

MEETING SINGAPORE'S ENGINEERING CHALLENGES

Keeping our harbour and sea lanes safe

Engineers like Michael Lee and Poh Chun Siong use advanced technology to help maintain our maritime security and integrity

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SINGAPORE— Speeding along the waves had its charms, but Mr Michael Lee was ready to take his career in a new direction.

Since 1983, Mr Lee had been in the shipping industry, working as a marine engineer at sea and a superintending engineer on shore. Looking for new challenges, he joined the Police Coast Guard (PCG) in 1996 as the deputy officer in charge (OC), Material Planning Section.

"In PCG, I have had plenty of opportunities, including the chance to work with high-speed aluminium and graphite reinforced plastic boats. At the same time, I've been able to work with patrol officers on boat design and layout, doing my best to meet the operational requirements in order to provide security for Singapore waters."

The 57-year-old is now deputy commanding officer (CO), Technical Maintenance Command (MPS). He holds a Certificate of Competency (COC) — Class 1, which he received in 1990. The COC is a seafarer certification issued by the Training Standards Department of the Maritime Port Authority.

BOAT BUILDING

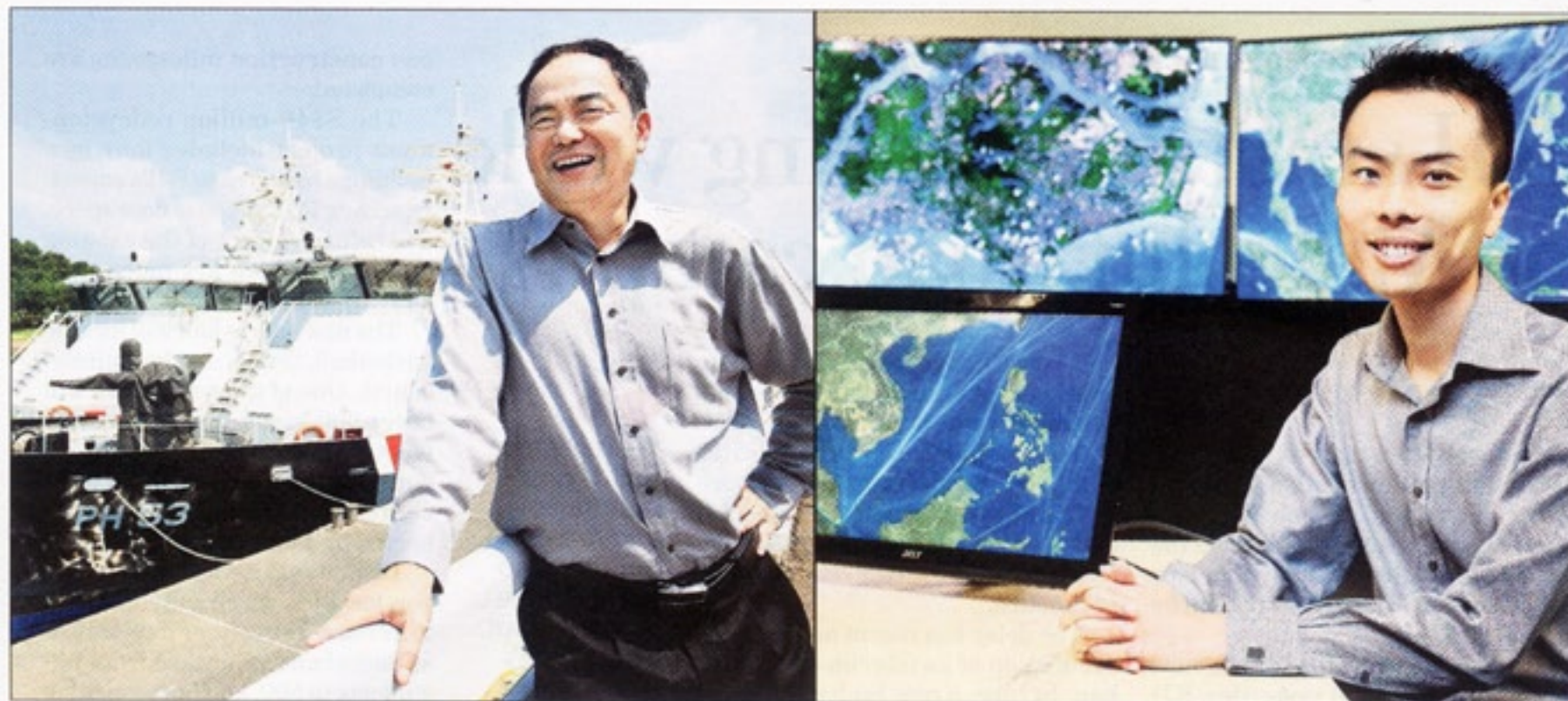
Mr Lee's job involves planning the maintenance of boats and equipment, monitoring assets and disposal, as well as new boat projects, including his current task of constructing new Patrol and Interdiction (PT) boats.

A typical day involves "planning and scheduling projects, attending meetings and carrying out inspections".

"I plan and work with external vendors on projects, as well as schedule and prioritise maintenance and repair," he said. "My job is to make sure that the PCG has a healthy fleet of vessels day to day."

Over the course of his career with PCG, he has witnessed and participated in its physical expansion and upgrading. "One project I worked on was the building of the Gul Regional Base, which replaced the old base in Jurong. There were new requirements for the workshop, equipment, berthing and maintenance. Since then, there have been two more bases — Loyang Regional Base and Brani Base."

Mr Lee also worked on the Rigid Hull Inflatable Boat (RHIB), which was required by the Special Task Squadron (STS). "It was indeed a challenge to fulfill the specialised requirements of STS, but we succeed-



Mr Michael Lee (left) finds it rewarding to help maintain Singapore's maritime security while Mr Poh Chun Siong appreciates the opportunity to contribute to Singapore's defence. PHOTOS: KOH MUI FONG

ed. In my job, we have to understand the needs of the users, manage their expectations and customise their requirements into workable solutions."

ADVANCING FORWARD

Mr Lee finds satisfaction in knowing that he is part of a team that maintains the security of Singapore's waters.

He said: "It's very rewarding to know that we are providing peace and safety to our loved ones and fellow citizens. Our efforts to maintain the boats that secure Singapore's waters will hopefully continue to keep Singapore peaceful and prosperous."

He believes technology will be both the cause of, and solution to, Singapore's security-related challenges in the future.

"While I'm not sure what things will be like 50 years from now, I know that technology will be much more advanced. Because of this, we need to stay in tune with it, keep up with the changes and adopt relevant solutions to handle the challenges Singapore will face."

COMMAND AND CONTROL

Mr Poh Chun Siong, 34, has always known that he would pursue a career in information technology (IT) and engineering. Prior to graduating from Nanyang Technological University (NTU) in 2007 with a Bachelor of Engineering (Computer Engineering), he conducted research on organisations to apply to.

He said: "The Defence Science and Technology Agency (DSTA) stood out as an organisation that offered opportunities to learn and explore the best and most cutting-edge technologies and ideas."

Mr Poh joined DSTA in 2008 as an engineer in the C4I Development Programme Centre, where he was part of a team that developed and enhanced command and control capabilities for the Republic of Singapore Navy (RSN). He is now a senior engineer.

Said Mr Poh: "The C4I Development Programme Centre exploits leading-edge technologies to develop Command and Control, Communications, Computer and Intelligence (C4I) solutions. Currently, I work with my team of eight engineers and Singapore Armed Forces (SAF) partners to study system designs, identify potential issues and meet system requirements."

He added: "This helps us design and deliver working prototypes and systems that meet the operational requirements for the surveillance of Singapore's coastal waters, facilitate the concept of seamless maritime collaboration and improve incident reporting capabilities."

SURVEILLANCE SUPPORT

According to Mr Poh, supporting the surveillance of Singapore's coastal waters is critical for the nation's defence and security.

"Singapore lies next to the Straits of Malacca, one of the busiest and most important shipping lanes in the world. Vessels could potentially be used to carry illegal immigrants, or as platforms to conduct acts of maritime terrorism. It is important to have a robust coastal surveillance system to detect even the smallest vessels that may easily avoid detection."

He admitted that it was initially a challenge to pick up enough maritime knowledge when he started working at DSTA.

"Unlike air traffic, which has strict regulations, vessels have fewer rules



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Mr Michael Lee
DEPUTY COMMANDING OFFICER, TECHNICAL MAINTENANCE COMMAND, POLICE COAST GUARD

when they sail into open waters, and their business model is a lot more complex. Fortunately, my supervisors and colleagues were forthcoming in sharing their expertise, experience and information with me. I also took every opportunity to shadow our SAF partners and users in their work to better understand their requirements and challenges."

FROM LABORATORY TO FIELD

In 2012 and 2014, Mr Poh was given the opportunity to present projects at the SAF-organised Optek (Ops-Tech) Exhibition, a platform for engineers and scientists to showcase, learn and exchange ideas on new capabilities developed for the military.

"In my work, I get opportunities to work with research laboratories to explore the application of cutting-edge technologies not yet available in the market. Witnessing how technologies evolve from laboratory to field deployment is definitely an eye-opening experience."

Some evolving technologies he believes will be useful include data analytics and advanced sensors, which are needed to design systems capable of sieving out real and false tracks. He anticipates that such technologies will be needed if piracy and maritime terrorism create future security issues in Singapore's waters.

He said: "At DSTA, every day is new and exciting to me. Technical competencies are taken very seriously, and there are always opportunities to learn and upgrade one's knowledge. I find it rewarding to be able to contribute directly to Singapore's security and defence."

This is the final part in an eight-part collaboration between the Public Service Division and TODAY.