DOCUMENTED BRIEFING

# *Air Force Operations Overseas in Peacetime*

## *OPTEMPO and Force Structure Implications*

*David E. Thaler, Daniel M. Norton*

Project AIR FORCE

# PREFACE

The post-Desert Storm era increasingly has been characterized by involvement of U.S. military forces in "contingency" operations short of war—activities of prolonged duration to enforce peace agreements and truces, to uphold standards of international conduct, and to provide humanitarian aid. This, together with regular military-to-military interactions and continued basing of forces in Europe and the Pacific, has made it imperative that the defense community assess the implications of ongoing operations overseas.

This documented briefing seeks to capture the breadth of the Air Force's commitment to supporting the President and his combatant commanders-in-chief during peacetime. It also provides insights into what this commitment implies for the USAF force structure.

This work was performed as part of a Project AIR FORCE-wide effort sponsored by Maj. Gen. Charles Link, former Special Assistant to the Chief of Staff, National Defense Review. The goal of this effort was to provide a documented and credible analytic foundation for the Air Force as it worked to ensure that its capabilities were accurately portrayed in the Deep Attack Weapons Mix Study, in the Quadrennial Defense Review, and in the National Defense Panel.

This work should be of interest to USAF planners in the Air Staff and at the Major Commands, as well as participants in and observers of DoD reviews of force structure.

**Project AIR FORCE**

Project AIR FORCE, a division of RAND, is the Air Force federally funded research and development center (FFRDC) for studies and analysis. It provides the Air Force with independent analyses of policy alternatives affecting the development, employment, combat readiness, and support of current and future aerospace forces. Research is performed in three programs: Strategy and Doctrine, Force Modernization and Employment, and Resource Management and System Acquisition.

## SUMMARY

Since the end of the Cold War, the size and character of U.S. military forces largely have been determined by the need to fight and win two nearly simultaneous major theater wars (MTWs). In the past few years, temporary duty (TDY) deployments abroad short of war—particularly those with a duration of months and years—have consumed an increasing amount of the military's time, energy, and resources. As a result, the capacity to fulfill commitments abroad in peacetime has become a key test of adequacy for U.S. force structure.

It is instructive that, in the 1993 Bottom-Up Review (BUR), the U.S. Navy (USN) and Marine Corps (USMC) used "overseas presence" as the primary basis for sizing the USN's fleet of large-deck aircraft carriers and for setting the USMC's manpower end strength. In contrast, the U.S. Air Force (USAF) presented very little on the roles of its assets in operations during peacetime—in part because the intensity of such operations was a relatively new phenomenon.

Recent reviews of military strategy, force structure, and modernization priorities—the Quadrennial Defense Review (QDR) and the National Defense Panel (NDP)—offered an opening to forge a new understanding in the Department of Defense (DoD) and Congress of the breadth of the USAF's commitment to the missions of the combatant commanders (CINCs) in peacetime. Unfortunately, the QDR did little more than the BUR in recognizing the growing role of aerospace power in fulfilling these missions on a daily basis. The QDR Report mentioned only in passing the profound impacts of ongoing activities on the USAF's tempo of operations (OPTEMPO) and force structure.

The purpose of this documented briefing is to articulate the contribution of USAF forces in meeting national security objectives in peacetime and to assess the implications of ongoing operations abroad for USAF force structure. It first illuminates the recent scope and intensity of the USAF commitment to supporting the National Command Authorities (NCA) and the CINCs on a daily basis. Air Force force elements participate consistently in at least three major, long-term TDY operations—Southern Watch and Northern Watch in Iraq and Joint Endeavor in Bosnia. These operations drive TDY rates

for many aircrews that approach or exceed the 120-day desired maximum (defined by the USAF leadership) despite earnest efforts by the USAF to spread the burden across the active and reserve components. Fighter aircraft and specialized platforms—command and control, electronic warfare, reconnaissance—log a substantial portion of their flying hours overseas.

The briefing then describes the implications of this commitment for OPTEMPO and force structure. This facilitates a comparison between the "supply" of wings that the force structure can provide overseas on a continuing basis and the observed "demand" for those wings as defined by the NCA and the CINCs. We assume current policies and deployment concepts.

We find that, with a force of 13 active-component and 7 Air Reserve Component (ARC) fighter wing equivalents (FWEs), the BUR structure could supply 2.17 FWEs for contingencies abroad. The post-QDR, FY99 force structure fields 12.58 active FWEs and 7.63 ARC FWEs. These changes, along with a slight decrease in fighter aircraft based abroad, diminish the supply only slightly, to 2.14 FWEs. This capacity for supporting contingency operations is an upper bound given our relatively optimistic assumptions about what the force can bear year in and year out (see pages 21–23). The observed demand is just over 2.0 FWEs for contingencies (see page 24), yielding an average TDY rate of 116 days per year. The fighter force has the capacity to meet the demand under optimistic assumptions, but there is meager reserve capacity. In addition, we find that specialized aircraft are being used at a rate well beyond what the current force structure would seem to be able to support. We further demonstrate how greater participation in contingencies by the ARC and by forward-based forces in the Western Pacific (WESTPAC) could help increase the supply—while noting that these options may not be available under current circumstances.

We then posit a more conservative average TDY rate for active crews of 100 days per year. This lower average better supports the original intent of the 120-day desired maximum as a standard for individuals—as opposed to an average across the force—whereby fewer crews exceed 120 days. The capacity of the force under this more conservative assumption diminishes to 1.57 FWEs, or about 33 aircraft *fewer* than recent demand. Neither posited increase in ARC or WESTPAC availability would bridge the gap between supply and demand.

The briefing then describes the effects on supply and TDY rates of further cuts in the fighter force structure—cuts evenly distributed between active and ARC FWEs. Putting two FWEs out of the QDR force would reduce supply to about 1.9 FWEs at the 120-day limit (1.4 FWEs at the 100-day limit) or increase average TDY rates to at least 125 days per year to meet the demand. Cutting four FWEs would lower the supply to 1.6 FWEs at the 120-day limit (1.2 FWEs at the 100-day limit) or raise average TDY rates to 137 days. With further cuts, therefore, demand would exceed supply by a considerable margin.

In the past, the size and shape of USAF force structure has primarily been predicated on defeating major aggression. However, the USAF may be approaching a point where commitments abroad short of war, and not major regional aggression, constitute the more demanding determinant of the size of its force structure. The demands associated with overseas operations short of war now should be a primary test of adequacy for USAF force structure.

## ACKNOWLEDGMENTS

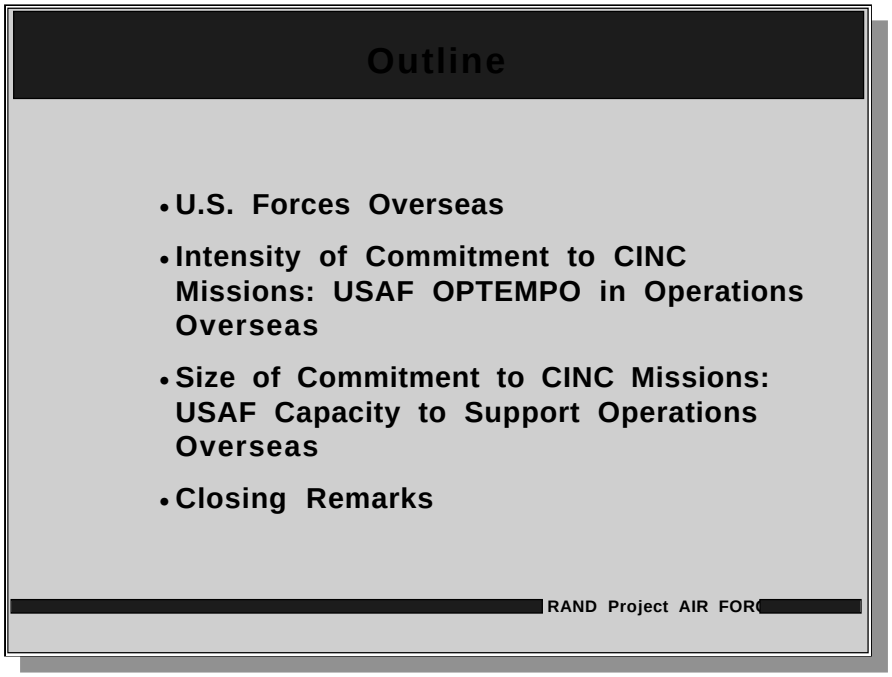
We are indebted to a number of people who provided a wealth of advice and information. First and foremost, many thanks to the leaders of the PAF effort, David Ochmanek and Ted Harshberger, for providing exceptional support and guidance.

We also appreciate the thoughtful comments from Bill Taylor of RAND, who formally reviewed the draft of this document. His critique was gladly incorporated into the final version.

RAND colleagues Glenn Kent, Eric Larson, John Stillion, Craig Moore, Richard Stanton, Carl Dahlman, Al Robbert, Alan Vick, David Orletsky, and Air Force Fellow Marsha Rouse provided invaluable advice as well as data. Many thanks to Col. James O'Brien and Maj. Rich LaRiviere (AF/XO-DAG), Col. David Deptula and his crew (AF/QRS), Col. James Holt (AF/XPY), Col. Wes Hester and Maj. John Good (AF/QRR), Lt. Col. Greg Flierl (AF/XOOA), and Maj. Samuel Johnston (ACC/CSX) for their time and insights. Vince Fonner of the Personnel Center and Richard Enz of the Reliability and Maintainability Information System (REMIS) management office kindly shared their databases.

Many thanks to Dionne Sanders for aiding us in document preparation, and to Phyllis Gilmore for editing the final draft of this briefing.

The authors are fully responsible for the contents of this study.

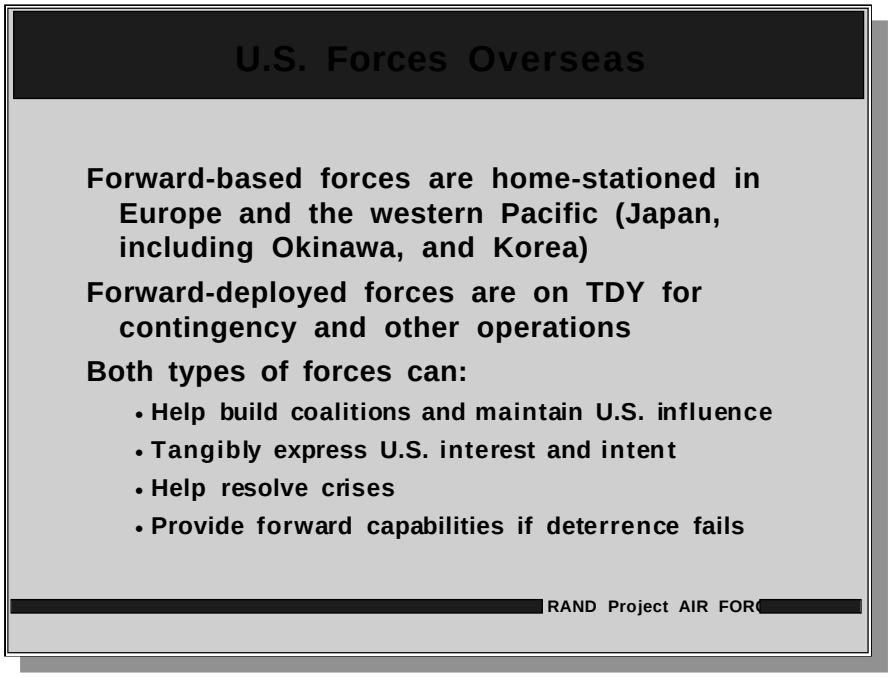



This documented briefing begins with some introductory remarks about U.S. forces overseas in general and USAF assets based and deployed abroad in particular.

The second section describes the intensity of Air Force involvement in operations overseas. We measure this intensity in terms of percentage of aircraft flying hours and aircrew temporary duty (TDY) rates. TDY rates here refer to the average number of days per year that aircrews are away from their home station. We also provide a sense of the funding needed to maintain this commitment to the commanders-in-chief (CINCs) in peacetime.

The third section defines supply (in terms of what the force structure can provide) and demand (in terms of what the force structure is asked to support). We then calculate the amount of force abroad that the force structure—as defined by the recent DoD Quadrennial Defense Review (QDR)—can support on a day-to-day basis. We also describe the implications of changes in underlying assumptions about the supply.

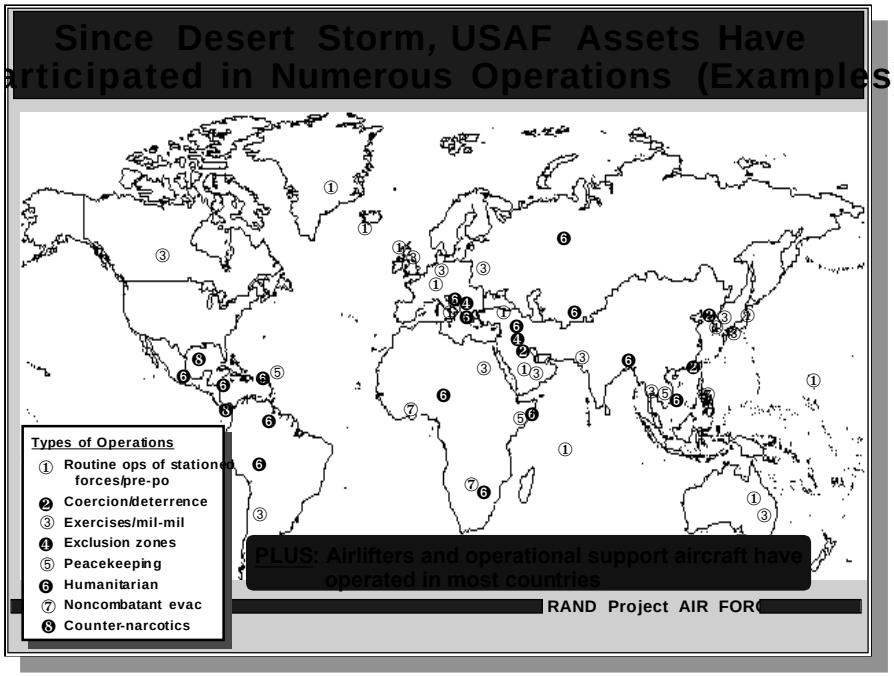
In closing, we summarize our findings and highlight the significance of alternative force structures.




The United States stations and deploys forces overseas in part because they are critical to attaining national security objectives in peacetime. Throughout this document, we refer to forward-deployed forces as engaging in *TDY* or *contingency operations* short of war—i.e., they do not include operations in the context of major theater war.

Forces stationed and deployed overseas help deter major aggression by providing a physical linkage to the full military resources of the United States. Forces deployed to areas of conflict or disaster help ensure that crises are quickly resolved. By conducting operations in regions of U.S. interest, military forces abroad influence the behavior of friends and foes alike. They provide expressions of U.S. commitment to allies in the face of threats to stability. At the same time, they signal potential adversaries of U.S. intent when such states are behaving contrary to U.S. interests. Finally, these forces help to build coalitions and maintain alliances.

The requirement, or demand, for forward-based and forward-deployed forces is driven largely by the "combatant" CINCs—the commanders of Central Command, European Command, Pacific Command, Atlantic Command, and Southern Command. These forces enable the CINCs to accomplish the missions assigned to them by the National Command Authorities (NCA).




This map depicts significant examples of the types of operations since Desert Storm in which Air Force assets have participated.[1]

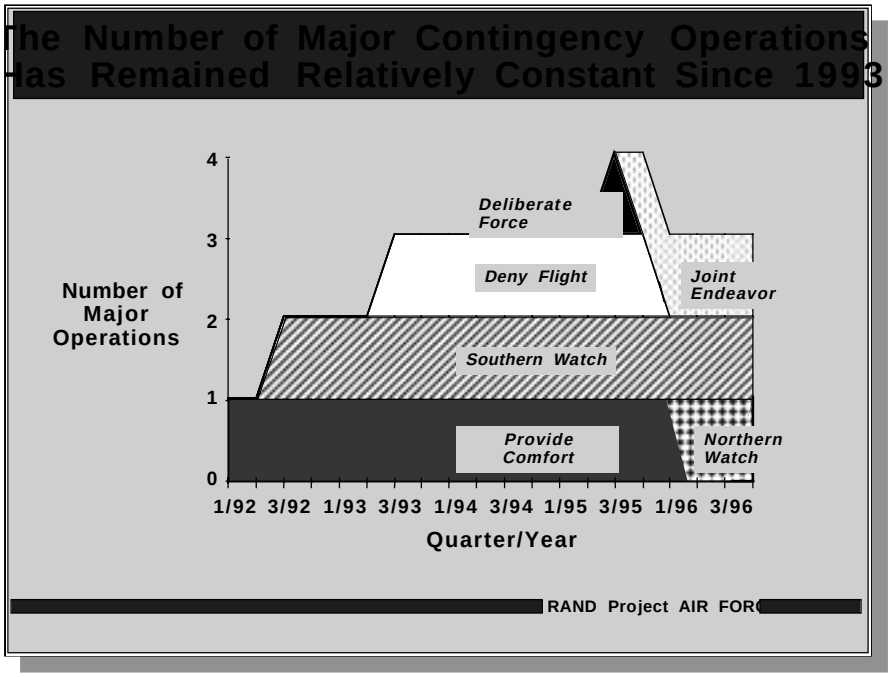
U.S. military forces engage in a number of activities overseas to support NCA and CINC missions in peacetime. Recent examples of these types of activities include:

- Routine operations of forces stationed in Europe and the Western Pacific, as well as prepositioning of materiel
- Coercive and/or deterrent deployments in the Persian Gulf (Vigilant Warrior)
- Exercises, such as Team Spirit, Cope Thunder, and Cobra Gold
- Exclusion zones in Bosnian and Iraqi airspace (Joint Endeavor, Northern and Southern Watch)
- Peacekeeping in Haiti (Uphold Democracy)
- Humanitarian assistance in Rwanda (Support Hope)
- Noncombatant evacuation operations in Liberia (Assured Response)
- Ongoing counternarcotics operations over the Gulf of Mexico and the Caribbean.

[1]Data for the map are from DFI International, *The Use of USAF Assets for Presence: Final Report*, prepared for the Air Force Studies and Analyses Agency, November 15, 1995, and Alan Vick *et al.*, *Preparing the U.S. Air Force for Military Operations Other Than War*, MR-842-AF, RAND, 1997.

Air Force units are forward based in Europe (USAFE) and the Pacific (PACAF). Forces are deployed all over the world, but the primary TDY
deployments of USAF combat and support forces are to Bosnia, the Persian Gulf area, and southeastern Turkey. These units are enforcing no-fly zones, deterring attacks, and ensuring cooperation with peacekeeping efforts.

In addition to the locations depicted here, USAF aircraft have operated in all but a handful of countries over the last few years, conducting operations, taking part in exercises, and delivering supplies and personnel.




Three of these operations have been of fairly large scale and extended duration: Joint Endeavor in support of the Bosnia peace accords, Northern Watch over northern Iraq to safeguard the Iraqi Kurds, and Southern Watch to enforce the no-fly zone over southern Iraq. All told, between 1.5 and 2.1 fighter wing equivalents (FWEs) have typically been deployed in these long-term operations, as well as a number of specialized and support aircraft.[2]

Airlifters and tankers also have played key roles in these and many other operations. They logged many flying hours and sorties in such operations as Uphold Democracy in Haiti and Support Hope in Somalia.

Overall, recent trends indicate that the CINCs' demand for USAF assets has increased since the end of the Cold War. The number of flying hours logged by fighter aircraft in these contingency operations has doubled since 1992. Active-component fighter sorties flown in contingency operations as a proportion of total sorties have jumped from 5 to 15 percent during this period.[3]

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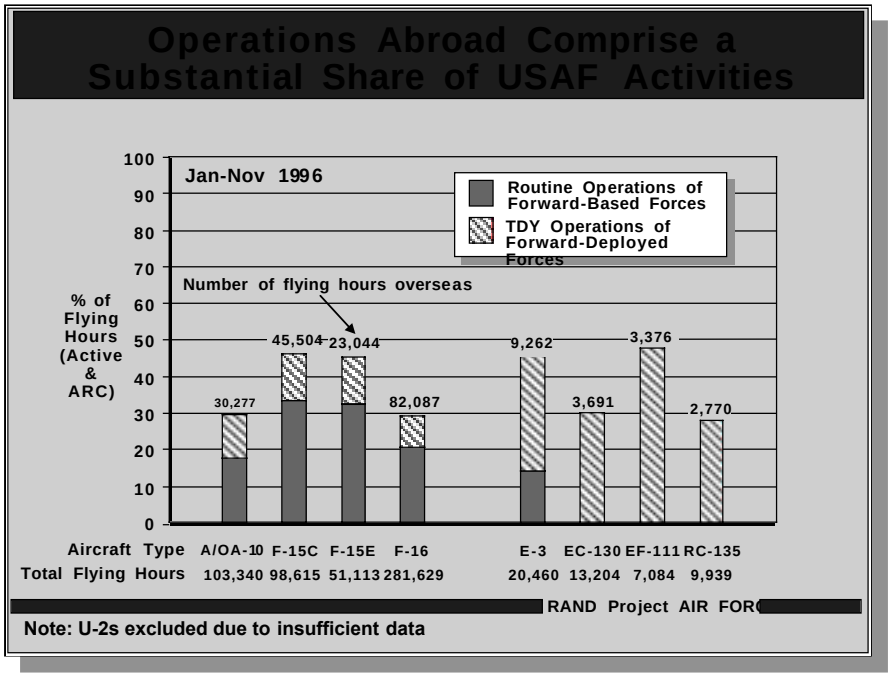
[2]See page 24 for a description of the USAF forces stationed and deployed abroad on 30 September 1996. There are 72 aircraft per FWE.

[3]See Alan Vick *et al.*, *Preparing the U.S. Air Force for Military Operations Other Than War*, MR-842-AF, RAND, 1997, pp. 19–20.

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With these general comments about U.S. forces abroad as background, we now explore the intensity of commitment of USAF forces to the CINCs for operations abroad short of war.

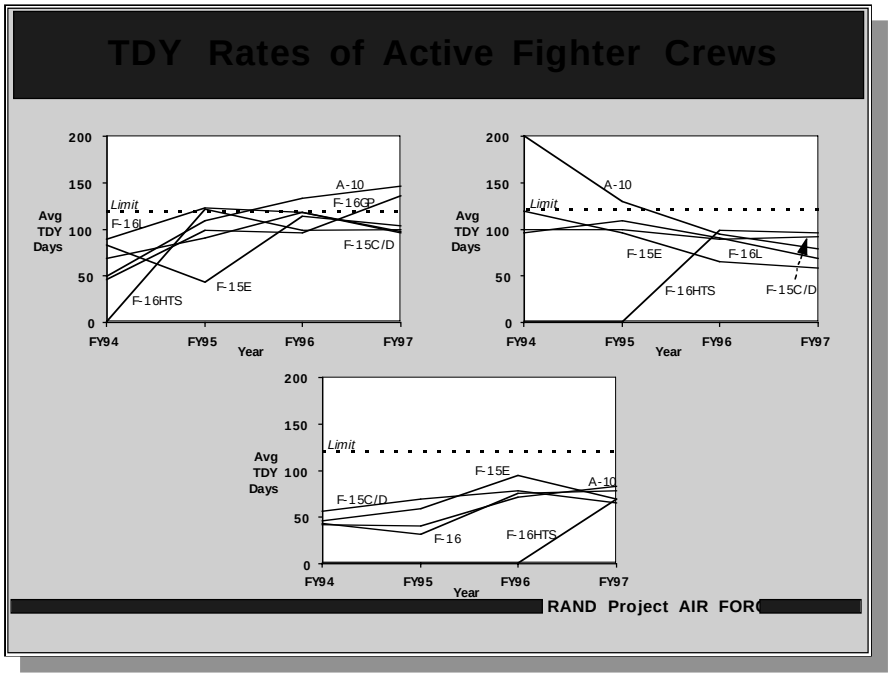
One measure of the intensity of commitment is the percentage of hours flown in overseas activities by active and Air Reserve Component (ARC—Air Force Reserve and Air National Guard) units.[4] Overseas activities constitute a substantial percentage of flying hours for several aircraft types.

Some 10 to 15 percent of F-15C/D, F-15E, F-16, and A/OA-10A flying hours were dedicated to TDY operations in 1996. When these are added to routine operations of forward-based assets, about 30 to 45 percent of the flying hours of these aircraft have been devoted to supporting national and CINC goals abroad.

In contrast, most specialized assets are not forward based, yet spend even more time in these overseas TDY operations. Nearly 50 percent of the flying hours of EF-111 electronic warfare (EW) aircraft and E-3

[4]Data for this figure are from the USAF's Reliability and Maintainability Information System (REMIS) database. This database provides flying hours by year, aircraft type, command, and type of operation. Note that we excluded flying hours of U-2 aircraft from the chart. This is due to insufficient visibility into distinctions between flying hours for operational training and those for contingency operations.

Airborne Warning and Control System (AWACS) aircraft were in such operations, while RC-135 Rivet Joint aircraft and EC-130 Airborne Command and Control Centers (ABCCCs) spent over 25 percent of their flying hours in these operations. EF-111s have been retired from the force; EA-6B aircraft manned by Navy and Air Force crews have taken over their function. Some 15 percent of total E-3 flying hours are logged by PACAF AWACS and those taking part in counternarcotics operations out of the CONUS.




A second measure of commitment is TDY rates—the number of days per year spent away from home station. This and subsequent charts represent *all* TDY—both in the CONUS and overseas—but the trends relate primarily to the demands of contingency operations. Training and other noncontingency TDY demands appear to be stable throughout the period. Thus, trends in TDY rates provide a sense of the level of TDY activity overseas that these crews experience.[5]

Former USAF Chief of Staff Gen. Ronald Fogleman defined a desired maximum for individuals of 120 days on TDY to minimize disruptions in operational training and to limit the stress that prolonged separation can place on personnel and their families. *Averages* for crews of many types of aircraft in Air Combat Command (ACC)—by far the largest of the three commands shown here—approached or exceeded this figure in FY96 but have been reduced somewhat in FY97.[6] This hides the fact that many *individuals* exceeded the 120-day desired maximum during the past two years. This is partly due to the fact that the more experienced crews tend to deploy more often than their less- experienced colleagues. These "go-to" individuals often record TDY

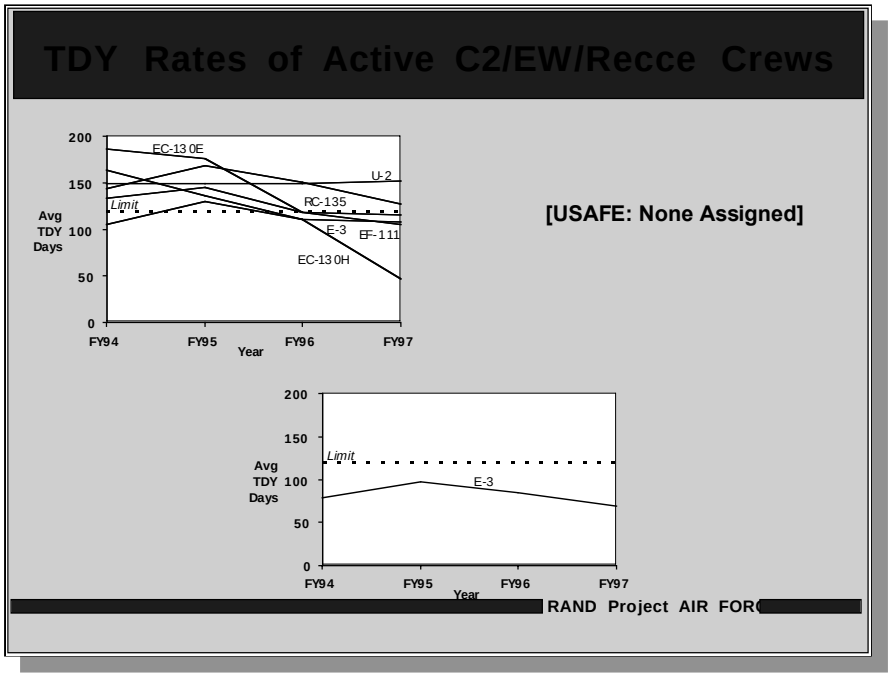
[5]Except where noted, the source of these and subsequent TDY data is the Air Force Readiness Center, AF/XOOA (formerly AF/XOOOR), the Pentagon.

[6]These figures exclude the PERSTEMPO of nonflying personnel, who are also experiencing relatively high TDY rates.

rates that exceed the average, while the TDY rates of others may fall well below the average.

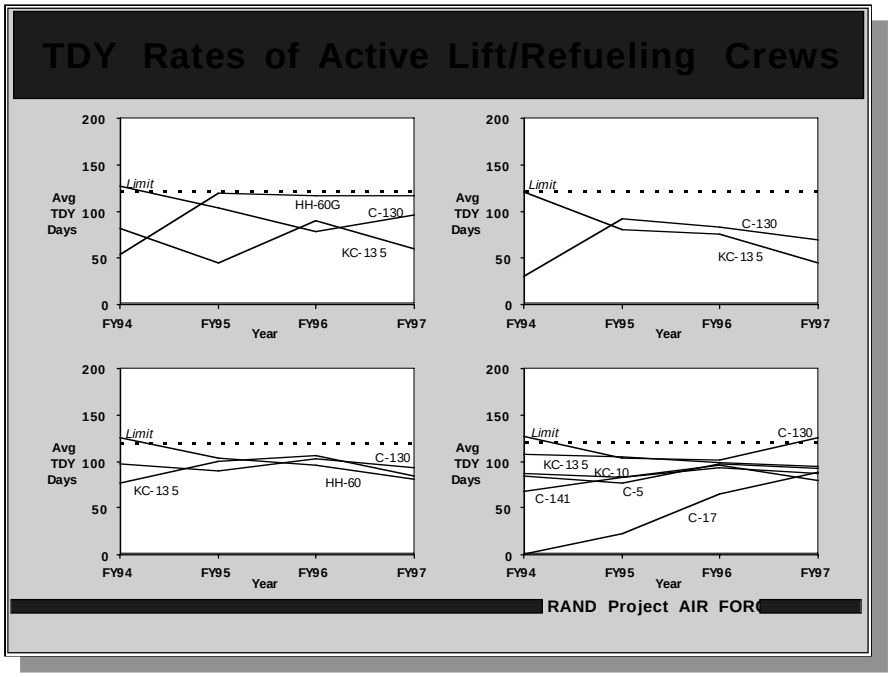
Note that, after an initial increase, TDY rates for ACC and PACAF fighter crews have been relatively stable over the past three years, while USAFE rates generally have come down (except for F-16 HTS, which first came on line in USAFE in FY96). This indicates that the TDY burden has been more evenly distributed across the active fighter force.

The CINC in the Pacific theater severely restricts the use of forces based in Korea and Japan for TDY operations in other regions, resulting in lower TDY rates on average for PACAF forces than for ACC or USAFE forces. The increase in TDY deployments from PACAF is borne primarily by crews based in Alaska, although some Japan-based units have deployed in support of Southern Watch.

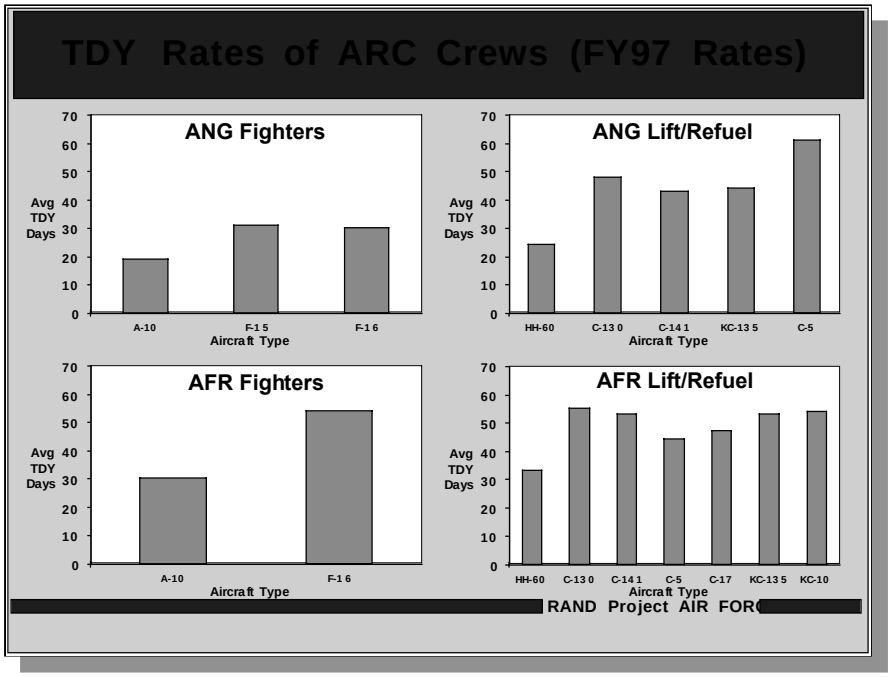



TDY rates for many types of command and control (C2), electronic warfare (EW), and reconnaissance (Recce) aircraft equal or exceed the 120-day desired maximum but do appear to have declined slowly over the past three years.

Rates for C2/EW/Recce crews have been reduced in general due to actions within the Air Force to increase crew ratios and to supplement active crews with ARC crews. In the joint arena, the DoD implemented the Global Military Force Policy in July 1996 to prioritize allocation of specialized aircraft for crises and contingencies. This policy was designed to balance the immediate needs of the CINCs with the long-term maintenance and training needs of the systems and crews, respectively.




Average TDY rates for crews of airlift and refueling aircraft in ACC, USAFE, and PACAF were relatively stable over the last three years. Rates of Air Mobility Command (AMC) crews have remained below 100 days due to heavy augmentation of active component units by Reserve associate crews. The exceptions were C-130 crews, who averaged 125 days in FY97.




The USAF also has attempted to manage TDY rates by distributing the burden of these operations to the Air Force Reserve (AFR) and Air National Guard (ANG) components. This chart shows FY97 TDY rates across all crews of ANG and AFR fighter, lift, and refueling aircraft.[7]

TDY rates of ARC crews generally are lower than those of active crews due to the circumstances of ARC personnel, who are only available on a limited basis. Many have employment in the civilian sector and must arrange with employers for time spent away from their jobs in military assignments. This limits the amount of time that they are available for contingency operations.

The ARC often calls upon volunteers to fill requests for TDY overseas. This volunteerism enables ARC personnel to manage their own levels of stress and time away from home and work. ARC volunteers have reduced TDY rates for active units, easing some of the burden. However, predicting future trends in this volunteerism is difficult and hence remains a problem for USAF planning.

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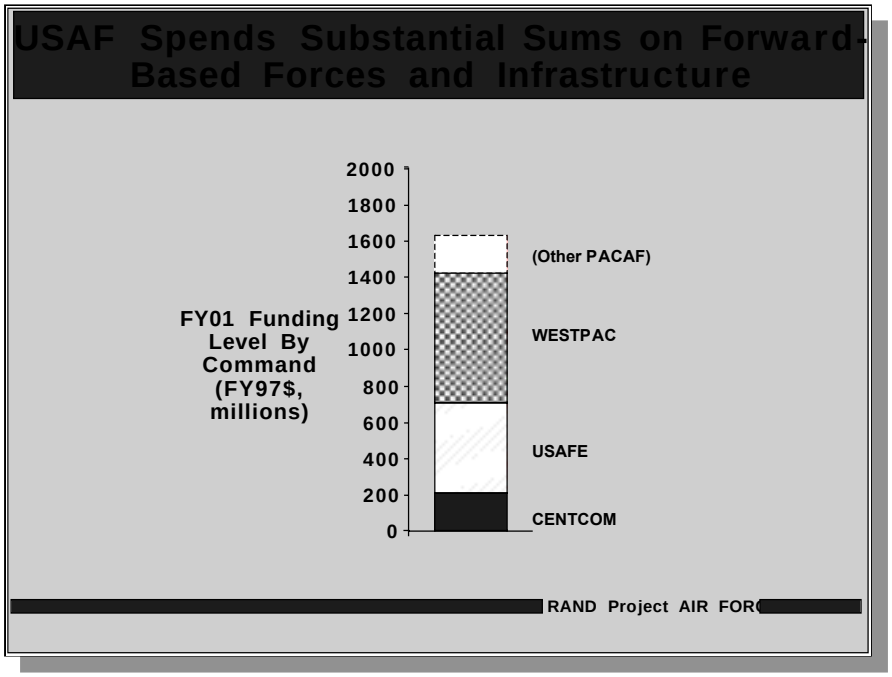
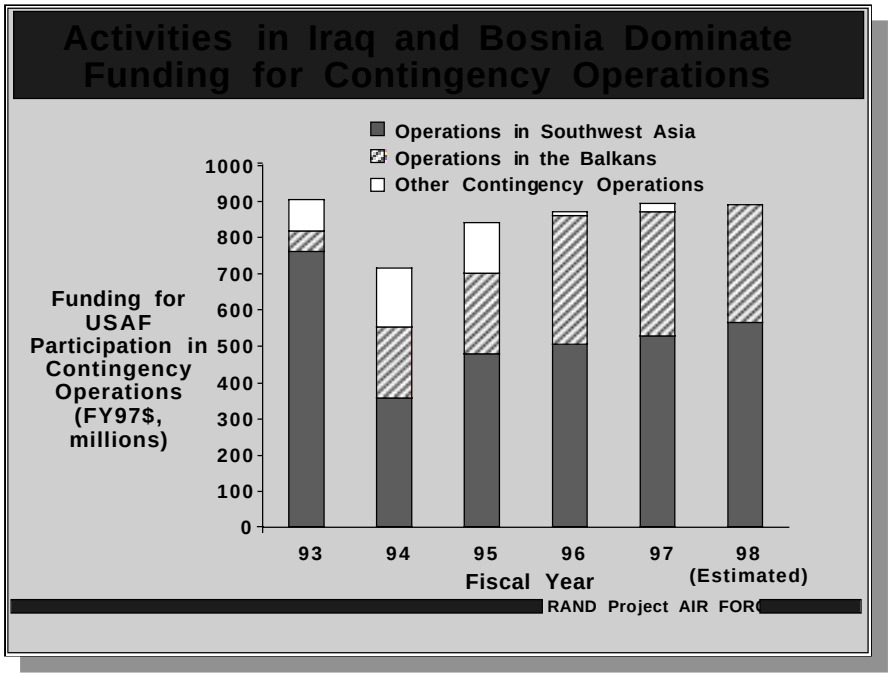
[7]ANG rates provided by the ANG Deployments Team. The source of the AFR rates is AF/XOOA.




Next we explore the funding related to forward basing and contingency operations.

USAF funding of forward-based forces and infrastructure in Europe and the Pacific, and funding tied to Central Command's (CENTCOM's) routine operations, amounts to about $1.6 billion per year.[8] This constitutes just over 2 percent of the total USAF budget.

[8]Source is USAF Program Objective Memorandum, FY98-03.

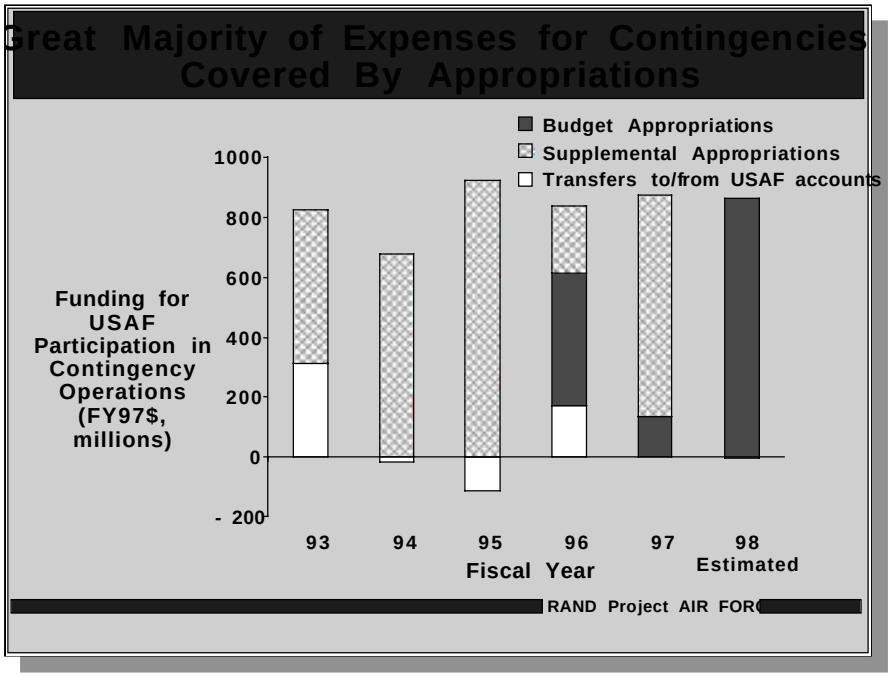



The great majority of the Air Force's funds for contingency operations have been spent on the three major operations: Operations Northern and Southern Watch, which amounted to 62 percent of the total, and Operation Joint Endeavor and its predecessors in the Balkans, which have made up an additional 28 percent. Between FY96 and FY98 (estimated), about 90 percent of the funding was for operations and maintenance (O&M), with the remainder going toward military pay.[9]

Funding for contingency operations has been relatively constant at almost $900 million annually. Costs have been increasing only slightly over the last two years and are projected to level off in FY98.

Together, funding for forward stationing and contingency operations has been equivalent to nearly 3.5 percent of the total USAF budget.

[9]Directorate of Budget Operations, SAF/FMBOI, The Pentagon.




In recent years, 76 percent of the funding for contingency operations has come from supplemental appropriations external to the programmed defense budget. Only 14 percent of the funding for contingency operations has come from budget appropriations originally programmed for that purpose in the defense budget. At the time of writing, this was projected to change in FY98, when budget appropriations are planned to cover the USAF's entire cost of contingency operations—possibly in recognition of the cost trends of the past few years.[10] The remaining funds have come out of USAF O&M and other accounts that were not originally earmarked for contingencies. In years when the appropriations and transfers exceeded the actual costs of the operations, a negative value was recorded.

While these figures imply that the funding requirements of these operations have not had a substantial effect on USAF budget accounts, the figures do not capture the potentially disruptive effects of moving funds in and out of accounts *within* a fiscal year. If funding is removed from the O&M accounts, even temporarily, it can negatively effect training and maintenance schedules.

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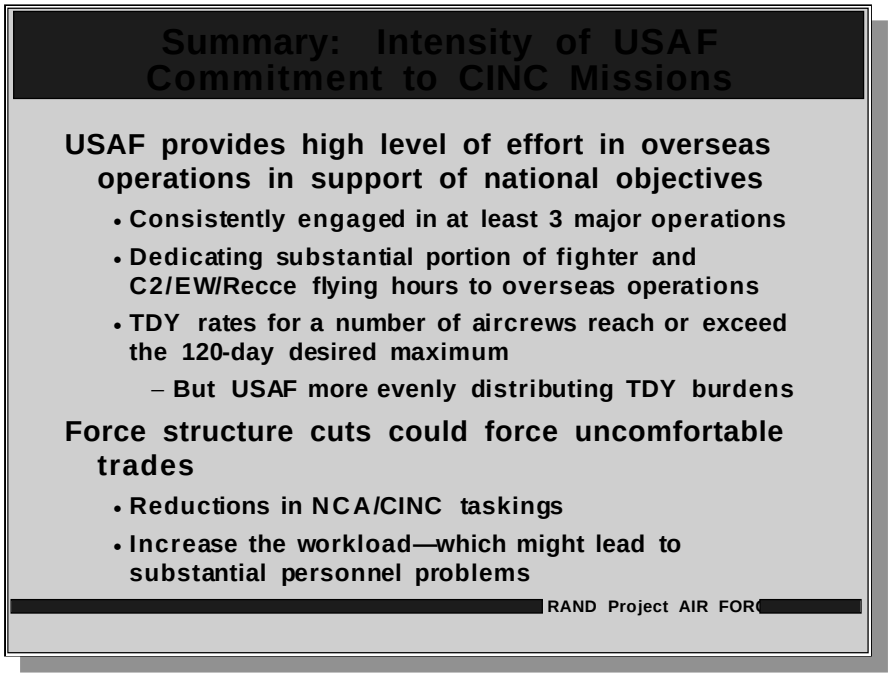
[10]Ibid.




In sum, the USAF continues on a daily basis to apply substantial levels of effort to ensure that the CINCs can execute their missions and support the national security strategy in peacetime.

Requirements for TDY abroad have been driven by three major operations over the past four years, and there are few indications that this level of effort will diminish substantially in the foreseeable future. Overseas activities account for between 30 and 50 percent of the flight hours logged by most types of fighter aircraft and C2/EW/recce platforms.

There is anecdotal evidence that high TDY rates are contributing to retention problems. To make matters worse, airline hiring of pilots was up sharply in 1997. Retention rates for pilots have dropped from 80 percent in 1994 to 40 percent as of spring 1997; many departing pilots point to time away from home as a major consideration.[11]

Short of reductions in the demand by the NCA and the CINCs, cuts in USAF force structure could raise TDY rates and lead to deeper personnel problems.

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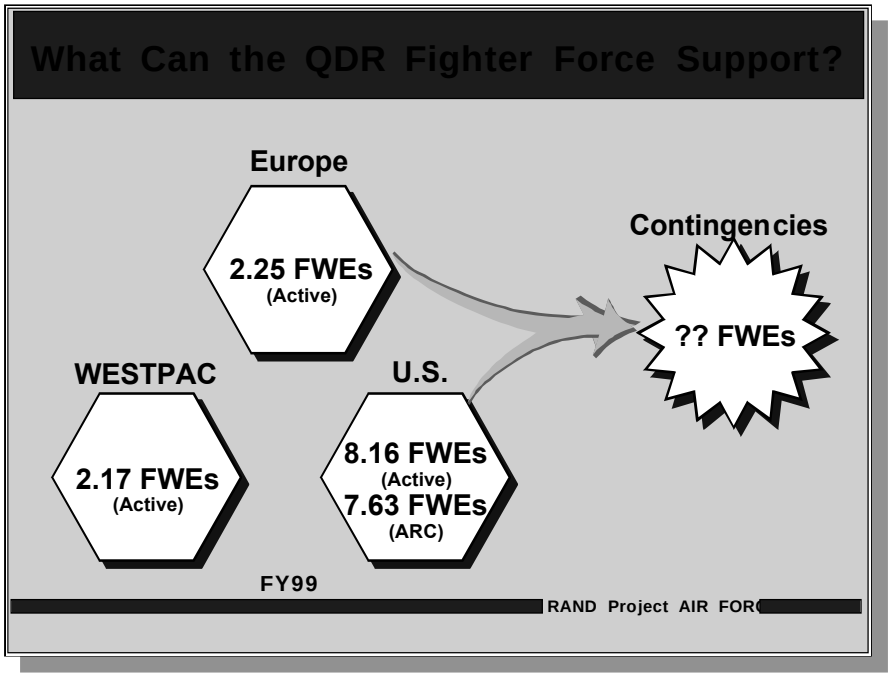
[11]See William Matthews, "Shaping the Force: More Cuts of People and Planes Are in the Works," *Air Force Times*, June 2, 1997, p. 12, and Patrick Sloyan, "Bailing Out?" *Newsday*, May 4, 1997, p. 8.

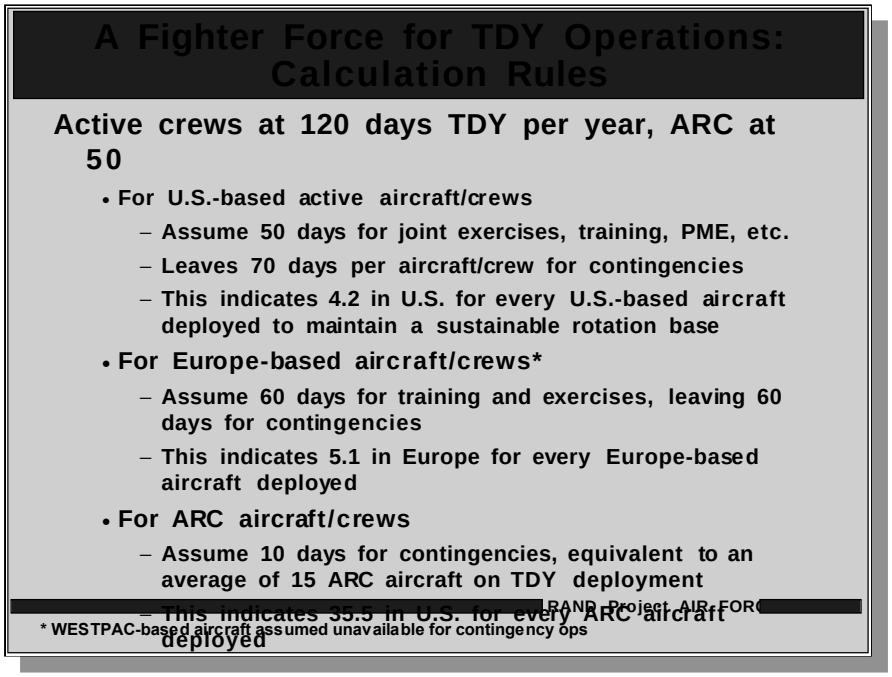



The previous section described the intensity of commitment of USAF forces to supporting the NCA and CINCs abroad in peacetime. This section explores the implications of this OPTEMPO for USAF force structure. Focusing on fighter wings, we begin by defining the supply that the current force structure provides. We then compare the supply to the observed demand for these forces. Finally, we describe the effects on supply of alternative assumptions.

The Air Force, as defined in the BUR, consisted of 20 FWEs with 72 aircraft each—13 active and 7 ARC FWEs. Decisions in the wake of the QDR reduced the active component to about 12.6 FWEs and increased the ARC to about 7.6 FWEs, for a total of 20.2 FWEs.[12] About 4.4 FWEs (all active) are forward based in Europe and the Western Pacific (WESTPAC). The remaining 8.2 active FWEs and all ARC FWEs are based in the United States. These numbers exclude 84 active and 21 ARC OA-10s, the forward air control version of the A-10 attack jet, since OA-10s are not included in the 20.2-FWE count.

[12]Numbers are for FY99 force levels.

As noted earlier, units based in Korea and Japan normally are restricted from supporting contingency operations in other regions. Though some squadrons from Kadena (Okinawa) and Misawa in Japan deployed to Southern Watch in the winter of 1996–1997, one can expect continued restrictions on these units as long as the threat of North Korean aggression against South Korea remains high. Thus, the pool of assets available as a rotation base for contingencies consists of the 2.25 FWEs in Europe and the active and ARC units in the United States, including Alaska and Hawaii.




To determine the capacity of this force structure to sustain contingency operations, we apply calculation rules that assume existing policies, deployment concepts, and TDY levels continue.

For active crews, we begin with the 120-day desired maximum. Note that this TDY limit originally applied to *individuals*, yet we use this as an *average* maximum *across the force*. This represents a fairly stressing standard—many individuals would exceed the 120-day limit, a phenomenon that average TDY rates hide. It is not clear that this level of effort could be sustained across the force year in and year out. Later in this document, we relax this assumption to an average of 100 days.

Squadrons commonly deploy with the same crew ratio per aircraft as that maintained at their home station and sometimes at a higher ratio. When the deployed ratio is higher than the "authorized" ratio, more crews are needed per aircraft deployed. In our calculations, we assume that the deployed ratio *equals* the authorized ratio, whereby aircraft can be used as surrogates for crews. As such, our conclusions about force structure should be seen as defining a minimum threshold.

We postulate that U.S.-based active crews can support contingency operations an average of 70 days per year. That is, aircrews in fighter units typically spend around 50 days of TDY per year participating in individual training, joint exercises, and other activities not related to

contingency operations. As a result, we assume that 4.2 aircraft are required to provide a rotation base for each aircraft on contingency TDY (365 ÷ 70 = 5.2 total aircraft needed, less the one deployed). This yields a multiplier of 0.192, or 70 ÷ 365.[13]

For Europe-based crews, we assume that only 60 days are available for contingency TDY to account for the need to train at ranges away from home more often than their U.S. counterparts. In the USAFE case, then, 5.1 aircraft are needed at home station to support each one on contingency TDY (a multiplier of 0.164, or 60 ÷ 365).

We postulate that ARC forces are available for an average of 50 days of TDY per year. Of these, 10 days per year are available on average for participation in overseas contingencies, or the equivalent of 15 aircraft deployed abroad. Thus, 35.5 ARC aircraft are required at home station to support one ARC aircraft abroad (a multiplier of 0.027, or 10 ÷ 365).

TDY operations abroad do not constitute the sole requirement for a rotation base. To avoid situations in which Air Force personnel spend the majority of their time on active duty stationed abroad, forward-based forces also normally require a rotation base. This rotation base may comprise personnel in staff positions as well as operational units in the United States. Furthermore, unaccompanied tours to sites abroad—one- or two-year tours, particularly in Korea, during which personnel are separated from their families, who remain at home in the United States—generate a requirement for a rotation base as well. While noting these additional requirements, we do not account for them in our calculations.

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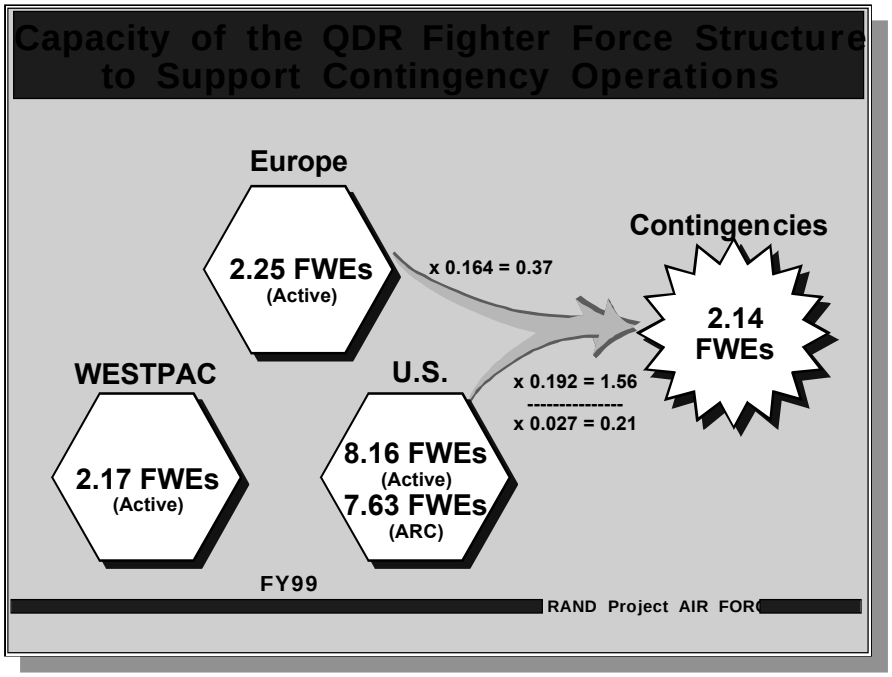
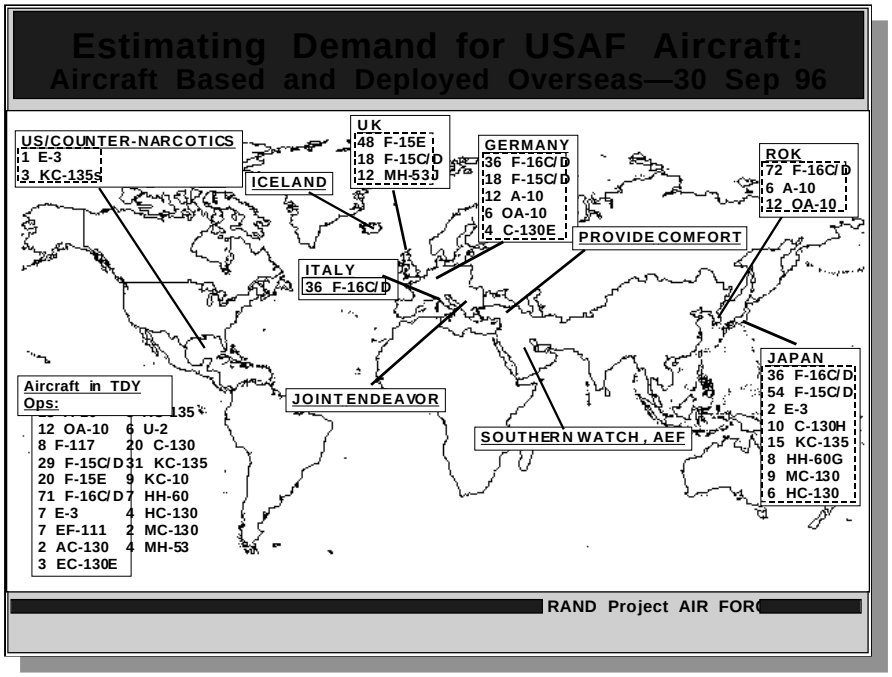
[13]We calculate average days on noncontingency TDY as follows: Divide the number of FWEs in contingency operations (the demand) by the total number of FWEs available, then multiply by 365. This yields 65 days average for contingency TDY given a demand of just over 2 FWEs (see below). Subtract 65 from the average TDY rate for active fighter crews (about 115), yielding 50 days for noncontingency TDY. We use 70 days for contingency operations by subtracting 50 from the desired maximum of 120.




Given the calculation rules defined above, the QDR force structure can provide a rotation base for 2.14 FWEs in contingency operations on a continuing basis. The 10.41 available active wings support 1.93 of these FWEs, while the 7.63 ARC wings provide a rotation base for 0.21 FWEs.

A major caveat: As described previously, we make assumptions about TDY limits (using 120 days as an average across the force as opposed to a maximum for individuals), crew ratios (authorized versus deployed), and forward-based forces (including unaccompanied tours) that would tend to overstate the capacity of the force to support contingency operations. *The actual capacity of the QDR force is likely to be somewhat less* than 2.14 FWEs. We return to this caveat below.

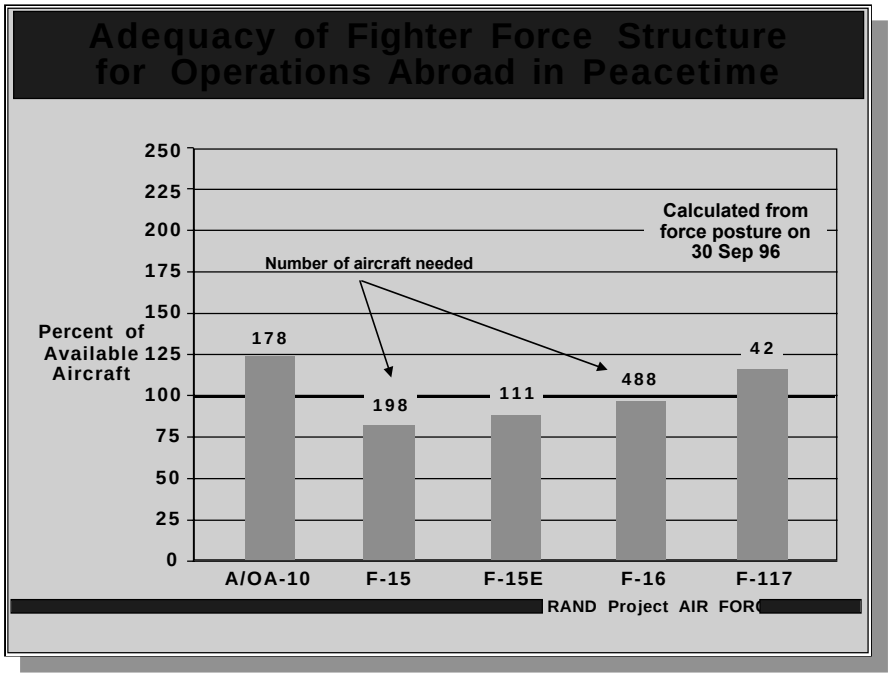



The map presented above depicts Air Force aircraft overseas on 30 September 1996. Deployments on this day have been used in the Joint Staff's "Baseline Engagement Force"—an effort to quantify the commitment of all U.S. forces to operations overseas in peacetime. The boxed forces on the map represent forward-based aircraft. The other aircraft listed are engaged in TDY operations—primarily Southern Watch, Provide Comfort (now Northern Watch), and Joint Endeavor.

Some of the aircraft participating in TDY operations are stationed in Europe. Thus, the numbers of aircraft shown on the map are not purely additive; we do not, however, double-count these aircraft in our calculations when we add forward-based and forward-deployed aircraft to yield the total number of aircraft abroad.

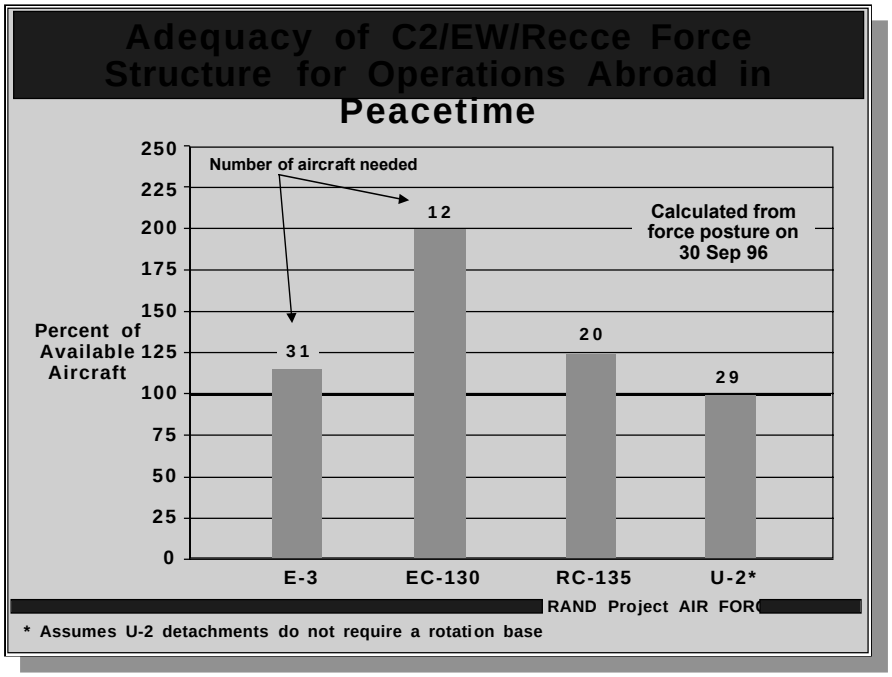
The total TDY deployment comprises 2.03 FWEs, or 146 aircraft on TDY operations divided by 72 aircraft per FWE. With 0.37 FWEs coming from USAFE (2.25 x 0.164 = 0.37 FWEs that USAFE can support in contingency operations), the total CINC demand for USAF fighter aircraft abroad is 6.08 FWEs (4.42 – 0.37 + 2.03).

The deployment of F-117s on 30 September 1996 was somewhat unusual; the future demand for these aircraft and crews may be less than projected here. Excluding the F-117s, the demand would diminish to 1.92 FWEs on contingency operations (138 ÷ 72).




This chart combines the calculation rules with the 30 September deployment to assess numbers of aircraft that would be required to support forward basing and overseas TDY—given the 120-day and 50-day TDY levels for active and ARC aircrews, respectively. The number of aircraft available for activities overseas (the 100 percent line in the figure) is active primary authorized aircraft (PAA) plus available ARC PAA.

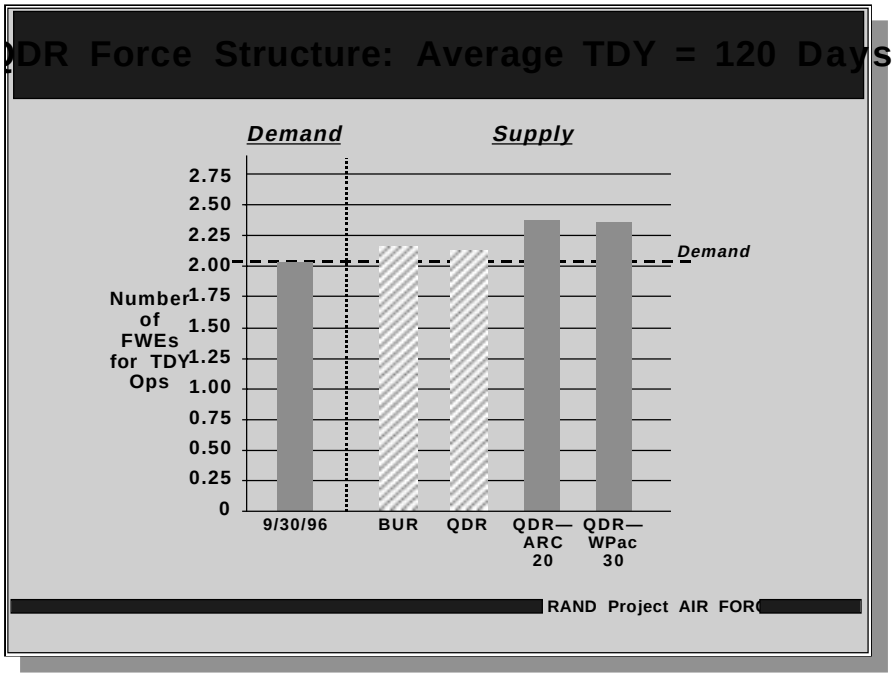
We conclude that the fighter force structure is almost fully utilized in support of ongoing overseas operations. In fact, maintaining the posited level of peacetime demand for A/OA-10s and F-117s would require increased numbers of these types in the force or backfilling by other types with similar capabilities. Interestingly, F-16s—the most numerous type of fighter in the force—approach 100 percent utilization. This aggregation hides the fact that the demand for more-advanced Block 40 and Block 50 F-16s (those equipped with day/night LANTIRN pods or HARM Targeting Systems) is significantly greater than the demand for less-capable Block 30s.




Specialized aircraft are experiencing a rate of utilization well beyond the level that the current force structure would seem to be able to support on a long-term basis. This finding is particularly remarkable in that our assumptions regarding the availability of these aircrews are more relaxed than those for fighter units. We assume for crews of specialized aircraft that 90 days are available for contingency TDY, leaving 30 for other TDY. Operational sorties commonly serve as training sorties as well.

By assuming 90 days for contingencies rather than 70, fewer aircraft are required at home station to support one deployed. Despite this, the chart demonstrates that current demand requires 100–200 percent of the force structure in all cases shown. The fielding of two additional Rivet Joint aircraft in FY99 should ease the burden of meeting the demand for the capabilities of this aircraft (in the figure, the additional aircraft are assumed to be available).

Note that U-2s often deploy in detachments for prolonged periods. We treat these as forward-based units that are assumed to require no rotation base. Had we treated these detachments as TDY deployments, the corresponding U-2 bar would be well above the 100-percent level shown in the figure.




This chart compares the supply of FWEs under the FY97 BUR force structure (second column from left) and the FY99 QDR force structure (third column from left) with the demand as of 30 September 1996 (leftmost column). We also present the effects of varied assumptions about the deployment capacities of the ARC and of forces based in WESTPAC. *In this figure, we assume that the desired maximum average for active TDY is 120 days per year*.

Under the 120-day TDY assumption, the QDR fighter force structure has the capacity to meet the demand, *but with a meager reserve—only about a third of a squadron* (8 aircraft) beyond the demand. A substantial increase in demand would be difficult to meet on a sustained basis, even under a relatively stressing 120-day standard. In the presence of a demand of 2.03 FWEs for contingency operations, therefore, the 2.14 FWEs that the QDR structure can supply is on the "ragged edge" of adequacy.

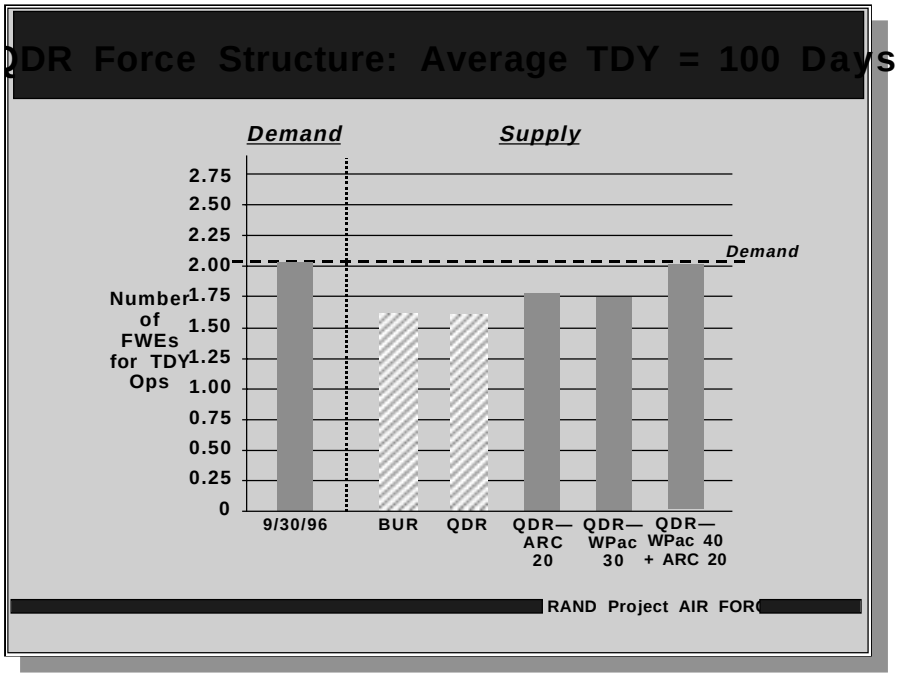
The change in force structure between the BUR and the QDR had little effect on capacity. This is because the transfer of aircraft from the active force to the ARC (which lowered capacity, since ARC forces cannot support as high a level of TDY deployment) was offset by the transfer of some Europe- and WESTPAC-based aircraft back to the United States (which increased capacity, since U.S.-based crews have higher TDY availability).

The last two columns on the right depict options that increase the capacity of the QDR fighter force structure.

The second column from the right depicts the effect of increasing the average number of days that ARC personnel could be deployed abroad from 10 to 20. This is equivalent to deploying an additional 15 ARC fighters to contingency operations. The capacity of the QDR force would rise to 2.35 FWEs, or roughly one squadron beyond the demand.

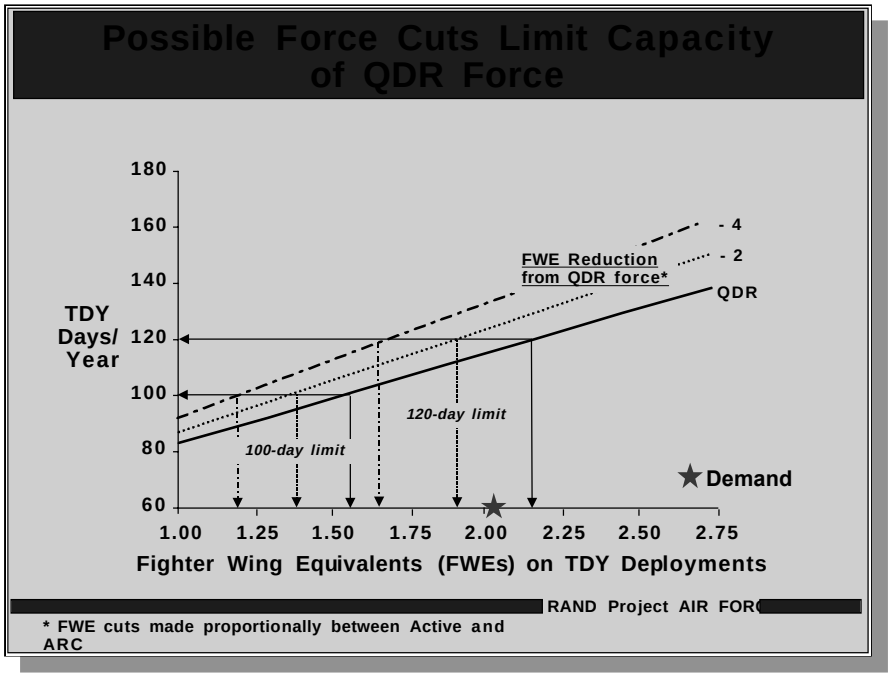
Finally, the rightmost column demonstrates the effects of allowing crews based in Korea and Japan to participate in contingency operations an average of 30 days per year. This would raise the capacity of the QDR fighter force structure to 2.32 FWEs.

Neither of these options is necessarily available under current circumstances. The ARC has already borne an increased share of the TDY burden and is limited in how much more it can ask of its personnel. Further, the continuing threat of North Korean aggression constrains the participation in out-of-area contingency operations of forces forward-based in WESTPAC.




As mentioned above, we caveat our conclusions about capacity to support contingencies due to our assumptions about TDY limits and other factors. This chart demonstrates the effects of a more conservative assumption about what personnel can bear year in and year out. Rather than an average of 120 days of TDY per year for active crews, we posit 100 days per year. This lower average could better support the original intent of the 120-day desired maximum as a standard for *individuals*; with a 100-day average, fewer crews would exceed 120 days. TDY days for noncontingency activities remain constant (50 days for U.S.-based crews, 60 for Europe-based crews).

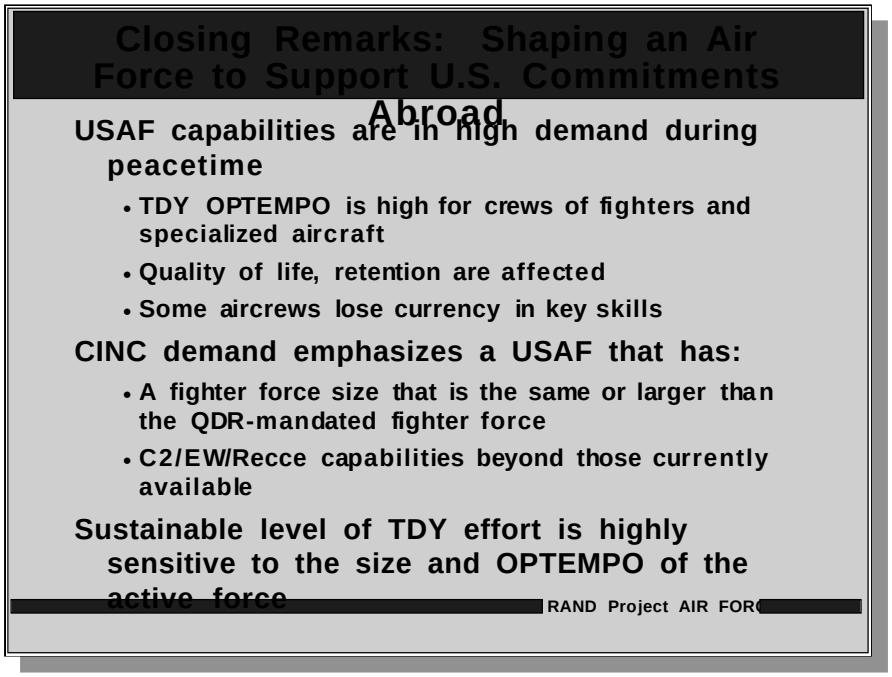
The maximum number of FWEs on TDY deployments that the QDR force structure could support would be 1.57 FWEs, or about 33 aircraft fewer than recent demand. Under the more conservative assumption, therefore, demand would exceed supply by a substantial margin, thereby causing great stress in the force. Neither posited increase in ARC or WESTPAC availability would bridge the gap between supply and demand. One option to reach the 2-FWE demand would be to combine an increase in ARC contingency TDY to 20 days with a WESTPAC increase to 40 days (the same as Europe-based aircrews). As emphasized above, such changes are highly unlikely under current circumstances.




Not surprisingly, changes in the force structure can have a dramatic influence on TDY rates and the number of units available for contingency operations. If the demand is maintained at about two FWEs, fighter units will average approximately 116 days per year.

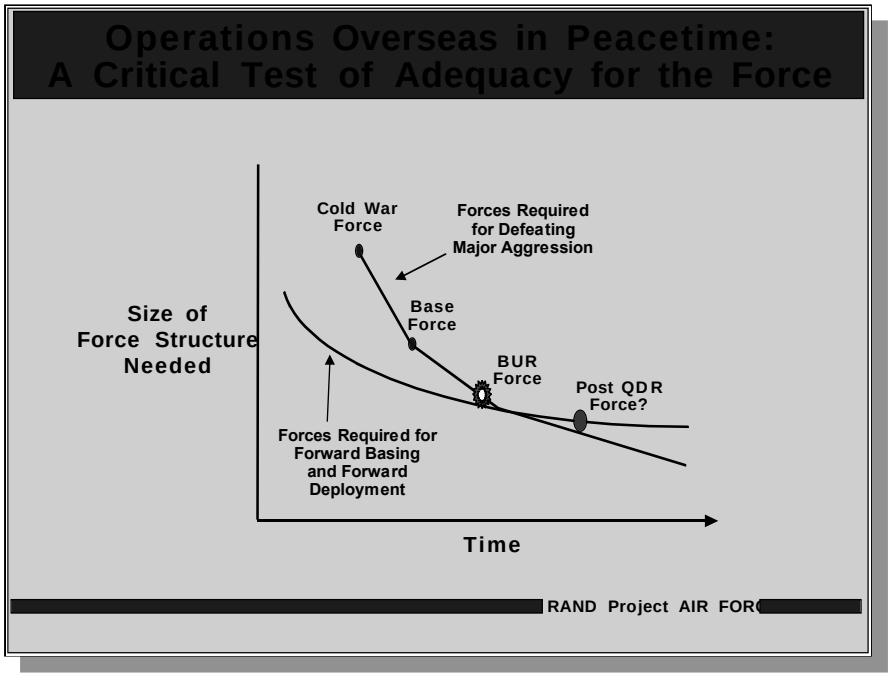
The QDR did not reduce the overall size of the tactical fighter force. However, the Deep Attack Weapons Mix Study (DAWMS), which informed the QDR, did leave open the possibility of reductions in the future. If the size of the QDR fighter force were reduced by two FWEs (proportional cuts from each component, i.e., 1.24 FWEs from the active component and 0.76 FWEs from the ARC), average TDY rates would rise to 125 days. With a reduction of 4.0 FWEs, average TDY rates would increase further to 137 days. These calculations assume that capabilities are fungible; TDY rates for certain aircrews could go much higher if specific capabilities are targeted for reduction.

Capacity to support contingency operations would diminish considerably under both the 120-day limit and the 100-day limit. Removing 2.0 FWEs from the QDR force would reduce the supply from 2.14 to 1.89 FWEs in the 120-day case (over a third of a squadron below observed demand), and from 1.57 to 1.38 FWEs in the 100-day case. Cutting 4.0 FWEs would diminish capacity further to 1.63 FWEs under the 120-day limit and 1.19 FWEs under the 100-day limit.




Since Operation Desert Storm, the NCA and the CINCs have called upon assets of the United States Air Force to participate in a wide array of operations overseas. These operations have included peacekeeping, exercises with foreign militaries, humanitarian missions, and operations to deter. Forward basing and forward deployment of military forces have been, and will remain, a critical element in the attainment of U.S. national security objectives. USAF assets will continue to be a key ingredient in the successful pursuit of U.S. interests.

The USAF commitment to the CINCs in operations abroad has been intense. Although the QDR fighter force may meet the demand under relatively "liberal" assumptions about TDY, crew ratios, and other factors, we find that the reserve capacity is quite small. Under a more conservative assumption—which may be more in line with the desired TDY maximum for individuals—*demand already exceeds supply*.




In the years since the end of the Cold War, the demands of deterring and defeating major aggression in areas of vital U.S. interests have diminished. The United States no longer needs to counter a global power (the Soviet Union) that challenges it at many points around the world. Rather, the U.S. focus is on deterring and defeating smaller regional powers with relatively limited objectives. At the same time, deployments overseas have increased substantially.

In the past, the size and shape of USAF force structure have primarily been predicated on defeating major aggression. However, the USAF may be approaching a point at which commitments abroad in peacetime, and not major regional aggression, are the more demanding determinant of the size of its force structure. Therefore, the demands associated with overseas operations short of war now should be a primary test of adequacy of USAF force structure.