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Speech by Dr Tony Tan Keng Yam, Deputy Prime Minister and Minister for Defence, at the 1998 Defence Technology Prize / Defence Technology Training Awards Presentation Ceremony

04 Nov 1998

Small nations like Singapore have little choice but to depend on high technology to build up a credible Armed Force. The rapid advances in technology, have resulted in the development of weapon systems that are many times more effective than their predecessors. Forces equipped with these high technological weapon systems have done battle with numerically superior forces and achieved decisive victory, as was demonstrated by the British in the Falkland War in 1982 and the Allied Nations in Operation Desert Storm in 1991.

Just as remarkable was the success of the Israeli Airforce in destroying some 80 Syrian fighters with the loss of only one aircraft in the air battle over the Bekaa Valley, in 1982. The MiG-29s operated by the Syrian Airforce were of the same technological level as the F-16s operated by the Israeli Airforce. But the Israeli Airforce had superior Electronic Counter Measures which blinded the radar of the Syrian MiG-29s. The integration of the Israeli Airforce fighters with their Electronic Counter Measure systems, through their command and control system was modern warfare's first taste of Integrated Warfare.

Our decision to build a high tech armed force demanded that we also build up a competent technological infrastructure; not only to maintain all the sophisticated systems that we purchase, but also to develop weapon systems that will be optimized for operation by our soldiers, and in our areas of operation. The range of our development projects is wide; from hardware like the BIONIX Armoured Fighting Vehicle to the New Patrol Vessels for the Navy. The integration of various sensors, communications equipment, computers and

weapons into platforms have made them more potent than similar weapon systems available for purchase off-the-shelf.

The greatest challenge for our defence engineers and scientists lies in developing unique solutions to meet our specific operational requirements, at the lowest possible cost. This requires our defence engineers and scientists to dare to experiment and to have the courage of their conviction to propose solutions that are unique in the world. A recent example of a unique to Singapore solution is the upgraded F-5E of the RSAF. In operational trials conducted recently after the first squadron had attained its operational status, it was found that the upgraded F-5Es would be a formidable match for the more modern F-16s and F-18s in combat.

To continue to progress technologically, we need software specialists and system engineers to design and develop software which had found itself in almost every single sophisticated weapon system that we are acquiring. The sophisticated Command, Control, Communications and Intelligence (C3&I) systems developed by the hundreds of professionals in CSO, SCO and DSO have enabled the SAF to fight as one integrated force instead of each Service fighting its own war.

As the build-up of technological capability requires a long gestation period, we must take a long-term view. The current economic turmoil should not detract us from continuing to invest in our defence technological capability. We are too small a country to be a leader in the creation of defence technology. Our goal therefore is to be a leader in the application of the latest technologies to solve our operational problems. We do this by staying close to the leading edge in the basic technologies and to dare to move ahead applying them to our weapon system when others have still not yet moved. Our lean organization, tight integration between the operational users and engineers and scientists and speed of decision making have provided us with unique advantages which bigger and wealthier countries do not have.

With such a wide scope of engineering, scientific and IT activities, it should be no surprise that MINDEF is the largest employer of technologists in Singapore.

This reflects MINDEF's determination to ensure that our weapon systems of the 2000's will continue to be well engineered and supported.

Ultimately, our technological capability will depend on the quality of our own engineers and scientists. Looking at the past as well as this year's winners of the Defence Technology Prize, I am confident that we will be able to succeed in the demanding technological arena as their achievements are a reflection of how far we have come.

It now gives me great pleasure to announce the winners of the 1998 Defence Technology Prize.

This year, the Individual Award goes to Dr Tan Kok Tin for his invaluable contribution in guided weapons work. He has played a key role in the planning and build-up of guided weapon simulation and test and evaluation capabilities in DSO. These capabilities have enabled MINDEF to be a smart buyer and the SAF a sophisticated operator of advanced guided missiles such as Harpoon anti-ship missiles and the BARAK anti-missile missile. Our ability to optimise the performance of these missiles is an invaluable asset of the SAF. Kok Tin's expertise in guidance and control is indispensable in supporting the MINDEF and the SAF guided weapons programme.

The first of the two Team Awards goes to the Airborne Compute Engine Project Team. The team had developed a very high performance computing engine, a super computer, the size of two slices of bread, for signal processing applications under harsh and confined environments of airborne platforms. Their work has yielded a technological breakthrough that will enhance the capability of the SAF in many of their weapon systems.

The second Team Award winner is an excellent example of how the partnership between MINDEF, SAF and the local research institutions has resulted in a significant enhancement of our defence capability. The Underwater Shock Technology Programme Team has established an underwater explosion numerical simulation and analysis capability. This places Singapore in the forefront of three dimensional numerical simulation of the interaction of mines and torpedoes with ships and submarines.

I would like to thank the Defence Technology Prize winners for their outstanding technological contributions towards the defence of Singapore. I congratulate them on their excellent achievements.

I would also like to congratulate the 15 recipients of the Defence Technology Training Award (Postgraduate) scholarship. The award of scholarship to these engineers and scientists to pursue their Master degrees or PhDs is an investment in our future.

Our efforts in building up our defence technological capability and the prizes and awards that we give out have one common thread. They are all aimed at ensuring that the very best science and technology talent is available to MINDEF and the SAF. MINDEF will spare no effort to ensure that the SAF remains a premier national institution, with quality and excellence as its hallmarks, to underpin the prosperity and progress of Singapore, for generations ahead.

News Release:

- Defence Technology Heroes Honoured by Dr Tony Tan (Document No: MINDEF_19981104001.pdf)

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