



MODERN COST EFFECTIVE FLIGHT REFUELLING SOLUTIONS

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International manufacturers of Flight Refuelling Aircraft (FRA) are limited to Boeing of USA, Illushin of Russia and Airbus of Europe. Chinese efforts to develop their own FRA have not apparently yielded much success beyond addition of the FRA role to one variant of the Chinese H-6 bomber which itself is based upon old Soviet era technology from the early 1950s. Countries seeking to induct FRA have a relatively limited menu to choose from and the most cost effective solution needs to be identified for induction.

BACKGROUND

A FRA should have adequate range itself so that it can be stationed at large distances from its launch base. Thereafter it should be fuel efficient so that it does not consume too much fuel itself. Then it should have a large amount of fuel available to be transferred to receiver aircraft and the rate of flow of the fuel during transfer should be high so that the time to refuel each receiver aircraft is kept low and more aircraft can be refuelled in a given time. The US has used the KC-135 tanker since 1957 when it entered service. The KC-135 is based upon the Boeing 367-80 (Dash 80) airframeⁱ. USAF initiated a competition to select a follow on to the KC-135 and invited global tenders for this project. The exhaustive evaluation carried out by USAF found the Airbus Multi Role Tanker Transport (MRTT) to be the winner in 2008 with its Airbus 330-200 based MRTT FRA aircraft. However, due to intense political and military-industrial complex pressure this was reversed to award the US contract to Boeing's KC-46A tanker; which is based upon the

commercial Boeing -767 aircraftⁱⁱ. At the time that India opted to induct FRA aircraft it did not have open access to the West's arms and equipment manufacturers' products to the extent that it does today. As the options were limited by this the Russian Il-78 FRA aircraft based on the Soviet era Il-76 military transport was inducted. In order to improve the efficiency of the Il-78 its engines were upgraded. The Il-78 has served IAF's requirements for several years now. However, the Il-78 suffers from a few drawbacks, common to all Soviet era equipment in high fuel consumption, difficulty in obtaining spare parts, and relatively low time between servicing and overhauls.

By and large equipment from the West scores better on all these parameters as well as boasting better Mean Time Between Failures (MTBF) figures. IAF finds a requirement for inducting larger numbers of FRA aircraft over and above the initial six Il-78s and so opened a global competition for selection. In this selection process IAF found the Airbus-330-200 based MRTT to be the best choice in terms of efficiency and life cycle cost as wellⁱⁱⁱ. The MRTT has another advantage in that unlike the Il-78 that carries the transferable fuel in tanks placed in its fuselage cargo space (the fuel tanks and other refuelling concerned equipment can be removed from the Il-78 to revert it to a cargo role when required), the MRTT carries most of the fuel in its wings thus keeping the fuselage cargo space

available for other cargo or personnel, even when it is on a FRA mission, thus making it a much more versatile machine than the Il-78. Airbus MRTT has won competitions and orders from several other air forces as well. These include the Saudi Arabian Air Force, Royal Saudi Air Force (RSAF), Britain's Royal Air Force (RAF), the United Arab Emirates (UAE), and Royal Australian Air Force (RAAF). It is under consideration by air forces of Algeria, Canada, Chile, Egypt, France, Peru, Turkey, South Africa, and South Korea. The latest country to select the airbus MRTT as its preferred FRA aircraft is Singapore^{iv}. The

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Airbus MRTT has been found to offer the best combination of cargo/ personnel carriage as well as In Flight Refuelling (IFR) capability at a reasonable cost. The fact that its parent aircraft, the Airbus 330, is in extensive commercial service worldwide helps in ensuring ready availability of most spares to give greater availability rates.

Airbus MRTT illustrates the economies of scope available to countries that are active participants in both civil as well as military parts of the aircraft industry. As India tries to give a fillip to its aircraft industry, this brings out the importance of establishing a civil component of the aircraft industry in addition to the military products arm of the aircraft industry.

CONCLUSION

There are relatively few manufacturers of FRA in the world. Currently these are limited to just Boeing, airbus and Illushin. All currently available FRA are based upon a parent commercial or cargo aircraft. Illushin FRA aircraft suffer from the drawbacks of efficiency, reliability and maintainability that did not allow Illushin aircraft to find a large global civil commercial market. Offerings from Boeing and Airbus are based on some of their best selling commercial aircraft and carry forward the efficiencies inherited from the parent airframes. The Airbus MRTT has won several order and competitions even by the USAF and is thus possibly a strong contender for being the most cost effective FRA available globally today.

(Disclaimer: The views and opinions expressed in this article are those of the author and do not necessarily reflect the position of the Centre for Air Power Studies CAPS)

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ⁱ "KC-135 Stratotanker", <http://www.boeing.com/boeing/history/boeing/kc135.page>, accessed on 07 Mar 2014.

ⁱⁱ "KC-46A Tanker", <http://www.boeing.com/boeing/defense-space/military/kc46a>, accessed on 07 Mar 2014

ⁱⁱⁱ Dominic Perry, "India selects Airbus Military MRTT for six-aircraft deal", <http://www.flightglobal.com/news/articles/india-selects-airbus-military-mr-tt-for-six-aircraft-380740/>, accessed on 07 Mar 2014.

^{iv} "Singapore to buy Airbus refuelling tankers for air force", http://www.spacedaily.com/reports/Singapore_to_buy_Airbus_refuelling_tankers_for_air_force_999.html, accessed on 07 Mar 2014.