F-111 costs are over-estimated

By Dr Carlo Kopp

In response to the *HeadsUp 306*, Chief of Air Force Air Marshal Houston submitted a rebuttal document to the Joint Standing Committee on Foreign Affairs, Defence and Trade. We now respond with the second part of a rebuttal.

• *Observations on retrofit of a new radar, internal missile launchers, stealth treatments and short wingtips (already under consideration) met claims of cost and risk and not being cost effective.*

The cost of all of these measures, other than the radar, is trivial in integration terms – internal trapeze launchers were integrated on the F-111 during the 1960s. Given the enormous strike/recce capability and support cost reduction gains from a modern AESA, complaints about cost-effectiveness are nonsense – BVR air-air capability is a bonus side effect.

• *Observations on the ~US$2.5 million unit cost of modern AESA radars were challenged with a treatise on integration issues in the F/A-18, and claims that the radar hardware would be a "small portion of the cost of integrating this radar on the aircraft".*

CAF is effectively claiming that integration costs for a new radar on 27 F-111s would be several times greater than $100 million – effectively similar to 1990s AUP program costs. An industry-sponsored study on a radar retrofit provided to Defence three years ago indicates that an AESA radar retrofit, including terrain-following functions and using existing TF computer, Pave Tack and F-111D HUD hardware, would be a relatively simple upgrade.

• *On escorting F-111s, CAF's document cites out of context the opening comment on F-111 escort requirements, but does not cite the punchline in HU 306 ie "only where airborne Sukhois are on station . . .would it be necessary to escort the F-111", thereby creating a misleading impression of HU 306. On F/A-18 self-escort non-viability against Sukhois, the document states that "Air Force does not believe that opposing regional fighters will have a detect first / shoot first / kill first advantage".*

This is not supportable comparing the F/A-18 vs Su-30, or either supported by Wedgetail, A-50 or other AWACS, a point later conceded in *Hansard* by Defence.

• *CAF's document further argued that an F/A-18 will survive because it will be fitted with a datalink to receive threat information for AEW&C, but the F-111 would not be fitted.*

Choosing not to fit a datalink and then claiming the F-111 cannot survive without it is a self-fulfilling prophecy; one remedied with less than $20 million of investment.

• *The document further argues that higher fighter speed makes it easier to detect in low altitude clutter, incorrectly labelled as "noise", unless terrain masking is used.*

Aside from not mentioning the importance of defensive jammers on a penetrating aircraft under missile attack, the argument that high-speed aids hostile detection is misleading, as it only applies for cases of closure rates between the target and interceptor placing the Doppler shift of the target outside the mainlobe and sidelobe clutter spectrum of the interceptor's radar.

For most engagement geometries this is not true. Many fighter look-down/shoot- down radars have much lower detection range against receding targets – NIIP's N-011M BARS on the Su-30 offers only 25 percent of the detection footprint compared with a closing target.

Ground Control Intercept radars guiding interceptors will also have serious problems in tracking fast, low-flying targets and speed presents kinematic problems for interceptors and their missiles.