



Issue 21 | June 2010

A periodic report on L-3 MAPPS
Marine Systems and Simulation activities

The Power of Two

Combined IPMS + IBS for the Indian Navy P28 Stealth Corvettes



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MAPPS

Manuel Perez joins L-3 MAPPS

as Marketing & Sales Manager, Marine Systems and Simulation



L-3 is pleased to welcome Manuel Perez to the Marine Marketing team as Manager, Marketing & Sales. Manuel will be responsible for marketing L-3 MAPPS products in South America, the Middle East and other selected countries.

Manuel has approximately 11 years of marketing, sales and product management experience working in various companies in both Latin America and in Canada.

Since 2006, Manuel was a Regional Sales Director at Mitec Telecom responsible for Latin America, Spain and Portugal. Manuel also has experience selling in South Asia and is fluent in English, French, Spanish and Portuguese.

Find everything you need to know

visit the L-3 MAPPS website at www.L-3com.com/MAPPS



The L-3 MAPPS website has been redesigned with a vibrant new look, new content as well as significant layout updates and new features.

The design allows users to quickly find the content they are looking for from the main page. Visit www.L-3com.com/MAPPS and see for yourself!

Check back regularly, as we continually update the site with new information and services on L-3 MAPPS Marine Systems and Simulation activities.

Fire Detection System

for the Canadian Navy Victoria Class Submarines

L-3 MAPPS was awarded the Victoria Class Fire Detection System (FDS) contract by the Department of National Defence (DND).

DND is replacing the existing obsolete 750 Minerva FDS fitted in the Victoria class submarines. The FDS monitors for heat and smoke throughout the vessels and provides the capability to crash stop ventilation and automatically actuate the fitted fire suppression systems located in the sonar cabinet space and communications office.

The new FDS system will consist of a replacement FDS enclosure with modern and fully supportable electronics that will fit into the same space envelope currently occupied by the existing FDS. The new FDS

will also include the replacement of all heat and smoke sensors located throughout the submarine.

Existing field cabling between the FDS enclosure and the heat and smoke sensors and between the FDS enclosure and the external systems will be retained.

The project will also include an update to the existing shore-based Machinery Control Trainer and the procurement of a new shore-based Maintenance Trainer for the submarine maintainers.

L-3 wins contract to upgrade Machinery Control Systems for Military Sealift Command's T-AOE Fast Combat Support Ships

L-3 Communications has been awarded a contract to replace the Machinery Control System (MCS) on Military Sealift Command's (MSC) T-AOE Fast Combat Support Ships. The total contract, valued at more than \$40 million, includes design, manufacturing and testing of the new equipment for one ship, with options for the remaining ships of the class.

Additionally, the contract designates L-3 as the turn-key provider for the design, build, test, integration, installation, commissioning and spares for the ship's new machinery and cargo control system.

The L-3 Systems Company was awarded the contract, alongside L-3 Westwood, L-3 Maritime Systems, L-3 PacOrd and L-3 MAPPS.

"This is an exciting win for L-3 as it exemplifies the broad capability of the Marine & Power Systems Group to provide low-risk, complete solutions for our customers," said Steve Kantor, president of the L-3

Marine & Power Systems Group. "We are extremely pleased to be selected and are committed to providing MSC with a modern, open architecture, state-of-the-art control system solution that allows optimal manning, efficiency and safety, and is supportable for the life of the ship."

The L-3 Machinery Control System will provide remote monitoring, control and automation of the ship's propulsion, electrical, cargo handling and auxiliary systems.

MSC's four fast combat support ships provide a vital service to the U.S. Navy by providing underway replenishment of fuel, ammunition, food and other cargo. The 48,500 ton, 754-foot long, T-AOE 6 Class ships are able to simultaneously transfer fuel, ammunition and stores to ships in carrier groups, reducing vulnerability of serviced ships by minimizing at-sea alongside time.



Combined IPMS + IBS

for Indian Navy P28 Corvettes

L-3 MAPPS was awarded a contract by Garden Reach Shipbuilders & Engineers Ltd. (GRSE) to provide a combined solution comprising a comprehensive integrated platform management system (IPMS) and an advanced integrated bridge system (IBS) for the Indian Navy's indigenously designed new generation Project 28 anti-submarine warfare Corvettes. The contract is for the first batch of four Corvettes and 12 ships are planned in all, each with a standard displacement of 2,500 tons and overall length of about 109 metres.

With this contract award, the Indian Navy has achieved several firsts, including leading the world's navies in implementing the new concept of integrated ship management systems (ISMS) with the unprecedented combined IPMS & IBS. It is also the first implementation of an advanced integrated navigation and IBS solution in a front line warship of the Indian Navy.

Several companies within L-3's Marine & Power Systems Group are working cooperatively to ensure success of this key program, with L-3 India taking the lead. With support from L-3 MAPPS, L-3 India is cooperating with L-3 Valmarine in Norway for the integrated navigation and IBS aspect of the project. An extremely high level of indigenization is being achieved on this project, as L-3 India has matured into an established warship control systems integrator since its founding in 1999.

Advanced Features

The Indian Navy has already inducted IPMS technology from L-3 MAPPS on other projects which have included our world leading On-Board Team Training System, Battle Damage Control System, Equipment Health Monitoring (including vibration monitoring) system, integrated Automated Fire Detection System, etc. In addition to achieving one of the highest levels of automation in warships of this size, the IPMS on the P28 Corvettes will feature our unprecedented advanced Personnel Location System (PLS) to allow on-board personnel to be tracked and managed efficiently under all conditions and especially during casualty and battle damage scenarios. When combined with the integrated CCTV capability of the IPMS/BDCS, the PLS significantly enhances the operational effectiveness of the crew in responding to mission requirements.

The integrated navigation and IBS for this project represent the most modern and networked solutions available today, with true multifunctionality across displays. This multifunctionality makes it possible to do "anything from anywhere at any time," as all the navigation sensor data are distributed on a fibre optic network for use by any or all of the IBS console processors. The IBS interfaces with the ship's combat management system and includes on-board training in addition to ARPA and ECDIS applications qualified to the latest IMO standards. L-3 is also providing a comprehensive suite of navigation sensors including radars.

The first of class ship, INS Kamorta, was launched at GRSE in Kolkata on 29 April 2010 in a typically grand ceremony as befits a vessel that represents the future direction of the Indian Navy. Later ships in the class are expected to be fitted with a composite superstructure to further reduce weight and improve ship performance and stealth features.

"The Indian Navy has already commissioned three INS Shardul class LST(L) landing ships built by GRSE using our platform management solutions and L-3 MAPPS is very proud of its relationship with the IN & GRSE to whom we are delivering the very latest generation of IPMS and IBS technologies for these P28 stealth Corvettes," said Rangesh Kasturi, vice president, marketing & sales of L-3 MAPPS Marine Systems and Simulation.

Engineering Control System for the Korean Navy FFX Frigates

The new generation of FFX surface ship combatants for the Republic of Korea Navy (ROKN) will include a large number of vessels with a shipbuilding and delivery schedule that will most likely extend into the 2020s. This necessitated consideration of a modern and comprehensive control system that minimizes risks associated with system integration and the evolution of future operational requirements while reducing life cycle support costs and maximizing ship performance. The proven, cost effective, reliable and advanced Engineering Control System (ECS) (also known as the Integrated Platform Management System) from L-3 MAPPS was selected to meet these challenges.

The FFX Frigates will be equipped with the CODOG propulsion system configuration. A key feature of the Korean Navy vessels equipped with the LM2500 gas turbine engines is the use of L-3 MAPPS digital gas turbine Engine Control Modules (ECM) and Local Operating Panel (LOP) which are seamlessly integrated within the overall ship control system. This seamless integration is achieved by utilizing the same hardware and software technology in both the ECM and the entire ECS. The electronic modules such as processor cards, input/output cards and the rest of the ECM hardware are identical to those used in the data acquisition units of the ECS; and the gas turbine LOP is the same as the repair stations and sub-damage LOPs that are distributed throughout the ship. This significantly reduces the total ownership costs, including support costs for the combined solution, while eliminating integration risk and ensuring the best approach for delivering on-board training simulator functionality for GT control and the rest of the ECS.

An advanced Condition Assessment System, including a Vibration Monitoring System (VMS), is an integral part of the ECS for machinery health monitoring and maintenance. This is further enhanced by an integrated Interactive Electronic Technical Manual (IETM) capability that includes voice and videos for effective on-board maintenance of the mission critical ECS equipment. The VMS uses portable data terminals and portable data analyzers to collect and analyze data from machinery that is not permanently fitted with vibration sensors.



The Battle Damage Control System (BDCS) pioneered by L-3 MAPPS is a major aspect of the ECS on this program. The combination of the resource tracking system, operator decision aids including static and dynamic killcards and incident management system using the tiled, layered graphics-based general arrangement plan ensures an effective damage action management capability.

The BDCS incident management system and damage action management will be further enhanced in future programs with incident recording and playback function as well as deployment of the L-3 MAPPS Interactive Incident Board Management System (I²BMS), enabling damage control tactical decision support capability.

Royal Netherlands Navy LCF

Land-Based Platform Trainer

The Netherlands Ministry of Defence, Defence Materiel Organization (DMO) has procured a combined Land-Based Platform Trainer (LBPT) and Maintenance Trainer (MT) for the Royal Netherlands Navy Technical Education (KMT0) Engineering School. At the same time, DMO awarded L-3 MAPPS a maintenance contract, so that the KMT0 could concentrate on the essentials of their mission: to provide training.

The LBPT project was defined based on the (original) ADCF IMCS project, and tailored for Royal Netherlands Navy's specific training needs: to qualify personnel to the desired level of IMCS knowledge, skills and competencies, for technical and battle damage control and emergency procedures.

The LBPT is a 'look and feel' replica of the IMCS operational areas on-board the ship: Ship's Control Centre (SCC), Emergency SCC (ESCC), Damage Control Stations, Bridge Steering Position and Marine Engineering Office.

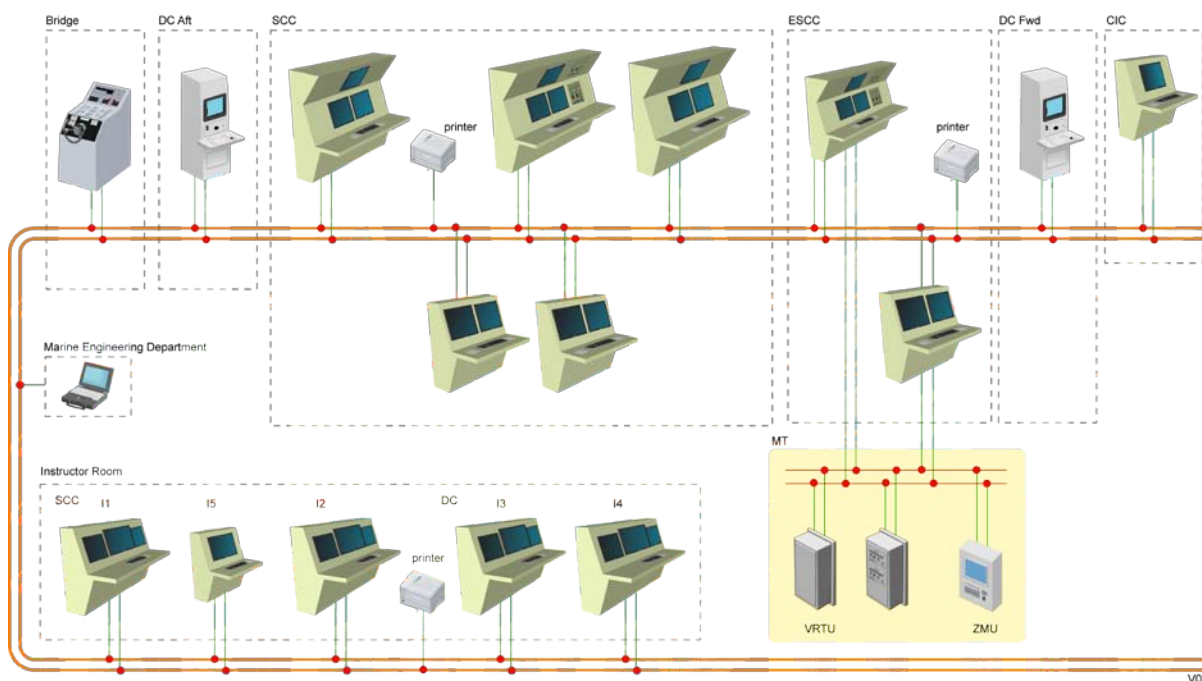
The LBPT combines both procedural and maintenance training in one system trainer.

Procedural training supports single user training, team training and large scale battle damage repair training. Training may be conducted by as many as five instructors, interacting together in one

training scenario. Student performance will be assessed based on built-in system tools that allow instructors to record and playback student actions on any scenario, and provide an automated student evaluation.

Maintenance training allows the instructors to inject the maximum variety of hardware failures, with a minimum of pre-faulted hardware parts; the Instructor Facility supports the simulation of hardware failures through the injection of software malfunctions.

During the design, development and integration project phases, the RNIN has the opportunity to evaluate incremental system prototypes, and provide comments as early as possible. In addition, L-3 MAPPS installed a shore-based On-Board Training System (OBTS) system at KMT0, to allow training ship crews during the development of the LBPT.



LBPT IMCS system architecture overview

The LBPT Instructor Facility is based on Orchid® Instructor Station (Orchid® IS), a part of L-3 MAPPS' Orchid® Total Development & Simulation Environment suite. To keep commonality between ADCF IMCS and the LBPT, the original ADCF IMCS software is reused, though adapted and enhanced where necessary to fulfill specific requirements.

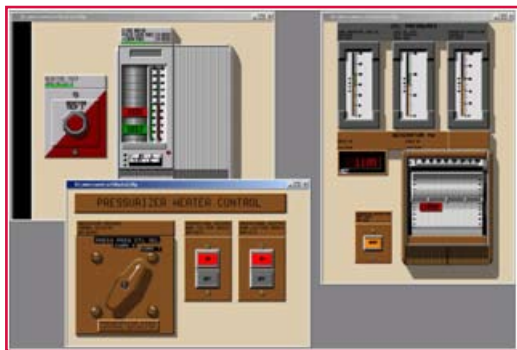
Some of the new LBPT features include:

- Multiple instructors guiding the same training session,
- Snapshots not noticeable to students,
- Restore of snapshots in a short period of time,
- Use of hardware panels and software panels,
- Student assessment,
- Enhanced Instructor Facility:
 - Scenario Manager
 - Training Management
 - Student View
 - Record and Playback
 - Student Evaluation and Assessment.

Procedural Trainer

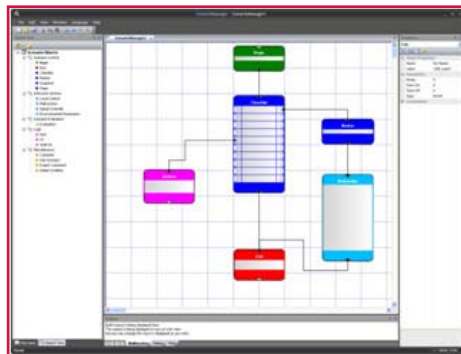
The procedural trainer includes the following features:

- Malfunctions: Reduce or degrade the functionality of systems,
- Signal Overrides: Manipulate IMCS signals without affecting the Orchid® Modeling Environment model; simulating failures in sensor or I/O processes
- Local controls: Actions that are done manually
- Stylized Pages: Graphical representations of ship panels or logical grouping of controls, based on a system or compartment



- Scenarios and Sub-scenarios: Used in structured training, scenarios may contain any of the following objects:
 - Initial Condition: A predefined state of the LBPT, generally used as a starting condition for training
 - Instructor Action: The (de)activation of a malfunction, signal override, local control
 - Timer: An unconditional delay in the execution of a path
 - Wait: A conditional delay for a specific condition to occur, or an Instructor initiated trigger
 - And/Or: Logicals to connect different paths
 - Checklist: Define checks with a 'yes' or 'no' output, where each output creates its own execution path
 - Snapshot: Stores the actual state of the LBPT during execution of a scenario. A Snapshot is not noticeable by the students, thus it will not interrupt student's actions. Snapshots make it possible to return the training to a point where students' actions, or incorrect decisions, would lead towards an undesired path

- Evaluation: Monitors student responses and rates student actions against a desired response (criteria). The Instructor also has the possibility to enter a manual evaluation and rating



- Training Manager: Used by the Instructor to start executing a scenario. Other instructors can join a running (sub-)scenario and interact with these scenarios, for their own tasks or responsibilities. At any time, the Instructor can pause the training and may decide to restore a Snapshot
- IMCS+: Offers the Instructor full IMCS functionality, without any need for User Rights, as would be necessary on-board ship, as well as easy navigation between the signals/devices and compartments on the IMCS HMI page and Orchid® IS
- Student Assessment: Monitors progress and rates students based on their actions during training. At the end of a scenario, a final assessment is made based on the evaluation. All evaluation data are stored and available to the School's student rating system
- Student View: In the Instructor Room, two sets of monitors provide the same information displayed on the student monitors
- Record & Playback: Information displayed on the student monitors can also be an important tool in the final student Assessment. For this reason, student monitors can be recorded, stored and replayed. The Instructor can also store the data for use at a later time.

Maintenance Trainer

The goal of maintenance training is to teach the interpretation of system generated error messages, fault finding procedures and installation of software.

Some of the simpler fault inducing possibilities are: installing pre-faulted hardware components, disconnecting wiring or faulting a sensor. In order to provide varied maintenance training, with minimal stock of pre-faulted hardware, while providing the student with maximum exposure to system errors, the MT Instructor Facility provides tools to inject simulated system errors.

Support

The LBPT will be shipped to the KMTO facility during the second half of 2010. Then it will undergo hardware commissioning and site acceptance testing, and achieve Ready For Training by the first quarter of 2011. As at RFT, warranty and extended warranty will be supported by a maintenance agreement.

During this maintenance period, L-3 MAPPS will be fully responsible for preventative, corrective and modification maintenance of the LBPT, while guaranteeing maximum availability.

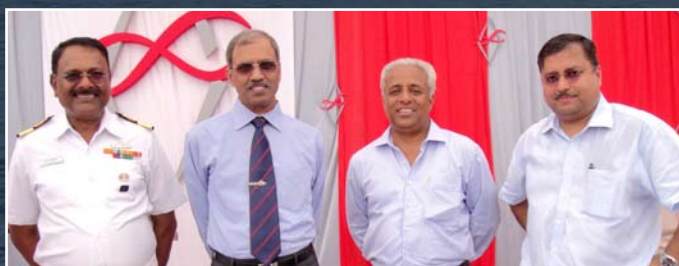
The Indian Navy celebrates the commissioning of

INS Shivalik

The INS Shivalik, the first of class of the Shivalik class or the Project 17 class frigates, was commissioned in a grand ceremony by Indian Defence Minister Shri AK Anthony at the Naval Dockyard Bombay on 29 April 2010.

The class and the lead vessel have been named for the Shivalik range of mountains in the Himalayan system. The INS Shivalik features several stealth features and is one of the most advanced warships that have been designed indigenously by the Indian Navy. The L-3 MAPPS integrated platform management system technology is a key aspect of the ship design and this is the first front line warship of the Indian navy fitted with such a modern ship control system. The well laid out machinery control room with multifunction consoles and large screen display was a key attraction for visitors after the ceremony.

L-3 MAPPS got special mention in the speech by the Chief of the Naval Staff, Admiral Nirmal Kumar Verma PVSM AVSM ADC, when he recognized the significant benefits in operational effectiveness that the ship's platform management system delivered. L-3 India's service engineers also received special recognition by the Indian Navy and Mazagon Dock Ltd. for their dedication and hard work above and beyond the call of duty to ensure that the setting-to-work and commissioning activities were conducted professionally and promptly under difficult conditions.



Indian Defence Minister **Shri AK Anthony** sitting at the L-3 MAPPS IPMS console in the Machinery Control Room of the newly commissioned INS Shivalik stealth frigate. He is being briefed by (from left to right) **Captain Suresh** (Commanding Officer of INS Shivalik), **Admiral Nirmal Verma PVSM AVSM ADC** (Chief of the Indian Naval Staff) and **Vice Admiral (ret'd) Malhi** (Chairman & Managing Director of Mazagon Dock Ltd.).



The L-3 MAPPS system on-board the INS Shivalik includes many of the advanced applications that our company has become well known for such as the digital engine control modules for the General Electric LM2500 IEC gas turbine engines, on-board embedded team training system, equipment health monitoring system, battle damage control system, etc. The unprecedented level of automation implemented on this ship provides the Indian Navy with several benefits including reduced manning and better exploitation of the ship's platform machinery and systems while maintaining the highest levels of ship safety and survivability.



Mr. Rangesh Kasturi, vice president, marketing & sales, spoke at the “Bada Khana” ceremony and presented a plaque to **Captain Suresh**, the Commanding Officer of INS Shivalik, to convey the best wishes of L-3 to the “No Limits” team of the officers and men of INS Shivalik.



DEFSEC 2009

This Canadian Defence and Security Aerospace Exhibition, (DEFSEC) took place from 9 to 11 September 2009 at the Cunard Centre in Halifax, Nova Scotia. Four L-3 companies in Canada exhibited at the event: L-3 MAPPS, L-3 MAS, L-3 Wescam and L-3 Electronic Systems.

L-3 MAPPS exhibited the Interactive Incident Board Management System (I²BMS) to a number of participants at the show including Canada's Minister of National Defence and the Minister for the Atlantic Gateway, the Honourable Peter MacKay.

This year at DEFSEC, L-3 MAPPS is looking forward to demonstrating the Human Machine Interface software, including the I²BMS for the upgraded Halifax Class IPMS to the Canadian Navy and Forces participants who will be operational users in the near future.



2009 INTERNATIONAL SHIP CONTROL SYSTEMS SYMPOSIUM

The International Ship Systems Symposium (SCSS) is held typically every four years and brings together a niche community of engineering, program management and ship control experts from around the globe.

There are four host nations who pass the flag: the USA, Canada, the Netherlands and the United Kingdom. In 2009, SCSS hosting duties fell to Canada, namely the Department of National Defence (DND) in partnership with the Canadian Defence and Securities Industries Association (CADSI), who took responsibility for the event management details on behalf of DND.

L-3 MAPPS was the exclusive platinum sponsor for the event, as well as the show bags and lanyard sponsor.

There were close to 80 papers presented, with topics ranging from Ship Controls to Damage Control solutions, discussing specific solutions for navy programs, integrated bridge solutions, on-board and land-based training solutions and many other topics.

L-3 MAPPS, L-3 Marine Systems UK, L-3 Maritime Systems and L-3 India were all in attendance to showcase our enormous combined strength in the field of marine controls and associated products. L-3 companies presented 11 papers in total throughout the two and a half days of the symposium.

The following were the L-3 presenters and their paper topics:



Olaf Knutson, Ayk Bagdasarian

Integrated Control and Monitoring System for the German Navy Corvettes



Reza Shafie-Pour

New Generation of Engineering Control System on Combatant Surface Ships for the Republic of Korea Navy



Richard St. Pierre

Retrofitting an Integrated Platform Management System



Patrick Garvis

Evolution of Integrated Control Systems in the Indian Navy



Yvan Lamontagne, Olaf Knutson

New Developments in Damage Control - Interactive Incident Board Management System - I²BMS



Jan Pol, Eda Francescangeli

Land-Based Platform Trainer for the Royal Netherlands Navy Air Defence and Command Frigate (LCF)



Jim Davies

Controlling the Royal Navy's Queen Elizabeth Class Carriers



Michael Hewitt

Systems Engineering the IPMS for the Royal Navy's Queen Elizabeth Class Carriers



Ken Lee

The Support Challenge for the Royal Navy's LPD's Albion and Bulwark



Mahesh Hedge

Re-Configurable Land-Based Training Simulator - An Innovative Solution for Personnel Training for Tomorrow's Navies



Alan Banks

Integration of COTS with Open Architecture Control Systems



LIMA '09

LANGKAWI

Held from 1 to 5 December 2009 in Langkawi, Malaysia, the Langkawi International Maritime and Aerospace Exhibition is a premier destination for aerospace and maritime manufacturers targeting the Asia Pacific growth markets. For nearly 20 years, LIMA has been serving exhibitor needs by assembling key decision makers from the defence, enforcement and civil sectors.

Hosting over 325 exhibitors from 25 countries, LIMA was held at the Mahsuri International Exhibition Centre and was visited by over 218 delegates from 41 countries. The show also had a significant presence of exhibiting ships, with over 90 warships and military vessels in nearby Porto Malai.

Several L-3 divisions, including Ocean Systems, ELAC Nautik and MAPPS were present.



DSEi 2009

With over 1,300 exhibitors and over 25,000 trade visitors, DSEi, held from 8 to 11 September at the ExCeL Centre in London, UK is one of the largest defence exhibitions in the world. In total, 70 official delegations from 49 countries were hosted by the UK MOD's Defence Export Services Organisation (DESO) at DSEi 2009.

L-3 had a large presence at DSEi 2009, with over 10 divisions exhibiting. L-3 MAPPS showcased its Interactive Incident Board Management System (I²BMS) and Integrated Navigation System.



DEFEXPO 2010

L-3 MAPPS together with L-3 India organized and participated in the DEFEXPO 2010 exhibition from 15 to 18 February in New Delhi in a stand shared by several L-3 divisions including Ocean Systems, Nautronix, ELAC Nautik, Klein, Wescam, Comm Systems East and Integrated Systems.

The exhibition was very well attended by Indian MOD/Navy officials and delegations of regional navies. The other L-3 divisions who are new to India also got excellent exposure, eliciting significant interest from MOD/Navy customers.



Women in Defence and Security Canada

Women in Defence and Security Canada (WiDS) was pleased to host the Honourable Peter MacKay, Minister of National Defence and Minister of the Atlantic Gateway, on 2 November 2009 for a breakfast meeting in Gatineau, Quebec. The event was very well attended by Government, Forces and industry personnel who had the opportunity to network with the Minister before the official breakfast.



Minister McKay spoke about recent international events that the Canadian Forces have taken part in, including, of course Afghanistan, and how his frequent trips there always give him a great sense of Canadian pride. He spoke about the \$40B in shipbuilding opportunities in the next twenty years in Canada for the Navy, Coast Guard and Transport Canada. The Minister also attended the WiDS Holiday Reception at the Bytown Navy Wardroom and has added the WiDS Golf Tournament to his agenda for 1 June 2010.

Wendy Allerton, Past President of WiDS, is shown in the photo below (third from right) with the WiDS Executive team.



UPCOMING EVENTS

The following are upcoming conferences, exhibitions and seminars where you can expect to meet with L-3 MAPPS Marine Systems and Simulation.

25-29 October 2010

Event Euronaval 2010



Location Paris, France

Organiser SOGENA

Participate <http://www.euronaval.fr>



See you in Paris!

Top Canadian



Naval Marine Engineering Student

2009 marks the 20th year that L-3 MAPPS and the Canadian Forces Naval Engineering School have honored deserving graduates from the Marine Systems Engineering Applications course. **The L-3 MAPPS Saunders Memorial Award** recognizes the academic and professional excellence of the most outstanding marine systems engineering officer on the course. Preceding an active shipboard assignment, the award is a highly regarded element of Marine Engineering (MARE) training excellence recognition.

The award is named in memory of Lieutenant Chris Saunders, who tragically lost his life following a fire aboard the HMCS Chicoutimi in 2004. The event was marked this year with the participation of Mrs. Gwen Saunders-Manderville, widow of the late Lieutenant Saunders and their sons, who presented the award to this year's recipient together with Wendy Allerton, director, marketing & sales for North America, L-3 MAPPS.

Congratulations to this year's winner, Lt(N) Chris Vandenhoven.



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SALUTING THE CANADIAN NAVY ON ITS 100TH ANNIVERSARY



PROUDLY SERVING
THE CANADIAN NAVY

L-3 MAPPS integrated platform management systems are used by many of the world's premier navies for comprehensive and integrated control of the platform machinery and systems on their warships. Look no further for proven expertise.

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