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## THE TANKER GAP REMAINS

### FIVE A330s ARE GOOD, BUT NOT ENOUGH

**The April 16th announcement of the EADS/Airbus A330-200MRTT chosen over the smaller Boeing KC-767 as the Air 5402 tanker program winner is the first step in the recapitalisation of the RAAF's primary force structure.**

While there is no doubt that a new technology widebody will be a significant improvement in offload capability over the existing 707-338C fleet, the decision to acquire only five aircraft, while better than four, does not go far enough to address the developing tanker gap.

In terms of basic capability the differences between the 45 tonne payload class twin engine Boeing and EADS offerings were not dramatic. The basic A330-200 has around 15% more design payload than the 767-200 and about 20% greater fuel uplift capacity – placing it close to 135% of a KC-135R in offload performance.

The EADS/CASA fly-by-wire 3630kg/min boom has about 34% better nominal transfer rate than the new KC-767 Boeing boom. The A330MRTT's 1270kg/minute hose and drogue FRL Mk 32 pods are virtually identical to the KC-767 pods. Boeing offered a refuelling receptacle as standard fit, EADS as an option.

Used as tankers both have in common fuel efficient twin engine designs with 0.8 Mach class cruise, and both share the tactical limitations of limited dash speed and the need for airborne spares to cover for single engine failures.

In airlift capabilities the differences are more pronounced, the Boeing design offered from the outset with a main deck cargo floor and door – this configuration being an as yet not implemented (or designed) option for the A330-200. In terms of 463L (108 x 88in) military pallets, the KC-767 carries 21 in total with three in the lower lobe, whereas the A330-200 would carry up to nine in the lower lobe with a further 26 on the main deck if a freight floor and

door are fitted. Airbus has yet to engineer an A330 freighter, so as it stands the RAAF A330s will be delivered with 293 troop seats on the main deck.

Mission avionics are to include a JTIDS/Link-16 terminal, and an infrared counter-counter measures package to defeat man portable SAMs.

In terms of achievable combat effect the Air 5402 solution falls into the same category as the current plan for the Wedgetail – a very good capability on a per platform basis in its size class, but with a number of platforms which is unrealistically small against the demonstrable strategic need.

While the A330-200 provides around 35% more offload than a KC-135R, the benchmark in medium tankers, assuming no runway weight restrictions, the extent to which this will be reflected in the ratio of fighters supported to tankers available is open to question. Twin engine tankers require a higher ratio of airborne spares compared to four engine tankers to cover against an engine failure causing a critical mission abort. Therefore while the best case fighter/tanker ratio is around 5.5:1, worst case it will remain around 4:1, and in scenarios where persistence is required, the 'established' 2.5:1 to 3:1 ratio will apply.

In strategic terms five tankers offer little more than four Wedgetails. To support a continuous 24/7 combat air patrol, two tankers will be required to cycle through the station, the time on station being limited by the on station fuel offload rate and distance to station, the former determined by the number of fighters. A spare tanker will be required, if the distance to station is short enough it could be a standby on the ground, if the distance to station is such that a tanker failure forces fighters to ditch, then the spare will have to be airborne. If we assume that all five tankers are available for use, this would permit two concurrent orbits providing they are geographically close enough to permit sharing the single spare.

As with the Wedgetail, such a small number of aircraft does not provide enough airframes to defend the North West Shelf/Darwin/Timor Sea arc against a cruise missile threat – or indeed any threat which requires 24/7 air defence coverage. Where the threat can be engaged with an ‘on demand’ launch of a fighter/AEW&C/tanker package, then three tankers are committed with one to two spares available as required by the profiles flown.

Where concurrent strike operations are involved, five tankers present similar obstacles. If we make the reasonable assumption that strikes would be flown across the sea air gap, then, depending on how critical the mission is, one tanker must be reserved as an airborne spare for the strike package regardless of package size. Depending on the strike radius flown, and the fighter type used, a fighter to tanker ratio of 8:1 down to 2:1 will apply. With two tankers committed to a strike package, three remain to provide either a single 24/7 orbit or on demand cover for two locations, sharing a single spare.

However the numbers might be sliced, \$2 billion buys modest strategic punch in new build medium sized tankers. The ultimate outcome of Air 5402 will thus be a better “training and limited operational capability” than provided by the existing fleet of 707s, but little more than that.

Much has transpired since Air 5402 was defined during the late 1990s. In the regional strategic domain we have seen the ongoing Asian arms race ratchet up further. India recently took delivery of its first batch of Il-78MKI tankers, in a similar payload class to the 767-200/A330-200. China converted further H-6 Badger airframes into H-6U/H-6DU tankers using a cloned UK design from the 1980s, producing a tanker in the UK V-bomber conversion class. Where either party ends up in tanker numbers is an open question – the trend in associated Sukhoi purchases remains open-ended, especially at the PRC’s end of the game. India recently signed for the carrier *Gorshkov* and a wing of navalised MiG-29Ks.

Perhaps of more concern however is emerging evidence of a Chinese program to manufacture indigenous strategic class cruise missiles. One of these appears to be a cloned naval Tomahawk, the other a cloned Russian Kh-55/65 (AS-15 Kent), equivalent to the B-52H CALCM. With a new Badger variant in test, capable of carrying four such cruise missiles, China acquires a strategic reach in excess of 2000nm (3705km) – and presents a capability demanding 24/7 AEW&C/tanker/fighter orbits to defend against across the region.

With both nascent ‘regional superpowers’ now building a robust capability to project air and missile power into South East Asia, Malaysia and Indonesia jumped on the Sukhoi bandwagon. Australia faces over the coming decade a much more competitive region, where the current and



*The A330 tanker (shown here in RAF markings) will provide a very robust replacement for the fleet of four 707-338C aircraft. In strategic terms this small number of medium sized tankers does very little to change the developing tanker gap, nor will it significantly improve the ADF’s very limited capability to deploy personnel and palletised cargo on the global stage.*

planned RAAF force structure is falling further behind in strategic weight as time progresses.

Offsetting the loss of the prematurely retired F-111 requires 12 to 15 medium class tankers. Providing enough tanking to support, on conventional profiles, a fleet of 80 to 100 RAAF fighters requires around 20 to 25 A330-200 tankers. On persistent profiles – now the reality in network centric combat – tanker numbers go up further. For comparison, the RAF intends to invest \$31 billion on replacement A330-200 tanker aircraft – nearly 16 times Australia’s intended investment.

Now that the \$2 billion budget for Air 5402 has been committed, does Defence even acknowledge a remaining tanker, let alone intend to address it? Had refurbished used airframes – be they 767-300, A330 or 747-400 – been opted for rather than new build, this situation need not have arisen. Buying more than 15 additional new build A330-200s to extend the current fleet to a strategically credible number would be extremely difficult in the current budgetary framework, even if spread over more than a decade. While used A330-200s or indeed other types like the 747-400 will remain a technically viable option to extend fleet numbers, bureaucratic politics inside Defence will remain the biggest obstacle.

This analysis has focused primarily on aerial refuelling issues, and not explored the very real problems which exist in strategic airlift needs for the Army. The reality of coming decades will be ongoing coalition and possibly regional campaigns in which the ADF will be contributing ground forces, which will need to be deployed and sustained over often global distances. Commitment to build up a significant force structure component of large dual role tanker/transports would present an opportunity to properly close the tanker and strategic airlift gaps in a single program. However, for this to materialise in a credible fashion Defence would need to opt for a lateral solution, such as boom – hose/drum equipped 747-400SF freighters. At \$US50m to 60m basic cost for used 747-400SF conversions, this would be affordable in the existing budgetary framework.

It is clear that the tanker gap will remain indefinitely until there is a fundamental change in thinking inside Defence. At the very least we can hope that when the contact is signed later this year it includes options for more aircraft and the option to fit freight doors and floors once this conversion is available.



*The AirTanker consortium is the preferred bidder for the UK’s Future Strategic Tanker Aircraft (FSTA) program, which will provide the RAF with tanker capacity under a unique private finance initiative (PFI) deal, using A330-200MRTTs. (AirTanker)*