

### 3. Air Force Pilot Management and Training

If we are projecting a shortfall of pilots in the future, the two policy choices that we need to look at are training larger numbers of new pilots and retaining more experienced pilots. These are the two key determinants of pilot inventory. The discussion below outlines several alternative policy options and examines the effect of each on the problems identified in the previous section.

#### Effects of Changed Retention Policies

The first two alternatives we examine are based on changed retention. To build what could be considered a “control” or comparison group, we first characterized a base case. Retention is measured in terms of Total Active Rated Service (or TARS), which is the expected number of years of rated service that an average pilot will serve on active duty after completing UPT.<sup>1</sup> Future retention behavior was estimated by adjusting historical retention data for changing circumstances. For example, one significant change is the increase in ADSO incurred by UPT graduates, which created a retention point at eight years of rated service (approximately 10 years of active service).<sup>2</sup> For the base case, we used the following TARS values for pilots who would reach the retention point in the years indicated:

1. FY95–FY97 (high<sup>3</sup> retention): TARS = 13.5 years;
2. FY98–FY99 (lowest retention): TARS = 12.0 years;
3. FY00–FY01 (low retention): TARS = 12.5 years.

<sup>1</sup>TARS values have historically ranged from 11.1 to 14.1 years.

<sup>2</sup>The retention point is based on years of *rated* service, not the normal year-of-service unit that determines promotion or retirement eligibility and that is used in the various figures in this section. The retention point typically occurs at 10 YOS (due to the length of UPT), but it can come at 11 or 12 YOS (or even later) for officers who are delayed in starting (or finishing) UPT. We used historical data to estimate the year-of-service distribution for UPT graduates. Expectation of behavior at the retention decision point also had to be modified. Previously, the retention decision could be made by a pilot over a period of several years following end-ADSO (at six years of rated service). An Air Force drawdown initiative now requires eligible pilots (i.e., fixed-wing pilots in good standing at end-ADSO) to take the pilot bonus (and incur an active-duty commitment until 15 YOS) or accept a nonflying assignment outside the aviation career track.

<sup>3</sup>The modifiers—high, lowest, low—refer to the retention rates (TARS slightly over 13 years) that we would expect without making the additional adjustments described in the rationale.

The rationale for these assumptions is discussed below.

Pilots reaching the retention point in FY95–FY97 are in cohorts that have been “shaped” by the drawdown and the officers remaining in these cohorts should be a select group. Thus, it seems credible to assume that when they approach the retention window, they should have higher retention than might typically be the case. Figure 9 illustrates what we mean by shaped cohorts. The dotted line shows the FY93 year of service requirements profile matched against the FY93 beginning-year inventory, shown by the full height of the bars. Because of the large overages in the more-experienced year groups, the Air Force instituted a series of force reduction policies targeted at these groups. For example, the Pilot Early Release Program (PERP) was targeted at those in the 6–14 YOS groups, Variable Separation Incentives/Selective Separation Bonuses (VSI/SSB) were offered primarily to those in 14+ YOS groups, and Selected Early Retirement Boards (SERB) were mandated for some in the 24+ YOS groups. As a result of the reductions (shown by the lighter or darker areas at the top of the bars), the FY93 end-year inventory more closely matched the required profile. This provides the rationale for the assumption of high retention for these cohorts in the base case described above. Many of those who might have left later have already done so earlier.

The number of pilots reaching the retention point in FY98–FY99 is reasonably large (especially when viewed relative to requirements for these cohorts),

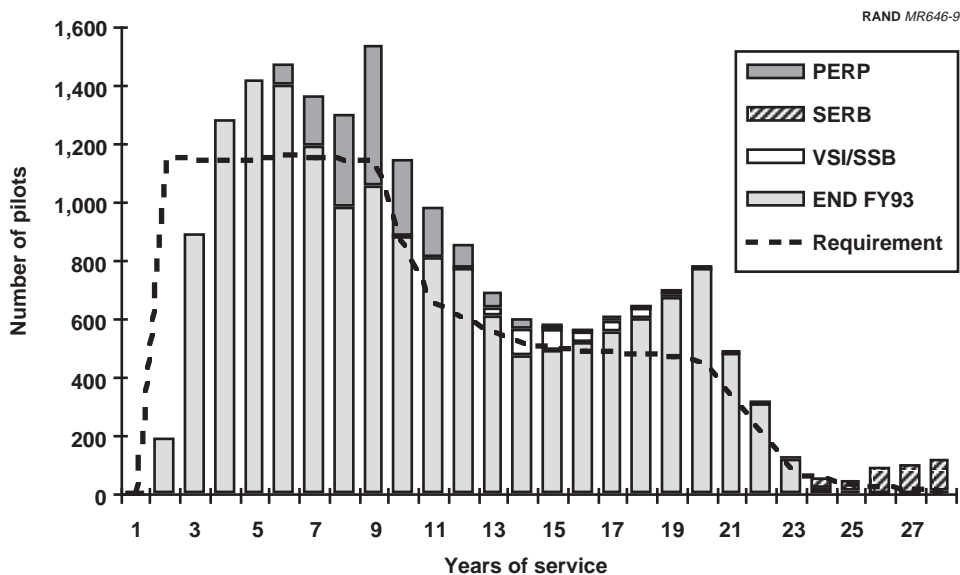


Figure 9—Example of Shaping Cohorts

whereas those at the retention point in FY00–FY01 are smaller because fewer pilots were trained in the early 1990s; the generally observed inverse relationship between relative cohort size and retention provides the rationale for the particular assumptions we adopt for these cohorts.

Table 1 outlines Alternatives 1 and 2 (as well as the base case for contrast), which bound the realm of possibilities with respect to changed retention. Alternative 1 assumes uniformly high retention for all cohorts, regardless of size or year (13.5 TARS); Alternative 2 assumes a much lower retention for the shaped cohorts (12.5 instead of 13.5 TARS), while maintaining the assumptions regarding retention of the cohorts in FY98–FY01 (12.0 and 12.5 TARS, respectively).

The results of our analysis under the different alternatives are displayed in Figure 10. The year of service requirement profile is shown by the dotted line, and the dark grey bars depict the FY02 inventory under the base case. Both of these are repeated from Figure 6. Recall that we estimate a shortfall in the base case of 1,400 pilots. The bathtub is very evident. What is interesting and perhaps surprising is that changed retention appears to only marginally affect the inventory profile. In the aggregate, we estimate that increased retention (Alternative 1) will increase the overall inventory to 12,900, thus reducing the estimated shortfall by 600 pilots, whereas lower retention (Alternative 2) will decrease the overall inventory to 11,700, thereby increasing the shortfall by 400 pilots. Note that there is, however, no measurable effect on the maldistribution of experience in the early years of service. The different retention scenarios affect primarily those in the more-experienced year groups, 10–18 YOS, with little or no effect on the bathtub. This is because UPT production was held fixed at projected Air Force levels (through FY01) for these excursions. Thus, training could not respond to retention changes until FY02.

**Table 1**  
**Assumptions Underlying Base Case and Retention Alternatives**

Year	Base Case	Alternative 1: High Retention	Alternative 2: Low Retention
FY95	13.5	13.5	12.5
FY96	13.5	13.5	12.5
FY97	13.5	13.5	12.5
FY98	12.0	13.5	12.0
FY99	12.0	13.5	12.0
FY00	12.5	13.5	12.5
FY01	12.5	13.5	12.5

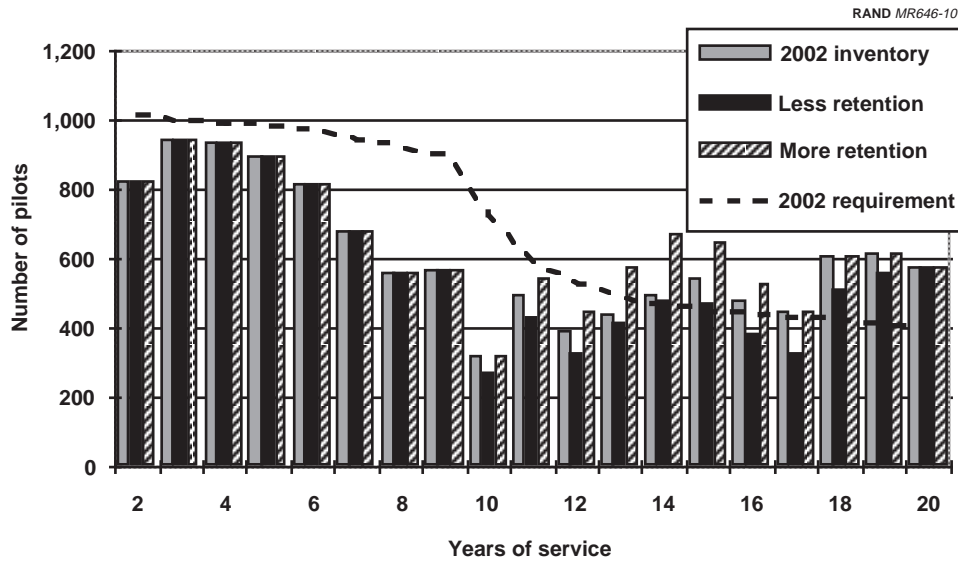


Figure 10—Effects of Retention Alternatives

## Effects of Changed Training Policies

The next alternatives focus on increased training. The base case is drawn from Air Force plans that were in effect at the time of the analysis. After that, the Air Force, recognizing the future value of increased UPT now, revised planned training rates upward to those shown in the second column of Table 2.<sup>4</sup> As a result, the base case shown does not fully mirror current Air Force estimates. We examine two alternatives: an increase in UPT of 100 starting in FY00; and an increase in UPT of 100 starting in FY97 and continuing each year thereafter. The

Table 2  
Assumptions Underlying Base Case and Training Alternatives

Year	Base Case	Revised Air Force Projections	Alternative 3: Increase UPT Later	Alternative 4: Increase UPT Earlier
FY95	500			
FY96	525			
FY97	670	700		770
FY98	811	925		911
FY99	911	950		1,011
FY00	990	1,025	1,090	1,090
FY01	1,050	1,050	1,150	1,150

<sup>4</sup>If these new training levels are implemented, their effect is reasonably shown by Alternative 4.

numbers selected were premised on feasibility and reasonable access to training bases and training aircraft.<sup>5</sup>

Figure 11 shows the results of increased UPT relative to the base case.<sup>6</sup> Increasing UPT earlier offers the best solution thus far, in terms of both increased inventory (+500 over the base case) as well as significant effects on the bathtub. Indeed, the effects on the 5–7 YOS groups is quite pronounced and the inventory profile for these groups appears to be remarkably close to the requirements line. Increasing UPT later offers a minor inventory increase of 200 pilots, with more modest effects on alleviating the bathtub effect.

## Effect of Changed Training and Changed Retention Policies

We explored one last alternative that combined both changed retention and increased training, as shown in Table 3. We thought it might be interesting to consider a real-world situation in which the shaped cohorts had lower retention (as envisaged in Alternative 2), but the Air Force, in response to the much lower

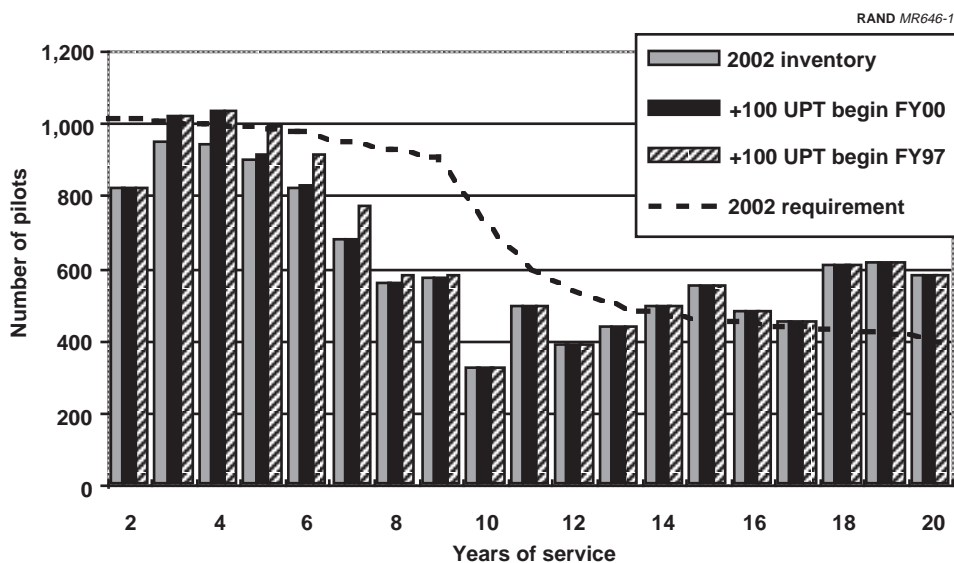


Figure 11—Effects of Increased Training

<sup>5</sup>During the 1980s, UPT training was typically 1,500 to 2,000 per year.

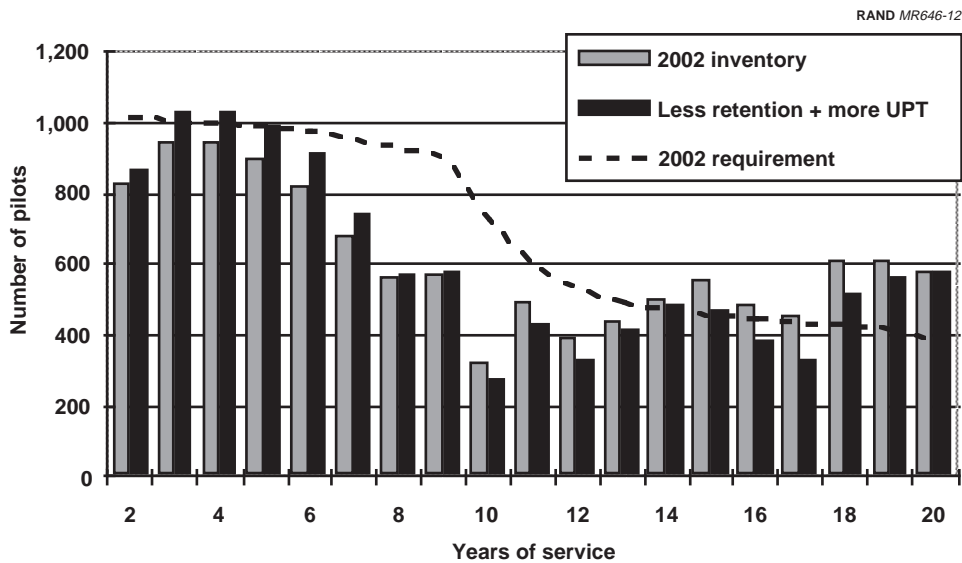
<sup>6</sup>Some years of service exhibit the accumulated effect of UPT graduates entering the pilot inventory with three or more years of service.

**Table 3**  
**Assumptions Underlying Base Case and Retention/Training Alternative**

Cohort Year	Base Case Retention Assumptions	Alternative 5 Low Retention	Base Case Training Assumptions	Alternative 5 Increase UPT After Lower Retention Is Known
FY95	13.5	12.5	500	
FY96	13.5	12.5	525	
FY97	13.5	12.5	670	720
FY98	12.0	12.0	811	911
FY99	12.0	12.0	911	1,011
FY00	12.5	12.5	990	1,090
FY01	12.5	12.5	1,050	1,150

than expected retention, increased UPT training by 100 for each year (except the first year, FY97).<sup>7</sup>

The result of this scenario on the FY02 inventory is presented in Figure 12. The combined effect of low retention and increased training is to increase the estimated pilot shortfall by 100. Increased training offsets to some extent the small negative effects of reduced retention because it allows the service to gain



**Figure 12—Effect of Lower Retention and Increased Training**

<sup>7</sup>Our reasoning was that by the time the Air Force could recognize the lower retention rate and act on it, it would not be feasible to increase training by 100; hence we adopted the lower number for FY97.

back those lost through lower retention and, in addition, mitigates the bathtub problem as well because the pilots are distributed better in terms of required experience.

## Conclusions

No likely policy scenario affecting inventory alone will completely resolve the twin problems of overall shortage in the outyears and maldistribution of experience. Figure 13 summarizes our assessment of the base case and the five scenarios that we considered: Alternative 1 (low retention), Alternative 2 (high retention), Alternative 3 (increased UPT later), Alternative 4 (increased UPT earlier), and Alternative 5 (low retention/increased UPT earlier). The low retention scenario offers the worst-case scenario: The shortfall increases relative to the base case and the bathtub effect worsens. Increasing UPT earlier—the policy largely adopted by the Air Force in their current plans—offers the best solution: The shortfall declines and there is less mismatch between the required and actual experience profile. Increased retention has the biggest positive effect in reducing the magnitude of the expected shortage, but it does not significantly affect the bathtub and increases the overage in later years of service.

The Air Force will likely face overall shortfalls of pilots by FY02 and, perhaps more serious, a significant maldistribution of experience. Changing retention

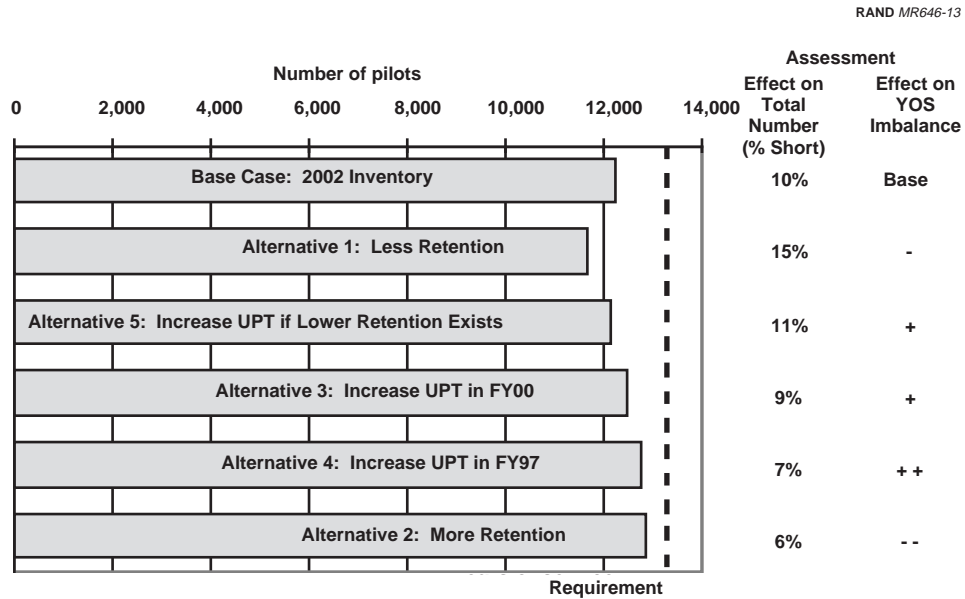


Figure 13—Assessment Summary

does not offer much promise for changing either of these two outcomes, but reducing requirements and increasing training do. Reducing requirements even beyond the current cuts planned by the Air Force, particularly in the staff category, is crucial to reducing future shortfalls and increasing UPT is fundamental to solving the bathtub problem. However, the Air Force needs to be able to absorb graduates of UPT in cockpits and operational units, and assignment policy is the key to increasing absorption. As such, a fundamental reexamination of assignment policy to accommodate these new goals seems warranted. Indeed, the Air Force is already doing this by moving away from the voluntary assignment system into one better suited to the needs of the service in terms of flows of individuals.<sup>8</sup>

However, a number of measures can be taken in the short term to minimize the effects of the bathtub and shortage problems. We list these below.

1. *Active-duty tours for certain ARC pilots* would directly increase active inventory. The Air Force is currently employing a policy similar to this in a modest way.<sup>9</sup>
2. *Reserve/civilian instructor pilot manning* would directly decrease active-duty pilot requirements, although questions of experience and training might arise.
3. *Changed assignment policy* would accelerate absorption of new pilots into units as more experienced pilots move into staff or other positions, opening up the cockpits to new pilots. This would increase inventory.
4. *First assignment instructor pilot (FAIP) manning* decreases MWS-qualified specific requirements because new pilots remain as instructors after finishing UPT to fill nonspecific MWS positions. In addition, this allows the FAIPs later to be absorbed into units more quickly because they have more flying hours. Throughout the 1980s, the Air Force employed this policy but then dropped it in favor of using more-experienced pilots as instructors. These pilots, it was felt, brought with them actual experience in operational units and were more strongly rooted in the service culture. However, resurrecting the FAIPs might be one way of decreasing requirements.
5. *Prioritizing assignments for fill* (as has been done historically) is yet another stopgap measure that could help reduce pilot requirements and, hence, expected shortages. Pilots could be used to fill the top-priority positions and

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<sup>8</sup>See Thie et al. (1994) for a more detailed discussion.

<sup>9</sup>The Air Force recently announced a voluntary pilot-recall program for 250 fighter pilots with recent active-duty or Air Reserve Component experience.



nonrated officers could be used to fill other positions or these positions could be left vacant.

In the next section, we discuss the second task of our overall project: an assessment of the adequacy of pilot flow to the reserves.