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RAND

*The Warfighting Capacity
of Air Combat Command's
Numbered Air Forces*

*Lawrence M. Hanser, Maren Leed,
C. Robert Roll*

Project AIR FORCE

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DOCUMENTED BRIEFING

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The Warfighting Capacity of Air Combat Command's Numbered Air Forces

*Lawrence M. Hanser, Maren Leed,
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*Prepared for the
United States Air Force*

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PREFACE

During an August 1998 briefing on the effects of the pace of work on personnel in the Numbered Air Forces (NAFs) of the Air Combat Command (ACC), General Richard E. Hawley, the ACC Commander, asked if RAND could offer an analysis of the number of NAFs that were needed by ACC to meet warfighting requirements. This documented briefing was prepared in response to that question.

Building on the results of a survey of NAF personnel conducted by RAND in spring 1998, this research examined the number and kinds of personnel assigned to the ACC NAFs, historical data on the flow of personnel into the NAFs, exercise schedules from ACC, and staffing requirements for different conflict scenarios. This briefing uses these data to explore the current capacity of the NAFs to support wartime missions, and hence, to explore the question of how many NAFs are required by ACC.

This research was performed in Project AIR FORCE's Resource Management Program. The contents of this briefing should be of interest to ACC, NAF commanders, and Department of the Air Force staff responsible for personnel policies and plans and operations.

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 four programs: Aerospace Force Development; Manpower, Personnel, and Training; Resource Management; and Strategy and Doctrine.

SUMMARY

BACKGROUND

The Air Combat Command (ACC) has three general-purpose Numbered Air Forces (NAFs): 8AF, 9AF, and 12AF. The NAF commanders are responsible for the peacetime command and oversight of the units assigned to their NAFs, which include wings, groups, and squadrons. In war or other contingencies, the NAFs support the Commander of Air Force forces (COMAFFOR), who is normally given responsibility for operational, tactical, and administrative command (i.e., the "care and feeding" of the troops). When employed in a military operation for the commander of a unified command [for example, the Commander-in-Chief (CINC) of U.S. Central Command] or a joint force commander (JFC), the COMAFFOR plans and oversees the execution of USAF air and space operations. If the USAF has the preponderance of air assets in the area of responsibility (AOR), the COMAFFOR may also be designated as the Joint Forces Air Component Commander (JFACC), with operational control over all air and space forces in the AOR.

In peacetime, the NAF organizational structure supports the command and evaluation of the readiness of assigned units; during a conflict, the NAFs provide trained personnel for the AFFOR and Aerospace Operations Center (AOC), which support the air campaign. An "above the line"¹ staff is primarily responsible for each NAF's peacetime mission and is limited by manpower authorizations to no more than 99 people. A much larger "below-the-line" staff primarily supports each NAF's wartime missions. Although the structures differ slightly among the NAFs, "below-the-line" personnel are generally organized into groups (A1/4—support and A3/5—operations) and squadrons (A1—personnel, A2—intelligence, A3—operations, A4—logistics, A5—plans, and A6—communications).

¹"Above-the-line" staff typically include the functions of judge advocate, chaplain, safety, and inspector general.

RESEARCH QUESTION

In the past two years, questions have been raised concerning how many NAFs are needed by ACC to support its warfighting requirements. In fall 1997, General Richard E. Hawley, ACC Commander, asked RAND to examine the capacity of the ACC NAFs to support DoD-wide exercise demands and the minimum amount of training required by the NAFs. During a review of the results of that research, General Hawley asked whether RAND could offer an analysis of *how many NAFs ACC needs to meet its warfighting requirements*. The research reported here was completed in response to that question.

CONCEPT AND APPROACH

Estimating how many NAFs are needed to support ACC's warfighting responsibilities raises two major questions. First, how much capacity do the NAFs have to support their warfighting role? And second, how much warfighting might they be called upon to do?

Official Unit Type Codes (UTCs describe the basic organization of Air Force forces that deploy) include staffing requirements for AFFORs and AOCs to meet three levels of conflict intensity: quick, limited, and theater response. A quick-response package (QRP) is designed to support the lowest level of intensity (up to 300 sorties per day and support for Air Force personnel at four geographically separated bases). A limited-response package (LRP) is intended to support as many as 1000 sorties per day and personnel at eight geographically separated bases. And a theater-response package (TRP) could support as many as 2000 sorties per day and personnel at 12 bases. These packages would provide the requisite AFFOR and AOC assets to support these levels of conflict based on 24-hour operations, with personnel working 12-hour work shifts six days a week.

We address the question of NAF capacity by examining how many simultaneous QRPs, LRPs, and TRPs each NAF could support, as well as how many response packages the assigned personnel from the three NAFs together would be able to support.

Under the assumption that QRPs, LRPs, and TRPs would operate most effectively with seasoned personnel, we also develop a monthly estimate of NAF experience levels. We consider an individual "experienced" if he or she has participated in a major AOC exercise (e.g., Blue Flag) or has completed mission qualification training. These monthly estimates are

based on the length of time that personnel remain at the NAFs (i.e., tour length), the rates of arrival of personnel into the NAFs (i.e., more personnel arrive during the summer months than during the winter months), and notional schedules for on-the-job training and comprehensive training exercises. For example, we can project the degree to which experience for the NAF as a whole fluctuates as experienced personnel leave for other assignments and new personnel arrive.²

The question of how much warfighting the NAFs may be called upon to support (i.e., the "demand side") is much more difficult. To approach this issue, we relied upon a recent RAND report that lists a number of potential conflicts around the world that could require air support. We asked NAF representatives to consider potential conflict scenarios and to assess the level of air support that might be required in terms of a QRP, LRP, or TRP. For example, various potential conflicts in the Persian Gulf could require as little as a QRP or as much as a TRP.

Ultimately, the amount of warfighting capacity that might be required is inherently unknowable—that is, the demand cannot be specified. However, with this analysis we attempt to more clearly represent the NAFs' supply of warfighting capacity. With this information, Air Force leaders will be in a better position to judge the adequacy of the current NAF structure.³

RESULTS AND CONCLUSIONS

Our model suggests that the overall experience level of a NAF could dip to as low as 82 percent of personnel having experience in at least one major AOC exercise (e.g., Blue Flag) during any given previous year.⁴ This is based on the assumption that tour lengths average 36 months, that the NAF engages in two full AOC training exercises per year that are optimally scheduled to maximize experience, and that everyone in a NAF participates in the training exercise when it is held. The results of RAND

²Similar results are obtained when projected experience levels are based upon arrival rates, tour lengths, and training time needed to achieve mission-qualified status (Air Force Instruction 13-109).

³We have structured our analyses to focus only on the capacity of the three ACC general-purpose NAFs. We do not include the additional assets that might be drawn from reserve units or other active Air Force organizations.

⁴A model based on the training time required to achieve mission-qualified status projects that the level of experience could fall to as low as 79 percent.

survey data on the pace of work at the NAFs show that this third criterion in particular is likely to be optimistic—fewer than 82 percent of NAF personnel reported participating in a full AOC exercise during the prior year.⁵ Thus, in reality it may be that the numbers presented here overestimate experienced capacity to some degree.

Staffing plans indicate that most but not all QRP, LRP, or TRP personnel would be provided by a NAF; under these guidelines, each NAF could itself barely provide the trained personnel to support one QRP. Indeed, for the time period we examined (winter 1997–1998), 8AF did not have enough assigned personnel in A2 (intelligence) to support even one QRP. Furthermore, 8AF would also have fallen short of trained A6 (communications) personnel for a QRP-sized operation. And each NAF would have had to use personnel from its A3/A5 group (plans and operations) to support A5 requirements for one QRP.

None of the three NAFs could have provided enough experienced personnel to cover the expected portion of the requirements for either an LRP or TRP. Each would have had to rely on people who may not have been adequately trained or experienced, and/or borrow properly qualified people from somewhere else. These shortfalls led us to examine the three NAFs' total or joint capacity.

Cumulatively, we found there would be enough experienced personnel to support one TRP and one simultaneous QRP. The three NAFs together would have had enough staff to support one LRP and two simultaneous QRPs, but the second QRP would have relied partially on inexperienced personnel. (This latter finding is based on the assumption that as requirements rise, experienced personnel would be used first.) Alternatively, together the NAFs could have supported three simultaneous QRPs.

We conclude that potential future conflicts could strain the ACC NAF structure. Unless additional experienced personnel were made available, reductions in the NAFs therefore strike us as imprudent in the current international environment.

⁵ However, personnel who did not report having participated in the preceding year may have participated in a full AOC exercise one or two years earlier and still be considered "experienced."

RECOMMENDATIONS

Although NAF personnel support many exercises throughout each year, few exercises provide training for an entire NAF in its warfighting missions. First, it is important to ensure that individual and annual training goals for personnel to participate in exercises are met. Second, and perhaps more important, personnel turnover and the need to serve other NAF functions, such as supporting other exercises around the world, continually limit the ability of the NAFs to perform or train for their warfighting missions. Hence, it is important that the scheduling for exercises such as Blue Flag take these other factors into account to maximize training effectiveness.

Furthermore, Blue Flag and similar exercises should be seen not only as a way for personnel to gain valuable AOC training and experience but also as an opportunity for commanders to evaluate the performance of the NAFs in their warfighting roles. With such information, NAF commanders would be better positioned (1) to understand and accommodate the effects of *inexperience* on overall AOC performance, and (2) to develop more-effective AOC training and staffing strategies.

ACKNOWLEDGMENTS

We are extremely grateful to the many individuals who contributed generously of their time and knowledge in the completion of this documented briefing. Air Force colleagues who played especially helpful and important roles in providing us with the information and insight we needed to develop and complete our analyses include Maj Rob Gass, 8AF/CCG; Col Jim Ewing, 8AF/DO; Maj Kevin Fowler, 9AF (609 CPS/DOXP); Lt Col Randy Bright, 12AF/DOXP; Lt Col Lee "Tip" Wight, 12AF/DOXP; and Gary Sambuchi ACC/DOE. RAND colleague Craig Moore contributed insight into the formulation, conduct, and review of our analyses and conclusions. Finally, we wish to thank RAND reviewer Jim Hosek for his thoughtful and helpful comments.

The authors retain full responsibility for all errors that remain in the document.

The Warfighting Capacity of Air Combat Command's Numbered Air Forces

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1 04/05/2000

Air Combat Command (ACC) has three general-purpose Numbered Air Forces (NAFs), the 8th, 9th, and 12th Air Forces (8AF, 9AF, and 12AF, respectively). During peacetime, each of the ACC NAFs has a support relationship with a different unified commander (Commander in Chief, or CINC). This structure involves managing component Air Force forces assigned under the NAF as well as the provision of general mission support in the relevant CINC's area of responsibility.

In wartime, NAFs support Air Force forces (e.g., through the provision of food and shelter) in an area of operations working through a Commander of Air Force forces (COMAFFOR) and his staff. They also provide the personnel and expertise for the operation's Aerospace Operations Center (AOC), which develops and executes the air operations plan, under the command of the Joint Forces Air Component Commander (JFACC). AFFORs and AOCs do not generally function in ACC on a continuous basis, but rather are constructed as needed during contingencies from personnel assigned to the NAFs, augmented by personnel from other Air Force organizations.

In the summer of 1998, the Commander of Air Combat Command asked RAND to estimate how many NAFs are needed by ACC to support its *warfighting* requirements. This briefing presents our conception of one mechanism through which the NAFs' warfighting capacity can be

evaluated, and the results of our employment of this approach. It focuses solely on the resources available to support wartime missions.

Our Goal and Concept

- Assess current NAF capacity; provide framework that offers insights into potential policy changes
 - maximum capacity is limited by overall personnel assignment practices
 - *experienced* capacity is limited by tour lengths, exercise schedules, and level of participation in exercises
- Evaluate NAF capacity to support various types of operations, based on:
 - assigned personnel (i.e., maximum capacity)
 - experience levels (i.e., experienced capacity)
 - AOC Response Package manning requirements
 - demand for various packages based on scenarios

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3 03/07/2000

To answer the question of what the ACC NAFs can support, our goal was first to identify the major policy-related variables that affect the NAFs' capacity to provide the personnel required for AFFORs and AOCs. The most obvious policies are those relating to personnel assignments. As a qualitative indicator, we identified personnel as "NAF-experienced" for the purposes of this analysis if they had participated in at least one full AOC exercise (e.g., Blue Flag or Unified Endeavor) while assigned to a NAF. The opportunity to gain experience through exercise participation is a further function of NAF tour lengths and of exercise schedules. In this analysis, we assumed that if an exercise occurred during an individual's tour of duty at a NAF, he or she had participated. The validity of this assumption will be discussed later in the briefing, but experience, by this definition, is also clearly a function of whether NAF personnel have equal opportunities to participate in exercises when they do occur.

Our method for examining how many NAFs are needed by ACC is to estimate the number of assigned personnel who could be expected to have had experience in at least one full AOC exercise, under different scenarios of tour lengths and exercise schedules. These numbers can then be evaluated against the staffing requirements for different types of potential operations, to estimate the numbers and kinds of operations that can be supported at any given time.

We Used Several Sources of Information

- AOC and AFFOR UTCs
- AFI 13-109, Volume 1
- AJECT Exercise Schedule
- Discussions with NAF representatives
- Potential conflict scenarios (RAND Project AIR FORCE)
- Unit Manning Personnel Rosters (~Nov. 1997)
- AFPC Personnel Assignment File (Oct. 1997)

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Our analysis relied on information from several sources. Unit Type Codes (UTCs) for AOCs (7FVX1, 7FVX2, and 7FVX3) and AFFORs (9AAB1, 9AAB2, and 9AAB3) provided the blueprints for the number and type of personnel required for different levels of "response packages" for a range of military operations. Air Force Instruction (AFI) 13-109 specifies the required training for AOC personnel. NAF exercise schedules provided by ACC indicated the frequency and kinds of exercises that might be typically available for NAF personnel.

NAF personnel helped us to understand the ways in which the NAFs plan to staff the AFFOR and AOC UTCs and to match response packages with potential conflict scenarios. These scenarios were drawn from *Sources of Conflict in the 20th Century*, a 1998 report conducted by RAND's Project AIR FORCE. Finally, rosters and assignment files from fall 1997 provided us with the numbers and kinds of personnel actually assigned to the NAFs, as contrasted with authorizations or stated manning requirements.

Air Ops Requirements and Possible Scenarios

Quick Response Package (QRP) (300 sorties per day;
4 geographically separated bases): e.g.,

- Unconventional Iranian aggression against Gulf Arab states

Limited Response Package (LRP) (1000 sorties per day;
8 geographically separated bases): e.g.,

- War between Russia and Ukraine

Theater Response Package (TRP) (2000+ sorties per day;
12 geographically separated bases): e.g.,

- Iran vs. Gulf Cooperation Council, 2010, if we find basing

The near future has substantial potential to
require air operations.

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The AOC and AFFOR UTCs represent three levels of response packages: quick (QRP), limited (LRP), and theater (TRP). QRPs are designed to support approximately 300 sorties per day flown from up to four bases and represent the level of effort that might be required by an operation in response to a scenario such as Iranian aggression against the Gulf Arab states. An LRP supports 1000 sorties per day from as many as eight bases and represents the level of U.S. response that might be needed if there were a war between Russia and Ukraine. TRPs support more than 2000 sorties per day from 12 bases—a scenario requiring this level of response might be another large-scale war in the Persian Gulf. Associated staffing requirements for each UTC are based on 24-hour operations, and assume that personnel work 12-hour shifts and six-day workweeks.

The potential for conflict in the early 21st century appears to be sufficiently large as to suggest a substantial need for air operations capabilities, which for ACC are managed principally through the NAFs.

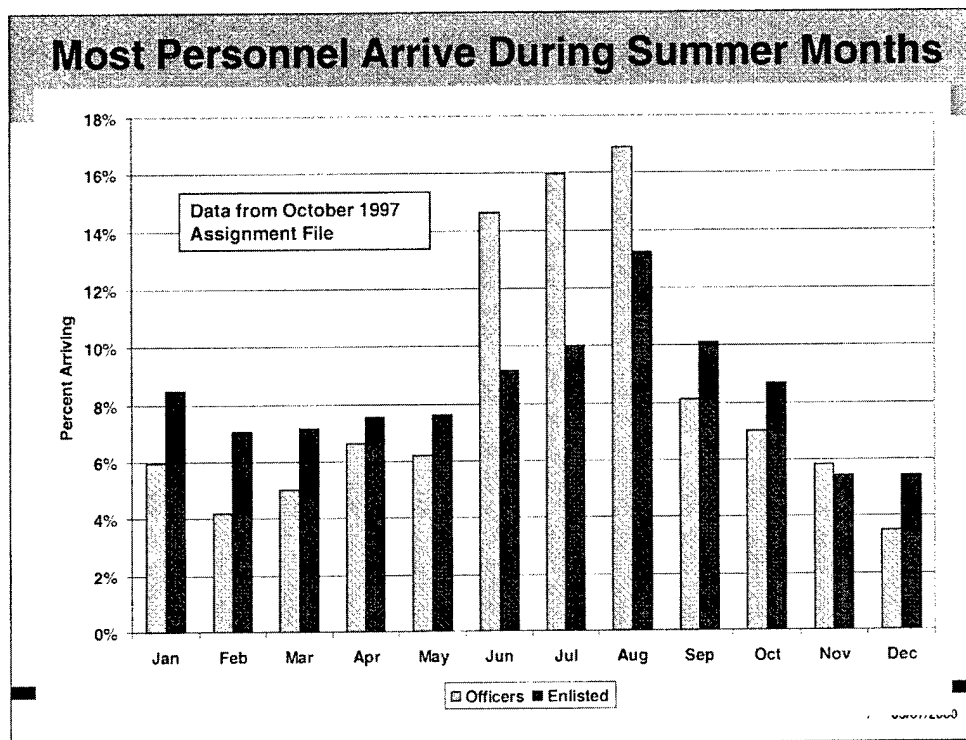
Level of AOC Experience at Any Point in Time Depends on Several Variables

- Cyclic Nature of Permanent Change of Station (PCS) Rates to NAFs
 - If personnel arrive just after an exercise is held, they must wait several months for another opportunity
- Length of NAF Tours of Duty
 - Shorter tours translate into fewer opportunities to participate in an exercise
- Exercise Schedules
 - Opportunities to gain experience in full AOC exercises are limited

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As noted earlier, the level of NAF personnel's exposure to training and full AOC exercises is a function of tour length, arrival rate, exercise schedule, and opportunities for participation.

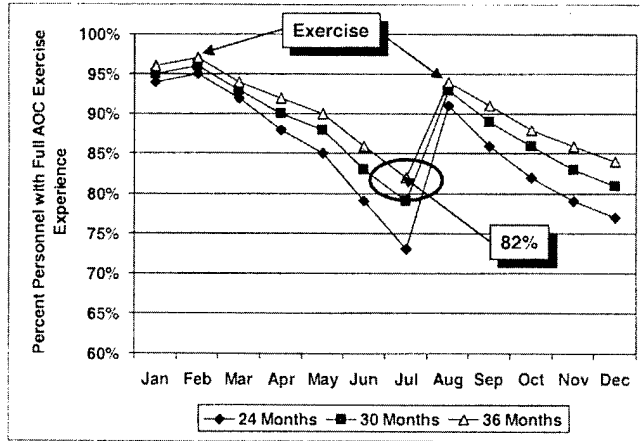


The above chart shows the monthly arrival rates for personnel at the three ACC NAFs, derived from Uniform Officer and Airmen Records strength files from the end of fiscal year 1997. Because personnel typically serve two or more years at a NAF, the percentages in the chart do not represent total annual turnover. This chart is best interpreted in the following way: of the officers who are transferred by a PCS to the NAFs during a typical year, approximately 16 percent arrive during the month of July, compared to the approximately 6 percent who arrive during January. Over 13 percent of enlisted personnel transferring during the year arrive during August.

As expected, the largest turnover of personnel occurs during the summer months. As a result, if an exercise is held in the spring, by the end of the summer a substantial number of new personnel will have arrived who did not participate in an exercise, lowering the overall experience level of the NAF as a whole.

The same holds with on-the-job training: the relatively larger influx of personnel during the summer months means that by the end of the summer a larger proportion of personnel will be untrained. Thus, the overall experience level of the NAF fluctuates with personnel flows.

NAF Experience Levels Vary with Tour Length . . . (two exercises per year shown)



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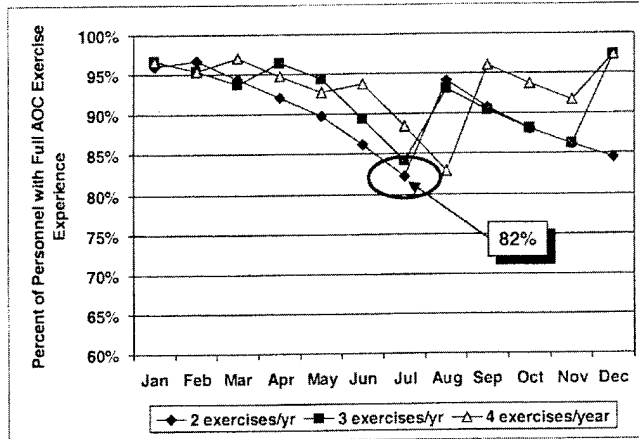
As shown in the above chart, the proportion of personnel with exercise experience is also a function of the length of personnel tours. If exercises are held twice per year (e.g., in February and August)¹ and personnel arrive at the monthly rates shown on the previous chart, then experience will vary as shown above. For example, if tours are 36 months long and exercises are held twice per year, then the experience level of the NAFs will reach a low point of 82 percent in July.² If tour lengths are only 24 months long, then experience dips to 73 percent in July.

This is particularly important if officers or senior noncommissioned officers (NCOs) who occupy leadership positions have shorter tour lengths, because they will then have fewer opportunities to gain AOC experience.

¹These two points, February and August, represent the "best case" in terms of scheduling. Based on turnover rates, any other possible combination of months that are six months apart would result in lower "lowest" experience levels. For example, May and October exercise dates would yield a low of 78 percent experience.

²Again, these estimates are based on the assumption that the personnel assigned to the NAFs participate in each exercise when it is held. In fact, our research indicates this is not the case, and that participation rates vary by organization and even by individual. That is, some portions of the NAF participate more regularly during scheduled exercises than do others, and some personnel are tasked repeatedly (e.g., even in support of other NAF's exercises), while others are excluded for a number of reasons. Despite this reality, we used the "equal participation" assumption to model a best-case scenario. In fact, actual experience levels could fall much lower than what is represented here, based on the degree to which participation in exercises is uneven across the organization.

**... and with Exercise Schedule
(36-month tours shown)**



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Experience levels also vary with the number of exercises held per year. This chart shows the manner in which exercise schedules, tour lengths, and monthly turnover rates interact to affect levels of experienced personnel. Not surprisingly, for constant tour lengths of 36 months, the lowest experience levels come with only two exercises per year (i.e., 82 percent, in July). If exercises are held three times per year, then the lowest level of experience is 85 percent, in July. If exercises are held four times per year, then the lowest level of experience is 83 percent, in August.

One point is of particular interest here: Experience is relatively insensitive to exercise frequency. Cutting exercises in half (from four to two) results in the loss of only 1 percent overall experience at the lowest points.

For the remaining analyses, we focus on the capacity of the NAFs to staff AOC and AFFOR UTCs from a pool of personnel that reaches a minimum of 82 percent “experienced.” This represents a worst case in terms of the lowest level to which experience might fall during the year, but also represents a best case in assuming that everyone participates in each exercise as it is held and that exercises are optimally scheduled.

We first make explicit the assumptions on which the analyses are based. Specifically, one might question whether experience in a full AOC exercise is a reasonable proxy for the experience required to function effectively as part of an AOC, and consequently, whether 82 percent represents a meaningful worst case.

There is both logical and analytical support for this assumption. Simply stated, Blue Flag or similar “full AOC” exercises (i.e., exercises that stress the entire operation and most closely approximate real-world requirements) provide the only realistic peacetime opportunities for personnel to gain experience in how all of the functions of an AOC operate together. For many AOC personnel, participation is a specified part of their annual training requirement.³ We therefore believe that it is reasonable to assume that AOC exercise experience is a useful proxy for experience, and that individuals with Blue Flag or similar exercise experience would be preferred in staffing an operational AOC.

But it may not mean that Blue Flag or similar experience is *required* for individuals to function effectively in an operational AOC—there are other means by which individuals gain experience in their assigned positions, including formal and on-the-job training apart from that provided during exercises.

AFI 13-109, which specifies the major training requirements for AOC personnel, includes annual participation in a full AOC exercise for many. It also specifies initial, mission qualification, and sustainment training requirements. New personnel are required to complete their initial and mission qualification training within 180 days of beginning their assignments (although extensions are available).

³See *Ground Environment Training—Air Operations Center*, Air Force Instruction 13-109, Vol. 1, October 1998.

If one argues that completion of mission qualification training is a more appropriate proxy for experience than AOC exercise participation, the minimum training requirements stated in AFI 13-109 provide an opportunity to validate the 82 percent "experienced" figure derived from our earlier analyses.

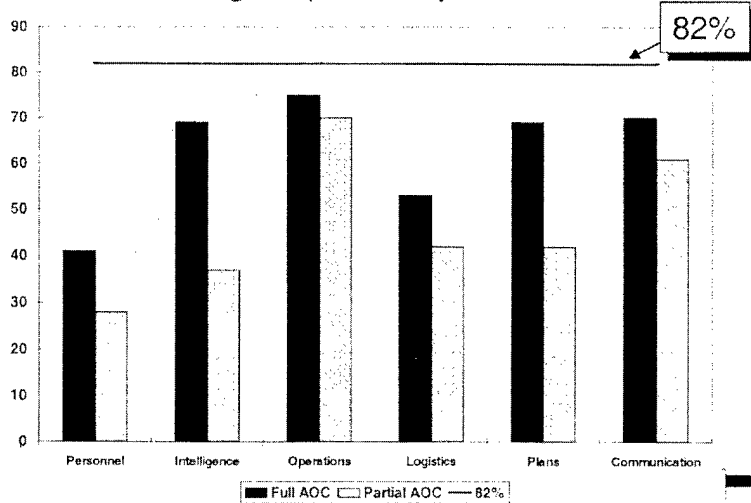
Using the same monthly arrival rates we identified previously, if we assume that new personnel take 180 days to become mission qualified and that tour lengths average three years, we can calculate the month-to-month percentages of personnel who will be mission qualified. In a steady-state model, the minimum percentage of mission-qualified personnel that would be reached in a 12-month period would be 79 percent—a number strikingly similar to the minimum of 82 percent "experienced" that we previously calculated using projected exercise participation and optimal scheduling. Thus, it appears that using either metric, experience levels in the NAFs could be expected to "bottom out" at around 80 percent under the most optimistic set of assumptions about exercise participation or adherence to stated training requirements.

It is also possible that an AOC could function effectively without all of its members being experienced (using either definition) and that untrained or inexperienced members could gain the requisite knowledge and experience during the first days of AOC operation. The relevant question then becomes, how many inexperienced members can an AOC manage to incorporate and still function effectively? One perspective might be that AOCs routinely function with from 10 to 20 percent augmentees who at least initially must be closely supervised by experienced personnel (see AFI 13-109).

From the above, we conclude that, all else equal, 82 percent represents a reasonable worst-case scenario of the number of experienced personnel that the NAFs might expect to have available during the course of a year. Although experience can also reasonably be assumed to develop during AOC operations, we further assume that there is a probable positive correlation between inefficiency and (potentially costly) errors and the proportion of inexperienced personnel.

Real Experience Levels Appear Even Lower—Exercise Participation Varies Across A-Staffs

Percentage of respondents that reported participating in an AOC exercise during the previous year:

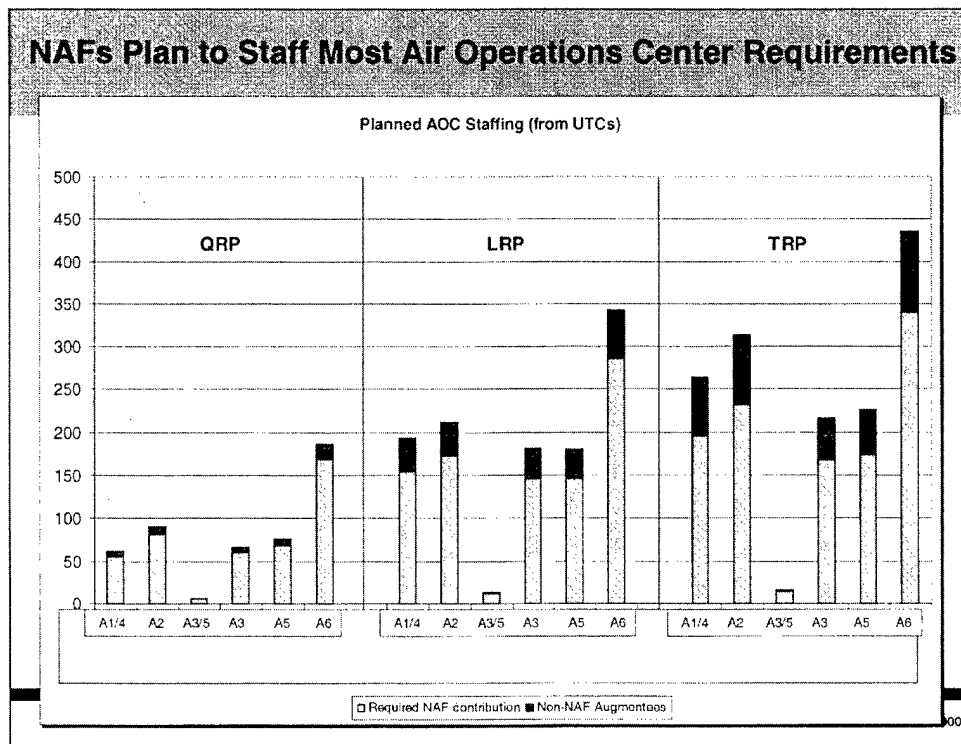


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As stated earlier, the preceding analysis assumes that all personnel assigned to a NAF participate in the exercises that occur during a tour of duty. Yet a RAND survey of a sample of NAF personnel in early 1998 found that experience with full AOC exercises *during the preceding year* was lower than the projected minimum level of 82 percent across all sections of the NAFs, assuming 36-month tours and two exercises per year. For example, although AFI 13-109 states a requirement for all personnel assigned to A5 to participate in one large AOC exercise per year, fewer than 70 percent of our survey sample had participated in a full AOC exercise in the previous 12-month period. Even fewer personnel reported recent experience with partial, or smaller-scale, AOC exercises. (The survey results do not necessarily mean that fewer than 82 percent had ever had experience with a full AOC exercise—individuals who did not participate in the immediately preceding year may have participated one or two years earlier in a full or partial AOC exercise.)

More important, the results of the survey indicate that our assumption that all personnel participate when a full AOC exercise is held is optimistic; thus, actual experience levels are likely to be more varied than in the theoretic model that we have constructed.

Apparently, frequent exercises do not necessarily mean that all or even a majority of NAF personnel are gaining experience through exercises. This may be because of the aforementioned tension between peace- and wartime missions: Some personnel may be supporting ongoing "peacetime" activities for their supported CINC, and thus be unavailable for wartime exercises. (For example, supporting counterdrug operations in South America may constrain the availability of 12AF intelligence personnel for exercises.) Also, exercises may be structured such that there is little need or opportunity for some staff members to participate. For example, in a Blue Flag exercise, logistics personnel may find few useful activities that afford practice on tasks crucial to their activities as part of an operational AOC. Somewhat ironically, another anecdotal explanation we were offered was that exercises are viewed more as "tests" or performance evaluations than as training events, so that experienced personnel were more apt to be included because they already possessed relevant expertise, whereas lesser-experienced personnel were excluded for fear of potential errors, creating a "rich get richer" effect. Nevertheless, we did not study, and thus do not have additional information on, reasons why participation in exercises appears to be unequally distributed. Additional work would be required to gain a better understanding of the causes of this uneven participation in exercises. At a minimum, however, it suggests that ACC should track exercise participation in each individual's permanent training record in a way visible to commanders in helping them decide who should participate in upcoming exercises.

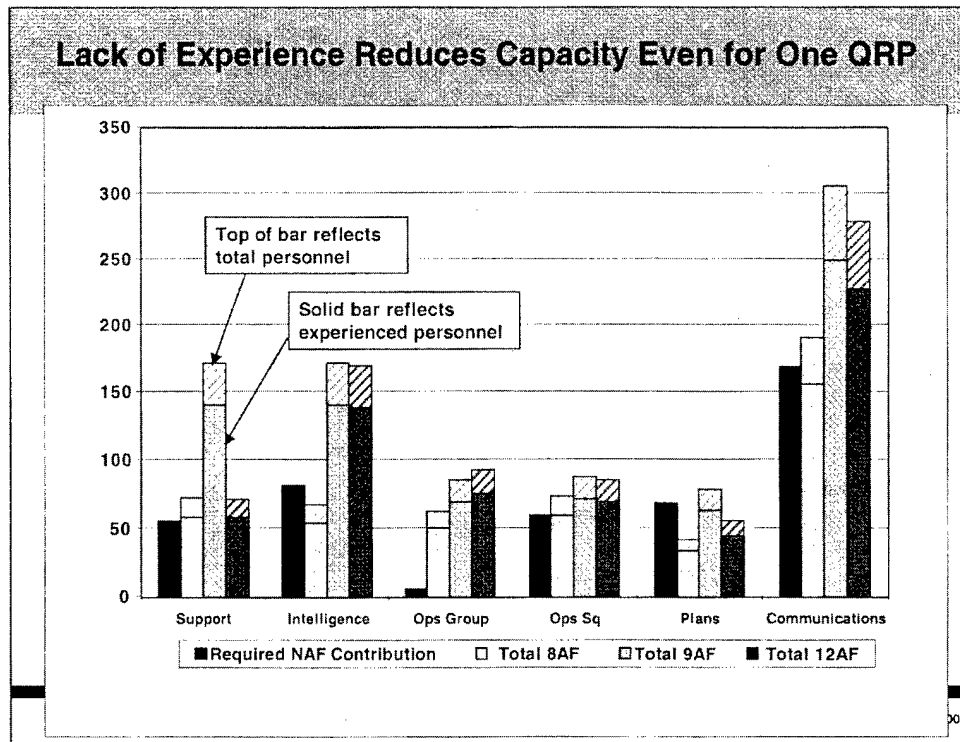


To specify the demand side of the personnel equation, we begin with the requirements as stated in the AOC and AFFOR UTCs for each of the three response packages. The above chart represents these basic requirements as they would be filled by NAF personnel. The overall heights of the bars represent the personnel requirements for response packages, as outlined in the AOC and AFFOR UTCs. To recap, each package is designed to provide an AOC that can support 24-hour operations at different levels of effort (QRPs being the lower and TRPs the highest), as well as a force headquarters to command, control, sustain, and support Air Force forces at geographically separated bases.

The two portions of these bars represent how these requirements would be met. NAFs plan⁴ to fill these packages with personnel in the following way: for a QRP, the lead NAF would provide approximately 80 percent of the required personnel, and then draw approximately 10 percent from other NAFs and an additional 10 percent in augmentees from other organizations (e.g., reserve units, the Air Staff, or subordinate units). For the incremental requirements of a LRP over a QRP, 50

⁴According to conversations with NAF staff that were then verified by personnel at each of the three ACC NAFs.

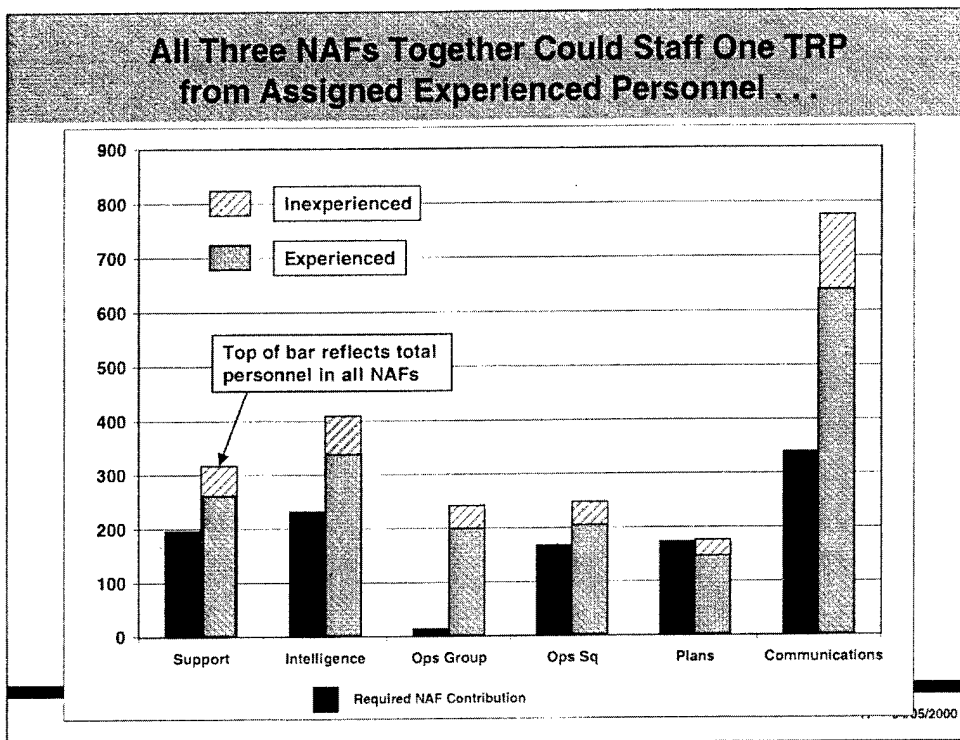
percent would come from the lead NAF, 25 percent from the other NAFs, and 25 percent from augmentees from other organizations. For the incremental requirements of a TRP over a LRP, the NAF would provide approximately 15 percent, and the remaining 85 percent would be drawn equally (42.5 percent each) from the other NAFs and other organizations. The chart shows the level of staffing that would be provided in each instance jointly by the NAFs (cumulatively, not distinguishing between the lead and other NAFs) and from augmentees. (For the purposes of this analysis, we have not distinguished between AFFOR and AOC requirements.)



We first examine the capacity of each of the NAFs to provide the planned level of 85 percent of personnel for one QRP. The solid black leftmost bars in each cluster in the above chart reflect a NAF's planned staffing requirements (i.e., 85 percent of overall QRP requirements) for one QRP. The three rightmost bars in each cluster represent the assigned personnel in the A-directorates at each of the ACC NAFs, and the solid-colored portion of these bars reflects a hypothetical 82 percent experience level. (Throughout this discussion, we assume that in standing up an operational AOC, a commander would prefer to fill positions using more-experienced personnel over less-experienced personnel.)

Note first that on its own, 8AF lacks sufficient assigned intelligence personnel to meet QRP requirements—whether experienced or inexperienced by our exercise-based definition. 8AF would also fall short in combat plans personnel, as would 12AF. However, based on discussions with NAF personnel, we assume that personnel in the air operations group could be used to fill shortfalls in combat operations and combat plans. Under these conditions, the excess of air operations group personnel means that both 8AF and 12AF have sufficient numbers to meet overall combat plans requirements for one QRP.

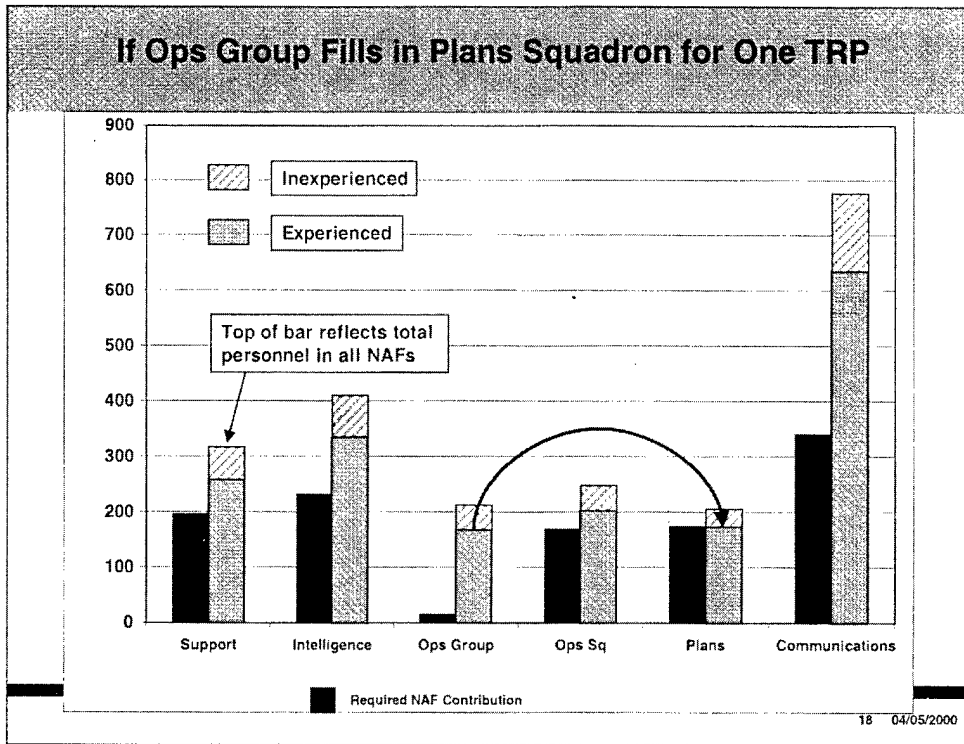
If the decision were made to staff a QRP only with personnel who had experience or who were mission qualified (i.e., based on our scenario of 82 percent of experienced personnel described above) presents a slightly greater problem. In this case, 8AF would also face a shortfall of experienced personnel in the communications squadron.



In addition to considering the capacity of each of the NAFs individually, it is also worthwhile to consider their collective capacity as a pool of resources. (This perspective assumes that there is perfect substitutability between personnel of similar grade and assignment between NAFs, which may not hold true for positions that require regional expertise, in particular. However, the number of these positions is thought to be relatively small.) This "rainbow" approach to utilizing personnel from all NAFs appeared to work well, for example, in EFX '98.

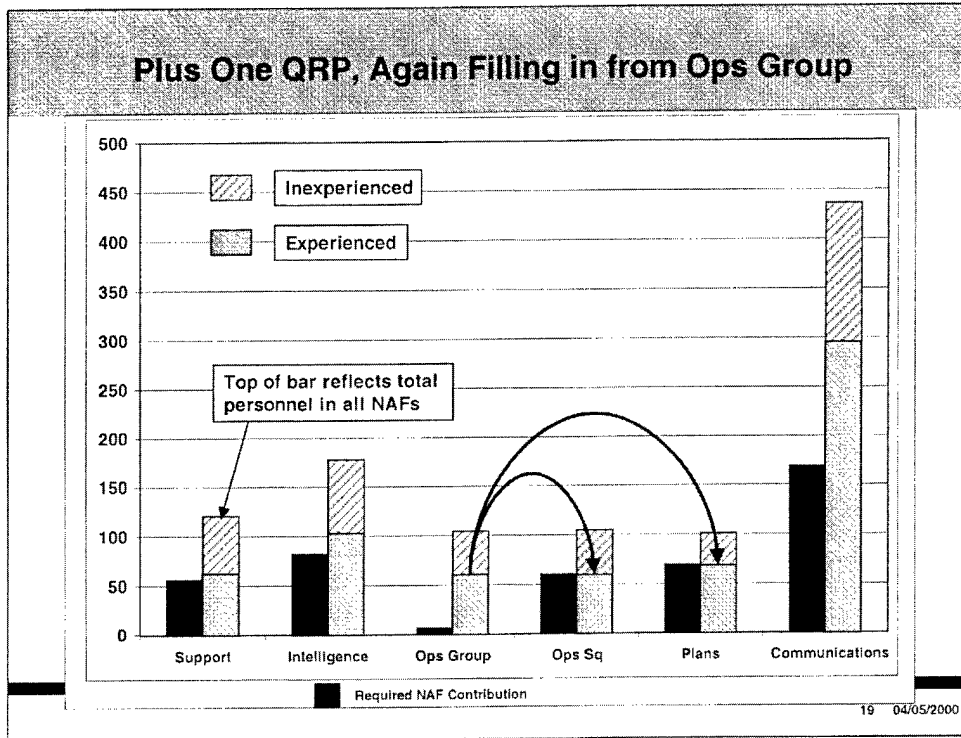
Using this collective view, we look next at the capacity of the NAFs to jointly support response packages. In the next several charts, the black bars on the left in each pair represent personnel requirements. The right bars represent the total assigned personnel from the three NAFs, and the solid-colored portion of these bars represents a hypothetical 76 percent experience level.

The above chart displays the capacity of the three NAFs to jointly support one TRP. Together, the NAFs have enough experienced personnel to support one TRP. They do not have enough resources to support two simultaneous TRPs.

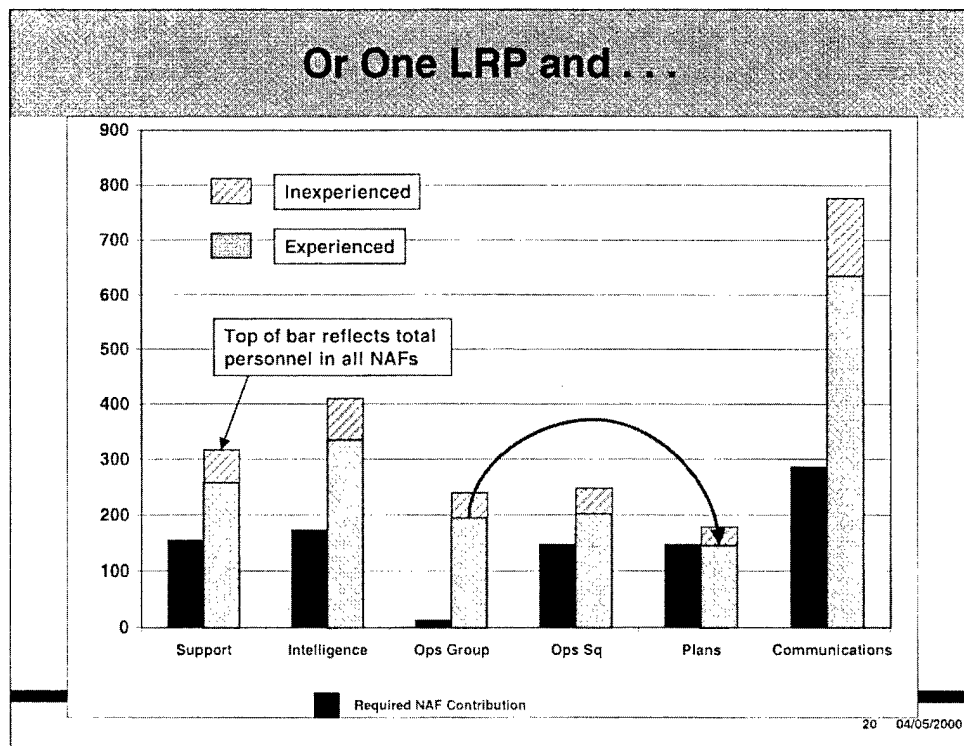


In the one-TRP scenario, the NAFs can meet TRP requirements for the plans squadron if they fill in with experienced personnel from the ops group.

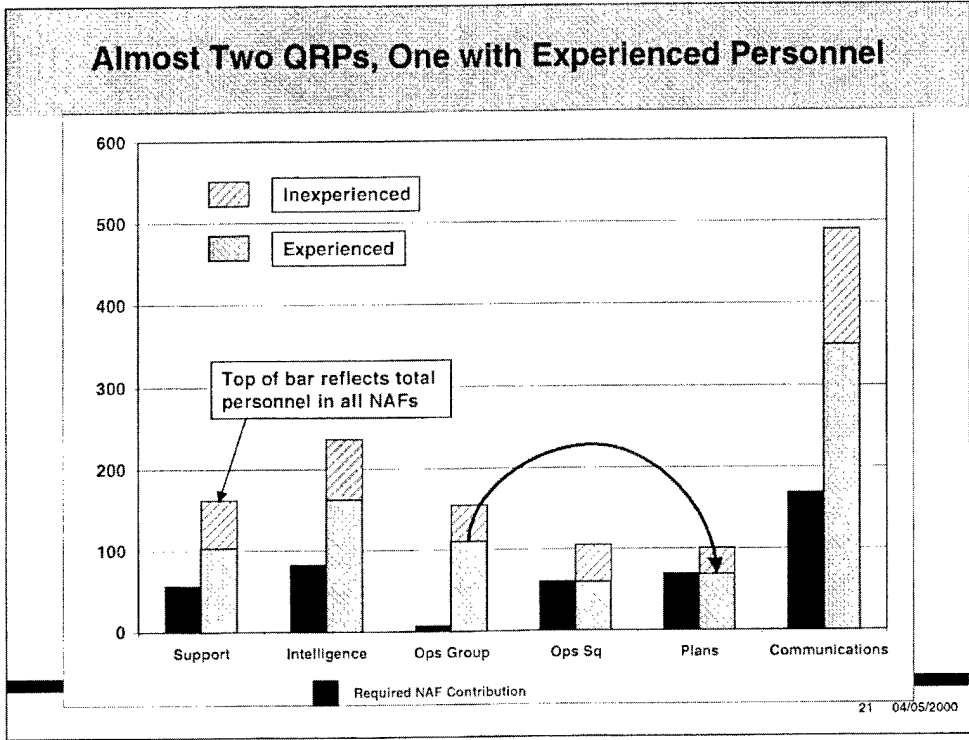
Plus One QRP, Again Filling in from Ops Group



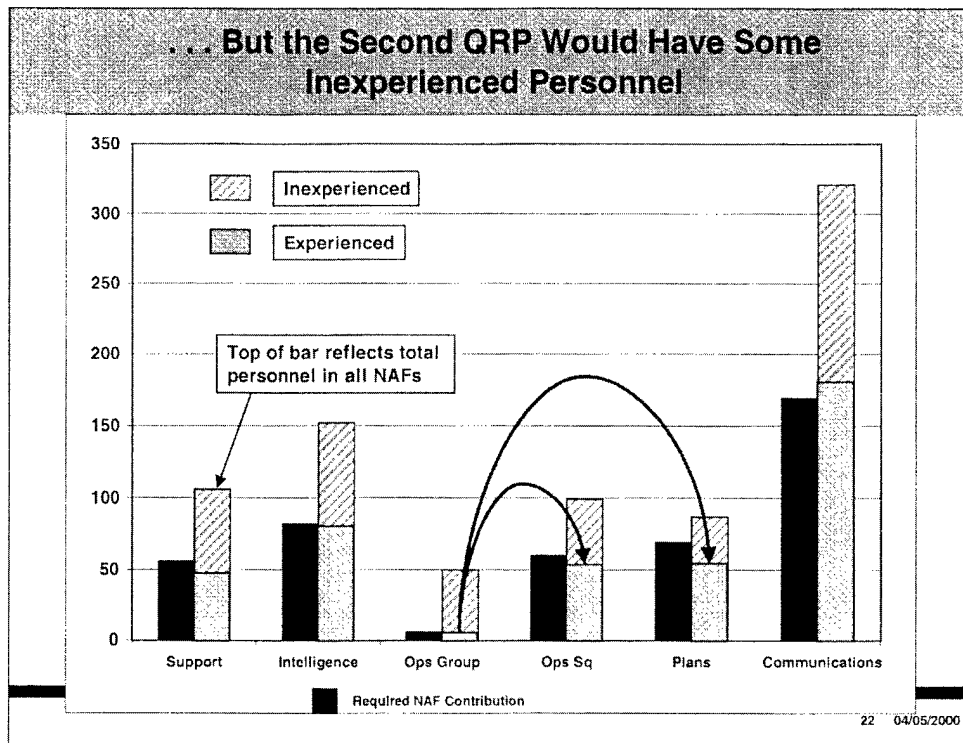
Expanding the possible set of scenarios, if one TRP were ongoing, the NAFs would have almost enough experienced personnel left to also support one QRP. The ops and plans squadrons' shortfalls could again be met with experienced personnel from the ops group.



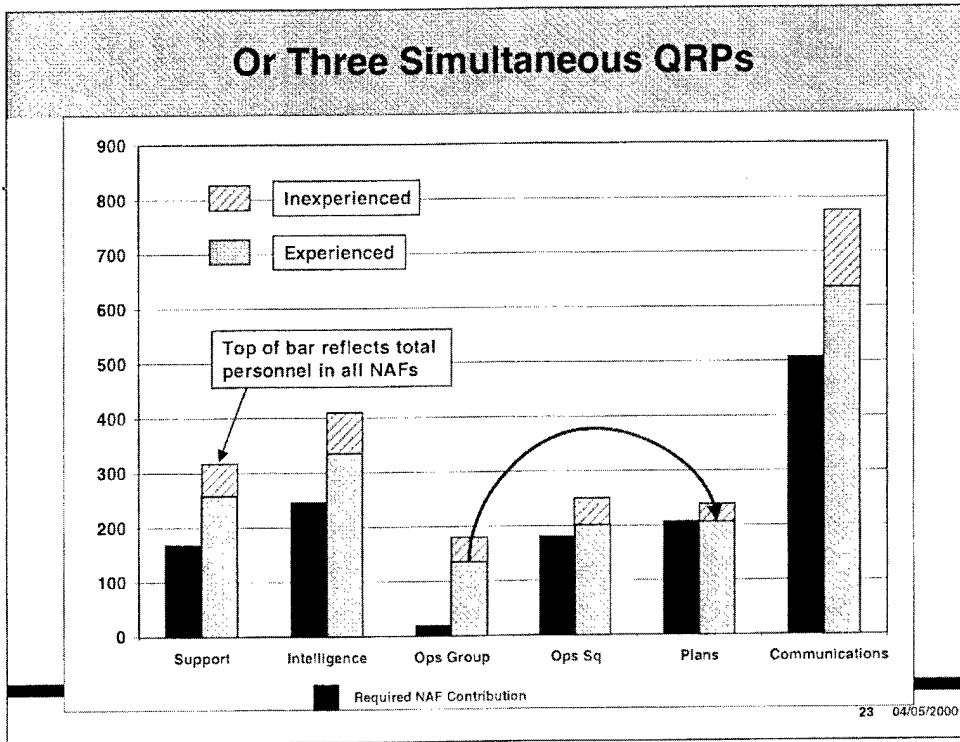
Looking at slightly smaller operations, the NAFs could jointly easily support one LRP, but could not support two simultaneously (all but the ops group and communications squadron would be insufficient).



If an LRP was already under way, the NAFs could also simultaneously staff two QRPs. As shown in the above chart, the first of these QRPs could be filled with experienced personnel, although this would be less true for the second.



A second QRP would in fact rely on a few personnel without recent exercise experience. Under such a combination of requirements (i.e., one LRP and two QRPs), it seems likely that inexperienced personnel would be spread throughout the response packages. However, if the response package requirements arose sequentially, it is likely that larger numbers of inexperienced personnel would fill the last package.



In yet another scenario, the above chart shows that the NAFs could support three simultaneous QRPs with experienced personnel. Thus, the NAFs could support only one of the following three scenarios:

- One TRP and one QRP
- One LRP and two QRPs
- Three QRPs.

Summary

- It takes the personnel from all three ACC NAFs to support the simultaneous operation of
 - 1 TRP and 1 QRP, or
 - 1 LRP and 2 QRPs, or
 - 3 QRPs
- Shortfalls arise most quickly in Air Support Squadrons
- Doesn't indicate constraints from *key* personnel
 - Concurrent operations would reduce leadership availability
- Existing structure of ACC NAFs would already be strained by foreseeable operations.

Thus, further NAF reductions may be imprudent in the current international climate.

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In summary, under the assumptions that we have presented, the assigned personnel from all three NAFs together could support one TRP and one QRP simultaneously, or one LRP and two QRPs simultaneously, or three simultaneous QRPs. However, even setting aside questions of experience, the three ACC NAFs together would face personnel shortfalls in supporting two simultaneous major theater conflicts requiring Theater Response Packages. For multiple operations, the shortfalls of experienced personnel arise most quickly in the support area. An important caveat is that these calculations do not take into consideration the need for experienced leadership in several simultaneous operations. As a result, the true capacity of the NAFs to support simultaneous operations may be less than shown.

Given the potential conflicts requiring AOC support and the staffing of the three ACC general-purpose NAFs, our analysis (and its imbedded assumptions) indicates that CONUS-based NAF resources could be strained under a variety of foreseeable circumstances. As long as the NAFs retain their existing requirements and manning policies, it therefore appears imprudent to further reduce the number of NAFs or their staffing.

Recommendations

Within existing constraints:

- Improve understanding of unequal exercise participation
- Ensure that individual requirements for training and exercise participation are met
- Evaluate exercise schedules for maximization of experience
- Use exercises to comprehensively train *and evaluate* all NAF personnel

Alternatively:

- Restructure NAFs to clarify and set priorities for warfighting missions
- Revise NAF organization along clearer missions to more fully meet essential manning requirements

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Our analyses are based on hypothetical experience levels and their potential effects on NAF performance in one or several simultaneous operations. Whether we use exercise participation or training to mark experience, our models suggest that levels of experienced personnel could fall as low as 79 to 82 percent during the course of each year. Because exercise participation rates are lower than we hypothesize, participation may be perceived as less important to combat capability. Alternatively, as anecdotes from discussions with NAF personnel suggest, it may be that NAF commanders do not wish to "fail" at exercises and so staff them with those already experienced. Nonetheless, even if we discount the importance of exercises or their value as proxies for experience, our model of experience based on mission-qualification training still puts the lowest level of experienced personnel near 80 percent each year.

It is possible that an AOC/AFFOR could function effectively with fewer experienced personnel than we hypothesize. Although current practices (i.e., the use of only a subset, and typically the experienced subset, of personnel) obscure reliable indications of the degree to which this might be true, we believe that broadening the focus of full AOC exercises from mere training to include an evaluation function would give commanders a more complete and realistic understanding of their true combat capabilities, especially for multiple operations.

Furthermore, our models suggest that little can be done to keep experience levels from falling to approximately 80 percent at some time each year. And because simultaneous operations could require the use of effectively all NAF personnel, this underscores the importance for NAF commanders of ensuring, through evaluations conducted during exercises, that their AOC/AFFOR responsibilities can be met with a staff that may be only 80 percent trained/experienced.

As is already under investigation by the Air Force, it may be that the NAF structure and organization are not optimized for the provision of dedicated warfighting capabilities. Clarification and prioritization of missions, both peacetime and wartime, could suggest different organizational structures within the NAFs, or apart from them, or more clearly delineated responsibilities for NAF personnel. Although these issues are beyond the scope of RAND's analysis, we provide here some indications of how to think about the provision of *warfighting* skills and the variables that relate to NAF warfighting capacity.