CONCEPT DEVELOPMENT REPORT

ON

CONTRACTED AERIAL REFUELING

Revised 1 March 1998
Revised 21 June 1999

Note: This report is UNCLASSIFIED when the classified attachment is removed.

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BACKGROUND

On 13 August 1997, USCINCTRANS met with representatives of Omega Air, Inc. and subcontractor TRACOR Flight Systems, Inc. to discuss their proposal for contract aerial refueling (A/R). USCINCTRANS subsequently directed that a study be conducted on the feasibility of contracted aerial refueling services for possible referral to the Joint Staff. To that end, the USTRANSCOM Plans and Policy Directorate (TCJ5) formed the Contract Aerial Refueling Working Group (CARWG), comprised of functional experts from U.S. Transportation Command (USTRANSCOM), Air Mobility Command (AMC), and Omega Air. After preliminary work, the complete working group met at USTRANSCOM on 1 October 1997. Working group members are listed at Atch 1. **This report version has updated information included in revisions made on 1 March 1998 and 21 June 1999.**

There have been two previous studies pertaining to the subject of privatization or contracting of aerial refueling. In response to Congressional direction, the office of the Secretary of Defense (OSD) submitted a report which, while acknowledging a potential tanker shortfall in certain wartime scenarios, concluded that "wartime aerial refueling is not suitable for private-sector sources." On the other hand, General Accounting Office (GAO) Report, NSIAD-96-160, in addressing the state of the aging KC-135 fleet, highlighted the need to address such factors as high OPTEMPO and the increasing cost of maintenance. There is a possibility that contracted aerial refueling might help alleviate these concerns

This CARWG concept development study will include:

- Quantitative analysis of the wartime probe and drogue requirements and potential for filling the requirements with contracted service.

- A review of Omega Air concepts.
- A discussion of operational and logistical considerations.
- An examination of policy, legal, and insurance considerations.
- Contract considerations and funding.
- Quantitative analysis of cost factors based on data provided by Omega Air.
- Conclusions.

The cooperation required to develop the CARWG report does not constitute any agreement between USTRANSCOM and Omega Air. Where necessary, information provided by Omega Air will be identified as such. For the purposes of this report, the generic term "Contracted Aerial Refueling Operator" (CARO) will be used to refer to the hypothetical civilian participant. The following, with attachments, is the complete CARWG report:

PROBE AND DROGUE REQUIREMENTS

Previous studies based discussion of tanker shortfalls on unclassified programmatic charts in the AMC 1997 Air Mobility Master Plan (AMMP). This report will also use analysis of the programmatic shortfall. However, due to the nature of the anticipated system, the refueling mission under consideration will be limited to probe and drogue. It should be emphasized that there is no shortfall in programmed wartime probe and drogue refueling platforms. The combination of 250+ planned KC-135 centerline drogues, 54 KC-10 centerline drogues, 45 KC-135 multipoint drogue mods (with 30 shipsets) and 20 KC-10 multipoint drogue mods (with

15 shipsets) is adequate to cover potential probe and drogue needs, other tasking permitting.

Further, due to the implications of combat and combat support roles, use of contracted civilian tankers is not anticipated for employment operations within or near a combat area. The likeliest wartime use of contracted aerial refueling is in residual stateside training and in the deployment/redeployment phase. Therefore, the wartime utility of contracted probe and drogue platforms is bounded by the extent to which they can relieve military tankers for boom tasking and the analysis reflects that limitation. In doing so, the report will closely reflect the potential contribution to readiness. See the classified analysis at Atch 2.

As the AMC/XPY point paper at Atch 2 cautions, the total number of OPLAN drogue requirements does not equate to any specific number of organic tankers that can be reassigned to boom requirements if relieved by contracted tankers. For example, KC-10 tankers are most often chosen because of operational considerations other than drogue capability, such as greater range, dual role, or multipoint capability. In the majority of cases, the anticipated B707 contracted system would not satisfy the requirement for these greater capabilities. For this reason, the analysis is based on relief of KC-135 tankers from drogue tasking rather than KC-10s. Likewise, not all KC-135 tankers relieved of drogue tasking would necessarily be available for boom tasking due to location or timing. Achieving optimum utility from contracted drogue tankers would require adjustment of TPFDD timing, which is the prerogative of the supported CINC(s). Finally, deployment timing during OPLAN execution is likely to be affected by employment operations. For example, changes in aircraft carrier operations could radically change later deployment plans with subsequent impact on tanker tasking.

OMEGA AIR UPDATE AND CONCEPTS

Omega Air, as an U.S. corporation, is interested in potential markets for contracted A/R and has begun development of a modification kit for probe and drogue operations. Developmental difficulties have caused delay in program development, which was originally scheduled for completion in February 1998. The current Omega Air schedule calls for ground and flight testing through 26 August 1998. FAA certification testing and issuance of a Supplemental Type Certification, i.e., the system certification, could be completed by late September 1998. Navy certification tests at Patuxent River could be completed by October 1998. **Due to a corporate reorganization of TRACOR, Inc., the prime contractor for aircraft conversion, together with various technical difficulties, the Omega Air program has fallen considerably behind schedule. Actual testing of the Omega Air aerial refueling system was begun in June 1999. As of 21 June 1999, Omega Air anticipated completion of testing at Mohave, CA and the initiation of flight testing at Patuxent River before September 1999.**

The system in development is one of single point, redundant (rather than simultaneous) capability, consisting of two variable speed hydraulic-driven internal pumps, two drogues, associated instrumentation, lighting, and hull modification (Atch 3). The system requires minimal ground support and is to be readied by the crew. Targeted time for conversion to aerial refueling mode from cargo mode is approximately one hour. Aside from a small weight penalty, the modification will have no effect upon cargo carrying capability. The anticipated cost of the aerial refueling modification is approximately $3.5 million per aircraft. Omega Air is prepared to modify up to 25 B707 aircraft, depending upon program development. Their plans include new

engines and avionics, though these improvements are not part of the refueling modification.

Omega Air basing plans are dependent upon program size and anticipated cargo business (as a Part 135 carrier). Basing could be on either or both coasts or be centrally located, with obvious cost implications due to sortie length. Unlike the CRAF program in which air carriers' sole defense arrangement is with the U.S. government, Omega Air's plans includes the possibility of A/R arrangements with more than one government. Omega Air has begun negotiation with the Canadian government for contracted aerial refueling which might also affect their fleet plans. See Atch 4. Omega Air's plans also include joining the CRAF as a cargo carrier. The implications of CRAF membership will be discussed later.

OPERATIONAL/LOGISTICAL CONSIDERATIONS

TASKING. Mission tasking for an hypothetical AMC-contracted A/R service will require close coordination between the Tanker/Airlift Control Center (TACC) and the CARO dispatch office. While an anticipated 24 hour response time is sufficient for wartime deliberate planning purposes, execution planning might be complicated by dispersed aircraft locations. This is particularly true if the expected bulk of the carrier's business is in international cargo. Unlike military tankers, civilian aircraft will not usually be positioned at home station waiting for mission tasking. Depending upon wartime requirements, the CARO must be prepared to recall aircraft either to home station or to some other location identified by the TACC.

AMC-assigned and -gained tankers are stationed at over 30 CONUS locations, often with long established receiver customers, A/R locations and local procedures. In an AMC contract,

peacetime CARO tasking is possible through the existing AMC "horseblanket" process, though some procedural adjustments might be necessary. Again because of the possible cargo-carrying role, for scheduling purposes the CARO will need to provide advance tanker availability to a TACC office designated to coordinate tasking. The CARO basing concept will need to consider likely receiver locations. CARO A/R tasking will not be at the expense of AMC unit training.

The frequency of probe and drogue A/R requests is largely determined by receiver requirements. According to the TACC, in FQ 97/1 AMC received 128 drogue tanker sorties requested of which 16 were non-supported. FQ 97/2 had 122 requests with 10 non-supported. FQ 97/3 had 206 requests of which 6 were non-supported. The fourth quarter results are incomplete due to a reporting lag, however, for that period, TACC reports 66 requests with only 2 requests being non-supported. Reasons for non-support included scheduling anomalies, higher priority tasking, and maintenance problems. Overall fleet availability was not a significant factor in non-support situations. At a TACC-estimated 3 hours per sortie, the 522 reported FY 97 probe and drogue refueling requests represent 1566 tanker flying hours of which approximately 100 hours was non-supported. This is compared to an overall annual KC-135 flying hour program of approximately 130,000 hours.

AMC tanker sortie reporting has improved dramatically since late 1997 through the use of a computerized horseblanket process. According to TACC sources, the number of FY97 KC-135 drogue tanker sorties probably exceeded 1,450, of which perhaps 70 were non-supported. At an estimated three flying hours per sortie, the FY97 KC-135 drogue sorties totaled in excess of 4,350 flying hours. FY98 sortie figures are similar, with requested KC-135 drogue sorties exceeding 1,400 and 4,200 flying hours, of which approximately 80 requests were non-supported. Nevertheless, even the greater flying hour

numbers are small in comparison to the annual KC-135 flying hour program.

It should also be noted that AMC drogue request figures do not reflect A/R requirements satisfied by U.S. Navy and Marine organic A/R assets. Such requirements are far greater in number than those satisfied by AMC. A contract which seeks to satisfy A/R requirements from different programs (e.g., AMC horseblanket, Navy/Marine organic, Canadian, NATO, FMS, etc.) will require a far more complex coordination effort. The AMC command and control system is an adequate platform for satisfying the A/R requirements of diverse programs, given the cooperation of the intended receivers. Depending on the size of the contracted A/R fleet, a permanent contractor presence in the TACC might be required.

DUAL ROLE CAPABILITY. A potential advantage of the proposed contracted aerial refueling aircraft is the ability to carry cargo. Though the CRAF program is currently oversubscribed in cargo capability, the flexibility inherent in an aerial refueling/cargo aircraft might lead to scheduling synergy and reduced cost, particularly in peacetime. Wartime utility as a cargo carrier depends on the aircraft type. Since wartime operational requirements, principally related to MOG factors, lead to a preference for wide body aircraft, a narrow body dual role aircraft's primary utility will remain aerial refueling. A possible exception is use in conjunction with the AMC Air Mobility Express (AMX) concept, depending on that program's estimated cargo load requirements.

CREW REQUIREMENTS. Due to wartime security requirements, the CARWG recommends that, similar to CRAF aircrews, the contracted A/R aircrews be comprised of U.S. citizens. Similarly, the aircrews should not be recruited from USAF Reserve or Air National Guard aircrews who might be subject to recall during wartime. As a working premise, the CARWG agreed that a 2.0 crew ratio is a proper starting point for analysis purposes. Operation

as a CRAF cargo carrier would lead to a 4.0 crew ratio.

STANDARDIZATION. The CARWG recommends that the CARO procedural standardization be in accordance with the appropriate USAF Technical Order, T.O. 1-1C-1-3. While use of NATO Allied Tactical Publication (ATP) 56 procedures as a benchmark was discussed, use of the USAF T.O. is more representative of DoD requirements. Compliance with T.O. standardization will be a CARO responsibility.

GOVERNMENT FURNISHED EQUIPMENT (GFE). The CARO will require access to equipment not normally used by civilian carriers. Mission planning will be enhanced by secure access to the applicable command and control system, as well as a government-provided STU III and classified fax machine. Other potential GFE include a Mode IV transponder, a radar transponder capable of transmitting a beacon code for India band radars, air-to-air TACAN, and UHF radios. Any practical arrangement will include the provision of GFE on a semi-permanent basis.

FUEL CONSIDERATIONS. DoD limitations regarding fuel type and contaminant prevention must apply. All DoD receivers require either JP-8 or JP-5 meeting quality use parameters in T.O. 42B-1-1, Table 5-2. See Atch 5. JP-8 and JP-5 received from DoD installations will meet these requirements. J A-1 commercial aviation fuel with an appropriate fuel system icing inhibitor is a suitable substitute if acquired from a Defense Fuel Supply Center (DFSC) contract location. A usable agreement for contracted A/R will include contractor access to both DoD installations and DFSC locations with government-provided fuel. A less likely option is waiver/change to the fuel T.O. requirements.

POLICY, LEGAL, AND INSURANCE CONSIDERATIONS

FAA CERTIFICATION/DoD APPROVAL. Aside from an FAA system certification, an FAA operating certificate is also required. The consensus of the CARWG is that the best option for operations is under FAR, Part 91, as a public use aircraft. This would be analogous to the operations of target towing aircraft. Similarly, just as target towing aircraft are inspected under FAR Part 135 criteria for operations and maintenance, an aerial refueling operator will be held to at least Part 135 standards in those areas. DoD carrier survey and approval, such as is required for passenger aircraft, is not required for air refueling either by public law or by DoD Directive 4500.53 as currently written. Nevertheless, some type of DoD certification or inspection is likely, if only to ensure contract compliance.

INTERNATIONAL LAW. FAA operational certification does not necessarily apply to other countries and the CARO might have to seek separate certifications for each country. There is a possibility that a country might consider aerial refueling to be inconsistent with civilian purposes as defined by the Chicago Convention.

As a contractor, the CARO would not normally be entitled to NATO SOFA protections. Significantly, the CARO would not be protected by the waiver of liability claims for a mishap during A/R with a NATO allied aircraft. Use of a CARO to support U.S. commitments to NATO Allied A/R programs will require the negotiation of specific waiver of claims protection.

Finally, there is some concern to avoid CARO use in or near an area of hostilities so that the use of an aircraft in civilian markings is not construed as being combat support. See the TCJA point paper at Atch 6.

INSURANCE ISSUES. Obtaining commercial insurance is a CARO responsibility. As

there are no standard commercial hull all risk insurance policies for aerial refueling, the CARO must seek underwriter participation. The limitations and cost of coverage might affect contract details. While FAA-provided peacetime all risk (hull and liability) insurance is sometimes available for air commerce, the FAA has indicated it would seek Cabinet level approval before expanding such coverage to aerial refueling. Commercial liability insurance might likewise be expensive and subject to country exclusions. Commercial war risk insurance is probably available. FAA Chapter 443 War Risk Insurance will likely require some DoD negotiations with the FAA. The FAA has indicated that Cabinet level approval might be required to extend coverage to aerial refueling. Indemnification under Public Law 85-804 would not be available in peacetime though it would likely cover war risks. Indemnification is only available to cover unusually hazardous risks. See the TCJA point paper at Atch 7.

CONTRACT CONSIDERATIONS AND FUNDING

CRAF or CRAF-LIKE. The CARWG determined that the potential contract format would be CRAF-like rather than part of the existing AMC CRAF contract. A number of factors contribute to this finding. First, unless already a CRAF member, the CARO would be required by public law to demonstrate 12 months of equivalent service before receiving a contract award. Secondly, there is no single measurement of wartime aerial refueling capability, analogous to wide body equivalents (WBE), in return for which a percentage of peacetime business can be promised. Aerial refueling utility can vary widely depending on such factors as location, distance, offload, and number of receivers. Unlike the CRAF contract, in which business is paid

through a renewable Transportation Working Capital Fund (TWCF), peacetime A/R business would be limited to the funding level provided for the purpose. Yet undetermined is the applicability of the CRAF "60/40" rule which requires that a member can receive no more that 40% of income from government sources. If this rule were interpreted to include revenue made from non-A/R sources, then the CARO might be handicapped as a CRAF cargo carrier (should it eventually choose to join) since money earned in A/R would count as part of the 40% limit.

The best format is that of an indefinite delivery, indefinite quantity (IDIQ) contract which requires a minimum quantity to be ordered. Important aspects of the CRAF contract can be replicated in the A/R contract, including the requirement to be a U.S. company, aircrew American citizenship, and the timing and procedures for wartime activation. The contract could include CARO access to DoD installations and fuel.

Nothing in a separate contract would preclude the CARO from becoming a CRAF member once eligible. The possibility also exists for a CRAF-eligible contractor to receive additional incentive as a cargo carrier in exchange for the additional A/R mission capability. This is similar in concept to the aeromedical evacuation (AE) segment which receives double Mobilization Value (MV) points in the CRAF contract. However, there are distinct differences that must be considered. The CRAF AE segment provides fully one half of the entire AE capability and receives incentive for an airframe (the B767) not readily offered for service. A prospective A/R contractor will not only be seeking business, but will provide only a small, though potentially important, fraction of the overall tanker capability.

FUNDING. Under current practices, AMC A/R customers only pay for the cost of the fuel provided. AMC tanker flying hours are paid for through USAF Operations and Maintenance (O&M) accounts. A satisfactory method of using a revolving capital fund for A/R services

would require a wholesale change in the process by which customers pay for A/R. Payment for CARO A/R services should remain in Service (though not necessarily USAF) O&M until and if program maturity allows another look at other options.

COST ANALYSIS

The CARWG analysis of the contracted aerial refueling concept costs benefited greatly from proprietary cost data provided by Omega Air. Based on working group discussions of various fleet options, Omega Air prepared a preliminary report on the projected cost per flying hour (Atch 8). The several analysis alternatives include B707 fleet sizes of three (3), five (5), ten (10), and twenty five (25) aircraft with either a single or dual basing plan. The annual flying hour levels vary from 500 to 1000 hours per aircraft. The assumptions used by Omega Air are on pages 3 through 8 of Atch 8 and include access to government contract fuel, use of certain GFE, and a 2.0 crew ratio. Costs include personnel, general and administrative (G&A), training, operations, and maintenance outlays, as well as a ten year amortization of refueling kits and an 8% profit. Cost figures also reflect a discount rate of 2.7-2.8% in accordance with guidelines from the DOD Commercial Operations and Support Savings Initiative (COSSI). The schedules in Appendix A of Atch 8 extend the cost estimates for each alternative until FY08. All cost figures are in constant FY98 dollars.

The chart following page 10 of Atch 8 shows the summary of flying hour costs for the chosen alternatives. The impact of fleet size and number of flying hours is evident. The most expensive alternative per aircraft, a five (5) aircraft fleet at one site, each flying 500 hours per

year, has a flying hour cost of $9,878 and an annual total cost of over $24.7 million. The least expensive alternative per aircraft, a twenty five (25) aircraft fleet at one site, each flying 1000 hours per year, has a flying hour cost of $6,366 and a projected annual cost of over $159 million.

The Omega Air figures were examined by AMC/LGC for completeness and fidelity. The figures are not meant to be analyzed from a contract perspective or to suggest a particular program size, but rather as benchmarks for report purposes. Average annual costs per study alternative are as follows (tentative first operating year flying hour costs reflecting start-up investment are in parentheses):

--- 3 aircraft, 1000 hours each, single site:	$6,721 per flying hour ($8,849)
--- 5 aircraft, 1000 hours each, single site.	$6,619 per flying hour ($9,177)
--- 10 aircraft, 1000 hours each, single site	$6,548 per flying hour ($9,177)
--- 25 aircraft, 1000 hours each, single site	$6,366 per flying hour ($7,641)
--- 5 aircraft, 500 hours each, single site	$9,878 per flying hour ($14,363)
--- 5 aircraft, 750 hours each, single site	$7,521 per flying hour ($10,526)
--- 5 aircraft, 1000 hours each, dual site	$6,721 per flying hour ($9,249)

The above figures represent the cost of single purpose fleets, i.e., those performing aerial refueling. The effect of other potential business, such as cargo operations, on overall costs was not initially computed. In February 1998, Omega Air resubmitted cost data (Atch 9) on the selected fleet alternatives, with an additional assumption of startup costs and amortization being shared between the projected A/R operation and the projected cargo operation for the same fleet alternatives. While the source of the anticipated cargo operations is not specified, revenue figures are based on participation as a CRAF cargo carrier. The potential effect of the resultant cost sharing is a substantial lowering of the annual cost per flying hour (tentative first operating year flying hour costs in parentheses):

---	3 aircraft, 1000 hours each, single site:	$5,245 per flying hour ($7,219)
---	5 aircraft, 1000 hours each, single site.	$5,095 per flying hour ($7,219)
---	10 aircraft, 1000 hours each, single site	$4,894 per flying hour ($7,219)
---	25 aircraft, 1000 hours each, single site	$4,862 per flying hour ($7,264)
---	5 aircraft, 500 hours each, single site	$6,395 per flying hour ($9,310)
---	5 aircraft, 750 hours each, single site	$6,084 per flying hour ($8,891)
---	5 aircraft, 1000 hours each, dual site	$5,120 per flying hour ($7,241)

Comparison of cost figures is hampered by the use of different assumptions. For example, the cost figures in the 1996 GAO report on refueling aircraft are disputed by AMC. At the time, GAO estimated the KC-135 flying hour cost to be $8,662 and projected an increase to $10,761 by 2001. AMC maintains that the GAO cost estimates are artificially high, due to the inclusion of numerous infrastructure items of common use in the cost calculations.

Likewise, the AMC cost data for KC-135 flying hours is computed on a different basis and therefore is provided as another data point rather than as comparison to any commercial operation. The FY98 KC-135R cost per flying hour is $2,097, representing fuel, supplies, and Depot Level Reparables (DLR). Unlike either the GAO study or Omega Air figures, the cost of personnel, support equipment, and infrastructure is not included in the USAF KC-135 flying hour calculations. **The FY99 KC-135R flying hour rate is similar at $2,232.** Also of interest is the USAF-derived aircraft reimbursement rate for non-U.S. government customers, which is intended to recover all costs. The FY97 USAF non-government reimbursement rate was $7,167 per flying hour. **However, according to AFI 65-503, Aircraft Reimbursement Rates, the FY99 non-government reimbursement rate for the KC-135R is only $3,678. The difference between the FY97 and FY99 non-government reimbursement rates is that the latter reflects more accurate information about KC-135R fuel consumption and cost.**

Reconciliation of the various government cost estimates was beyond the scope of this study.

Likewise, no attempt was made to determine the flying hour costs of Navy and Marine A/R platforms. The Omega-provided cost figures for contracted aerial refueling are realistic, given the assumptions used, the most important of which is a robust peacetime A/R flying hour program between 500 and 1,000 flying hours per year for each aircraft.

FINDINGS

The CARWG reached several conclusions about the feasibility of contract aerial refueling:

- A review of programmatic tanker requirements in the single MRC and SIOP scenario combinations reveals a measurable opportunity for contracted aerial refueling to relieve AMC KC-135 tankers of some probe and drogue tasking. Depending on the scenario, either 16 or 26 tanker sorties will cover the probe and drogue requirements on 95% of deployment days.

- There are no known equipment or technical obstacles to preclude program development.

- Due to legal, policy, and liability considerations, the primary utility of contracted aerial refueling is in training and deployment operations outside areas of hostilities.

- Currently, AMC does not have a sufficient amount of peacetime probe and drogue refueling business to sustain a useful contracted A/R fleet. AMC annual probe and drogue tasking does not exceed 2,000 hours. A minimal one year "proof of concept" program, involving 2-3 aircraft and 4 crews will require approximately 350-400 hours.

- According to the A/R-only cost figures, a five (5) aircraft contracted A/R fleet will require approximately 5,000 annual flying hours to reduce average costs below the calculated USAF non-government reimbursement rate. The return for an estimated $33 million annual cost is an approximate potential increase of 1% in wartime capability.

- According to the dual-use (cargo and A/R), shared-cost figures, all of the examined fleet alternatives could reduce average cost below the USAF non-government reimbursement rate. Under these assumptions, a five (5) aircraft contracted A/R fleet, representing a 1% increase in wartime capability, would cost approximately $25.5 million annually

- Because of the diversity of requirement sources, a sustainable contract A/R program will require Joint Staff and/or OSD sponsorship in order to elicit the cooperation of the Services and CINC(s), as well as the FAA and NATO.

- A sustainable peacetime A/R contract will require consolidation of probe and drogue requirements from various sources. Potential sources include the Navy and Marine Corps, FMS operations, and existing and potential agreements with Allies, primarily Canada, Germany, and other NATO countries.

- Due to the unique features of this concept, the best contract vehicle will be a CRAF-like, indefinite delivery, indefinite quantity (IDIQ) contract.

REPORT TO CONGRESS ON PRIVATE SOURCING OF AIRLIFT OF MILITARY PERSONNEL AND CARGO

November 1997

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INTRODUCTION

The FY 1996 National Defense Authorization Act requires the Secretary of Defense to report on the feasibility of the use of private-sector sources for air transportation of military personnel and cargo. Section 365 requires that the report include a cost-benefit analysis and an assessment of the issues raised by such use of private-sector sources. Section 365 also states that the report should discuss the requirements that private-sector sources must meet, and determine the effect of the use of private-sector sources on military personnel and facilities.

This report is focused primarily on airlift missions provided by "common-user" aircraft. There are other service-specific air transportation missions that may also be candidates for the use of private-sector sources and they are being evaluated by individual services. For example, the Navy is evaluating the possible use of chartered commercial helicopters to perform transportation of cargo and personnel to and from ships in the Military Sealift Command. If the services identify additional missions that can be met by private-sector sources, specific proposals will be forwarded in future budget requests.

ASSESSMENT OF FEASIBILITY FOR PRIVATE-SECTOR SOURCES

It has been a long-standing policy for DoD to rely on commercial transportation resources to the greatest extent possible, and for DoD to procure and operate its own transportation resources only when needed to meet military requirements that cannot be met by the civil sector. Accordingly, the first step in this study was to determine which airlift missions were not military in nature and could be met by private-sector sources. Military airlift missions include (1) combat missions where the aircraft could be placed in a hostile situation, (2) unique missions that must be flown by aircraft with military design features not found in the civil sector, and (3) highly sensitive missions, either with classified payloads or special passengers conducting sensitive business in a secure communications environment. The assessment of operational feasibility of using private-sector sources relative to this definition is presented below.

Operational Support Airlift

Operational support airlift (OSA) aircraft are used to meet short notice, generally smaller, cargo and passenger lift requirements. OSA aircraft range in size from smaller, executive-style planes such as the C-12, C-20, and C-21 to mid-sized aircraft like the C-9. In wartime, OSA aircraft located in or deployed to overseas locations would be used to support warfighting theater commanders. These aircraft would provide for the high-priority, short-notice movement of critical personnel and cargo. Examples of wartime missions would be the emergency resupply of critical spare parts or urgently needed medical items, the movement of classified intelligence materials such as targeting imagery and film, or the short-notice movement of high-priority

command and staff personnel. Overseas OSA wartime missions may occur in hostile situations and may be highly sensitive requiring secure communications, and therefore are not suitable for private-sector sources.

OSA aircraft located in the continental United States (CONUS) would provide short-notice cargo and passenger deliveries, often to remote locations, that cannot be satisfied by the scheduled service of the major air carriers. These CONUS missions could be flown by civil aircraft charters, if satisfactory arrangements could be made for responsiveness to short-notice requests for airlift, often to locations away from major metropolitan airports.

Special Airlift Missions

Special Airlift Mission (SAM) aircraft are stationed at the 89th Airlift Wing located at Andrews Air Force Base, Maryland. These aircraft provide safe, secure, and reliable air transportation for the President, Vice President, Cabinet, members of Congress, and other high-ranking dignitaries. Most Special Airlift Missions are not suitable for private-sector sources. For example, many of these missions provide secure transportation for the President or members of the First Family. Other missions provide transportation for high-ranking national security officials such as the Secretary of Defense, Secretary of State, or Chairman of the Joint Chiefs of Staff. On such missions, SAM passengers conduct highly sensitive business while en route, and communications security is essential. On the other hand, special air missions for Congressional and Executive Branch travel, excluding the White House and Departments of Defense and State, may be suitable for private-sector sources.

Aeromedical Evacuation

Aeromedical evacuation refers to the wartime movement of wounded combat personnel. Intratheater aeromedical evacuation, moving casualties out of the combat zone to the periphery of the combat theater, is primarily conducted with C-130 aircraft configured for an aeromedical role. These missions require an aircraft that can operate in an austere airfield environment, and in potentially hostile situations. Therefore, these missions are not suitable for private-sector sources. Intertheater aeromedical evacuation refers to the movement from the periphery of the combat theater to the coastlines of the continental United States. Most of this capability is already provided by private air carriers. Within CONUS, aeromedical evacuation is used to move wounded personnel from the coastlines of the United States to their home stations. These missions would be flown by civil aircraft and available military aircraft. At this time there are no military aircraft maintained solely for wartime aeromedical missions within CONUS.

Intratheater Airlift

Intratheater airlift provides the rapid onward movement of supplies and personnel from the ports of debarkation to destinations throughout the wartime theater of operations. Such

missions would be flown by C-130 aircraft, augmented by C-17s in a tactical role. In addition, these aircraft could be called upon to conduct other special missions such as emergency unit moves or airdrops in theater. Due to the combat nature of these intratheater missions, they are not suitable for private-sector sources.

Military Intertheater Airlift

Intertheater airlift provides the rapid deployment of cargo and passengers over intercontinental distances in times of crisis. Much of this airlift is already provided by the civil sector. The Civil Reserve Air Fleet (CRAF) consists of passenger and cargo aircraft that commercial carriers have agreed to make available for DoD's use in times of crisis. In return for their participation in CRAF, carriers are given preference for DoD's peacetime passenger and cargo business. Fully activated, the CRAF fleet accounts for over 90 percent of the total passenger capacity in the DoD airlift fleet, and about 30 percent of total cargo capacity. Although civil aircraft provide important capabilities, there are some essential characteristics they do not have. For instance, civil aircraft cannot carry the full range of military equipment. Of the cargo (including bulk cargo) that would have to be moved by air in a major regional conflict, only about 45 percent of the total tonnage would fit into the largest commercial cargo aircraft. Additionally, civil aircraft cannot air-drop cargo or personnel, nor can they provide specialized capabilities, such as the rapid off-load required in combat situations. Commercial aircraft also require long runways and special material-handling equipment, and therefore cannot operate in austere airfields. Therefore, intertheater airlift provided by military aircraft is not suitable for private-sector sources.

Aerial refueling of military aircraft

Aerial refueling aircraft are used to extend the range of fighter, bomber, combat support, airlift, and special operations aircraft. The primary tanker used to support joint and multinational operations is the KC-135. Additionally, the KC-10 is a dual-role tanker and airlift aircraft that can be used for both aerial refueling and cargo transport. Aerial refueling aircraft provide support to different aspects of military operations. First, tanker aircraft allow for the rapid deployment of combat aircraft into regional theaters of operations. This capability enhances force projection by decreasing reliance on staging bases while accelerating the deployment of combat aircraft to the theater of operations. Second, after the deployment is complete, combat aircraft continue to rely heavily on aerial refueling during employment in theater. Aerial refueling increases the payload capability for long range missions by reducing the need for cargo-fuel tradeoffs. During the employment phase, aerial refueling aircraft are required to operate in a strict emissions controlled environment, and may even be required to conduct operations at night and in all weather conditions. Third, tanker aircraft provide critical support to nuclear-armed bombers committed to the strategic nuclear war plan (i.e., the Single Integrated Operational Plan, or SIOP). In a crisis, tanker aircraft would be placed in an alert posture at the same time as bomber aircraft would be placed on alert.

Overall, the requirement for tanker aircraft is based on an assessment of aerial refueling needs to support planning scenarios. The tanker fleet must be adequate to support the employment of combat aircraft in a major regional conflict in addition to a SIOP alert. Management of the peak workload requires the use of training aircraft for wartime missions, and the dedicated use of KC-10 aircraft for aerial refueling. Thus all tanker aircraft and aircrews may be called upon to support employment of combat aircraft in theater or the alerting of SIOP bombers. Although it might be possible to find non-combat aerial refueling missions during the early portion of a deployment into a theater, the tanker aircraft used in such a non-combat role are required for combat aerial refueling missions later in the scenario. Therefore wartime aerial refueling is not suitable for private-sector sources.

The peacetime tanker flying hours budgeted for each fiscal year are based on training requirements. The primary objective of peacetime aerial refueling is to obtain and maintain proficiency and currency in all aspects of refueling operations, for both the refuelers and the receivers. This objective requires consistency in training, where refuelers and receivers would train exactly as expected to fly in combat. In conclusion, all tanker crews must be trained and available, and all tanker aircraft must be capable and available, to serve in a variety of combat roles, near or in hostile airspace, at any time to meet current requirements. Because the training of tanker crews covers the full range of combat missions, it is not suitable for private-sector sources.

FORCE STRUCTURE ALTERNATIVES

Of the various types of airlift currently conducted by military aircraft, there are two feasible candidates for private-sector sources: CONUS Operational Support Airlift (OSA), and certain special airlift missions (SAMs). For each of these candidates, the cost of operating the currently projected fleet of government-owned aircraft is compared to the cost of using private-sector aircraft to meet the same requirements. This section of the report details the force structures used to prepare the cost assessment.

Operational Support Airlift

In 1995, the Joint Staff evaluated the number and mix of OSA aircraft that would be needed to support two nearly simultaneous major regional conflicts. As a result of that assessment, DoD has established a requirement for 391 OSA aircraft. The Joint Staff study defined the requirement as 230 generic short-range (turboprop) aircraft and 161 generic long-range (turbojet) aircraft. Table 1 shows the assignment of the current OSA requirement by aircraft type and military service.

SUBJECT: Contract Air Refueling

ISSUE: To provide Background on Omega Contract Refueling Costs

USTRANSCOM POSITION: Contract Air Refueling Provided by Omega is Not Cost Effective

COST COMPARISON:

- Omega Air is providing the Navy contracted air refueling services as allowed by Program Budget Decision (PBD) 824. The PBD states "Navy will conduct a pilot program to contract for refueling support including tanker aircraft support, consistent with applicable statutory and regulatory requirements."

- Omega Air charges the Navy $5,995 per flight hour plus aircraft fuel burn and fuel off-load. Adding the fuel burn of Omega's B-707 increases the cost as follows:

  Basic Flight Hour Charge.....$5,995
  Fuel Burn: 18,000 lbs for first hour,
  and 11,000-12,000 lbs per hour thereafter
  at a cost of $1.22 per gallon*.....$2,094-$3,278
  Omega's projected actual charge.....$8,089-$9,273 per flight hour

  * Calculation based on KC-135E burn rates (similar to B-707), JP-8 fuel weight of 6.7 pounds per gallon, DOD J-P8 fuel charge rate.

  -- This cost calculation is bolstered by the fact that the Navy programmed $12M against 12,000 hours of Omega flight time—hence the **Navy projected Omega Air's total costs at $10,000 per flight hour.**

- In contrast, the Air Force provides air refueling to the Navy *free of charge*. Air Force tankers are O&M funded and provide air refueling as a by-product of fulfilling their own training requirements. The only charge related to an Air Force refueling mission is for fuel off-loaded to receiver aircraft—this mission dependent amount was not included in the Omega Air costs quoted above.

- Air Force refueling is still 51-56 percent less costly to DOD than Omega even when tanker maintenance, fuel, and personnel costs are factored.

  -- The KC-135R total costs for fuel, depot maintenance, depot level reparables and consumables, and aircrew personnel costs total $4104.98 per flight hour—a 51%-56% savings to DOD over Omega.

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Lt Col Stan Skavdal/TCJ5-AA/229-4935/_____/28 May 02

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WEEKLY CONSOLIDATED EXSUMs
25 April 2002

EXSUMS ARE NOT RELEASABLE OUTSIDE OF USTRANSCOM

TCJ5:

GAO INVESTIGATION ON AIR REFUELING/KC-767 LEASE. On 18 Apr, AF/XORM facilitated a GAO meeting with AMC & TCJ5-AA. GAO relayed strong congressional interest in KC-135 service life, cost issues, capability, and Omega Air. AMC/XPY briefed Economic Service Life (ESL) and Tanker Requirements Study—ESL brief stated KC-135 was structurally viable to 2040. Current AMC Strategic Plan is consistent with ESL stating, "Aircraft Structural Integrity Program revised estimate is 39K hours for KC-135R/T and 36K hours for KC-135D/E." Current KC-135R hours are approximately 16K. According to ESL, "annual fleet support costs of about $2.1B for the KC-135D/E/R/T aircraft fleet will increase to about $3.0B over next 40 years." Reference GAO questions on cost, XORM stated AF is working cost issues (no information yet) and Boeing is developing business case with SPO. Reference capability, XORM said offload capability of 767 was about same as KC-135, but 767 offered greater flexibility with additional centerline hose and receptacle. XORM also stated Airbus was not competitive because aircraft's footprint was about 80% larger than KC-135 without a corresponding offload advantage, verses 767 footprint, which is only 29% greater. In response to Omega Air questions, GAO was advised issue was previously studied—AMC, USTC, and Joint Staff determined at that time there was inadequate value. The Omega Air concept may be revisited as an option under any future AOA. AMC is currently answering related congressional questions on Omega--TCJ5 will assist as needed.

Next Step: **Monitor—no USTC visit currently scheduled.**

Intended Outcome: **Accurate GAO report.**

Lt Col Stan Skavdal/TCJ5-AA/229-1444/23 Apr 02

Noted H Tell Me More _____ Background _____

We need to make the obvious point that OMEGA charges the USG for fuel, crews + gas. The USAF charges for Gas only! Omega is a really dumb idea - even to navy senior leadership when they found out about the latest contract! Don't let this issue drop. We need to get the GAO fired up about the waste of USG $!!!

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UNITED STATES TRANSPORTATION COMMAND
508 SCOTT DRIVE
SCOTT AIR FORCE BASE, ILLINOIS 62225-5357

6 June 2002

MEMORANDUM FOR CHIEF OF NAVAL OPERATIONS

FROM: TCCC

SUBJECT: Use of Omega Air

1. At the most recent Navy-Air Force Warfighter Talks, we discussed the cost of the Navy's contract air refueling test with Omega Air. As follow-up, attached is data confirming that the Navy will generate significant savings using Air Mobility Command (AMC) rather than Omega Air refueling assets.

2. Our analysis indicates that Navy will save over $8,000 per flight hour using AMC refueling services vice Omega Air's tankers. The Navy accrues these savings because AMC tankers are O&M funded and provide air refueling as a by-product of the tanker fleets' training requirements. In effect, AMC provides air refueling services free of charge to the user--unlike Omega Air.

3. The cost saving figures contained in the attached point paper were developed using current FY02 published data for flying hour costs and DOD fuel rates. We shared the above with GAO in response to their recent Air Omega refueling inquiries.

4. By every measure, it appears clear the Navy can save precious dollars through use of AMC tankers. We will continue to work in close coordination with your commanders to ensure AMC assets satisfy the Navy's refueling needs--at less cost than Omega Air services.

5. In light of the above, I hope that your staff might re-examine the value of continuing your Omega Air contract.

VR –

JOHN W. HANDY
General, USAF
Commander in Chief

~~Attachment~~:
~~Air Refueling Cost Comparisons~~

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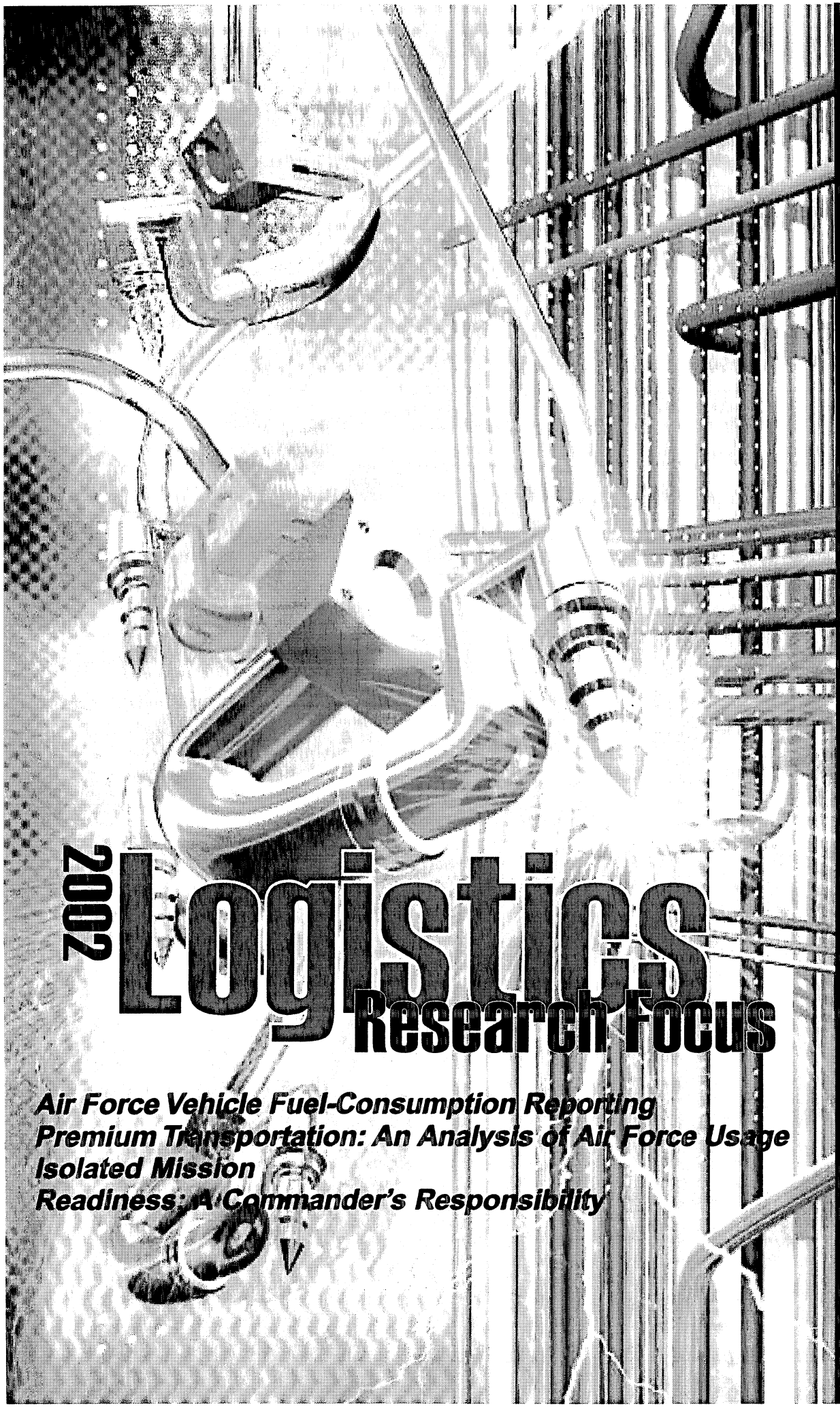

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2002 Logistics Research Focus

Air Force Vehicle Fuel-Consumption Reporting
Premium Transportation: An Analysis of Air Force Usage
Isolated Mission
Readiness: A Commander's Responsibility

Innovative or Insane? Civilian Contract Air Refueling

Lieutenant Colonel Robert D. Pollock, USAF
Deputy Chief, Mobility Division
Directorate of Global Reach Programs
Assistant Secretary of the Air Force

The article by Major Mark D. Camerer (Volume 26, Number 1) advocates actively pursuing civilian contract air refueling (CCAR) capability to aid in the defense of the nation. The article cites numerous sources and facts and then concludes that the way ahead is *singular*. Unfortunately, the article relies upon errors and omissions of fact in order to make its point.

In March 1998, The US Transportation Command (USTRANSCOM) thoroughly evaluated the CCAR concept and rejected it as providing no significant wartime requirement or cost benefit for the Services. In March 2000, USTRANSCOM forwarded its findings to the Director of the Joint Staff, who independently determined that the potential wartime benefit was not worth the costs. As recently as June 2002, the USTRANSCOM commander, in a letter to the Chief of Naval Operations, stated, "The Navy can save precious dollars through use of AMC [Air Mobility Command] tankers" and "I hope that your staff might reexamine the value of continuing your Omega Air (CCAR) contract."

USTRANSCOM and the Joint Staff disagree with the CCAR concept because the facts don't support it. The article implies that the concept has been proven and that it is providing cost saving services to the Navy. This is not the case. The single CCAR aircraft is used to support test and local training operations for probe-equipped aircraft only. The author spends time making a case that CCAR operations are cost-effective, but the data provided obfuscate the truth. The author claims that the cost of flying hours on a CCAR tanker "fits squarely in the middle of organic air-refueling costs." This could be a point of comparison if the Navy reimbursed the Air Force for air-refueling flying-hour costs—but it doesn't—the Navy reimburses the Air Force for fuel offloaded, just like it does to the CCAR, but then, the Navy also has to pay the rest of the CCAR bill.

But what is the bill the taxpayers are paying? The article cites a CCAR cost per hour of $5,995. This number is a half-truth. The Navy is actually paying approximately $9,000 per hour for the CCAR service and has budgeted $10,000 per hour—all while Air Force tankers are essentially free to the Navy and Marine Corps as a product of the Air Force training program and operations and maintenance account. The Navy reimburses the Air Force for fuel offload only, while it must pay CCAR for the fuel offloaded, tanker aircraft fuel burn, and per diem, in addition to the $5,995 per flight hour. In effect, the taxpayers pay twice for every fill-up on the CCAR aircraft: a $9,000 per hour CCAR bill and the normal training flying hour bill for the Air Force tankers, which the Navy opted not to use.

In making the case for training benefits, the article states,"CCAR increases training opportunities." This is false. The Department of Defense (DoD) has long held that units should train, as they will fight. Refueling off CCAR aircraft is incomplete air-refueling training for the Navy since the CCAR aircraft is dissimilar from KC-135 and KC-10. Additionally, use of the CCAR by Navy forces denies currency-training opportunities to Air Force crews. This loss of training actually decreases airpower employment effectiveness through loss of currency by aircrews in both Services.

Another claim made by the article is, "CCAR fills the gap in wartime plan deficiencies." The author omitted mention of a 1996 DoD report to Congress, which identified what combat missions could be civilianized and what could not. Based on months of study and Office of the Secretary of Defense review, the report states that air refueling was not a candidate for civilianization since it is an inherent combat capability critical for the Navy and Marine Corps and was particularly critical to the Air Force in order to execute the Global Strike and Global Mobility missions. Use of civilian aircraft in war scenarios raises significant unresolved legal and treaty issues far outweighing any benefit to be derived by the civilian tankers.

In July 2002, AMC reviewed the CCAR aircraft against the Joint Requirements Oversight Council-approved mission requirements for air refueling aircraft and found that the CCAR airframe meets none of the nine criteria established for air refueling aircraft. CCAR fails to meet the requirement for refueling the full range of receiver aircraft. It is not capable of carrying and offloading fuel other than primary fuel. It cannot maximize fuel offload rates within receiver onload capabilities. It cannot onload fuel as a receiver from other air-refueling aircraft. CCAR aircraft are neither capable of meeting alert requirements nor capable of operating amidst worldwide threats. They do not have a multimission capacity and are not able to serve as a robust, survivable, and secure communications link. In all, CCAR represents the antithesis of filling "the gap in wartime plan deficiencies." Planning for the "specialized" use of the CCAR would instead add to the "fog of war" during today's need for instantaneous response.

Finally, the article states, "AMC does not have a plan to fill near-term requirements." This claim is dated at best and truly misleading, given the other reports and citations referenced in the article. Over the last year and a half, AMC, Air Force Materiel Command, the Air Force Studies and Analysis Agency, USTRANSCOM, the Air Staff, and the Joint Staff have been actively pursuing innovative recapitalization options for the tanker fleet. In December 2001, Congress permitted the Air Force to explore an operating lease for up to 100 767-based tanker aircraft in a configuration that would permit refueling of Air Force and Navy/allied aircraft on the same mission. This and other recapitalization options represent reasoned and responsible paths ahead and a near-term solution.

Given the facts, the way ahead for air refueling is indeed "singular"—USTRANSCOM and the Joint Staff have provided it. CCAR meets no significant wartime requirement and provides no cost benefit to the services.