

By Dr Carlo Kopp

In response to the critique published in HeadsUp 306, Chief of Air Force Air Marshal Angus Houston submitted a rebuttal to the Joint Standing Committee on Foreign Affairs, Defence and Trade. We now respond, in part.

- *AM Houston's response to HU 306 is notable for the inclusion of misquotations and quotations out of context, which create a misleading impression of the original critique, eg "exchange rates [for close combat] have historically been below rates using ambush tactics, including modern BVR combat" becomes "been at low rates using ambush tactics", incorrectly suggesting that HU 306 claimed poor BVR exchange rates.*

The discussion of parameters favouring BVR capability was challenged with a treatise arguing the issues to be more complex than portrayed, introducing "radar efficiency" into the argument, claiming the inferiority of the F-111, and arguing that "bigger radars, longer

Now we're getting technical

ranging missiles, lower radar signatures and higher fuel loads" may contribute to BVR capability.

The radar literature does not identify "efficiency" as a design parameter in pulse Doppler radars. Given the enormous investment in high-power, phased-array radars, ramjet and large diameter rocket motors for BVR missiles, stealth measures and conformal fuel tanks, claiming these are not decisive to BVR combat challenges the collective wisdom of US, EU and Russian operators / manufacturers.

- *The point that "fuel is energy and energy is life" was challenged with the claim that the F-111 burns fuel at three times the rate of the F/A-18 in the "high-end air defence role".*

Given that US data shows the fuel burn of an F-111 at 0.95 Mach, 50 percent fuel and 28,000ft to be about 15 percent greater than the fuel burn of an F/A-18 at 0.84 Mach,

50 percent fuel, loaded for air-to-air, this claim is unsupported.

- *The point that speed was valuable in BVR combat was challenged with a claim that "speed is only useful if it doesn't allow the threat aircraft to detect you before you can detect it".*

Given that air-air missiles have finite energy in their rocket motors and will run out of speed and manoeuvre capability as their motors burn out, claiming speed is less important than detection capability is simply nonsense.

Knowing where a fast opponent is, but being unable to engage due to inadequate speed performance has been a repeated feature of failed intercepts against Foxbats, SR-71s, Backfires, F-105s and F-111s over the years.

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Alaska faces US fire threat

FAIRBANKS – With Independence Day, the US fire season has started and the worst are in drought-hit Alaska. There are two wildfires near Fairbanks. Smoke grounded firefighting aircraft.

The biggest fire is 50km south of the city, which has driven hundreds of refugees into town.

A second fire charred 72,500 hectares in a popular recreation area. There were 60 active fires.

In the Lower 48 states, lightning started a 27,000ha fire near Payson, Arizona, while a smaller blaze threatened the Mount Graham International Observatory.

Only a handful of big-tanker, firefighting planes has so far been cleared for service as a severe fire season threatens.

Air traffic growth returns

GENEVA – International air passenger traffic rose by 19.4 percent between January and May this year compared with the same period last year, the International Air Transport Association says. Freight traffic was up 12.2 percent.

"Not only have we recovered from the impact of SARS and war in Iraq, all major regions of the world are reporting traffic levels above those of 2000, the last normal year for our industry," said IATA Director-General Giovanni Bisignani.

In May alone, passengers on all international routes were up 38 percent on May last year when the industry was suffering from the impact of the SARS flu-type epidemic and fallout from the invasion of Iraq.

For Asian airlines, the recovery

was even more dramatic. Traffic there in May was up by 108 percent on that of the same month last year, indicating that the "SARS effect" was well and truly overcome.

IATA said the January-May figures showed passenger traffic up 8.8 percent over the same period in 2000, just before the onset of a global downturn which set the industry on a steep downward path.

Earlier this year, airline chiefs feared steep rises in oil prices, but Bisignani said a recent decline had helped improve the situation.

Efficiency gains and cost-cutting would remain priorities.

Despite the shocks that had rocked the industry over the past four years, its underlying growth rate was 3.6 percent a year.

North America saw a passenger growth of 32.8 percent in the first five months and Europe 19.1 percent.

Carlo's comment (from previous page)

• *The observation that the F/A-22A does everything better than the JSF was challenged with a claim that "the F/A-22A is not being developed to provide air-to-ground capability."*

This is simply not true. IOC configuration F/A-22A delivered in 2005 will carry a pair of JDAMs, synthetic aperture radar modes are in development, and in 2007 the aircraft acquires the GBU-39 Small Diameter Bomb, sized around the F/A-22A weapon bays and datalink improvements. The F/A-22A will

internally carry the same number of Small Diameter Bombs as the JSF does

• *AM Houston's response to HU 306 raises technical points about the changes in F-111 radar cross section with "small off boresight" angles and also claims that the smaller size of the F/A-18A gives it a smaller radar signature than an F-111.*

Both statements are incorrect for applicable X-band radar. The geometry of the F-111 presents its

largest forward sector radar signature as a result of the engine inlets and radar bay bulkhead. Increasing the off-boresight angle left or right by only 8 degrees hides one inlet and reduces the coupling aperture of the other.

Radar signature for aircraft of similar size is mostly determined by shape, not by size, and the complex curvatures, concave reflectors and external stores of the F/A-18 are not conducive to effective radar signature reduction.

Part 2 next week.

Call for Europe UAV program

LONDON – Europe should cooperate on developing UAVs, including armed ones, to avoid being left to rely on US imports, Mike Turner, the chief executive of British defence firm BAE Systems.

He was speaking in his capacity as president of the AeroSpace and Defence industries association of Europe.

US companies such as Northrop Grumman Corp have captured the lead in UAV development as Britain and other European countries move slower.

Turner said Britain must decide whether it wants to develop its own UAVs or work with European or US

firms to ensure it has a stake in the growing industry.

"You can argue after JSF if we don't do UAVs and UCAVs, what is the future of air systems in Europe?" Turner said.

Osprey making test progress

WASHINGTON – The V-22 Osprey tilt-rotor transport has completed Phase IVB of its shipboard suitability testing, the fifth of six at-sea periods the tiltrotor will go through during the aircraft's developmental testing.

This was the latest in a series of tests leading to the aircraft's operational evaluation and subsequent

full-rate production decision next year.

During the eight days aboard the *USS Iwo Jima* (LHD 7) operating off Maryland, the V-22 demonstrated a tendency to tilt along its lateral axis when sitting on the flight deck behind a hovering aircraft – a phenomenon known as "uncommanded roll on deck".

Because the Osprey has a digital flight control system, engineers are able to reprogram the flight controls to eliminate undesirable characteristics such as roll on deck.

Previous shipboard suitability phases have tested the performance of the Osprey behind a hovering H-1, H-46, and H-53.

Phase IVB was designed to test the effect on a V-22 behind a hovering V-22.



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