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Officer Street-to-Fleet Database: Expanding Capabilities

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Executive Summary

This annotated briefing is a follow-on study sponsored by N81. In the earlier study, the sponsor wanted to develop a database for officers to calculate time-to-train to first assignment (TTT) metrics for each officer community. The earlier study described how we merged Navy officer personnel files with the very detailed Navy training files to follow each officer from accession through all his/her early training to first assignment. The merged dataset became the initial Officer Street-to-Fleet (OSTF) database. For each officer, it reports courses taken, start and end dates of each course, course outcomes, and time-to-train before first assignment. It also covers such officer characteristics as race, gender, and accession source and records career events, such as pipeline completion, attrition, and lateral transfer.

The initial construction of the OSTF database covered the aviation, surface warfare, submarine, and supply corps communities for officers who began training between FY 1992 and FY 2001. We found that, in general, there was a decline in average TTT to first assignment for successive accession cohorts throughout the 1990s for officers who complete training. We also broke down average TTT into average time under instruction (UI), time not under instruction (NUI), and stash time. Changes in average NUI and stash time over the period were mixed.

In this study, we expand both the database and the metrics calculated from it. We calculate TTT metrics for pilots and naval flight officers (NFOs) by specific training pipeline, identify some areas of concern for NFO attrition, extend our TTT calculations to the large restricted line (RL) communities, and expand the database to include FY 2002 accession and training information.

We found that average TTT fell for all aviation training pipelines since the FY 1993 accession cohort but that attrition rose slightly for most pipelines over the same period. In particular, helicopter training attrition rose substantially for the FY 1996 and FY 1997 accession cohorts. We also found that the increase in NFO attrition for the FY 1997 and FY 1998 accession cohorts is related to an increase in the number of OCS accessions, historically an accession source with high attrition rates. Finally, we found recent decreases in average TTT in RL communities.

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This study is follow-on work to the *Officer Street-to-Fleet Database* (CNA Annotated Briefing D00006693.A2) and is sponsored by N81. The goal for this database is to be able to readily calculate a variety of metrics that will be useful to leadership in designing and evaluating officer personnel policies.

In our earlier study, we built a new database by merging officer personnel records with detailed training information from the Navy Integrated Training Resources Administration System (NITRAS II) database. The result, called the officer street-to-fleet (OSTF) database, included officers who accessed from FY 1993 to FY 2001. We calculated average time to train to first assignment (TTT) in several officer communities for those who completed training. We also broke down average TTT into time under instruction, time not under instruction, and time outside instruction (e.g., stashes). We found that average TTT in the aviation community decreased from 44 months to 38 months for the FY 1993 and FY 1997 accession cohorts. We also found that average TTT in the surface warfare, submarine, and supply communities decreased over the decade. We found mixed results on improvements in time not under instruction and time outside instruction for these latter three communities.

In this study, we expand the OSTF database to more communities and include another year of data. We also calculate some additional TTT metrics for the aviation community.

Expanding the OSTF Database Analysis: Task List

- Calculate average time to train to first assignment (TTT) in aviation community by platform
- Look for reasons why NFO attrition rose for the FY 1997 and FY 1998 cohorts
- Calculate average TTT for restricted line communities
- Update database with FY 2002 information

Our earlier study focused on calculating average TTT for the aviation, surface warfare, submarine, and supply corps communities. In this study, we extend our examination of the aviation community by calculating average TTT by type of platform. This allows us to see if all aviation training pipelines made similar improvements in average TTT. In the last study, we found that Naval Flight Officer (NFO) training attrition for the FY 1997 and 1998 accession cohorts was substantially higher than the two preceding years. Here we examine why that might have happened. We also expand the number of communities for which we provide average TTT calculations—namely, the larger restricted line (RL) communities. Finally, we update the database with FY 2002 information.

Summary Results

- Average TTT fell for all aviation training pipelines since FY 1993
- Attrition rose slightly for most aviation pipelines; helo attrition rose substantially for the FY 1996 and FY 1997 cohorts
- The increase in NFO attrition is related to an increase in the number of OCS accessions—historically an accession source with high attrition rates
- Average TTT in RL communities shows recent improvement
  - Early RL NITRAS data have limitations

We found that average TTT declined for accession cohorts after FY 1993 for three platforms—propeller (prop, or fixed wing), helicopter (helo), and jets—and for NFOs. However, this decline was accompanied by a slight increase in attrition during training for each of these platforms. In particular, we observed a noticeable increase in attrition fairly late in the helo pipeline for the FY 1996 and FY 1997 cohorts, which was sustained in FY 1998.

We examined the pattern of several variables that might be related to the attrition patterns for NFOs over the study period. In our last study, we saw an increase in NFO attrition for the FY 1997 and 1998 cohorts. We found a large increase in the number of NFO accessions in FY 1996, and found that the larger accession cohort size was sustained in FY 1997 and (to a lesser degree) in FY 1998. The increase in accession cohort size was primarily the result of increasing Officer Candidate School (OCS) accessions. Historically, NFOs who access through OCS have a higher training attrition rate than NFOs from other accession sources; the FY 1997 and FY 1998 cohorts were no exception, and this helped explain the overall increase in NFO training attrition.

As for the restricted line (RL) communities, both the intelligence and cryptology communities show very recent improvements in average TTT (for direct accessions into the community). Future data will show whether the improvements can be sustained. We have some concerns about the accuracy of the data in the early years of reporting, especially when we examined the average time under instruction, not under instruction, and outside instruction.

Expanding the OSTF Database Analysis: Task List

- Calculate TTT in aviation community by training pipeline
- Look for reasons why NFO attrition rose for the FY 1997 and FY 1998 cohorts
- Calculate TTT for restricted line communities

Note: Calculations include FY 2002 information

This section of the brief shows our calculations of average TTT in the aviation community by platform-specific training pipeline. We identify training pipelines by the reported courses taken and use the Fleet Replacement Squadron (FRS) information when necessary.*

Once the specific pipeline has been identified, we use the same methodology to compute average TTT as in our first study. That is, we measure aviation training time from the date that the officer was commissioned to the date that he/she starts the first sea tour as TTT (for laterals into the community, we use the date of their first aviation course rather than their commissioning date). We then average the training time of all officers who complete the pipeline.

It is important to study attrition from the pipelines as well because average TTT can only be calculated for officers who complete training. One issue is that any improvement in average time to train might have been accompanied by an increase in training attrition. Improvements in average time to train that are not accompanied by an increase in training attrition may signal real gains in pipeline efficiency. It is less clear what is driving improvements in average training times when they are accompanied by increases in attrition.

* The FRS is the last element of training before an aviator becomes fully qualified. The FRSs are pipeline specific.

How Did We Assign a Pipeline?

- Aviation courses were defined as one of four school types—preflight, primary, intermediate, and advanced
- Intermediate/advanced course titles determined the jet, prop, helo, and NFO pipelines

School Types	Associated Pipeline			
Preflight				
Primary				
Intermediate	Jet*	Prop	Helo	NFO
Advanced	Jet*	Prop	Helo	NFO

- When a student record indicated that no pipeline could be assigned or that multiple pipelines could be assigned, the FRS activity was used to assign the pipeline

*Includes E2/C2 pipeline

The first step in calculating TTT to first assignment by platform is to identify which variables in the database can help define a training pipeline. All aviation trainees must take Aviation Preflight Indoctrination (API) and primary flight training (we refer to these two courses combined as basic training). When trainees are in basic training, it is impossible to tell in which aircraft they will be trained. Although NFOs and pilots have different designators upon accession, there is still some movement between these communities after commissioning but before intermediate course work begins. For this section of the brief, we identify NFOs by their intermediate/advanced coursework (or FRS, if necessary) rather than strictly by their designator. Thus, if an aviator attrites before beginning an intermediate course, he/she is considered a general aviation attrite (or a "basic" attrite).

In general, we use the intermediate and advanced classes to determine the trainee's pipeline. If the aviator never reached full duty, we used his/her intermediate or advanced courses to determine the pipeline to which he/she belonged. However, the data have limitations. Not all the records on the NITRAS file were complete. Also, some records indicated that trainees might belong to multiple pipelines (e.g., they had an intermediate class in one platform and an advanced class in another platform). When we found aviators who reached full duty but had no reported intermediate/advanced courses or had reported intermediate and advanced courses in different pipelines, we used the FRS to which the aviator belonged to determine the pipeline.

Sample School Breakdown

Jet	Prop	Helo	NFO
T45 Strike	Intermediate Maritime	Intermediate Helo	Advanced Navigator
T45C Strike	T44 Advanced Multi Engine	Advanced Helo	Intermediate NFO
Advanced T45 Strike	Fixed Wing Transition		Advanced NFO
Intermediate Strike	USAF Turbo Prop		Advanced NFO S/F core
Advanced Strike			RIO NFO
Intermediate E2/C2			TN NFO
Advanced E2/C2			

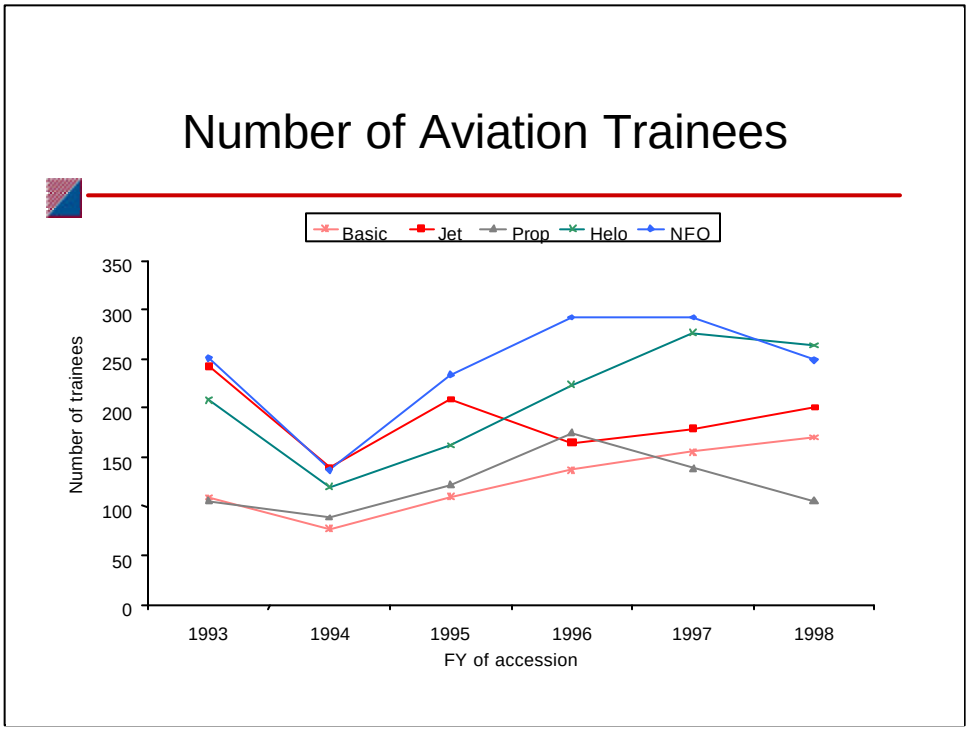
This slide gives a more detailed description of intermediate/advanced pipelines for the four different platforms/designators. Note that E2/C2 pilots are grouped with pilots from other strike aircraft. After completing basic training, aviators take at least one intermediate and one advanced class in a pipeline.

Sample Record for an Aviator Assigned to a Pipeline by FRS

- This is an actual record for an aviator who took courses in multiple pipelines

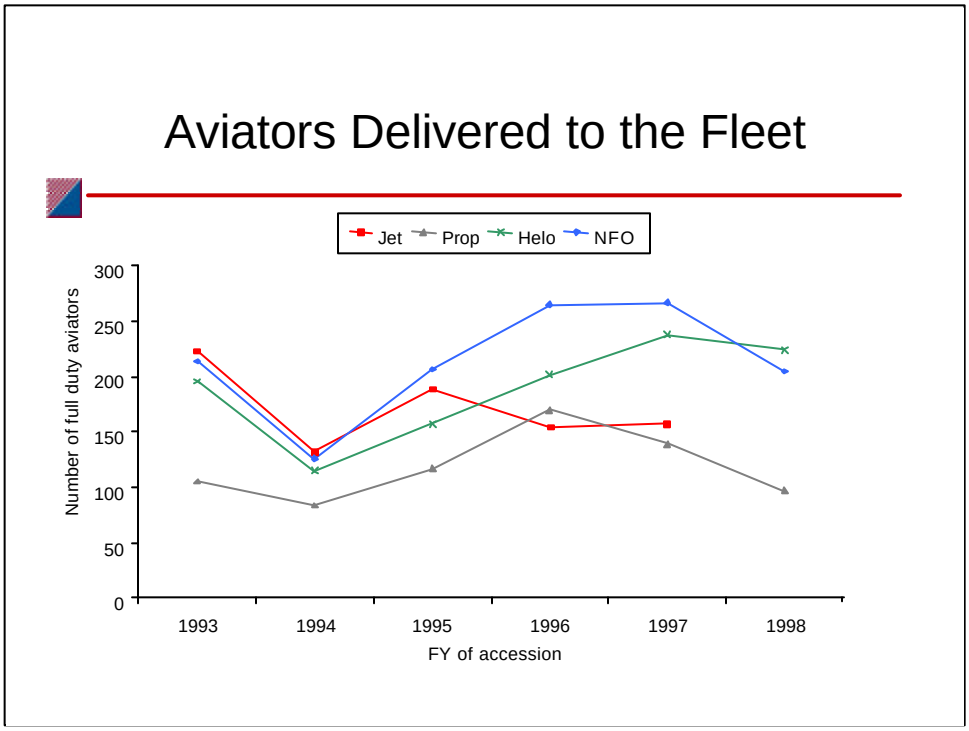
Course Title	School Type	Pipeline	FRS Activity
Q 2A0001 PRIMARY FLT TRNG V1	Primary		SC/C VP 30
Q 2A0013 INTER HELO V4	Intermediate	Helo	SC/C VP 30
Q 2A0053 T-44 ADV MULTIE V2	Advanced	Prop	SC/C VP 30

Here we show an example of a record that indicates multiple pipelines. This trainee attended an intermediate helicopter course but an advanced prop course. We used the FRS to assign this student to the correct pipeline: VP 30 is one of the FRSs that provides the final phase of prop pilot training.



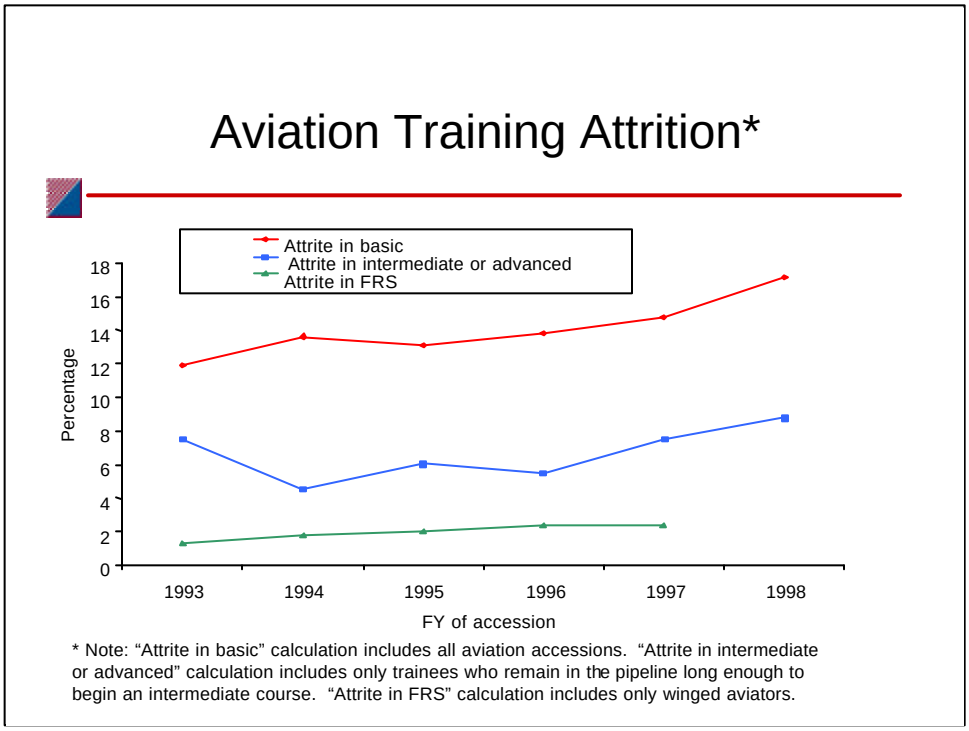
To illustrate the magnitude of early aviation training, we show the number of aviation trainees by pipeline. The trainees are classified into basic (preflight or primary) status or into a particular pipeline. Aviators classified into a pipeline have made it to intermediate/advanced courses and include those in an FRS. This graph includes trainees who did not reach full duty as an aviator.

The significant decline in the number of aviation trainees in FY 1994 is related to the overall drawdown of Navy personnel. The number of NFO and helo trainees increased steadily from 1994 so that by FY 1997 the numbers of NFO and helo trainees had increased substantially. By contrast, the numbers of prop and jet trainees showed less of a trend; the numbers have fluctuated since FY 1994, but by 1997 they were not very different from their 1994 levels. Changes in the size of pipeline training typically reflect changing mission requirements.



This slide shows the number of aviators who were delivered to the fleet from each fiscal-year accession cohort. This metric corresponds to some of the Naval Aviation Production Process Improvement (NAPPI) metrics. The number of helo pilots and NFOs reaching the fleet increased substantially after FY 1994; the number of prop pilots delivered to the fleet peaked in FY 1996 and then decreased steadily to FY 1998. These pilot production changes reflect changing mission needs. The number of jet pilots delivered to the fleet varied over the years since FY 1994 but did not display a discernible trend.

These data do not explicitly account for changes in the size of the accession cohort or for training attrition. The next few slides show the attrition rates (or training losses) for these accession cohorts.



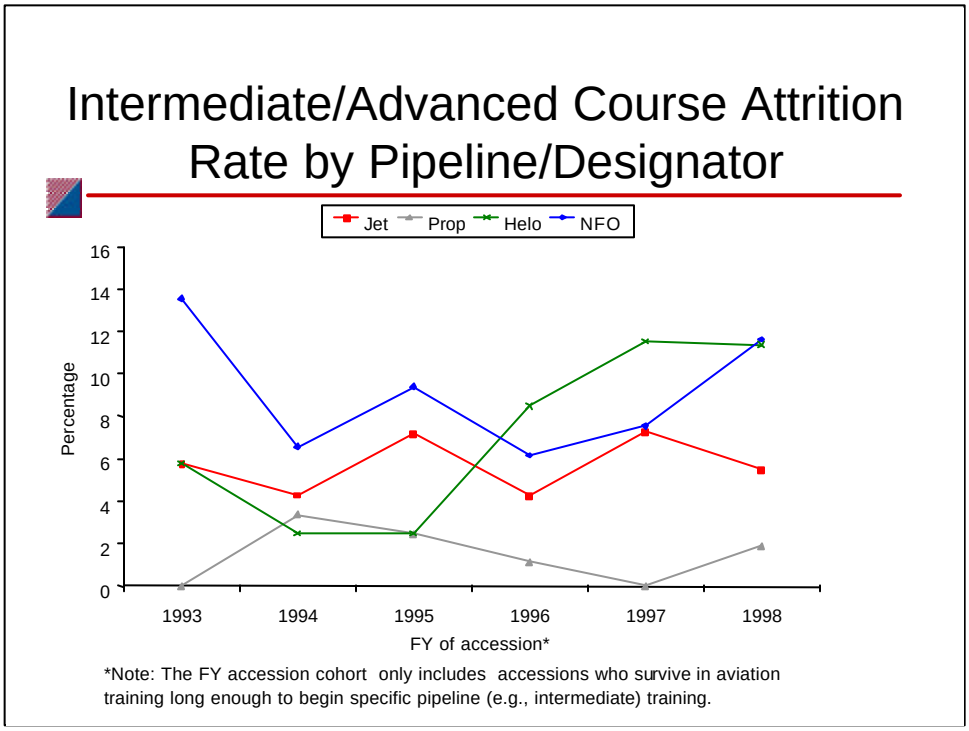
To have a complete picture of aviation time to train, we need to examine attrition from basic, intermediate or advanced courses, and the FRS for all pipelines. These data are organized by fiscal-year accession cohort.

One important change over the decade is the increase in attrition from basic and from intermediate or advanced courses for the FY 1997 and FY 1998 cohorts. The rate of attrition from basic (measured for aviation accessions) was relatively stable for the FY 1994-96 cohorts at 13.0 to 13.5 percent, but it increased substantially for the FY 1998 cohort to 17.1 percent.*

Similarly, the attrition rate from intermediate and advanced courses (measured for those who begin an intermediate course) was roughly constant for the FY 1994-96 cohorts at 5.5 to 6 percent, but the rate increased to 8.8 percent for the FY 1998 cohort. By contrast, the attrition rate from the FRS (measured for winged aviators) has been relatively stable for the FY 1994-98 accession cohorts, rising only slightly from about 1.7 percent to 2.4 percent.

The basic and intermediate/advanced attrition rates taken together for FY 1997 and FY 1998 could indicate a problem. An increase in basic attrition by itself might be less worrisome because it could reflect earlier identification of students unlikely to complete training. However, when it is coupled with a rise in intermediate/advanced attrition, it suggests that no such attrition re-timing occurred. To know if a trend is forming, these attrition rates must be monitored carefully in the future. Next, we look at attrition rates by pipeline to learn if these patterns hold for all pipelines.

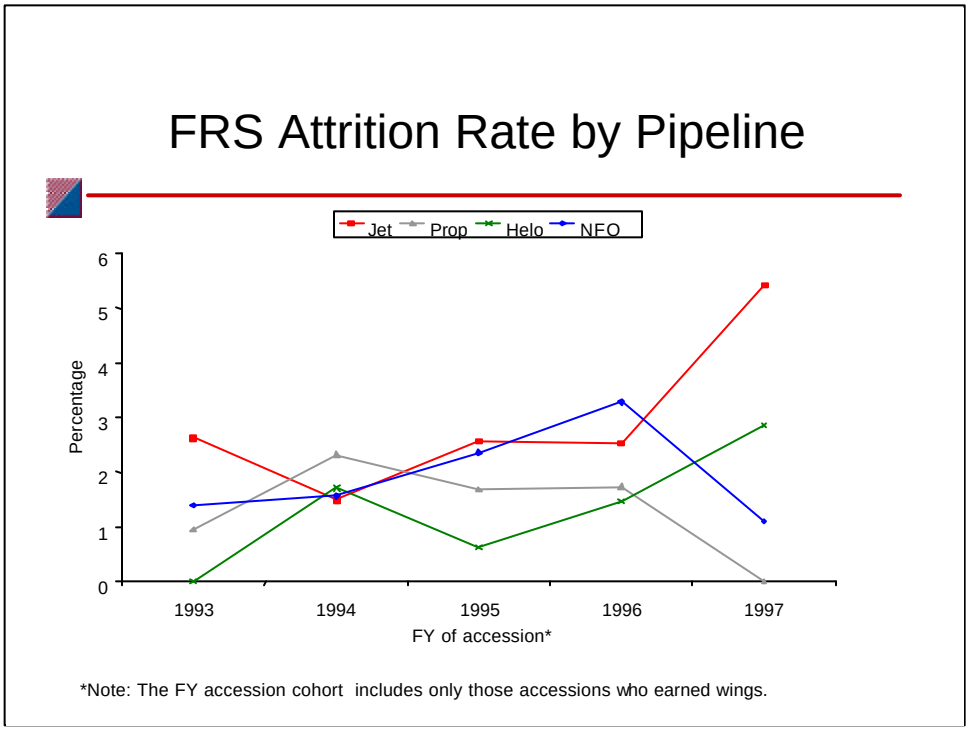
*Later in the brief, we focus on aviation trainees who have the NFO designator at commissioning.



To calculate intermediate/advanced course attrition rates, we include only officers for whom we observe at least one intermediate class. These data do not capture attrition that occurred in basic.

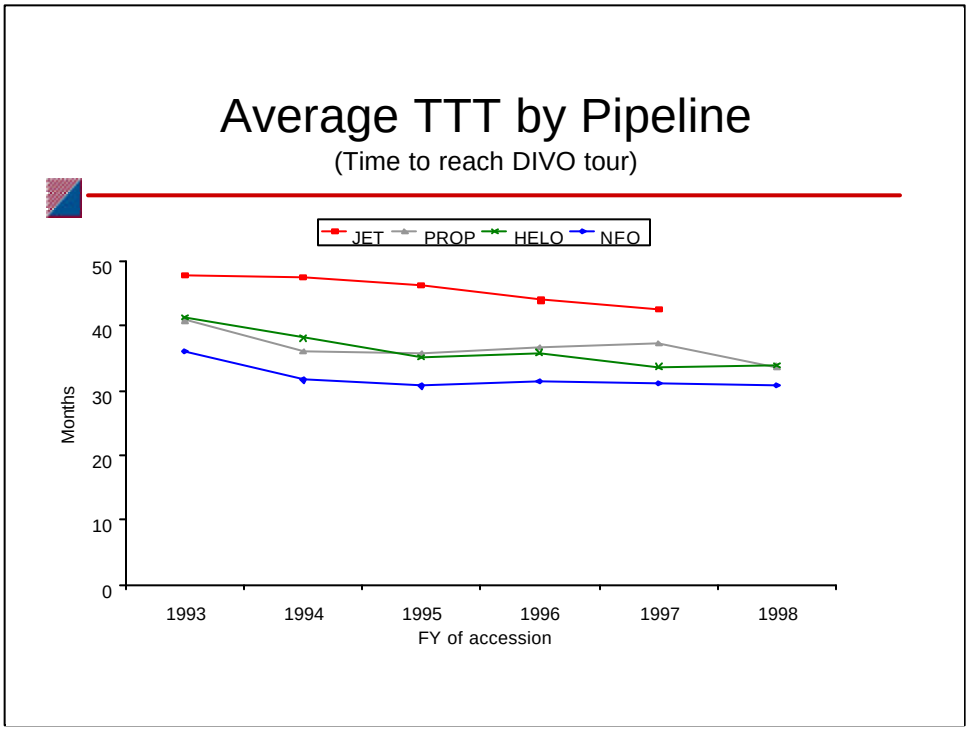
Platform-specific pipeline attrition rates in intermediate/advanced courses vary substantially, but only the helo pipeline displays a discernible (upward) trend over the FY 1993-98 study period. However, for the more recent accession cohorts in the study period, the graph shows that increases in the jet, helo, and NFO attrition rates explain the rise in overall aviation attrition in the previous chart. NFO attrition is the main driver of the increase in the overall rates for the FY 1998 cohort, with prop students contributing to the increase to a lesser degree.

The loss rate for trainees in the helo pipeline displayed a significant increase beginning with the FY 1996 cohort. (The overall FY 1996 aviation attrition rate remained relatively stable because the other pipeline/platform rates declined slightly to offset the helo increase.) The rate for the FY 1995 cohort is about 2.5 percent, but it jumps to about 8.5 percent for the FY 1996 cohort and to about 11.5 percent for the FY 1997 cohort. Resource limitations did not allow us to explore the reason for this increase, but it could be related to how the increase in helo pilot trainees was achieved (e.g., possible changes in recruiting practices), a change in policy at training commands, or perhaps inclusion of additional training that was particularly challenging.



As the graph shows, attrition rates from the FRS (measured for winged aviators) tend to be fairly small regardless of pipeline. The FRS attrition rates typically fall between 1 and 3 percent. There does not appear to be a discernible pattern for these attrition rates over the whole FY 1993-98 study period (e.g., more than two years of successive increases or decreases).

However, the jet FRSs show an unusually high attrition rate for the FY 1997 cohort. To put this in perspective, for FY 1991-94 accession cohorts (FY 1991-92 are not shown on the graph), about 135 to 230 aviators earned wings in jets. In those years, between 2 and 6 winged jet pilots attrited from the FRS, which produced attrition rates for those years of 1.5 to 2.5 percent. The FY 1997 cohort had 166 winged jet pilots but 9 FRS losses to produce a 5.5-percent loss rate. It is not clear why this sudden increase in the jet FRS attrition rate occurred and whether it indicates a trend. Not all members of the FY 1998 cohort who winged in jets have completed or attrited from the FRS. Because the FRS attrition rates are sensitive to a change of even one attrite, we show only cohorts for which we can observe either completion of or attrition from the jet FRS for all winged aviators.



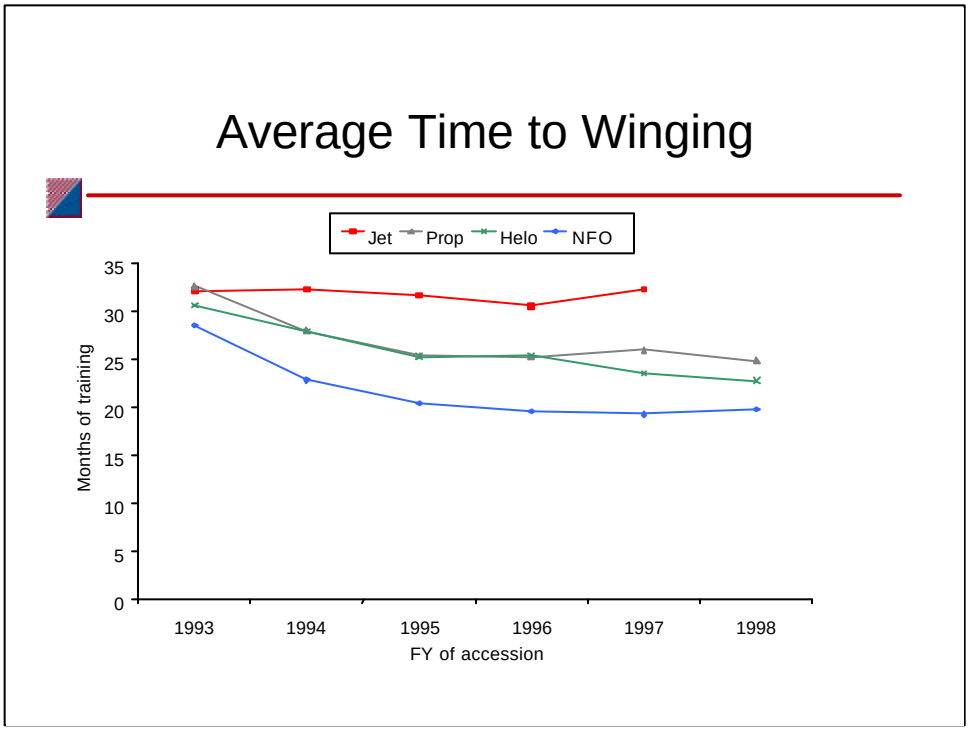
The previous slides reviewed the size of accession cohorts and the attrition rates from the aviation pipelines. This slide and the next few compare average training time by pipeline.* The data include only members of each cohort who complete training. We use average time to train to the division officer (DIVO) tour as a key metric. We also break out TTT to DIVO tour by average time to winging and average time from winging to DIVO tour.

For direct aviation accessions, the start date of training is the date the officer is commissioned. This allows "stash" and other nontraining pipeline time to be included in the measure of how long it takes to deliver a fully trained aviator to the fleet. For laterals into aviation, the start date of training is the date that their preflight course began. We use the date of the first operational tour as the DIVO tour start date.

The graph shows promising and sustained declines in average TTT for jet and helo pilots since the FY 1993 cohorts. The NFO pipeline shows an initial decline in average TTT from the FY 1993 cohort to the FY 1994 cohort (from 36.1 to 30.6 months), but it has remained relatively stable—30.5 to 31.5 months—ever since. In slides 24 and 25, we show that as a percentage of the NFOs reaching the fleet, there was a shift away from VP squadrons to other squadrons over the study period. VP squadrons have typically had the shortest training pipeline, so there has been a movement toward longer NFO pipeline times regardless of changes in the pipeline efficiency.

Average TTT for the prop pilots also shows an initial decline from the FY 1993 cohort to the FY 1994 cohort (from 40.9 to 36.1 months), but average TTT actually rises slightly to 37.2 months in FY 1997 before dropping to 33.8 months for the FY 1998 cohort.

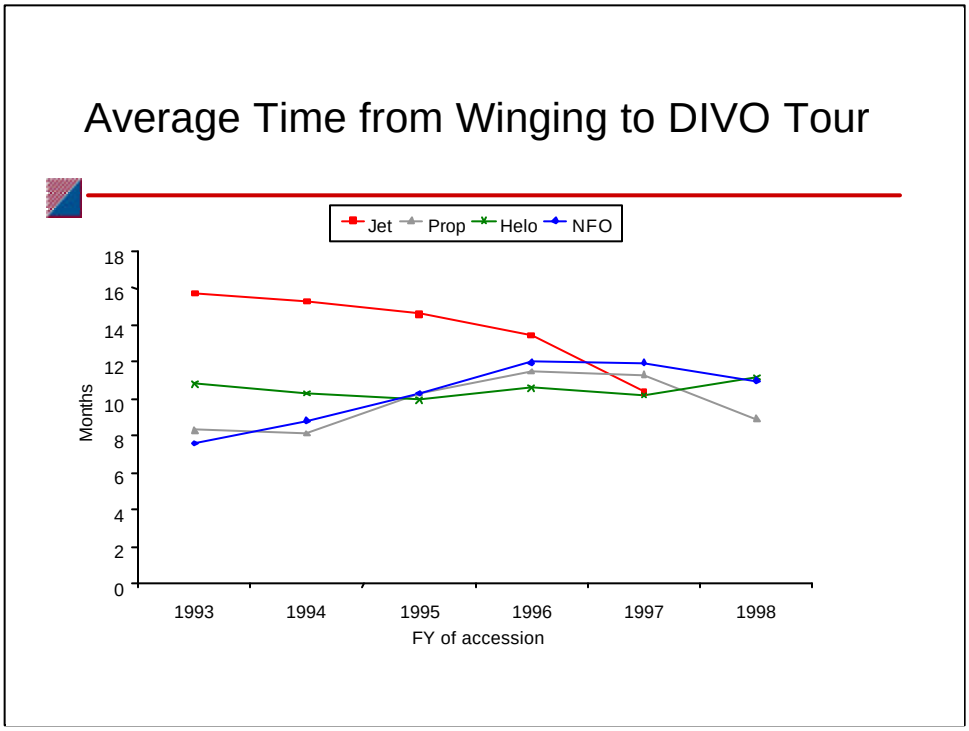
* Slide 42 shows the complete distribution for the FY 1993 and FY1997 accession cohorts.



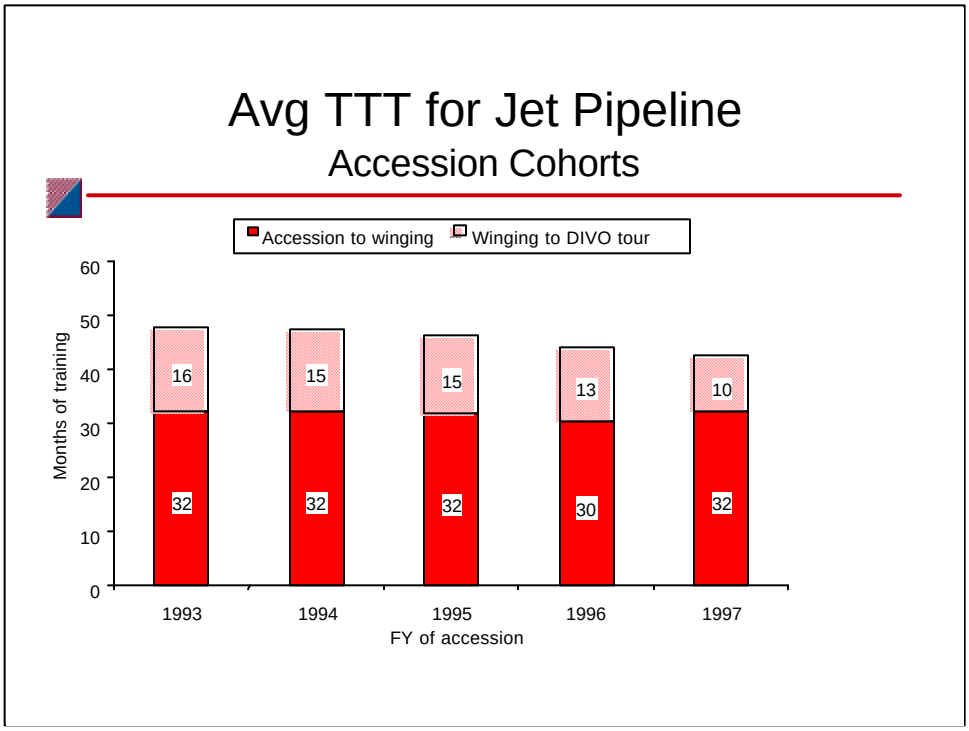
We break down average TTT to the DIVO tour into the average time to winging and the average time from winging to the DIVO tour. In this slide, we present average time to winging by pipeline/designator. The "winging date" is the date that the last advanced course was completed.

As the graph indicates, average time to winging for those who complete training declined steadily over the decade for all pipelines except jets. The NFO average time to wing fell substantially from 28.5 months to 19.8 months from FY 1993 to FY 1998. The helo and prop average time to winging also improved. Over the FY 1993-98 period, average time to winging for helo pilots declined from 30.6 months to 22.7 months and for prop pilots from 28.5 months to 19.8 months.

For jet pilots, average time to winging fell from approximately 32.5 months for the FY 93 accession cohort to approximately 30.5 months for the FY 96 cohort, but then increased back to 32.3 months for the FY 1997 cohort. Future data will indicate if an upward trend is developing.



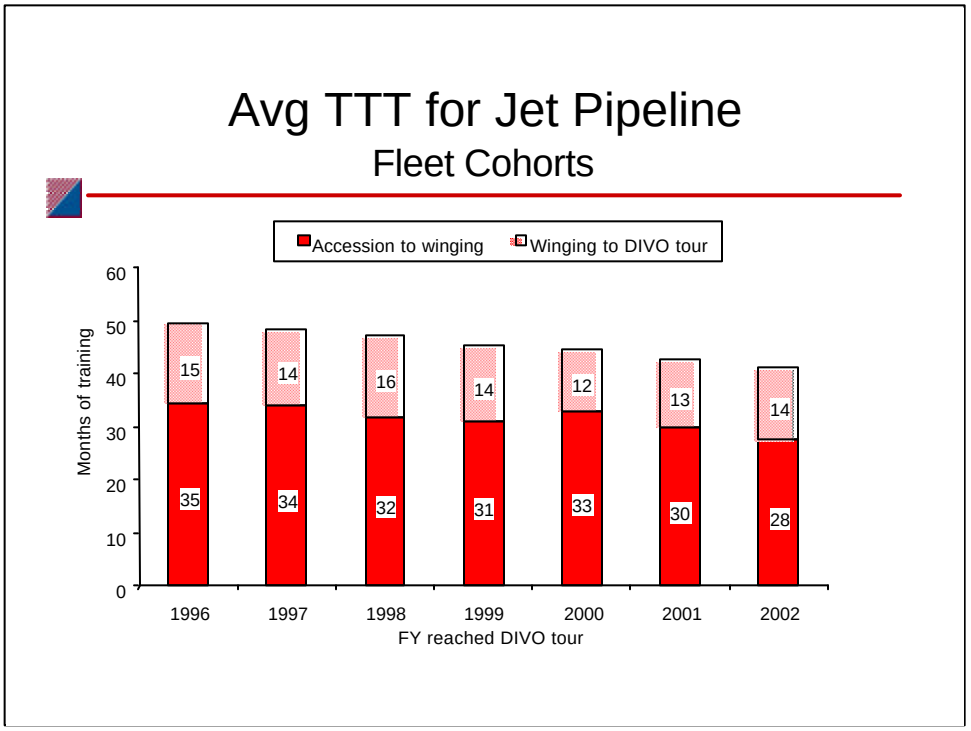
The average time from winging to the first DIVO tour (essentially, the time spent in the FRS) rose for the NFOs and for the prop pipeline pilots. One possible explanation is that post-winging training became more complex over the time period. Although there was an increase in the average FRS time for prop pilots, the results for the FY 1998 accession cohort suggest that the increase for this pipeline may be starting to reverse. In addition, average time in the FRS for jet pilots has fallen substantially over the period. In particular, there was a large drop in average time from winging to the DIVO tour for the FY 1997 accession cohort (from 13.5 months to 10.4 months). It is too early to say whether that drop can be sustained, but preliminary data for the FY 1998 jet pilot cohort that the average time from winging to DIVO tour could exceed 12.5 months. Thus, indications are that the very low FY 1997 average may be temporary.



This slide introduces a series of displays of the time-to-train data for each pipeline separately. These slides are especially useful for examining a possible relationship between changes in training times and the implementation of NAPPI policies. Here we show average TTT (rounded to the nearest month) for jet pilots by fiscal year of accession. TTT has declined steadily for jet pilots. Those who were commissioned in FY 1993 took an average of 48 months to reach DIVO tours as fully trained aviators, whereas those who were commissioned in FY 1997 took only 42 months. For jet pilots, the overall decrease in average TTT to the DIVO tour is largely explained by a decrease in the average time in the FRS—from 16 months for the FY 1993 cohort to 10 months for the FY 1997 cohort. Average time to winging has remained stable throughout the period at 32 months (30 months for the FY 1996 cohort.)

The decline in average TTT to the DIVO tour is consistent with the timeframe when NAPPI policies were being more fully implemented. The earliest NAPPI policies began development and implementation in 1998, but some of the policies were more fully developed and implemented through 2001. Thus, earlier cohorts—from 1993 to 1995—may not have been exposed to the policies, but later cohorts would have been.

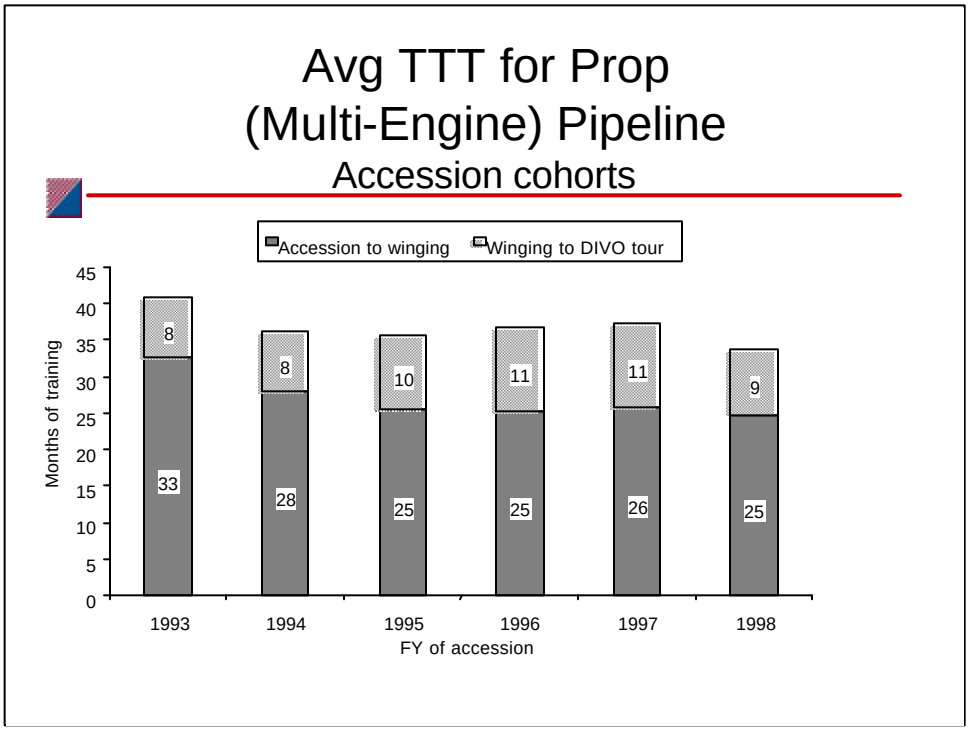
Another possibility is that over the drawdown period, there was a shift in the type of jet aircraft flown away from those with larger average FRS times to those with smaller average FRS times. Without further scrutiny, however, we cannot say precisely what drove the decline in the average TTT.



This slide is similar to the preceding slide for jet pilots; however, here we calculate average time to train to DIVO tour (broken out by average time to winging and average time from winging to DIVO tour) *by the year that the pilot reached the fleet.* This allows us to use the most recent data available to help determine the latest trends in the efficacy of jet training.* The graph shows a steady downward trend in average training time—from 50 months for jet pilots who reached the fleet in FY 1996 to 43 months for those who reached in the fleet in FY 2002, a 14-percent decrease.

An interesting difference in TTT calculations appears when viewing the data by fleet cohorts (defined by reaching the fleet in the same year) rather than by accession cohorts. The more recent data suggest a decline in the average TTT for very recent fleet cohorts which is driven entirely by decreases in average time to winging. It suggests that, in the next few years when the data are available, we might see a decrease in the average time to winging for accession cohorts in FY 1998 and after.

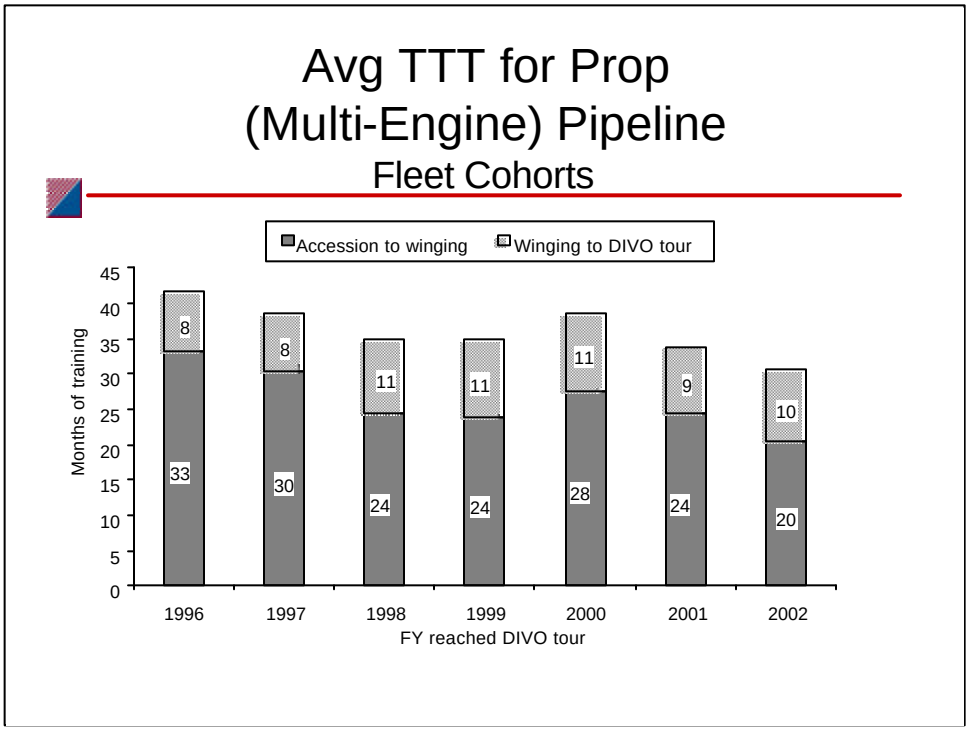
*There are tradeoffs in using accession cohorts or fleet cohorts to measure average TTT. Using accession cohort data allows us to measure attrition from the pipeline more easily but at the expense of having to exclude the most recent accession data. Using fleet cohort data allows us to display the most recent data available but cannot be used to measure attrition from the pipeline.



Average TTT to the DIVO tour for the prop pilots by accession cohort shows a decrease early in the study period studied but mixed results after that. One positive note is that data from the most recent accession cohort for which we can observe either completion or attrition from the pipeline (FY 1998) suggest improvement in both average time to winging and average time from winging to the DIVO tour.

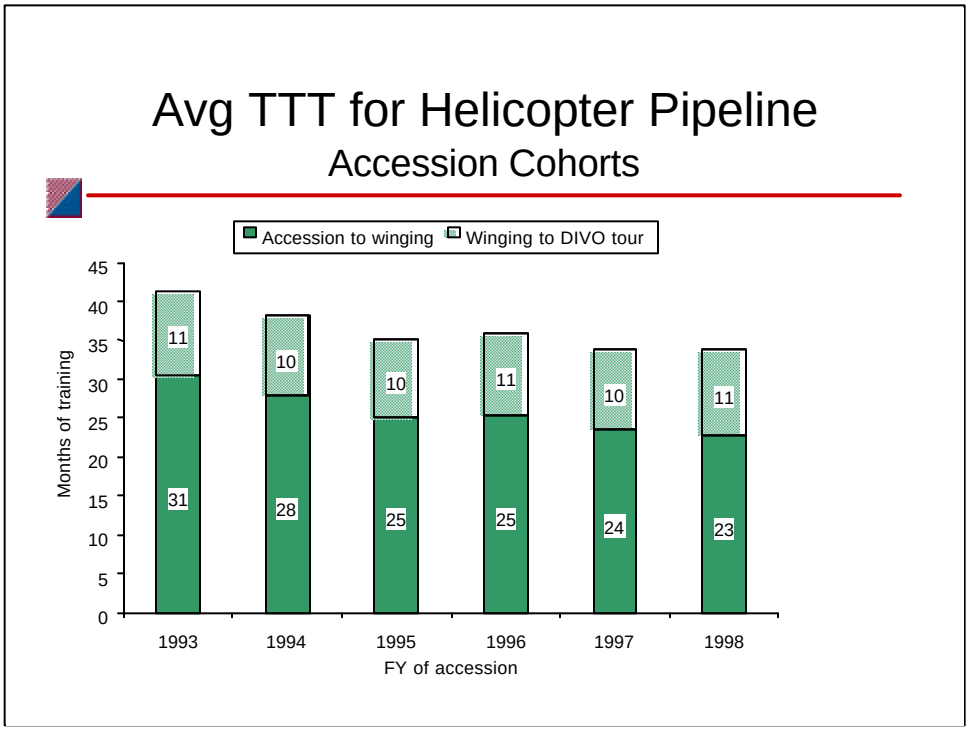
Much of the improvement in average time to winging for the prop pilots occurred early in the period, with a decrease from 33 months for the FY 1993 accession cohort to 28 months for the FY 1994 accession cohort. There was another significant drop for the FY 1995 accession cohort to 25 months. Since then, average time to winging has been essentially flat.

Average time from winging to the DIVO tour actually increased substantially over the FY 1993-97 period from 8 months to 11 months, although the FY 1998 cohort shows a significant decline to 9 months in the FRS. When the data are calculated for fiscal year accession cohorts, it is not clear if NAPPI and other initiatives to improve efficiency have affected the prop pipeline. Significant downsizing and reorganization of the prop community took place during the early and mid 1990s, and, in the short run, this may have affected the training pipeline in ways that lengthened the average time.

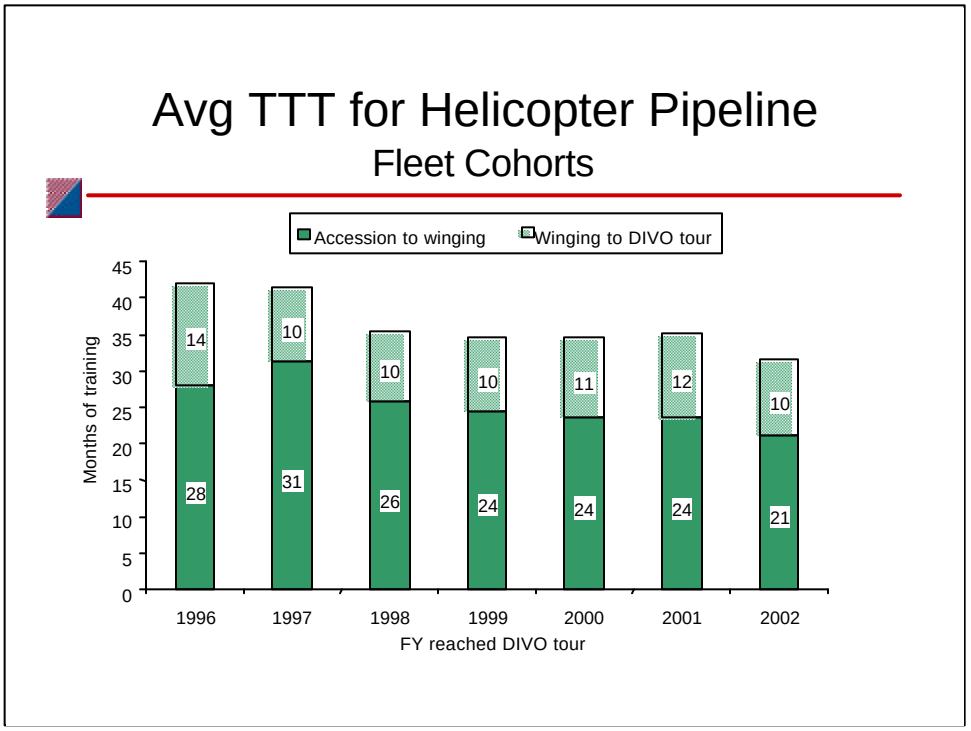


When we calculate TTT to the DIVO tour for fleet cohorts, we see more consistency with changes in the average TTT and the adoption of NAPPI and other training policies. Note, however, that there were average TTT improvements that preceded the more recent training policy changes. The graph shows that overall average TTT has dropped from 41 months to 30 months from the FY 1993 fleet cohort to the FY 1998 fleet cohort, all of which came from improvements in the average time to winging. Average time to winging fell over the period from 33 months to 20 months, a drop of nearly 40 percent. Moreover, a significant drop occurred from the FY 2000 to the FY 2002 fleet cohort—from 28 months to 20 months—at a time consistent with NAPPI policies taking effect. Without further analysis, however, we cannot say to what extent the NAPPI policies were responsible for the decline.

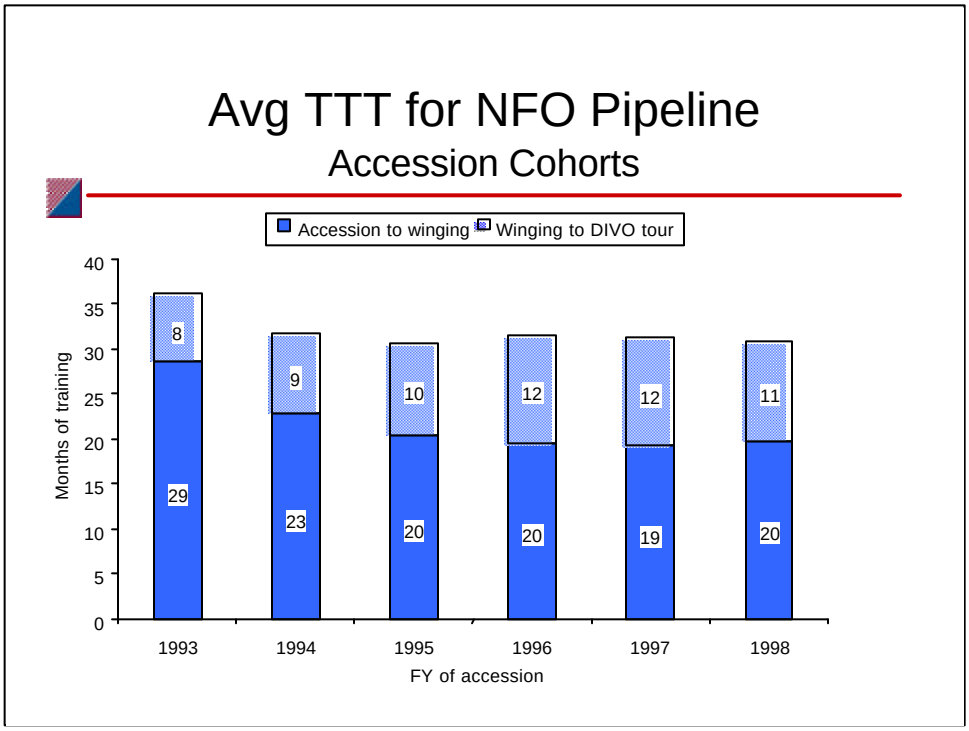
Note that average time in the FRS rose substantially over the period, but the improvements in average time to winging offset increases in average time in the FRS.



Average TTT to the DIVO tour for helo pilots fell steadily from FY 1993 to FY 1998 measured for accession cohorts. As with other platforms, the improvement is driven by decreases in average time to winging. The data on average time to winging for helo pilots show an interesting trend; there were relatively large improvements early in the time period (31 to 25 months for the FY 1993 to FY 1995 cohorts), but there were additional smaller, steady improvements in years following FY 1995. The most recent improvement is consistent with NAPPI policies. They also coincide with increased attrition from the helo pipeline. Average time in the FRS for helo pilots was essentially constant over the time period.



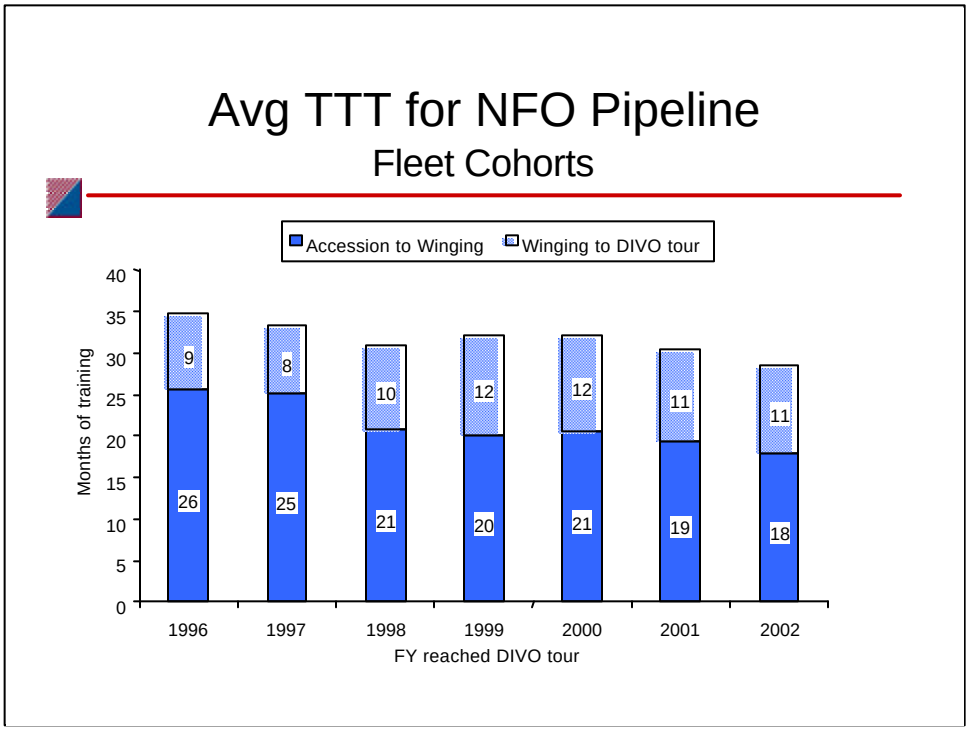
When average TTT to the DIVO tour is calculated for helo pilots who reached the fleet in the same year, a slightly different pattern emerges. Overall, there has been a decline in average time to reach the fleet from 42 months for the FY 1996 fleet cohort to 31 months for the FY 2002 fleet cohort. We see a significant drop in average time to winging—from 31 months to 26 months—for the FY 1997 to FY 1998 fleet cohorts. We observe another decrease in average time to winging for the FY 2002 cohort that is consistent with the implementation of NAPPI policies. Average time in the FRS for helo pilots shows a slightly less stable pattern over time when measured by fleet cohorts rather than accession cohorts, but there has been no discernible trend from the FY 1998 to the FY 2002 fleet cohorts.



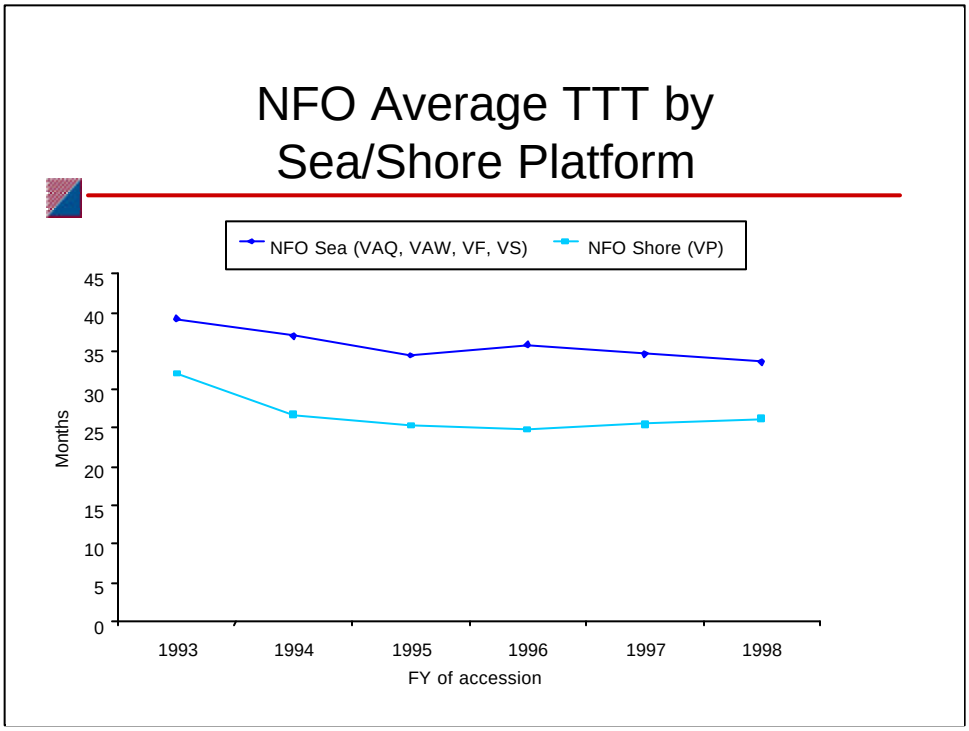
Average TTT to the DIVO tour for NFOs shows a pattern similar to that of prop pilots in that there was a decline early in the time period due entirely to improvements in average time to winging. Overall, however, average TTT to the DIVO tour has been essentially flat since the FY 1994 accession cohort.* From FY 1993 to FY 1994, average time to winging fell from 29 to 23 months, a decrease of over 20 percent. This was followed by another decline to 20 months, but, since the FY 1996 accession cohort, average time to winging has been flat. Average time in the FRS actually rose throughout the period.

There appears to be less consistency with NAPPI initiatives for the NFO community than for the pilot communities, but, without further analysis, it is difficult to know what impact NAPPI has had on NFO training times.

*Slides 24 and 25 show some additional information on average TTT by squadron type and on the change in the percentage of squadron types that were trained over the period.

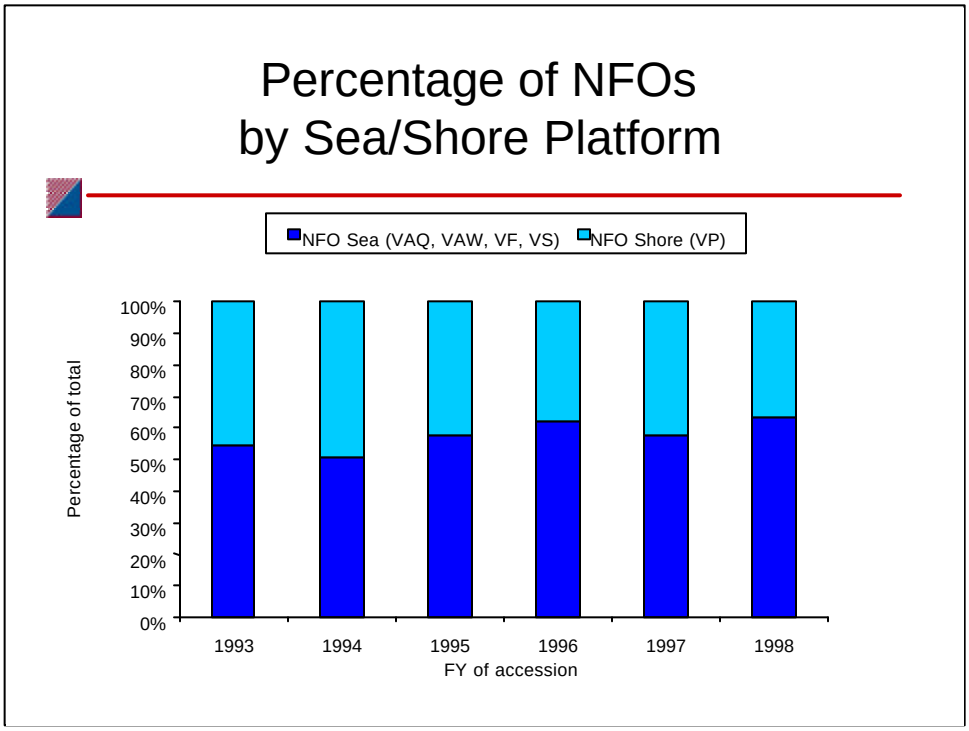


Average TTT to the DIVO tour for NFOs shows a different pattern when the data are organized by fleet cohorts rather than by accession cohorts. Here we see a more distinct downward trend in TTT, and, like many of the pilot communities, the improvement comes from decreases in average time to winging. When the most recent data are used, we see more consistency with the adoption of NAPPI initiatives.



This slide illustrates changes in average TTT for NFOs in sea- and shore-based squadrons over the study period. For sea squadrons (VAQ, VAW, VF, and VS), average TTT for accession cohorts fell rather steadily over the study period—from just over 39 months for the FY 1993 cohort to about 33.5 months for the FY 1998 cohort, a 14-percent decline. For the shore squadrons (VP), average TTT also declined over the period but nearly all of the decline occurred between the FY 1993 and FY 1994 cohorts—from just over 32 months to about 26 months, a decline of about 18 percent.*

* Backup slide 44 shows data on NFOs by squadron type (i.e., we show average TTT to DIVO tour for VAQ, VAW, VF, VP, and VS separately).



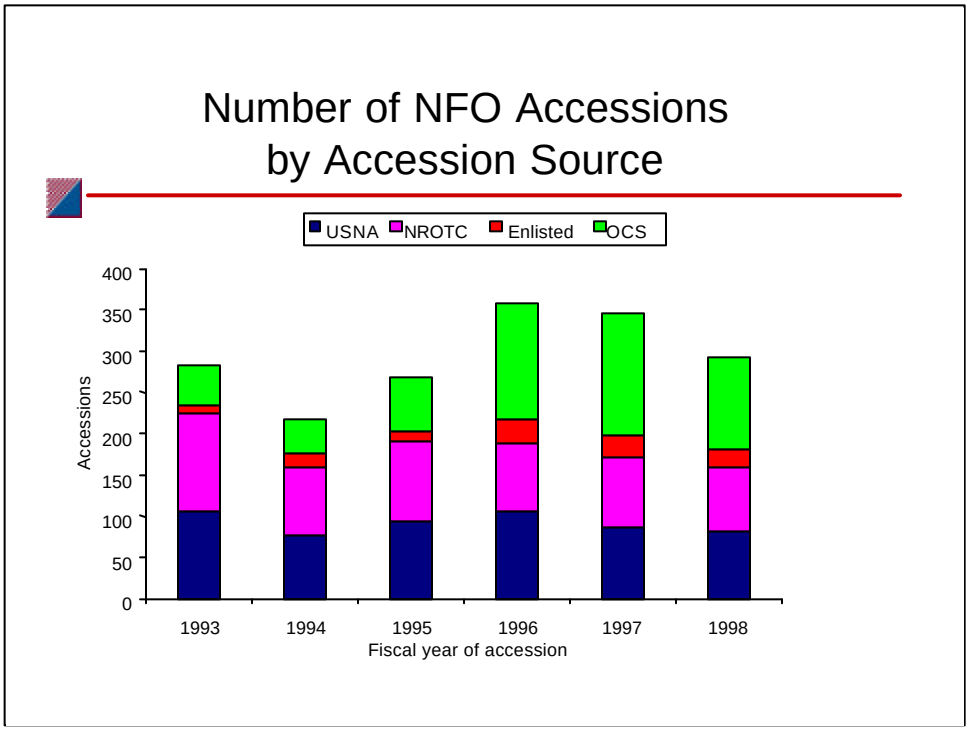
We were interested in whether there was a shift in the type of NFO trained over the course of the study period. Perhaps the most important feature is that the percentage of NFOs trained in the squadron type with the shortest training pipeline—VP—declines over the period. From FY 1993 to FY 1998, the percentage of NFOs who complete training in the VP platforms fell from over 45 percent to about 36 percent. This suggests that, even if there are improvements in average TTT in the other squadron types, they are likely to be offset by the shift in NFO training to longer pipelines.

Expanding the OSTF Database Analysis: Task List

- Calculate time to train to first assignment (TTT) in aviation community by platform
- ➢ Look for reasons why NFO attrition rose for the FY 1997 and FY 1998 cohorts
- Calculate TTT for restricted line communities

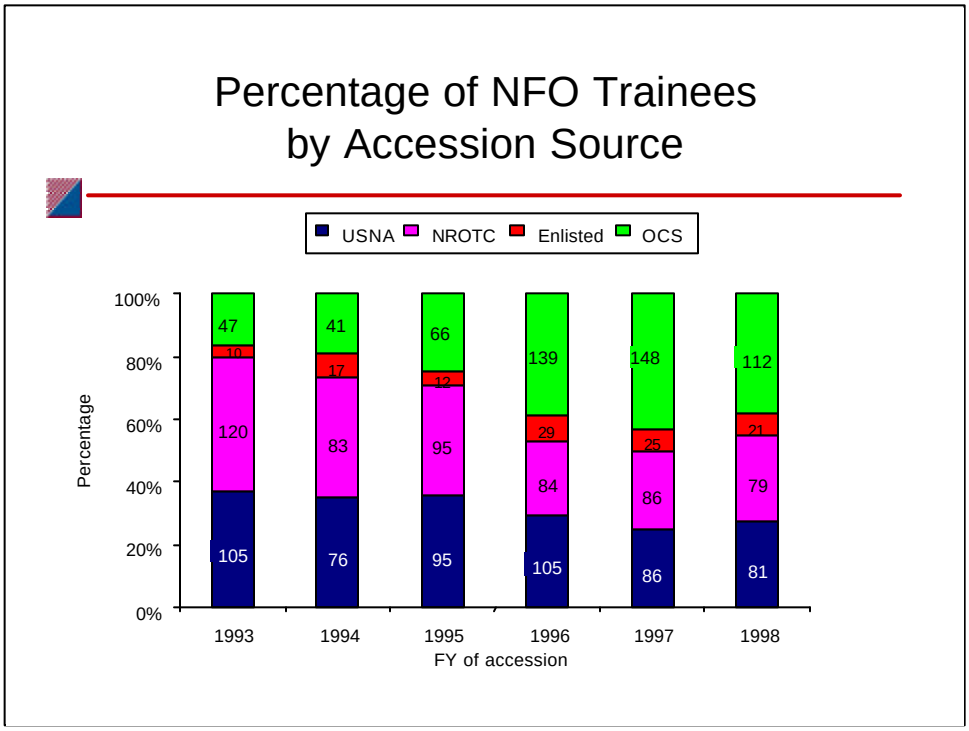
Note: Calculations include FY 2002 information

In the initial officer street-to-fleet study, we showed that NFO attrition increased substantially for the FY 1997 and FY 1998 accession cohorts. In this section of the brief, we examine changes of certain attributes of NFO accessions to see whether they correspond to changes in the attrition rates. In this analysis, we define NFOs as those who access into the aviation community with the NFO designator.

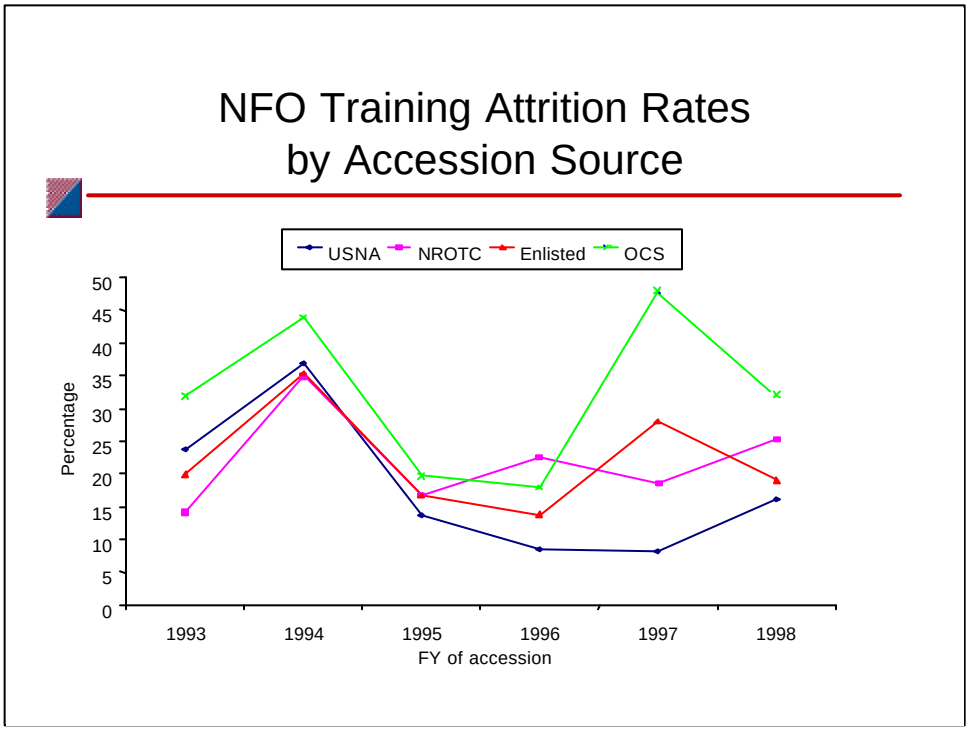


We looked first at accession source to explore whether it had some relationship to the attrition rate. This slide shows the number of NFOs who accessed through the various accession sources---the United States Naval Academy (USNA), the Naval Reserve Officer Training Corps (NROTC), various enlisted-to-officer programs (Enlisted) and officer candidate school (OCS). The graph clearly shows that the number of accessions through OCS is by far the most variable over the time period. To put this in perspective, the number of NFOs who accessed from USNA range from 76 in FY 1994 to 105 in FY 1993 and FY 1996. The low and high NFO accessions for NROTC are 79 and 120, and most years have between 85 and 95 NROTC accessions. By contrast, the smallest and largest NFO OCS accession cohorts are 41 and 148. The two largest accession cohorts from OCS are 139 and 148 for FY 1997 and FY 1998, respectively.

OCS is expected to have more variation over time because it is used as a "valve" for officer accessions. The number of USNA and NROTC aviation accessions is known with some accuracy as many as 4 years before officer commissioning. By contrast, the OCS accession mission can change each year rather quickly depending on unexpected changes in the number of accessions from the other sources and changes in fleet needs.



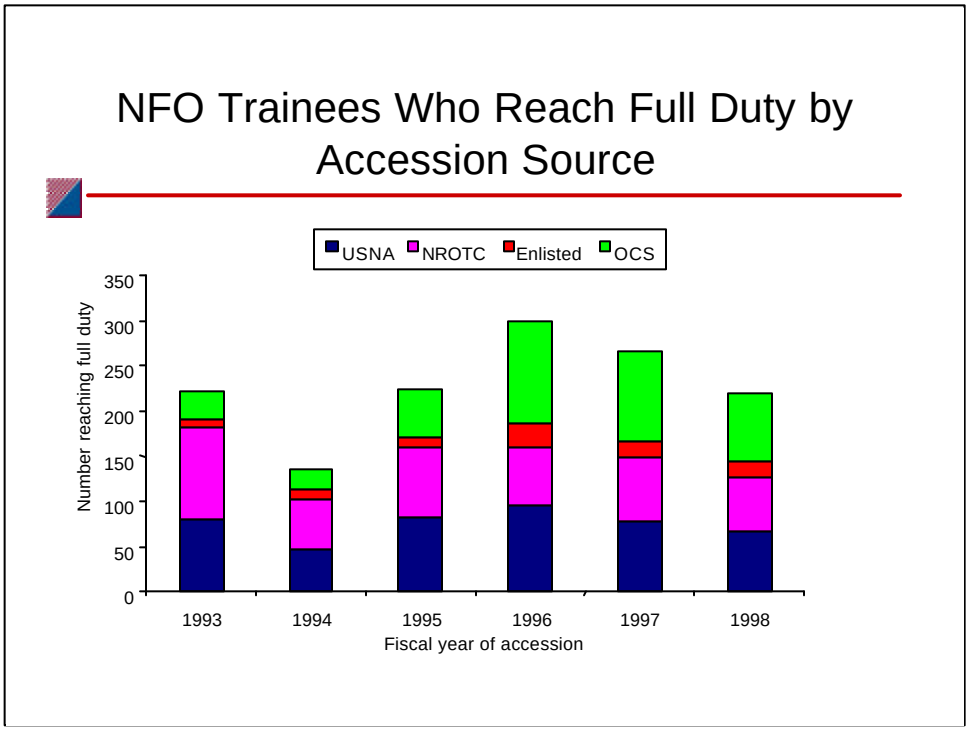
This slide shows the percentage of each accession cohort coming from each source. In FY 1993, almost 43 percent of all NFO accessions came through NROTC, 37 percent from USNA, and only 17 percent from OCS. By FY 1996-97, about 50 percent of the accession cohort came through either USNA and NROTC, whereas 40 percent came through OCS.



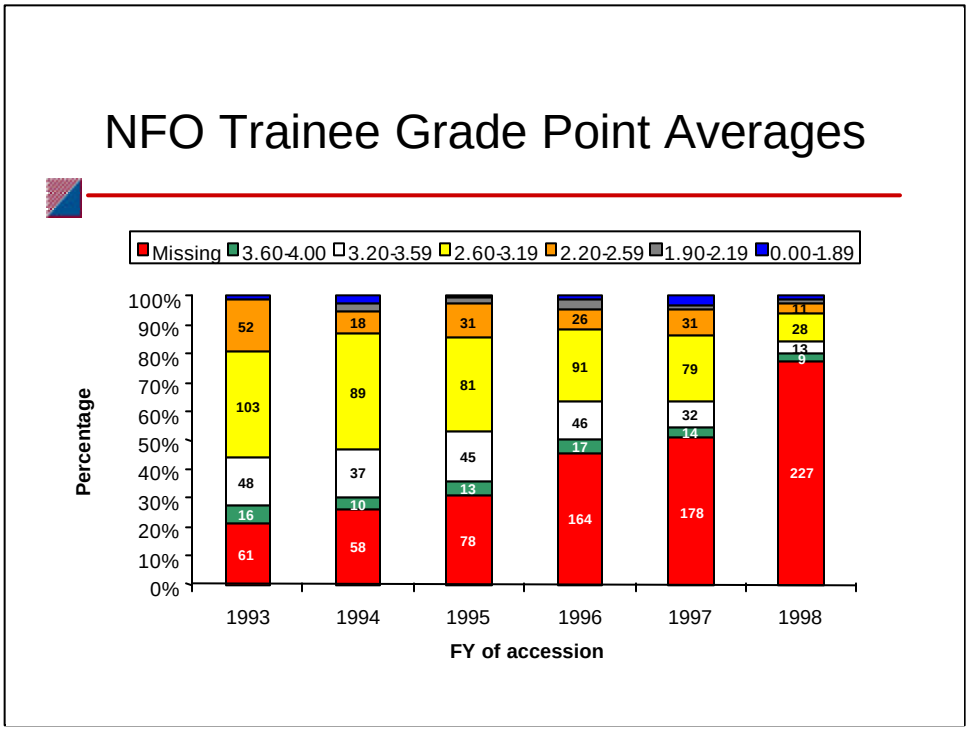
This graph shows the attrition rates from NFO training for each accession cohort by accession source. Note that the first year of the expansion in accessions from OCS—FY 1996—was not accompanied by in an increase in OCS attrition. OCS accessions jumped from 66 in FY 1995 to 139 in FY 1996, and attrition actually fell from 19.7 percent to 18 percent. However, in FY 1997 and FY 1998, when the OCS mission was quite large (148 and 112 accessions, respectively), the OCS attrition rate spiked to 48 percent for the FY 1997 cohort and 32 percent for the FY 1998 cohort.

Except for FY 1996, OCS attrition is highest of all the accession sources even in years when there was a relatively small mission. For example, OCS attrition was 31.9 percent and 43.9 percent for the FY 1993 and FY 1994 cohorts, respectively. The number of OCS accessions in those years was only 47 and 41, respectively. It appears that factors other than size of the OCS mission that are still correlated with accessing through OCS play a role in the OCS attrition rate.

The strength of the overall economy may have helped contribute to the significant rise in the attrition rate in FY 1997 and FY 1998. Although the economy (based on several measures) was expanding even in 1994 and 1995, the annual unemployment rate fell from 5.4 percent in 1996 to 4.5 percent in 1998, creating one of the best job markets for new college graduates in decades. (The unemployment rate continued to fall until 2000.) Just as the Navy's need for OCS recruits peaked, the opportunities for qualified candidates were peaking.



This chart illustrates the number of NFOs reaching the fleet by fiscal year of accession and by accession source. Although OCS leads all accession sources in numbers reaching the fleet, we know from previous graphs that it may have required substantially more OCS accessions than accessions from other sources to produce this number of fully trained aviators.



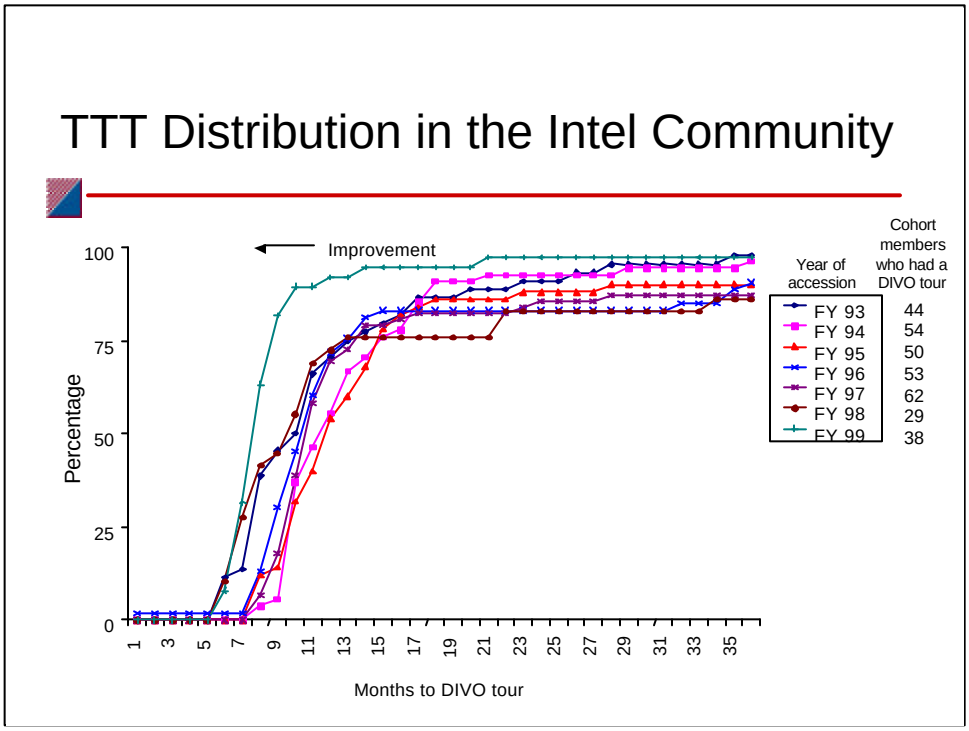
This slide shows the breakdown of the undergraduate grade point average (GPA) reported on the personnel file for officers who access into the NFO community. A striking feature of this variable is the number of missing entries; the more recent the accession cohort, the more missing GPAs there are. These GPA data include entries (possibly missing) for officers with the NFO training designator who attrite from the aviation community or from the Navy. Unfortunately, the missing entries are so numerous that it is particularly difficult to know if GPA might be related in some way to NFO attrition. On a more promising note, we have seen that some data that are not reported when the officer is commissioned are reported on the personnel files in later years.

Expanding the OSTF Database Analysis: Task List

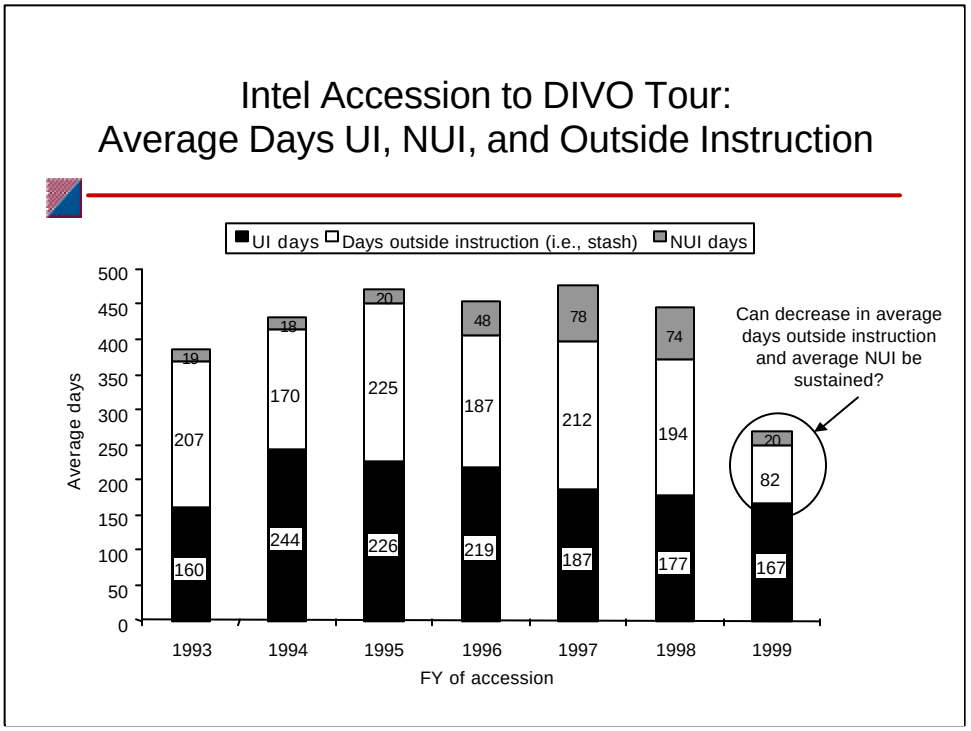
- Calculate time to train to first assignment (TTT) in aviation community by platform
- Look for reasons why NFO attrition rose for the FY 1997 and FY 1998 cohorts
- ➢ Calculate TTT for restricted line communities

Note: Calculations include FY 2002 information

We have expanded the OSTF database to include the larger restricted line communities. In this section of the brief, we examine two RL communities: intelligence and cryptology. The sponsor is most interested in time to train to first assignment, so we focus on direct accessions, even though lateral transfers in mid-career are an important source of personnel for these communities. As in the first report, we include average TTT calculations for officers who complete training, and we calculate average time under instruction, not under instruction, and outside instruction.

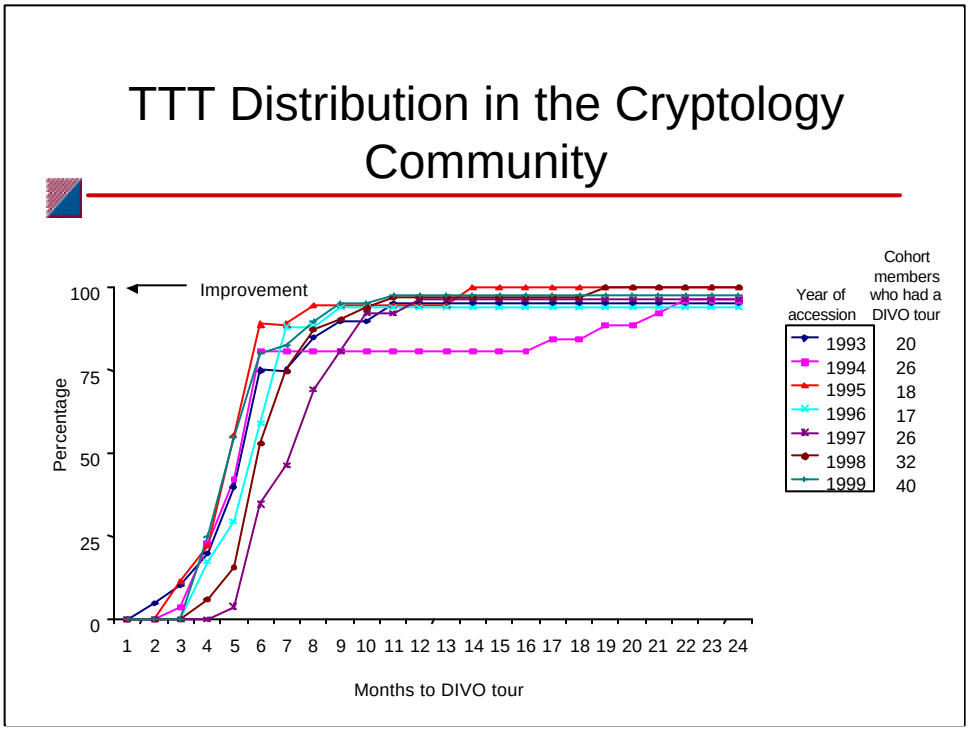


Here we look at the time to train distribution (rather than the average) for the FY 1993-99 direct accessions who reached their first operational tour in the intelligence (intel) community. For example, about 75 percent of members of the FY 1999 intel accession cohort who reached a first operational tour completed their training in 9 months or less. This represents a substantial improvement from the previous years in which 75 percent of the members of an accession cohort completed their early training in 13 months or less (15 months or less for the FY 1994 and FY 1998 cohorts). The next slide shows where the improvements in TTT were made.



This slide shows the average time under instruction, not under instruction, and outside instruction for the direct accessions into the intel community who reached their first operational tour. FY 1999 shows the most dramatic change among all the years in average time not under instruction and outside instruction. Indeed the change is so dramatic in a single year that it will be important to verify in the future whether this change is sustained. For most cohorts, average time outside instruction (i.e., in a stash situation) is at least as large and, in a number of cases, larger than average time under instruction. The FY 1999 accession cohort members who reached the fleet show a reduction of time outside instruction compared with the FY 1998 cohort of nearly 60 percent—from an average 194 days to just 82 days. The FY 1999 cohort also posted a large improvement in average time not under instruction compared with the FY 1997 and FY 1998 cohorts—from about 75 days to just 20 days. However, the FY 1993-95 cohorts posted average time not under instruction similar to that of the FY 1999 cohort, so it may be that the FY 1997 and FY 1998 cohorts had unusually and temporarily large average time not under instruction.

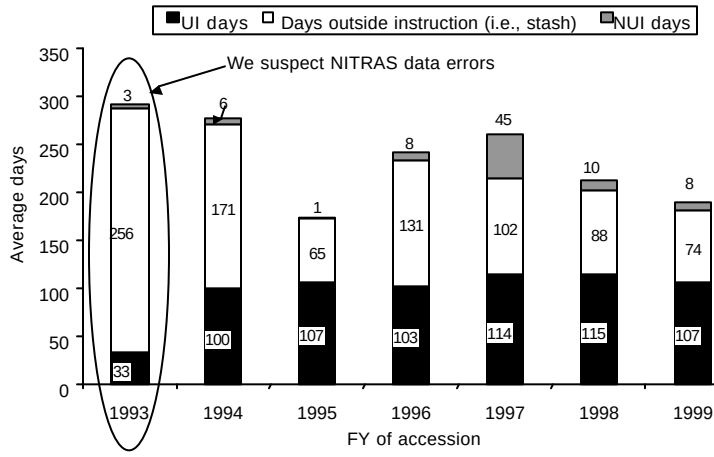
Changes in average UI could reflect a change in the number of students who completed courses in a timely manner, a consolidation or elimination of certain course materials, or a shift in the timing of certain training from before to after the start of the operational tour. It is beyond the scope of this study to distinguish among those possibilities.



We show the distribution of TTT to first assignment for direct accessions in the cryptology (sometimes referred to as "crypto") community. For most accession cohorts from FY 1993 to FY 1999, at least 75 percent of the cohort completed early training in 7 months or less. About 25 percent or less of each cohort remain in the training pipeline substantially longer (which, given cohort sizes of 40 or less, is 10 or fewer officers). Outliers clearly have a significant effect on the overall distribution because the cohort sizes are small.

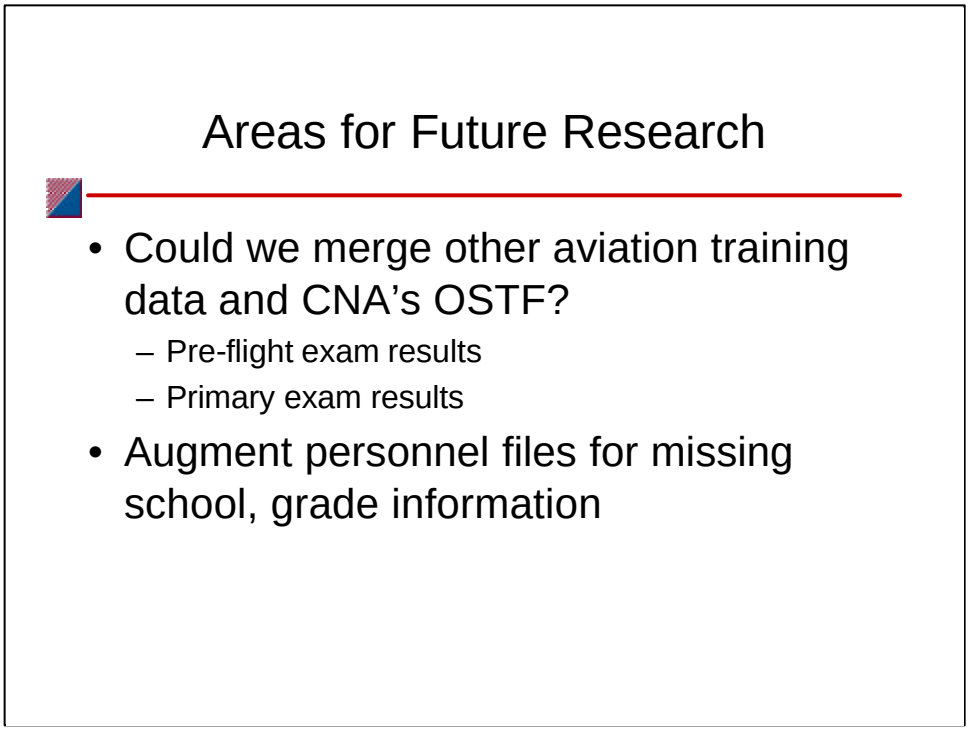
Two accession cohorts, FY 1994 and FY 1997, displayed patterns of slower completion. Since the FY 1997 accession cohort, there have been two successive years of improvements in the time-to-train distribution for direct accession cryptology officers.

Crypto Accession to DIVO Tour: Average Days UI, NUI, and Outside Instruction



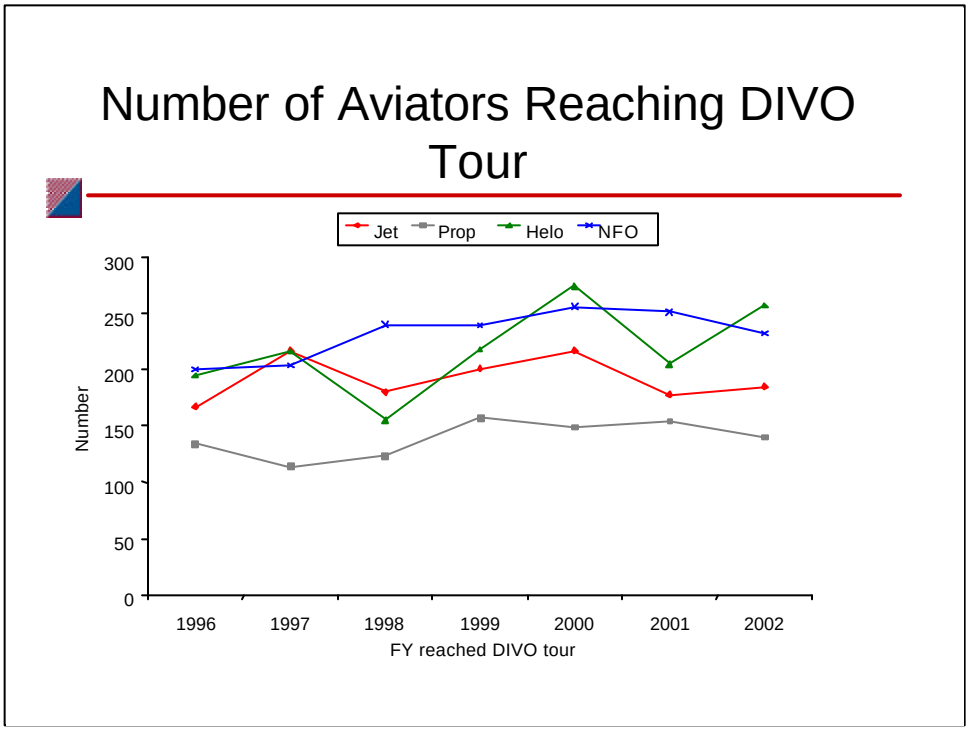
We broke down the total TTT to first assignment for the cryptology officers into UI, NUI, and time outside instruction. Again, because of small cohort sizes and a few outliers, these averages are substantially larger than the median values (50th percentile) shown on the previous slide. We suspect that there were data entry errors for the FY 1993 cohort; in particular, their average time under instruction is one-third or less of that for subsequent cohorts.

On a promising note, the graph shows that the improvements in average TTT to first assignment for the most recent accession cohorts in the study period are driven largely by improvements in average NUI and average time outside instruction.

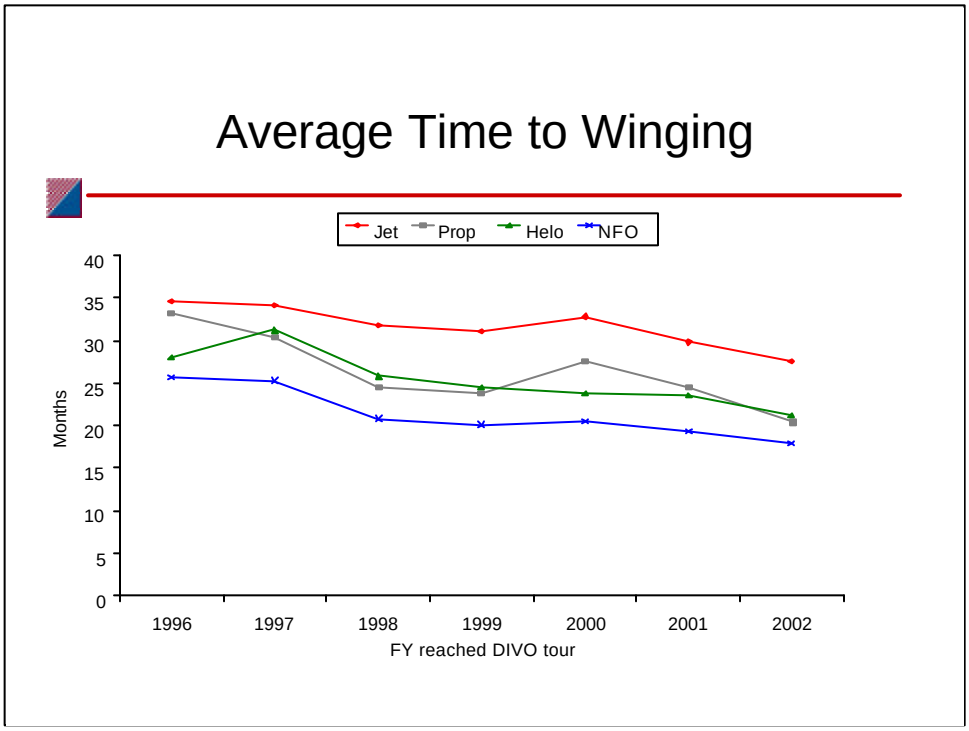


Other data collection efforts are going on in the aviation community to capture even more specific training outcomes than those captured in the NITRAS database. In particular, preflight and primary exam results are collected for each aviator trainee. It would be useful to explore the possibility of merging the OSTF database with the detail from other aviation training databases. It might also be useful to try to complete the missing data in the personnel files on grades and other undergraduate school information to gain a clearer understanding of the effect on early officer training of the quality of and performance in undergraduate studies.

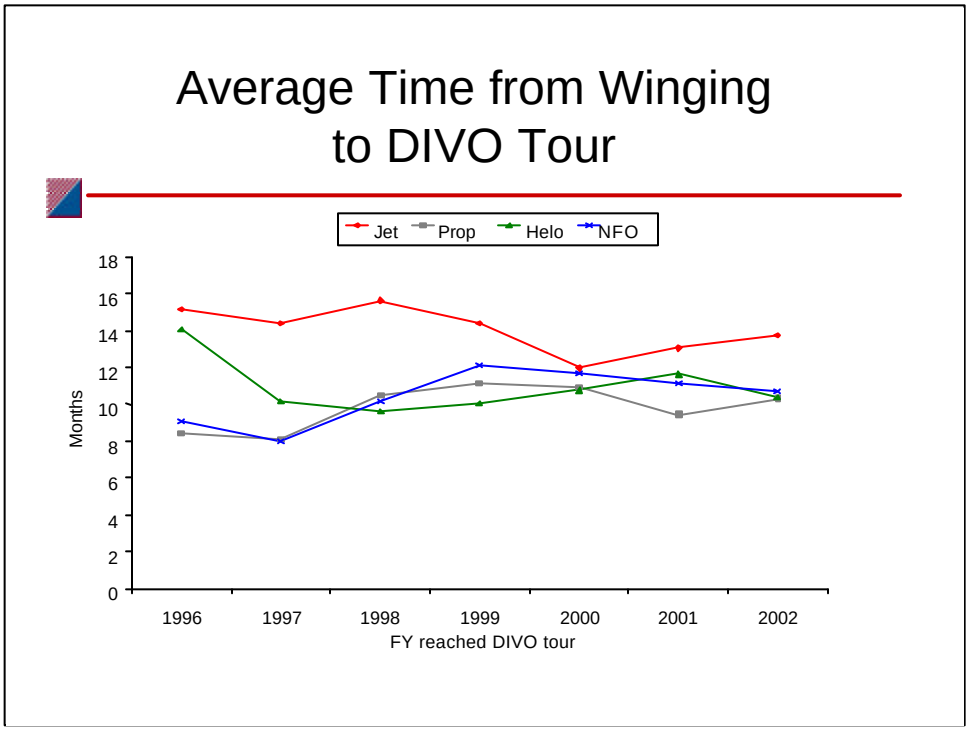
Backup



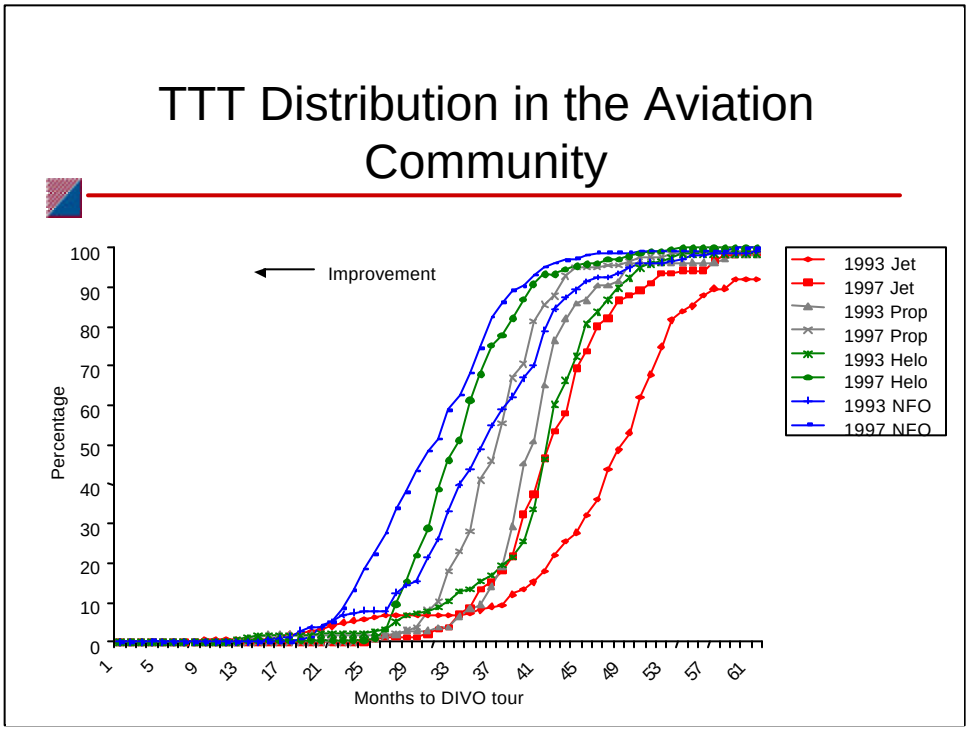
This slide corresponds to slide 9 but is measured by fleet cohorts rather than accession cohorts.



This slide corresponds to slide 14 but is measured in fleet cohorts. It illustrates the progress that has been made in reducing average time to winging since FY 1996. In general, there has been relatively steady improvement (decreases) in average time to winging for fleet cohorts across all platforms.

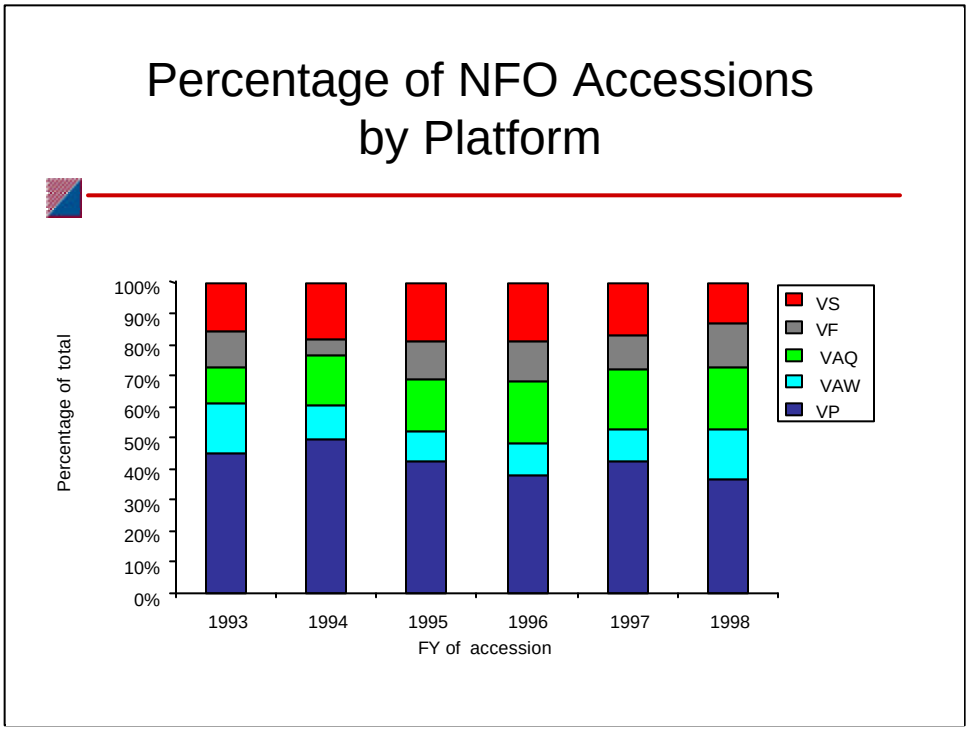


This slide corresponds to slide 15 but is measured in fleet cohorts. It shows a varied picture of changes in average time from winging to the DIVO tour for fleet cohorts in the study period across all platforms.

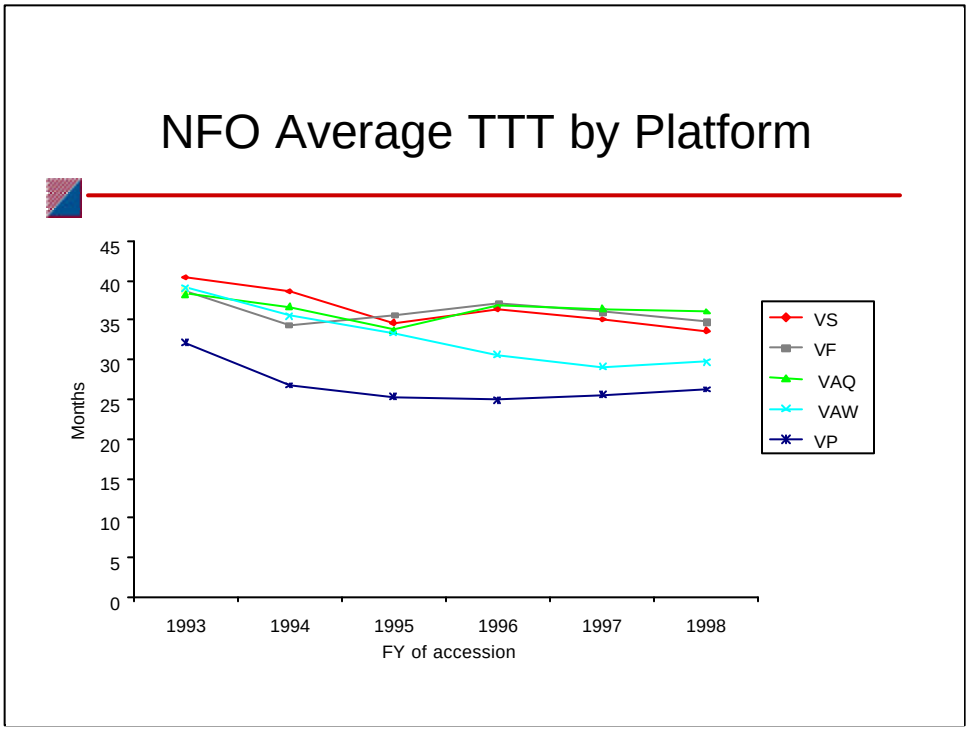


This graph illustrates the overall improvement in training times for the different aviation training pipelines. Improvement is denoted by a shift leftward of the distribution curve. For example, the FY 1997 jet pipeline training time distribution lies to the left of the FY 1993 distribution after 34 months of training. Nearly 75 percent of the FY 1997 accession cohort who reached the fleet as a jet pilot completed training in 45 months or less. This is a significant improvement over the FY 1993 accession cohort, among whom only 32 percent completed jet training in 45 months or less. (Another way to compare the jet pipeline training time distributions of the two accession cohorts is to note that it took at most 45 months to train 75 percent of the FY 1997 cohort, whereas it took 52 months to train 75 percent of the FY 1993 cohort.)

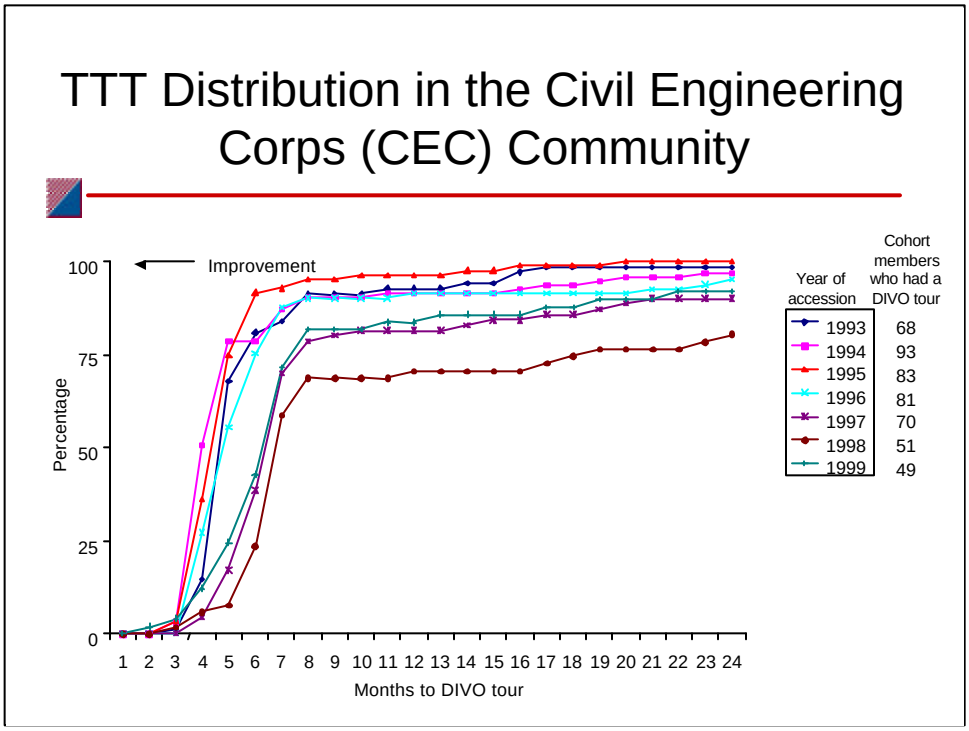
Although all pipelines show TTT distribution improvement from FY 1993 to FY 1997, the jet and helo pipelines show the most dramatic improvements.



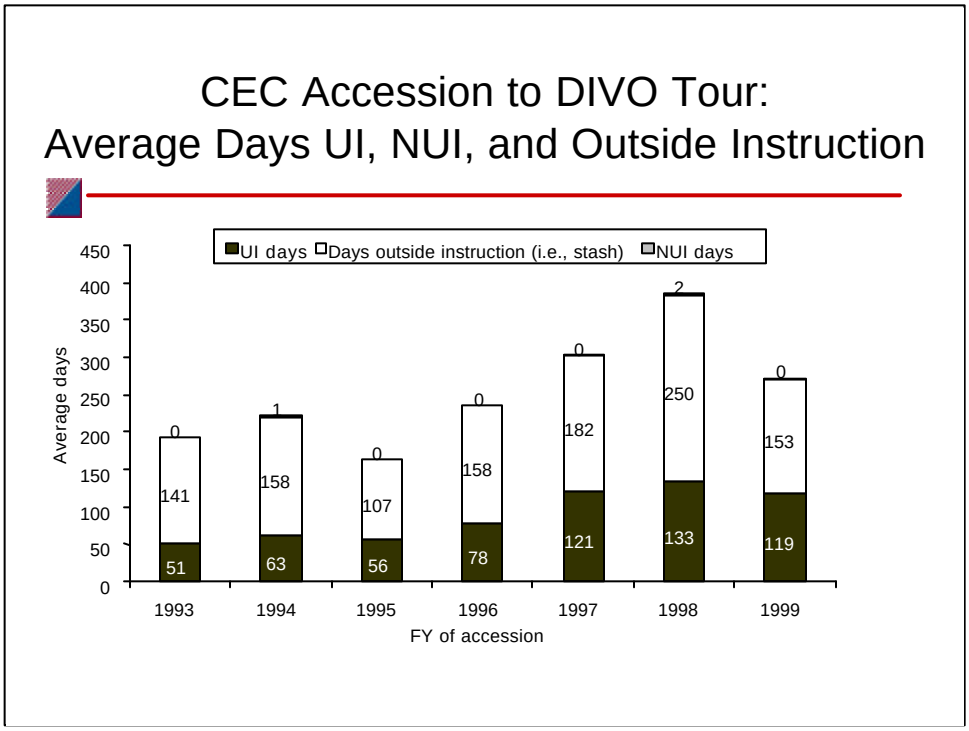
This slide is a more detailed breakdown of slide 25. It shows that the percentage of NFOs trained in VP squadrons declines over the period. As is shown in the next slide, the VP squadrons have the lowest average TTT. This suggests that improvements in time to train in the other squadron types are likely to be offset by the shift in NFO training to longer pipelines.



This slide is a more detailed breakout of slide 24. For several squadron types (VAQ and VF), average TTT for accession cohorts actually rose slightly over the study period. For several other squadron types (VS and VAW), average TTT declined over the period. And for the squadron type that had the lowest average TTT for every accession cohort (VP), there was an initial decline in average TTT, followed by no changes in average TTT for a number of successive accession cohorts.



This graph illustrates the TTT distribution for the FY 1993 to FY 1999 CEC accession cohorts who reached a first operational tour. One year that stands out is the FY 1998 cohort. Although relatively small compared with other years, it had only about 60 percent of its members complete training in 7 months or less, whereas earlier cohorts had at least 75 percent complete training in 7 months or less. Fortunately, the FY 1998 experience appears to be unique; the FY 1999 accession cohort shows training times much more in line with pre-1998 cohorts.



Here we examine the average TTT by direct accession cohort broken down by average UI, NUI, and time outside instruction for the CEC community. The reported average NUI days are negligible, but the average days outside instruction are substantial and quite variable over the study period. The rise in average days outside instruction for the FY 1997 and FY 1998 cohorts appears to have abated.

The increase in average UI days appears to have been the result of lengthening the CEC basic qualifying course, starting with the FY 1997 accession cohort, as well as the addition of some shorter courses—field office operations (starting with the FY 1996 accession cohort), public works management (starting with the FY 1997 accession cohort), and the basic officer leadership training course (BOLTC) (starting with the FY 1996 accession cohort).


CNA