



Boeing will equip its KC-767 NewGen Tanker with a 787-style cockpit

# A DUEL FOR FUEL



EADS North America is priming an offer with the A330-based KC-45

As hard-fought competitions go, the US Air Force's KC-X tanker battle has had pretty much everything to offer. Congressional scrutiny, corporate impropriety and a flawed procurement model have thwarted the service's three previous attempts to replace more than a third of its Boeing KC-135s. And after months of uncertainty over the likelihood of a renewed Airbus A330-based offer, the Department of Defense's recent approval of a 60-day bid extension has enraged Boeing's supporters, and upped the pressure on an already strained transatlantic industrial relationship. With Boeing and EADS North America now honing their final proposals for the 179-aircraft deal, we look at their candidate systems, and at how Washington will judge the capabilities of their rival products.

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Senior Master Sgt. Julie Layton/US Air Force

The US Air Force is making a fourth attempt to replace its oldest KC-135s

**CONTRACTING**

# KC-X choice key for DoD

Price the key factor in tanker contest, as Department of Defense looks to transform its troubled procurement model

**STEPHEN TRIMBLE** WASHINGTON DC

If all goes smoothly, the US Air Force will sign a contract in late 2010 to buy 179 operational tankers over the next 13 years, replacing part of a Boeing KC-135 fleet that entered service from 1956.

Of course, the decade-long experience with the KC-X contracting process suggests the aforementioned 'if' is a significant operative. Three attempts to buy new tankers since 2001 have so far yielded only jail terms, political tension and contractual failure.

Political intrusion remains a threat as Boeing and EADS North America prepare to submit bids ahead of a 9 July deadline.

But, among the risks the Department of Defense can directly control, none is more important for the outcome of KC-X than the success of a controversial and complex acquisition strategy adopted since last September to decide the winner of the fresh competition.

It's an approach that has already received sharp criticism. The new KC-X acquisition strategy moved Northrop Grumman to withdraw as prime contractor to former partner EADS on 8 March, with company executives complaining about unfair selection criteria and unwise contracting terms.

The intricate evaluation formula for KC-X even prompted EADS chief executive Louis

Gallois to rebuke the strategy the following day, saying the rules offer a "huge advantage" to Boeing's smaller aircraft.

The DoD did not heed calls by EADS to modify the evaluation criteria – although it did extend the deadline for submitting proposals by two months. But Gallois' subordinates at EADS NA decided on 20 April to compete anyway.

"We intend to win," said EADS NA chief executive Sean O'Keefe. "We believe this will be judged on the merits and on the criteria the DoD has laid out."

**US AIR FORCE ACTIVE TANKER FLEET**

| Type         | Number     | Percentage  |
|--------------|------------|-------------|
| KC-135R      | 363        | 76%         |
| KC-135T      | 54         | 12%         |
| KC-10A       | 59         | 12%         |
| <b>Total</b> | <b>476</b> | <b>100%</b> |

Source: Flightglobal's MilICAS database

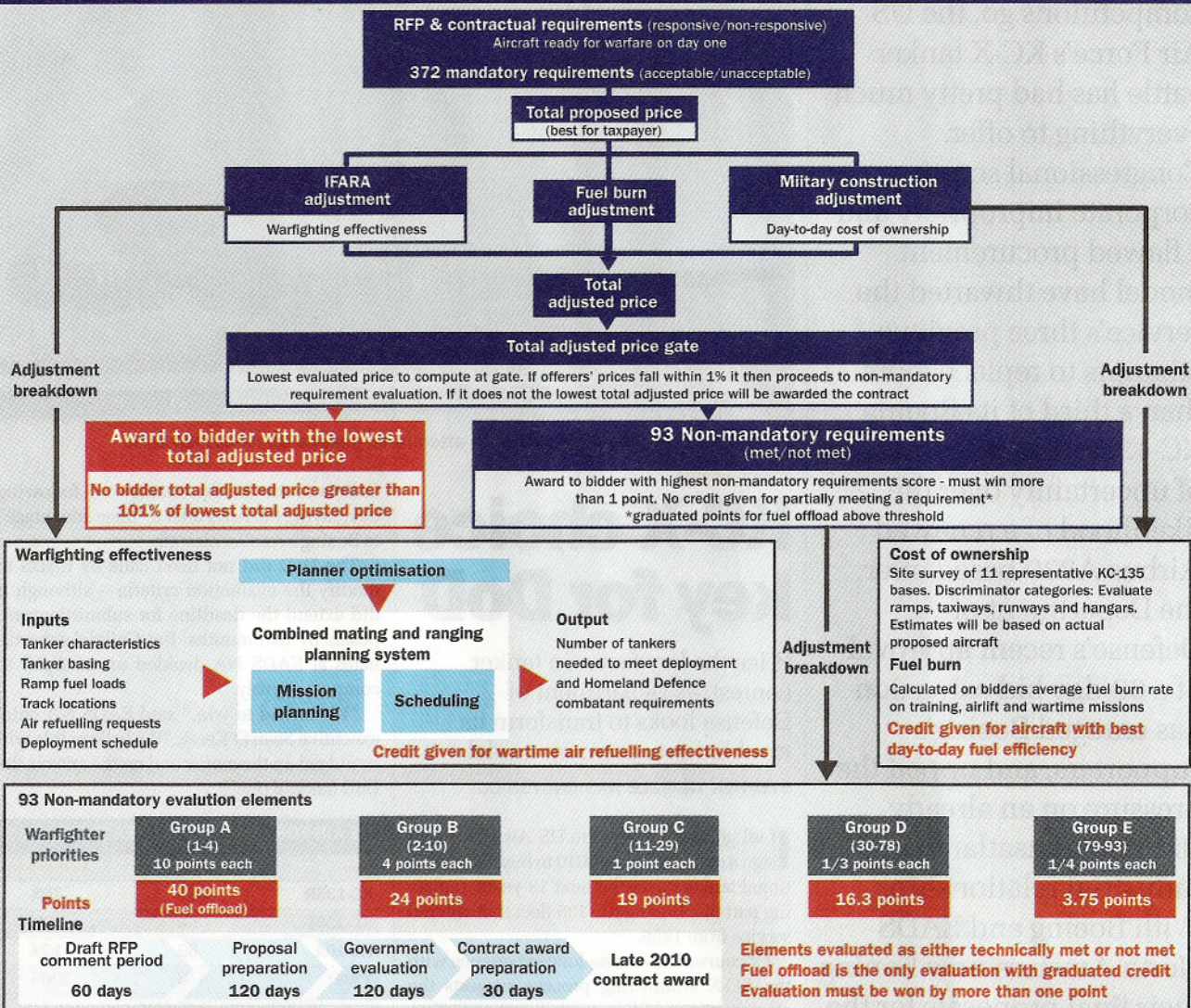
But the outcome of KC-X could influence more than the evaluation of the Boeing KC-767 NewGen Tanker against the Airbus A330-200-derived EADS NA KC-45.

When the DoD unveiled the criteria for the second competition last September, its objective was not merely for the KC-X contract award to survive a potential protest by the losing bidder.

The past decade has been filled by costly blunders for weapons acquisition. With KC-X, a new DoD regime hopes to set the template by which multi-billion acquisition deals for advanced weapon systems should be done.

Following closely behind the KC-X contract award are requirements to buy new aircraft to replace combat search and rescue helicopters for the USAF, armed aerial scouts for the US Army and presidential helicopters for the US Marine Corps.

### KC-X BID REQUIREMENTS



SOURCE: US Department of Defense

Tim Bicheno-Brown/Flightglobal

» The pending deals bear similarities to the KC-X process, as repeats of previous acquisition failures, and are also likely to involve derivatives of existing aircraft.

Among the military's needs to buy new aircraft, however, none are more expensive or sensitive than the potentially \$35 billion tanker contract. At the end of the day, the evaluation will be judged not by whether it passes a protest challenge, or is upheld by lawmakers who control the funding.

The true test will be whether the evaluation can select the aircraft that best meets the air force's requirements – but for the right price.

According to Northrop, the ideal aircraft under the selection criteria for KC-X is not in the competition. In fact, the air force is already flying it. "If you were able to build a new KC-135 today, technically, it would win the

competition," Mitchell Waldman, Northrop's vice president of business development, said last October.

The solicitation issued in February – but revealed in draft form last September – bases the fuel offload requirement for the KC-X tanker on the maximum capacity of the KC-135R.

In real terms, the air force wants an aircraft that can deliver 42,600kg (94,000lb) of fuel at a 1,000nm (1,850km) mission radius after taking off from a 10,000ft (3,050m) runway.

In the previous competition, the Boeing KC-767AT offered the capability to deliver about 54,400kg of fuel at that distance.

Northrop's larger KC-30 (later rebranded as the KC-45) proposed delivering 69,400kg under the same parameters. The KC-45's extra fuel capacity seemed to be the single most

important factor in the air force's analysis. "I know the team looked at a whole number of things," former Gen Artur Lichte, then chief of Air Mobility Command, said on 29 February. "But from my perspective, I can sum [the KC-45 decision] up in one word: more. More passengers, more cargo, more fuel to offload, more patients that we can carry, more availability, more flexibility and more dependability."

But the DoD has changed the rules for the re-competition, giving no advantage in its evaluation to any of the qualities previously identified by Lichte.

Instead, the solicitation requires the bidders to meet 372 mandatory requirements. The proposal that passes each requirement at the lowest price – which is adjusted to account for base construction costs, fuel efficiency and

» analysed mission effectiveness – wins the contract.

But the DoD also inserted an important caveat. The air force prefers to pay for the minimum performance at the lowest price. However, if the adjusted price of the two proposals falls within 1%, the air force will consider 93 non-mandatory specifications.

It is possible to earn up to 103 bonus points for exceeding the minimum requirement. The bonus criteria includes awarding up to 10 points for a tanker that provides at least 66,700kg of fuel offload at 1,000nm; a metric promised by Northrop's team in the previous competition.

It remains unclear what performance Boeing will promise in this competition, but it could have collected six bonus points with its previous offering under the new rules.

Essentially, that means the air force's new criteria rewards the KC-45's seemingly greatest advantage – size – with potentially less than 4% of the achievable bonus points, but only if the non-mandatory requirements are even scored.

The set-up appears to favour Boeing's smaller aircraft, but only if the manufacturer can beat EADS on price.

"Northrop had a point about this process resulting in a price shootout," says Richard Aboulafia, vice president for analysis at the Teal Group.

Such an outcome appears to favour a Boeing bid, as in theory, a smaller aircraft is cheaper to build and less expensive to operate and maintain.

However, some analysts think EADS can literally give Boeing a run for its money under the new evaluation criteria.

"I think EADS may have more of a shot at it than people think," says Michel Merluzeau, managing partner at Seattle-based G2 Solutions. "If they can demonstrate they meet the requirements then it becomes a price shoot-out."

The KC-45's apparent disadvantage on manufacturing cost, as compared to the KC-767, may not be accurate, Merluzeau says.

Significantly, Northrop and Boeing submitted offers in the previous competition that came within fractions of matching each other on price.

Since that time, two things have changed in EADS's favour, Merluzeau says. Northrop's departure means EADS can scratch the margin claimed by the former prime contractor, which has been estimated at between 10% and 15%. Meanwhile, the predicted softening of the Euro's value in relation to the US dollar also may allow EADS to price more aggressively in the new competition.

"The answer really boils down to one of price," says Ralph Crosby, chairman of EADS NA. "Our risk is small because our develop-

OPERATIONS CRAIG HOYLE LONDON

## USAF TANKERS IN EUROPE



The 100th Air Refuelling Wing, based at RAF Mildenhall, uses 15 KC-135s

THE US Air Force's only permanent European-based tankers are the 15 Boeing KC-135s assigned to its 100th Air Refuelling Wing (ARW) at RAF Mildenhall in Suffolk, England.

Totalling around 75 pilots and 30 boom operators, or "boomers", the unit provides support for regionally based assets, including Lockheed Martin MC-130H/P combat tankers from Mildenhall, Boeing F-15s from nearby RAF Lakenheath and Lockheed F-16s from Spangdahlem AFB, Germany.

Its assets are also called upon to refuel USAF types transiting European airspace en route to Afghanistan and Iraq, and to provide support for

fighters from other NATO and Partnership for Peace nations.

The 100th ARW has flown the KC-135 since 1970, and its aircraft are now in the Block 40.4 avionics configuration. This features a Rockwell Collins Pacer Crag cockpit and global air traffic management capability.

Its KC-135s are capable of carrying a maximum fuel load of 95,200kg (210,000lb), and of transferring this at up to 3,630kg/min from the tail boom. A boom drogue adapter can deliver up to 1,090kg/min, and three of its aircraft have underwing hose and drogue pods, which can offload a maximum of 1,210kg/min.

Col Creg Paulk, commander of the 100th ARW, says he

cannot remember one of the unit's aircraft being flown at its maximum fuel load. "Fighters regularly only take about 70% of the fuel that they've asked for, so we have to plan for inefficiencies."

The wing logged around 6,600 flight hours in 2009, and Paulk says each of his aircraft has typically amassed only 20,000h, despite being an average of 49 years old.

"They are ageing aircraft, but it's more of a maintainer problem," he told IQPC's Air Tankers and Aerial Refuelling conference in London earlier this year. "We see them working a lot on corrosion and the skin, but the engines and avionics are not so much of a problem." ■

ment is advanced. This implies that our price for the [system development and demonstration] part of the contract may be lower.

"Our competitor hasn't fully defined their airplane, let alone started to build it. Their price will be a determinate of what they offer."

Crosby notes that "the risk part of the equation has been assigned to the contractor. The tanker for Australia is virtually identical to what we will offer the air force. Based on all data and evidence I have seen, we have a lot less distance to go than our competitor."

In the original competition, the air force's long list of non-mandatory "requirements" is remembered as one of key reasons the competition was poorly managed. The sheer number of non-mandatory specifications seemed extraordinary. Of 808 separate needs specified

in the request for proposals, more than 770 were labelled non-mandatory. Reviewing the air force's performance after the US Government Accountability Office sustained Boeing's protest into the KC-45's selection in 2008, the DoD interpreted such a lopsided ratio as one of the signs the competition was mishandled.

In the second go-round, DoD officials took care to correct the imbalance, chopping the list of non-mandatory specifications from more than 770 to 93.

Keeping that number low is sought not only to reduce the chances of a successful protest by a losing bidder.

Cracking down on ambiguous specifications that can lead to costly contract changes later is a major tenet of the ongoing acquisition reform movement. »

» Non-mandatory specifications often become transformed into real requirements after contract award, generating extra costs with dozens of contractual add-ons.

Deputy Secretary of Defense William Lynn raised that point on 25 February, as he unveiled the final draft of the RFP for the second competition.

"One of the ways you get cost growth is that you add requirements as you go through the programme, and you implement them through engineering change proposals and you increase the price," Lynn said. "That is exactly what would have happened, had the prior competition gone forward to contract."

Of course, the GAO prevented the prior competition from advancing. The air force's mishandling of its 770 non-mandatory requirements was cited as one of eight reasons for overturning the contract award to the Northrop-led team.

Specifically, the GAO's auditors found that the air force had failed to credit Boeing for offering to meet more non-mandatory speci-

**"One of the ways you get cost growth is that you add requirements as you go through the programme"**

**WILLIAM LYNN**  
US Deputy Secretary of Defense

cations than Northrop, despite language in the solicitation that asked bidders to satisfy as many as possible.

"Clarity and precision is a very important principle of the acquisition reform effort we have here," Ashton Carter, undersecretary of acquisition, technology and logistics, said on 25 February.

"And so the source selection strategy [for KC-X] is crystal clear," he adds. "We've said that from the beginning. Everybody will know, when a winner is picked, exactly why they won. And up front, both offerors know exactly what they need to do to win." ■



Staff Sgt. Eric Harris/US Air Force

**179 aircraft are set to be replaced**



The KC-767 NewGen Tanker is shrouded in mystery

### PROPOSAL

## Boeing keeps faith

Competition is fierce but Boeing hopes that its NewGen Tanker will prove to be sophisticated enough to win

**STEPHEN TRIMBLE WASHINGTON DC**

Since losing the first competition for KC-X, Boeing has retained the same basic type model series in its proposal, but changed virtually everything else about its marketing approach and product offering.

The KC-767 NewGen Tanker, unveiled in a low-key announcement on 4 March, fills in a few essential details, but leaves the most important elements of Boeing's proposal shrouded in mystery.

Such pre-submittal secrecy is normal in the aerospace industry, but the practice contrasts sharply with Boeing's approach in the previous competition. Flush with the confidence of being the US Air Force's incumbent tanker

supplier for a half-century, the company spared few details about its proposal in the months before the release of the previous request for proposals.

Boeing, however, initially lost the previous competition before the US Government Accountability Office overruled the air force's decision to award the contract to the Northrop Grumman/EADS North America KC-45.

Jean Chamberlin, newly-appointed KC-767 programme manager, explained in a February interview that she foresaw a tough competition. "I do see it as neck and neck," Chamberlin said. "This is a really tough competition. I'm going to have a hard time thinking about how much [information] I'll disclose now."

Boeing has also launched a very different marketing campaign. If company executives lectured air force officials about refuelling concepts in the first round, they have resisted that urge in the second contest. Instead, Boeing officials have repeatedly stressed that they would listen to the customer's requirements, and respond with the best aircraft the company can offer.

Until the 4 March announcement, Boeing officially was considering either the KC-767 or KC-777, although it conceded that the KC-767 became more likely after the air force

**SALES CRAIG HOYLE** LONDON

## NEWGEN TANKER EXPANDS KC-767 LINE

BOEING'S PROPOSED NewGen Tanker design incorporates numerous major advances over the 767-200-based aircraft already sold to export customers Italy and Japan.

The nations have each ordered four General Electric CF6-80C-engined KC-767s, all in the convertible freighter configuration. This enables them to also fly the aircraft carrying either a full load of cargo, up to 200 passengers or a combination of both.

Japan's air force early this year received its last boom-equipped example from Boeing's local partner Itochu. Deliveries had started in 2008, and the type was placed into operational service at its Komaki air base last July.



**Italy has ordered KC-767s**

Italy's acquisition has been less straightforward, with its air force now expecting to put the KC-767A into frontline use from later this year.

Originally scheduled for delivery from 2007, the model has encountered development delays with key equipment including its Smiths Aerospace hose and drogue refuelling pods. Its aircraft are also equipped with a Boeing tail boom and a centreline hose drum unit. The problems also prompted the company to

remove its local conversion partner, Aeronavali, from the project in an attempt to reduce delays.

The configuration selected by Italy has a maximum fuel capacity of 92,000kg (203,000lb), with this having been increased from the design's original 73,000kg limit through the addition of three auxiliary tanks each in the aircraft's forward and aft cargo bays.

The Italian air force is currently using one passenger-configured 767-200 to support training activities for its tanker crews. Boeing is now working to complete certification activities in the USA. "Three of the four tankers are in flight test, with the fourth airplane still being modified," it says. ■

### KC-767 ORDERBOOK

| Nation | Ordered | In use | Tanker configuration                  | Engines    | Seating   | Service entry |
|--------|---------|--------|---------------------------------------|------------|-----------|---------------|
| Japan  | 4       | 4      | Tail boom                             | GE CF6-80C | Up to 200 | July 2009     |
| Italy  | 4       | 0      | Tail boom, centreline hose, wing pods | GE CF6-80C | Up to 200 | Late 2010     |

Source: Flightglobal's MillicAS database

issued a draft list of requirements in September calling for a smaller aircraft.

When the KC-767 NewGen Tanker was revealed, however, it was clear that Boeing had decided to offer a very different and more sophisticated tanker to the air force.

A 787-style digital flight deck featuring four 15.1in liquid crystal displays would be integrated on the 767 if Boeing wins the contract. The cockpit also shows two cursor control de-

fuselage. The new boom includes a wider refuelling envelope, Boeing says, and digital control technology.

But there remain significant gaps in the public knowledge about the KC-767. In the previous round, Boeing's offering was sometimes criticised by its opponents as the "Frankentanker". The aircraft was a composite, including the fuselage of the -200, wings of the -300 and cockpit of the -400ER. So far

it's not clear which of Boeing's aircraft contribute to the NewGen Tanker's structures and flight control systems. In any event, Boeing is not asking its propulsion supplier to provide any additional power. Pratt & Whitney will deliver the same 62,000lb (275kN) thrust PW4062 engines as offered in the previous competition. The selection of the PW4062, however, does not tip Boeing's hand, as the engine powers all three variants of the 767. ■

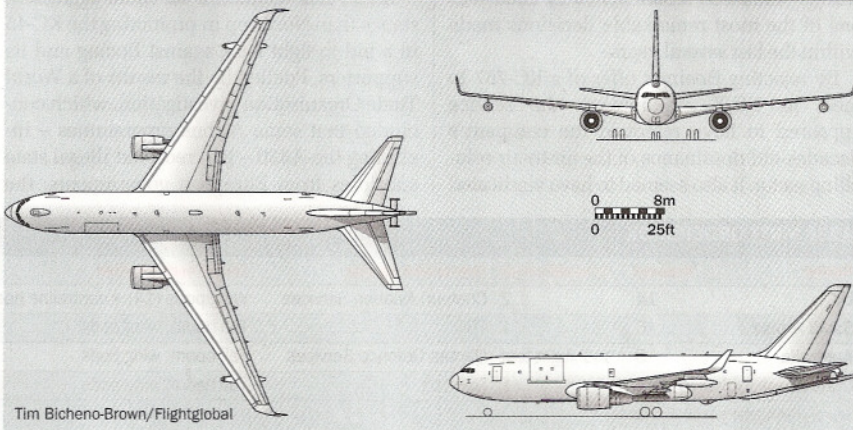
### "I do see it as neck and neck. This is a really tough competition"

**JEAN CHAMBERLIN**  
KC-767 programme manager

VICES on the instrument panel, similar to the cockpit layout inside the 777. However, the design lacks a fifth multi-function display, as offered on the 787.

The most visible change to the KC-767 airframe are newly-added winglets, as the air force now stipulates a preference for the most fuel efficient aircraft. The new design also incorporates an improved refuelling boom system, which extends from the belly of the centre

### BOEING KC-767



Tim Bicheno-Brown/Flightglobal



With four buyers now on board, EADS hopes its A330 MRTT will dominate the market

Airbus Military

**COMPETITION**

# More please

EADS has taken a more aggressive stance than Northrop in its bid to promote the KC-45 as the tanker that the DoD should plump for

**CRAIG HOYLE** LONDON

The US Air Force's selection of the Northrop Grumman/EADS North America team's Airbus A330-200-based KC-45 in 2008 was one of the most remarkable decisions made within the last several years.

By rejecting Boeing's offer of a KC-767 to meet its KC-X requirement, the service appeared to have removed the company's decades-old dominance of the air-to-air refuelling sector. It also seemed to have vindicated

a bid strategy which had promised to deliver a vital commodity: "more".

But that was not the end of the story, with a Boeing appeal to the US Government Accountability Office having led to the deal's termination over process errors.

Also in early March, Northrop stepped back from a contest that it considered to be unfairly skewed towards a smaller design, leaving EADS NA to go it alone in pursuit of the 179-aircraft deal.

With the contest now in a 60-day extension period approved by the Department of Defense before responses to a final request for proposals must be tabled on 9 July, the gloves have well and truly come off.

EADS has adopted a far more aggressive stance than Northrop in promoting the KC-45 in a bid to fight back against Boeing and its supporters. Fuelled by the results of a World Trade Organisation investigation, which concluded that some Airbus programmes – including the A330 – had received illegal state subsidies from European governments, the

KC-767 NewGen Tanker's promoters have dressed the product as an all-US tanker fighting against a transatlantic raider.

But claiming that its North American activities today support 200,000 US jobs and contribute \$11 billion to the economy each year, EADS is promoting its own US credentials.

"The KC-45 will be made in America by tens of thousands of American workers, and build the US economy for today and tomorrow," says EADS NA. If selected, the company will assemble its new tanker in Mobile, Alabama, and also bring in similar work on the new A330-200F freighter.

EADS's head of Airbus military derivatives, Antonio Caramazana, says the KC-45 offering will draw heavily on the company's experience in preparing the A330-200 as the KC-30A for the Royal Australian Air Force. "The basic aircraft and the basic air-to-air refuelling solution is very similar," he says.

To enter delayed service from late this year, Australia's new tanker/transports are

**A330 MRTT ORDERBOOK**

| Nation               | Ordered | In modification | Conversion partner       | Tanker configuration                 | Engines        | Seating | Service entry |
|----------------------|---------|-----------------|--------------------------|--------------------------------------|----------------|---------|---------------|
| UK                   | 14      | 2               | Cobham Aviation Services | Wing pods (14) + centreline hose (7) | R-R Trent 772B | 291     | Late 2011     |
| Saudi Arabia         | 6       | 1               | TBC                      | Tail boom, wing pods                 | GE CF6-80E     | 30+236  | 2011          |
| Australia            | 5       | 1+2 flight test | Qantas Defence Services  | Tail boom, wing pods                 | GE CF6-80E     | 272     | Late 2010     |
| United Arab Emirates | 3       | 1               | Gamco*                   | Tail boom, wing pods                 | R-R Trent 772B | 16+240  | Late 2011     |

Source: FlightGlobal's MilICAS database

Note: \*In-service support only

equipped with an EADS advanced boom refuelling system and a Cobham 905E hose and drogue pod under each wing. Certification work should conclude around mid-year.

"We are working with the RAAF to make the transition," says Caramazana. The service is expected to receive two aircraft late this year before declaring initial operating capability in early 2011. All five of its aircraft will be delivered before full operating capability is achieved during 2012.

EADS would prepare its first prototype KC-45 for the USAF in Getafe, Spain, and complete subsequent aircraft in the USA. It will offer the aircraft with the option of a cargo door, enabling the type to be flown in a passenger/cargo combi configuration, or to carry a freight load of up to 45,000kg (99,200lb).

"The capacity of the A330-200 as a cargo transport is phenomenal," says Caramazana.

Its offering will also use the Cobham 805E fuselage refuelling unit already integrated

## "The capacity of the A330-200 as a cargo transport is phenomenal"

**ANTONIO CARAMAZANA**

Head of Airbus military derivatives, EADS

with one of the UK's first two A330s under the Future Strategic Tanker Aircraft programme. As with all MRTTs sold to date, the design will retain the A330's maximum fuel capacity of 111,000kg.

With Australia's first aircraft now nearing operational use, EADS is highlighting the level of new systems included within Boeing's KC-767 NewGen Tanker, and their potential risk.

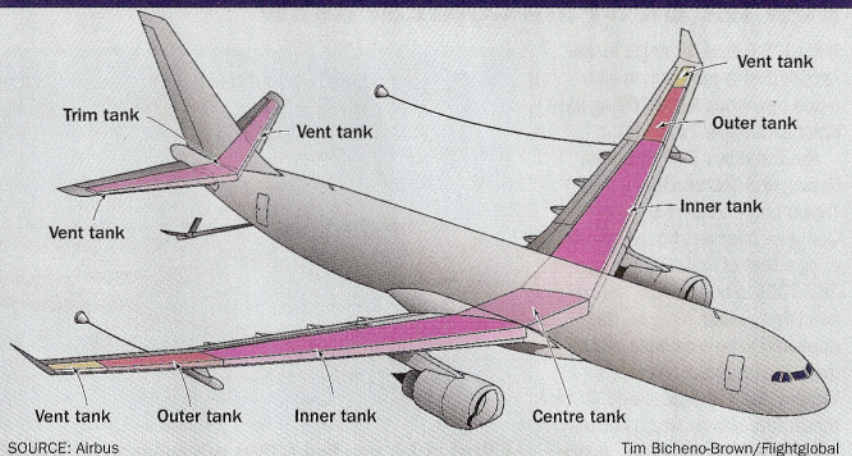
"The [US] Air Force shouldn't have to take an expensive gamble on an aircraft that only exists on paper," it says. Selecting a new development would be "a gamble with taxpayer money and the warfighter's future," it argues.

The European Aviation Safety Agency in mid-March granted a civil supplemental type certificate for the MRTT modifications. These include the fly-by-wire boom, an enlarged cockpit with a new operator console for the refuelling system and a universal aerial refuelling receptacle slipway installation to also allow the aircraft to receive fuel from another tanker.

The commercial aircraft's original flight-control laws have also been modified for the latter requirement, enabling a pilot to make more agile inputs in roll.

"It is much more responsive, to keep the aircraft within +/-1ft," says Tim Butler, Airbus project test pilot for the A330 MRTT. "We flew an ex-USAF KC-135 pilot, and he

## A330 MRTT FUEL TANK ARRANGEMENT



made contact the first time," he notes. "That validates the work that we've done."

In tanker law and with the boom extended, the A330 is restricted to a flight envelope within +2.0g and 0g. A new bank angle mode has been added to its autopilot to provide a more stable tanking platform, says Butler. "It's a great enhancement, as it allows the receiver to stay in contact. It's worked well for us."

Aircraft refuelled during flight testing with Australia's first two KC-30As have included Spanish air force Boeing EF-18s, Portuguese air force Lockheed Martin F-16s and a French air force Boeing E-3F airborne warning and control system platform. The MRTT has also received fuel from a French C-135 tanker.

This work highlighted a safety issue with the wing pod fairing, with the refuelling basket having on one occasion hit the wing while being retracted. The fairing was redesigned to improve hose stability and passed subsequent testing, leading to the late April award of daylight certification to use the hose and drogue system.

Airbus expects its civil certification to be followed "this summer" with military certification from Spain's INTA authority for the hose and drogue system. Flight testing of the aircraft's boom system "is progressing well, and will be completed shortly", it adds.

Located on the enlarged flight deck, the "boomer" operator station features an enhanced vision system which uses images from numerous high definition cameras, and also includes an optional 3D mode.

The same cameras provide images under day, night and dusk conditions, and can be combined to show a 180° panoramic view from wing tip to wing tip.

"We want to give carefree handling to the operator, and to the receiver a reduced workload," says Don Cash, the project's head flight test boom operator. For the operator, the process is hands-off after contact has been made, he notes.

Additional benefits of the system include it automatically knowing, for example, which



EADS North America's KC-45 tanker would be completed in Mobile, Alabama



CONTRACT CRAIG HOYLE LONDON

### HOW THE UK'S FSTA CONTEST GREW

THE UK'S Future Strategic Tanker Aircraft (FSTA) competition also pitted the Airbus A330-200 against Boeing's smaller 767.

Proposed by a BAE Systems, Boeing and Cobham team, the Tanker and Transport Service Company offer was based on delivering a fleet of Rolls-Royce-engined 767-300s to be acquired second-hand from British Airways. This appeared to be a credible means of replacing the Royal Air Force's Vickers VC10 and Lockheed TriStar tanker/transports, which had also seen previous commercial service.

But this perception changed with the RAF's need to perform long-range missions in support of combat aircraft operating above Iraq



A fleet of 14 modified A330s will support RAF operations

during the second Gulf War in 2003, and by the demands of the UK's subsequent mission in

Afghanistan. Having previously appeared too large, the new-build A330s offered by the EADS UK-led

AirTanker consortium suddenly appeared an ideal fit. In addition to delivering air-to-air refuelling services, the type could also be used as a way of providing part of the vital "airbridge" to carry equipment and personnel between RAF Brize Norton in Oxfordshire and Afghanistan.

AirTanker was shortlisted by the Ministry of Defence in January 2004 for the FSTA deal, but protracted negotiations between the parties meant that a contract was not signed until March 2008. The deal covers the provision of 14 leased A330s under a private finance initiative deal worth an estimated £13 billion (\$19.9 billion) over 24 years. ■

» quantity of fuel to use and which pumps to employ with a specific receiver aircraft.

EADS says the MRTT's size means that it can fly 500nm (925km) before remaining on station for 5h with an available fuel load of 60,000kg. Alternatively, this can be changed to 50,000kg over a 1,000nm distance with a 4h 30min time on station.

In addition to the five ordered by launch customer Australia, Airbus Military has sold a further 23 A330 MRTTs to Saudi Arabia, the United Arab Emirates and the UK.

Australia's third aircraft is now in modification by Qantas Defence Services in Brisbane, Queensland, with this and the programme's last two airframes to undergo customer acceptance flights in the country. An option to buy three more cargo-door equipped MRTTs expired in 2007, but Caramazana says: "we are willing to negotiate again."

The first aircraft for both Saudi Arabia (six) and the United Arab Emirates (three) are now undergoing conversion in Spain, with deliveries to both to start during 2011. The UAE's aircraft will all be completed in Spain and supported locally by Gamco, and there is the possibility for three additional aircraft to be acquired.

Airbus is still negotiating with a potential partner for local involvement in Saudi Arabia, although it says this is not a necessity. "Right now we don't have a solution," says Caramazana. "It has to be a balance between the investment in capital, capabilities and technology transfer."

The first two aircraft from the UK's eventually 14-strong FSTA fleet arrived at Getafe in the second half of last year, and structural modifications have been completed on both. The "prototypes" will be used to support cer-

tification activities, with the Royal Air Force's remaining 12 to be modified by Cobham Aviation Services in Bournemouth, Dorset. The entire fleet will carry Cobham 905E wing pods, while half will also use the company's centre fuselage refuelling unit.

The UK's first modified tanker will make its first flight in military guise this September, and enter service in late 2011.

Airbus says it will leverage certification work already performed on Australia's MRTT where possible for the UK programme. After basic certification and qualification, the first two aircraft will be flown to Qinetiq's Boscombe Down facility in Wiltshire to support user trials.

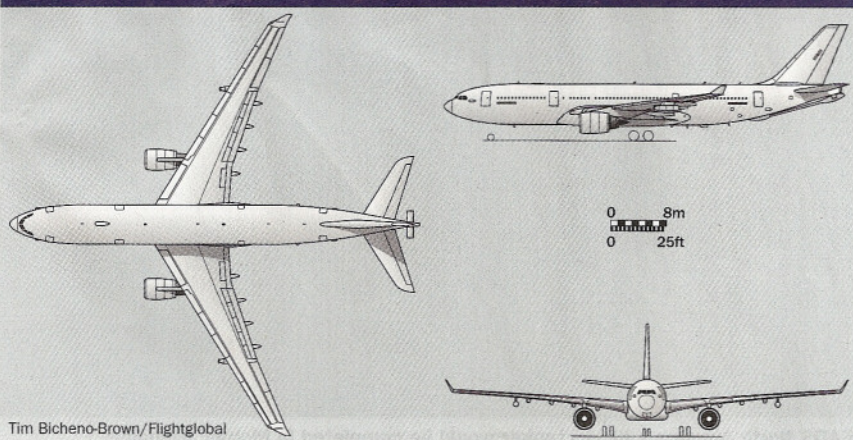
The tankers will be flown with combat types including the BAE Systems Harrier GR9, Eurofighter Typhoon and Panavia Tornado GR4, and with large aircraft such as the Boeing E-3D Sentry and Lockheed Martin C-130J tactical transport.

"We have offered to the market a response to the disadvantage of the old tanker fleet," says Caramazana. Other potential sales opportunities exist in Europe, Asia, the Middle East and South America, he says, with India and France considered near-term prospects.

Airbus Military has also modified several A310 transports for the tanker role for Canada (two) and Germany (four), with the type offering a maximum fuel offload of 60,000kg. Several nations have also ordered air-to-air refuelling equipment for the A400M, which has a 58,000kg capacity. ■

To follow the developments in the KC-X tanker battle as the DoD nears its decision, visit [flightglobal.com/defence](http://flightglobal.com/defence)

#### AIRBUS A330 MRTT



Tim Bicheno-Brown/Flightglobal