HALE UAVs examined 1

Global Hawk: great but no panacea

By Dr Carlo Kopp

MELBOURNE – Perhaps the most strategically relevant and significant gain for the ADF in last week's DCP announcement was the long over due commitment to acquire a High Altitude Long Endurance UAV, with the Northrop-Grumman RQ-4 Global Hawk series identified as the leading candidate. While HALE UAVs provide many highly valuable Intelligence Surveillance Reconnaissance (ISR) capabilities, they are an incomplete solution to the problem of building a modern ISR architecture for the ADF.

For Australia an ISR-capable HALE UAV offers the means of gathering high resolution synthetic aperture radar, ground moving target indicator radar, visible and infrared optical imagery to support ADF land and air operations as well as strategic intelligence. With a suitable radar configuration, these UAVs can supplement the expensive AP-3C fleet in a range of roles, extending AP-3C fleet fatigue life as well. With an Electronic Intelligence (Elint) payload, such UAVs can provide persistent surveillance of static and mobile radar emitters.

The question is not that of what HALE UAV ISR systems can do – it is what they cannot do. In the euphoria of the public debate around the DCP these important holes in future ADF capability have not rated a mention. HALE UAVs have important limitations in several key areas.

Survivability is a major issue in a region equipped with Su-27/30 fighters. The Sukhois have big radars, big engines and 10 tonnes of fuel, permitting supersonic zoom climb profiles to engage such UAVs. Production models have cited service ceilings of 57,000 ft, and more than two dozen time-to-height records were won since the 1970s by lightened variants.

Heatseeking and radar guided variants of the missiles fired by Su-27/30 present a serious risk to any HALE UAV. The expected proliferation of high altitude/long range S-300PMU series SAMs will further exacerbate this problem.

Blowing a $100 million UAV out

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India splurges on modern arms

India builds its muscle 1

NEW DELHI – India's drive for higher-tech armaments drew 300 arms suppliers from 21 countries to display their latest hardware. India says it won't allow lack of funds to slow its arms shopping.

India's second international defence exhibition opened the day after Finance Minister Jaswant Singh announced a US$5.5-billion modernisation fund to speed up arms procurements.

India last month signed a US$1.5-billion deal for a Soviet-era aircraft carrier as part of a spate of arms purchases, to end what it called neglect of the country's armed forces, one of the largest in the world.

The contract followed Indian purchases of 66 British Hawk trainers worth US$1.66 billion and stepped-up negotiations for six French Scorpene submarines worth some €2 billion.

The build-up comes as the Indian government engages Pakistan in a peace process.

Indian companies are also trying to sell weapons. As in Sydney last week, India offered its BraHmos, a cruise missile built jointly by India and Russia and successfully tested several times from Indian soil.

"The BraHmos is an example of developing world-class weaponry with not so fancy price tags," said the Defence Research and Development Organisation, which helped develop the weapon

India's Mahendra and Mahendra is also exploring the international market for its $18,000 strike vehicle that can launch anti-tank rockets or turn into an infantry combat vehicle.

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out of the sky is a cheap way for a regional nation to make its displeasure known to the Australian government of the day.

The second important limitation of HALE UAV is speed. Once on station UAVs provide a continuous feed over a satellite link.

But their slow transit speed puts limits on how quickly such a UAV can be retargeted or replaced.

The third limitation is shared with satellites – the inability to gather optical imagery through a dense layer of low altitude cloud. In tropical rainforest-clad South East Asia, this is a big problem in the wet season.

While X-band high resolution radar can penetrate cloud, the range from which good imagery quality can be gathered depends on the water content of the cloud and the power-aperture performance of the radar.

A related issue is shadowing by hilly terrain. A HALE UAV is geometrically incapable of dealing with this because of its altitude and required stand off in contested areas.

HALE UAVs provide only part of the ISR solution. The other part is provided by a crewed aircraft, capable of fast transit speeds and oblique or direct imaging with radar or optical systems from a reasonably near-low altitude.

Here is where ADF force structure planning falls over. The F/A-18A and JSF are not hot performers either in range, endurance on station, low level handling or egress and ingress speeds to an area of operations. The onboard optical and radar ISR capabilities in both types, even with feasible enhancements, will not provide the required GMTI and optical quality from reasonable standoff distances – big apertures and powerful radars are needed. For the JSF there is the additional issue of performance/stealth degradation if large external pods are carried, while an internal bombbay package is unlikely before 2020.

There is an obvious, high performance and economical solution, but one which last year's F-111 decision unfortunately closes off permanently. Until a complete ISR solution is introduced, much of the rhetoric about "information-age, network-centric, ISR-driven warfare" will be little more than that – empty rhetoric.

India builds its muscle 2

BrahMos missiles mounted on a patrol boat, shown at Pacific 2004

Delhi sets up $5.5bn kitty

NEW DELHI – India last week announced a $5.5 billion defence modernisation fund to help the world's fourth-largest military buy airborne warning and control systems (AWACs), combat planes and an old aircraft carrier.

Finance Minister Jaswant Singh, presenting an interim budget until elections expected shortly, told parliament that the defence fund will ensure a steady flow of money for arms purchases, which often take years to complete.

Last month, New Delhi finalised the purchase of an old Russian aircraft carrier, Admiral Gorshkov, aimed at ensuring the navy is a key player in the Indian Ocean, with an edge over China.

Singh separately announced an increase in defence expenditure for 2004/05 to $14.6 billion, just over one per cent higher than the previous year. More than 70 percent of this money goes towards maintenance costs such as wages and pensions for India's 1.2 million strong military.

S Afs sell 155mm guns

NEW DELHI – India and South Africa have finalised a deal for 180 self-propelled 155mm Denel artillery pieces and 100 howitzers, subject to Cabinet approval

"We have sold a substantial amount of ammunition to India and now we have finalised this 155mm deal," Denel's marketing executive Hendrik Helberg said.

The agreement includes the transfer of technology so that the guns could in future be manufactured in India.

The deal ends a self-imposed moratorium by India on artillery system imports since 1986, when the purchase of Swedish Bofors guns worth US$1.33 billion led to charges of bribery that finally toppled a government.

The Denel weapons would have 52-calibre barrels and a range in excess of 40 kilometres.

South Africa also wants a contract to manufacture with India 400 motorised 155mm guns for export to third countries.