vice President Business Development, Advanced Ceramics Research*

Based in Tucson, Arizona, Advanced Ceramics Research is developing a small sonar buoy tube deployed UAV for covert ISR. The Coyote is air deployed from a standard sonar tube, and contained in the COTS tube and storage device. It is designed to be rugged, cost effective and flexible, and employs a variety of sensors. ACR will also present recent operational and R&D experiences with the Silver Fox UAV platform.

**9.15am Australia's DoD AUV Requirements** *Dr David Wylie - DSTO (TBC)*

The Defence Science and Technology Organisation (DSTO) is Australia's leading science agency dedicated to defence and national security. Its responsibility includes the expert, impartial and innovative development and application of science and technology to the defence of Australia and its national interests, and to provide advice to government on the application, capabilities and acquisition of defence technologies and equipment that would support Australia's national security needs.

**10.00-11.00am Pacific 2006 Exhibition Viewing**

**11.00am UUV Developments & Roles** *Janis Cocking - DSTO (TBC)*

Australia, along with its allies, is moving towards the use of a range of unmanned and autonomous assets for use in military operations. These assets will operate both above and below the surface of the oceans and will be networked with each other and with manned platforms and systems.

As part of its Automation of the Battlespace initiative, DSTO is addressing several critical undersea issues using a combination of simulation and field experimentation. These include energy storage and management, deployment and recovery, navigation, communications and human support issues.

Two vehicles, called Wayamba and Mullaya, have been developed as test beds for field experiments and the testing of technologies which could address the critical path issues. The test beds are also being used to demonstrate different concepts of operation, such as multiple vehicle co-operation in integrated air-undersea operations and multiple-undersea vehicle operations.



*DSTO - Wayamba UUV*

**11.30am UUV & Mine Countermeasures** *Unmanned Maritime Systems Program, Lockheed Martin*

Lockheed Martin Undersea Systems' existing advanced technology and decades of proven

expertise in systems integration, shallow water acoustics, UUV technology and undersea operations, has allowed for the development of the Sea Talon - a cost effective, rapidly deployable, multi-mission underwater detection and tracking systems.

**12.00pm UUV Operations in Littoral Waters** *Chris Minto - Sales Manager, QinetiQ Ltd (TBC)*

QinetiQ is one of the world's leading defence technology and security companies, which is undertaking a range of unmanned technology development projects relating to USV/UUV communications, and submarine based launch and recovery of UUVs.

**12.30-2.00pm Pacific 2006 Exhibition Viewing**

**2.00pm USV Development & Roles** *Giora Katz - Head of Naval & EW Systems Directorate, RAFAEL Armament Development Authority Ltd*

RAFAEL offers unmanned and autonomous systems for various missions, including airborne and maritime applications. RAFAEL also supports unmanned systems with payloads, ground control and advanced rapid signal processing systems.

At Pacific 2006 RAFAEL will be demonstrating the capabilities of the Protector USV, which can be used for military, naval and homeland security applications.

**2.30pm Systems and Sensors for AUV Command and Control** *Trevor Ward - Product Line Manager (Through Water Communications) Nautronix Ltd.*

Nautronix is a world leader in the provision of marine technology solutions including acoustic positioning, navigation and through water telemetry solutions to the defence, offshore and ocean science arenas. Unlike UAVs and USVs, that utilise GPS Navigation and Satellite Transmission technologies, UUVs have not yet reached a level of maturity that will allow these services to be used effectively. The typical UUV navigation uses Inertial Navigation System technology, which is prone to drift and loss of position without access to any external update, such as surface GPS or USBL. Nautronix has developed the ability to provide and manage command, control and navigation of a UUV via the use of advanced acoustic signaling technologies. Potential solutions and indicative trial results, including descriptions of an underwater acoustic network for self navigation and through water communication and relocation system, already proven in the field, will be presented to provide an insight into solutions for the future operation of UUVs.

**3.00pm Operational Simulation & Training** *Dr Michael McGarity Manager, Products and Technologies - CAE*

CAE is a global leader in the design and manufacture of sophisticated operational military simulation and training systems for air, land and sea applications, having supplied the defence forces of more than 30 nations with military training systems and services.

**3.30pm Heavy Fuel Engine Systems** *Tony Fitzgerald - Director Business Development, Orbital Corporation*

Orbital is a world leader in the development of direct fuel injection technologies, which converts spark ignition aircraft and marine engines to operate on heavy fuels.

**4.00pm Closing Remarks from the Chair**

**4.30pm Farewell Refreshments**