

## **Organization and Funding of Intercollegiate Flight Teams**

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### **ABSTRACT**

Fifteen flight teams were surveyed at the 2006 National Intercollegiate Flying Association's (NIFA) national flight competition at The Ohio State University. The purpose of the survey was to (a) gain insight into how teams are organized, how much they practice, and how they are funded; (b) correlate this information with overall team rankings at nationals to determine the key characteristics of a top performing team; and (c) to gather ideas and share them with other NIFA teams. Key characteristics of surveyed teams that placed in the top quartile included (in order of their correlation with overall ranking): multiple flight practices per week; three or more ground practices per week; the school absorbed all flight costs; and one or more paid coaches. Methods of fundraising were found to include: washing airplanes, washing cars, selling logo-items, selling donuts, walk-a-thons, and penny-a-pound flights.

### **INTRODUCTION**

Flight competitions between colleges date back to 1919 with the start of the Intercollegiate Flying Association. The follow-on to this, the National Intercollegiate Flying Club (NIFC) was formed sometime around 1930. Competitions resumed after World War II in 1946, under the current name of National Collegiate Flying Association (NIFA). The current organization, NIFA, Inc. was incorporated in 1972 (Hemphill, 2007).

Other aviation associations have supported the intercollegiate flight competitions, in particular the University Aviation Association (UAA) and The Ninety Nines. In the 1950's, NIFA was governed by an ad hoc committee of UAA prior to its being turned over to the NIFA Council in 1996 (UAA, 2007). The Ninety Nines women pilot organization has helped with judging and funding events since 1948 (The Ninety Nines, 2007) and continues to strongly support NIFA today.

NIFA consists of member teams from post-secondary schools that compete in flight competitions. Today, NIFA is made up of 79 member schools (NIFA, 2006a) in eleven geographic regions. Currently there are no member schools in Region XI, the Northwest United States. The Mission Statement of NIFA is:

The National Intercollegiate Flying Association was formed for the purposes

of developing and advancing aviation education; to promote, encourage and foster safety in aviation; to promote and foster communications and cooperation between aviation students, educators, educational institutions and the aviation industry; and to provide an arena for collegiate aviation competition. (NIFA, 2007a)

### **Competitions**

Each year, schools meet in regional flight competitions, referred to as SAFECONs which stands for Safety And Flight Evaluation Conference (Shreve, 1982). Within a region, schools take turns volunteering to host the regional competition. In general, the top three schools from each regional are invited to the national competition (NIFA, 2006b).

At a SAFECON, teams compete in a variety of flight events and ground events that test their knowledge and flying skills against other schools. Flight competition events include accuracy landings, cross country planning and navigation, and message drop. Ground events include written exams that test aeronautical knowledge, computational ability, and aircraft recognition skills, and other events that test instrument flying ability in a ground training device, and thoroughness in aircraft preflight on an actual aircraft. The national competition includes additional events. Points are awarded to teams based on member's performance. Flight events count twice as much as ground

events (NIFA, 2006b). Regional SAFECONs typically last for four days and National SAFECON last six days plus travel days and on-site practice days for each competition.

**Teams**

The benefits of a NIFA flight team to the school and the team members can be immense. A successful team brings positive attention to the school, motivates students, creates a lasting positive college experience for members, and ultimately could help improve recruiting and other sources of revenue to the school. Flight teams are organized many different ways within school structures. The way the team is organized affects the availability of funds, and the stature and prestige of the team at their school.

**Expenses**

Participation in NIFA is very expensive for flight teams. During the year, teams practice flight events to the extent they can afford the aircraft costs. For Regional SAFECONs, teams have the expenses of lodging, meals, registration, ground transportation and aircraft expenses. Teams that advance to the national competition have these expenses again at the national level plus the additional expenses of farther travel to the national host school and the longer duration of the national competition. Teams typically incur ten or more nights of lodging as part of national competitions depending on how early the team arrives to practice on-site prior to the start of the SAFECON.

How to fund the flight team’s activities and expenses are a major challenge to schools and teams. It is a constant question whether the expense and effort is worth it for the intangible return on investment. Teams are looking for ideas and ways to reduce expenses and generate funds while at the same time performing better in competitions. This, therefore, is the impetuous for this research.

**METHODS**

At the 2006 NIFA Nationals competition at The Ohio State University airport, 15 of the 28 attending schools were surveyed. The purpose was to (a) gain insight into how different teams

are organized, how much they practice, and how they are funded; (b) correlate this information with overall team rankings at nationals to determine the key characteristics of a top performing team; and (c) to gather ideas and share them with other flight teams.

The survey was administered to team coaches or advisors while the teams were in the main hangar at the competition. Table 1 shows how many schools were surveyed from each NIFA region. While the convenience sample is not all inclusive, it is a good cross-section of the teams at the competition. The schools completing the survey represent eight of the ten different regions, and are an even distribution in quartile ranking at the national competition. The schools in the survey include both large and small and both public and private schools.

Table 1. *NIFA Regions Represented in Survey*

<b>NIFA Region</b>	<b>Number of schools in survey</b>
Region 1	2
Region 2	0
Region 3	2
Region 4	0
Region 5	1
Region 6	2
Region 7	2
Region 8	1
Region 9	3
Region 10	2

Table 2 shows how the teams surveyed ranked at the 2006 NIFA national competition. The ranking is based on the total points the team received (NIFA, 2006c). The top quartile includes two large state universities, one private aviation university, and one military academy. The bottom quartile includes two private universities, one community college, and one a public college. The seven schools in the middle were three private schools and four mid-size state universities.

For each variable in the next section, the number of teams scoring in the top and bottom quartile is given along with a Pearson correlation in hopes of giving insight into what does and does not work well.

Table 2. *Overall Ranking of Teams in NIFA 2006 National Competition*

Ranking	Number of Teams in Survey
Top Quartile	4
2 <sup>nd</sup> Quartile	4
3 <sup>rd</sup> Quartile	3
4 <sup>th</sup> Quartile	4

## RESULTS

### Team Organization

NIFA’s requirement to be a member is that “each team must be associated with a regionally

Table 3. *Team Organizational Structure.*

Organizational Structure	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
Student activity organization	5	2	0
Club	2	0	2
Team	1	1	0
Department organization	1	0	0
Mission Activity	1	1	0
Club and elective course	1	0	0
None	4	0	2

### Team Size

Table 4 shows the varying size of the teams. The largest team surveyed had 32 members, while the smallest was 7. Only one school surveyed had a team large enough to limit the size of the team. For the other schools, anyone who wanted was allowed to be on the team. There was a correlation of  $r = -.42$  between the size of the team and the team’s overall ranking in the competition. Teams with less than ten members all scored in the bottom quartile.

The larger teams did not bring the entire team to the national competition. Only the host school had more than 20 competitors at nationals.

### Coaches and Advisors

NIFA requires that when attending a flight competition, “each team be accompanied by a faculty advisor or other advisor recognized by their institution as the official representative for their team” (NIFA, 2006d). In addition to the

accredited institution of higher education” (NIFA, 2006d). Beyond that, teams can be intramural teams, student activity organizations, courses, flying clubs, or some other organization. Table 3 shows how the teams surveyed are organized. The most often cited organization was student-activity organization. Four teams said they did not fit within any formal organizational standing within their school although they were associated with the school. One team required that team members register for, and attend, an elective course that meet three class periods per week.

advisor, ten teams surveyed have coaches to help the team prepare for competition.

Table 4. *Size of Team*

Size of Team, members	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
7-10	6	0	3
11-15	0	0	0
16-20	3	2	0
21-25	3	1	1
26-30	2	0	0
> 30	1	1	0

There are no NIFA guidelines on who can be a coach, how many coaches there can be on a team, or if coaches can be paid. The survey attempted to determine the number of coaches per team and if those coaches were paid by the school.

Table 5 shows the number of volunteer coaches on a team. Volunteer coach was

defined as those whose official work duties do not include the flight team and who coach in their spare time. Coaches are either former team members who have graduated or flight instructors employed by the school. It is not known how much time each coach donated to the team. One large school stated it had ten volunteer coaches “all the time and many others on an occasional basis”.

Table 5. *Number of Volunteer Coaches on a Team*

Number of Volunteer coaches other than advisor	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
0	5	1	2
1	3	0	1
2	5	1	1
4	1	1	0
10+	1	1	0

As shown in Table 6, the majority of teams had no paid coaches. Paid coaches were defined as those whose work duties specifically include the flight team and who are compensated by the school for their time with the team. Most paid coaches were employed as flight instructors. It is not known what percent of time each coach worked with the team. Note that three of the four teams that finished in the top quartile had at least one paid coach. The one team with no paid coaches that finished in the top quartile is the school with ten volunteer coaches. There was a correlation of  $r = -.60$  between the number of paid coaches and overall team ranking in competition.

Table 6. *Number of Paid Coaches on a Team*

Number of paid coaches, other than advisor	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
0	10	1	4
1	2	1	0
2	2	1	0
3	1	1	0

The number of advisors on the team is shown in Table 7. Advisors held different

positions: faculty, flight instructor, dispatcher, adjunct professor, and administrative staff. The advisors were volunteers for all but one team. For three schools, the advisor was also an active coach. One advisor said his time counted equivalent to being on a committee. There was a small correlation ( $r = -.28$ ) between the number of advisors and the team ranking in competition.

Table 7. *Number of Advisors on a Team*

Number of Advisors not Classified as coaches	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
0	3	1	0
1	8	2	2
2	4	1	2

Table 8 shows the total support from coaches and advisors. The number is individual coaches and advisors, not full-time equivalent. This variable had a correlation of  $r = -.55$  with overall ranking.

Table 8. *Total Number of Advisors and Coaches Helping the Team.*

Number of Advisors not Classified as coaches	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
1	2	0	1
2	3	0	1
3	7	1	2
6	2	2	0
11+	1	1	0

## PRACTICE

### Flight Event Practice

There are two parameters that related to how much a team practices. One is how often the team practices during the year, defined as the ‘practice season’, and the other is how much the members fly when during a practice.

The different ways teams organize their practice seasons is shown in Table 9. Only one team practiced year round. The information on the season was not specifically on the survey, but came through comments. Therefore, not all teams answered this question.

Table 9. *Flight Practice Season for Teams*

Flight Practice Season	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
Year round	1	0	0
12-16 weeks prior to event	1	0	0
Beginning of semester until regionals, then January until nationals	2	0	0
6 weeks prior to event	2	1	0
Between regionals and nationals only	1	0	1
Very limited practice time shortly before event *	4	0	3
No answer	4	3	0

\*Comments included: “three times total before event”, “3 weeks per year”, “2hr total before event”, “20hr total for team per year”

Table 10. *Structure and Frequency of Flight Event Practice*

Frequency of Flight Practice	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
Any time	1	1	0
Daily starting 6 weeks prior to event	1	1	0
3 times per week	1	1	0
Saturday initially, and then everyday close to even	1	1	0
Saturday plus weekdays	1	0	0
Saturday or Sunday only	4	0	0
No recurring weekly practices	6	0	4

The different ways teams structure their flight practice shown in Table 10. It was clear from the survey that practice makes a difference in competition performance. Surveyed teams in the top quartile practiced flight events multiple times each week. Surveyed teams in the bottom quartile had no regular flight practice.

There were many variations on how much to practice. One team allows less practice time per pilot prior to making cuts for the competitions. Then, as the competition

approaches, competitors are allowed more practice time. The schools with very little practice time said they encouraged their students to practice landings during their ‘regular’ flight lessons. One team that finished in the top quartile wrote the team members had “Unlimited use of Cessna 150. Unlimited use of other aircraft when available [*sic*]. Flyers are expected to fly every day close to competition.” Table 11 shows how many hours teams fly per practice.

Table 11. *Typical Flight Hours for Practice*

Flight Hours per Practice	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
3hr/pilot/week	1	0	0
1 hr/pilot/week	1	0	0
0.5hr/pilot/week	1	0	0
6 hour/plane/week	1	0	0
1-2 hr/day	1	1	0
100 hr/year	1	0	0
20 hr/year for team	2	0	2
≤5 hours for team prior to event	4	0	2
Not Given	1	1	0

In order to estimate the total flight practice per team member per year, the variables (a) hours practiced, (b) frequency of practice, (c) practice season, and (d) size of team were combined to determine yearly flight-practice hours per team member. Computing this variable required estimating how many weekends per semester and assuming no practice during Thanksgiving, Christmas, or Spring breaks. For example, a team where each pilot practices once a week for one hour prior to regionals and starting again in January has an estimated 26 total flight-practice hours per year. Table 12 shows the spread of estimated flight-practice hours. There is a correlation of  $r = -.71$  between flight-practice hours and overall ranking.

### Ground Event Practice

Table 13 shows how often teams practiced for ground events. One team practiced ground events Saturday & weeknights, and then, close to the event, did two-a-day practices, one in the mornings before classes and another in the

Table 13. *Frequency of Ground Event Practice.*

Frequency of Ground Event Practice	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
4 or more times/week	2	1	0
3 hours or times/week	7	3	1
1.5 to 2.5 hours/week	4	0	1
1 time every two weeks	1	0	1
5 hr before event	1	0	1

## TEAM FUNDING

### Flight Time Funding

Flight *practice* funding generally fell into a few categories: (a) the school absorbed the cost, (b) the pilot-flying paid a rental fee, (c) the team paid a rental fee from a team account, (d) the money was donated, or (e) the flight training contractor, Delta Connection, absorbed the cost.

The study did not try to ascertain where school funds came from within the school's budget because coaches and advisors do not have insight into this information. For purposes of this survey, the term "team account" includes

evening. There was a correlation of  $r = -.56$  between time for ground event practice and overall ranking.

Table 12. *Estimated Yearly Flight Practice Hours per Member*

Flight Practice Hours per year per member	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
More than 52	4	3	0
Between 27 and 52	2	1	0
Between 14 and 26	1	0	0
Between 1 and 13	2	0	0
<1	5	0	4
Not able to estimate	1	0	0

a variety of sources such as donations, fund raising by the team, and dues. "Team account" does not include funding from the school, either through student activities or the academic unit.

Table 14 shows the how teams paid for their flight practice and if the team received a discount on the cost of rental aircraft. The table shows that for three out of four teams in the top quartile, the schools paid for the flight practice.

Table 15 shows how teams paid for their flight time at the 2006 competition. Flight time at competition includes travel to-from competition, any practice at the competition and the flying events.

Table 14. *Methods of Funding Flight Practice*

Method of Funding	Rental Cost to Team or Pilot	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
School, either department or college	none	8	3	1
Pilot flying until cuts, then team account	Discount from rental rate	1	1	0
Corporate Donation	No Discount	1	0	0
Pilot flying aircraft	Discount from rental rate	1	0	0
Pilot flying aircraft	No Discount from rental rate	2	0	1
Delta Connection	none	2	0	2

Table 15. *Methods of Funding Flight Time at National Competition*

Method of Funding	Number of Teams	Number of teams in top quartile	Number of teams in bottom quartile
School, either department or college	7	3	0
Team account	2	1	0
Sponsor	1	0	0
Delta Connection	2	0	2
Combination school & team account	2	0	1
Combination school & \$200/contestant for nationals	1	0	1

**Funding of Hotels, Meals, and Transportation**

In addition to flight time, there are many other expenses involved in participating in and attending a flight competition. These other expenses include hotel rooms, ground transportation during the event, meals, VFR and IFR charts, and registration fees. Table 16 summarizes how teams paid for different expenses at national competition.

One school had a very active parent group that helped the team with expenses at competition. For example, different parents sponsored dinner each night while at the competition.

The majority of schools indicated they were trying hard to get donations and sponsorship for the team. The exceptions were two schools that paid 100% and did not expect their team to do any fundraising. Donations ranged from charts donated by the local fixed-based operator (FBO), to one \$10,000 sponsorship from a bank, and a “very generous” sponsorship to one school from NetJets. One school emphasized parent

donations to the university and then doubled it using employee matching funds where the parents work.

Teams that used fundraising as a source of funding used a variety of methods. Money raised went into a team account. Methods of fundraising included:

- washing planes for flight school (~one plane/week)
- washing planes for local pilots and at fly-ins (one day wash-a-thons)
- washing cars
- selling logo-items in the local pilot store (team runs the pilot shop)
- selling donuts
- walk-a-thons
- penny-a-pound flights

Table 16. *Method of Funding Hotels, Meals, and Transportation at National Competition*

Method of funding	Number of Schools		
	Hotels	Meals	Transportation
School, academic unit or college	4	3	5
Student Activity Funds	1	1	0
Team Account	5	4	5
Combination of school & team account	2	1	2
Contestants	3	5	3
Parents	0	1	0

Table 17 summarizes where teams get their funds, not including funds for aircraft, and an estimate of how much comes from each source. For purposes of the question, “school” includes the academic unit, student activities or other entity at the school. “Donations” include sponsors, and cash or in-kind donations to the team. “Fund raising” includes the team working or selling something in exchange for money. “Student” is team members paying their own money as opposed to raising the money.

All but two teams surveyed used a combination of sources for their funding. Contrary to commonly held beliefs, only two teams (12%) were totally funded by their schools and eight teams (54%) surveyed did no fundraising. There was no meaningful correlation between the source for funds and

overall ranking ( $r = -.13$  for school funding,  $r = -.05$  for fundraising).

### Size of School

The last variable examined was the size of the school versus overall ranking. The size of the student body was taken from the Carnegie Foundation web site (Carnegie Foundation, 2006). There is a correlation of  $r = -.44$  between the size of the student body and the overall team ranking.

## DISCUSSION

In determining where to put resources to improve a team, it would be helpful to summarize how the different variables examined correlate with team ranking. Table 18 summarizes this information.

Table 17. *Source of Funds for Expenses other than Aircraft*

Percent of funding	Number of Schools			
	School	Donations	Fund Raising	Students
100%	2	0	0	0
76-99%	2	1	3	0
51-75%	2	2	0	1
26-50%	3	2	2	0
1-25%	3	4	2	8
0	2	6	8	5
Can't determine	1	0	0	1

Note: The two teams where the members paid their own meals at events did not include this money in the percent of funds coming from students. However, it is believed that this does not affect the table because these two schools paid <25%, and that would not change.

Table 18. *Correlation between Survey Variables and Overall Team Ranking*

<u>Variable</u>	<u>Correlation, r</u>
Total yearly Flight practice hours	-.71
School pays for flight time	-.67
Number of paid coaches	-.60
Frequency of ground practice	-.56
Total number of coaches & advisors	-.55
Size of school	-.44
Size of team	-.42
School funding other than flight time	-.13
Fundraising for other than flight time	-.05

It is satisfying to see that flight practice was the factor with the highest correlation to team performance. However, the amount the top teams practiced was substantial. Team members in the top quartile practiced for flight events, on average, every day.

The question for a school wanting to do better at nationals is how to afford team members practicing for flight events every day? The study showed schools paid the cost of flight time for three out of four teams in the top quartile. The one surveyed team in the top quartile that did not receive financial support from the school is a large public university. Instead, it had exceptional local alumni support with sponsorship and donations to pay the bulk of flight time and help with coaching to offset the lack of school funds.

Other than aircraft cost, the idea that only a big school can do well at nationals or that a team has to receive substantial funding from their school to place well is not substantiated. Teams that had to earn the money for hotels, meals and transportation did just as well as teams that did not have to raise funds.

With respect to team success, the survey showed the importance of having a paid person whose job duties include responsibility for the flight team. A school would be best served to put its funds into a paid position whose duties include coaching, guiding the team in fundraising, obtaining sponsorships, and recruiting volunteer coaches. A job position of team coach provides a continuity and corporate

knowledge as the team members gradually change every year. Also, unlike a volunteer coach, a paid coach has a vested interest in the team doing well and the incentive to make the flight team a priority.

## CONCLUSION

It is clear from the survey that to do well at NIFA national competitions takes a tremendous commitment both from the team members and the school in terms of both money and time. Hopefully this information is helpful to schools in determining how to organize, fund and support a flight team.

Key characteristics of the teams in the top quartile include:

- All had flight practice multiple times per week.
- All had ground practice three or more times per week.
- Three out of four had the school absorb all costs of the flight time.
- Three out of four had one or more paid coaches whose duties included the flight team.

There are at least two areas where further study could be of benefit. First, this survey did not include all NIFA teams, and in particular did not include any teams from the regional level that did not qualify for nationals or any teams that qualified for nationals but could not afford to attend. An area for following study would be to expand the sample size to include all NIFA teams. Second, it would be beneficial to know how academic units that provide school funds to their teams successfully lobby for and account for the funds in their budget.

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