

Research Note 86-56

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EVALUATION OF A FLIGHT SURGEON
COURSE SYLLABUS CHANGE

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In November 1983, the syllabus for the Flight Surgeon flight training program was changed from a solo flight to a formal checkride evaluation at the 14-hour level. A preliminary investigation indicated that the syllabus change might negatively affect the training program by reducing its attractiveness to potential applicants or by reducing student attitude, motivation, and performance during flight training. During 1984, all Flight Surgeon students completed an "Incentive Factors Survey" before beginning the course. After		

completing the course, the instructor pilots rated each of their students on a "Flight Training Survey." The most important application incentives to the majority of the Flight Surgeon students were the opportunities to enhance their military careers, to receive flight training, and to study aviation medicine. The opportunity to fly solo was an important, positive incentive to 22% of the students, but 31% of the students were either indifferent to or negatively influenced by a solo flight opportunity. The remaining 47% of the students indicated that the solo flight opportunity was a modest, positive incentive. The flight training ratings indicated that student attitudes and motivation levels were not only satisfactory, but were generally above average when compared to previous Flight Surgeon students. Ratings of student performance were generally commensurate with ratings of the student's ability. In summary, the negative effects of the syllabus change were neither pervasive nor severe. No compelling evidence was obtained to revert to the solo flight syllabus.

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INTRODUCTION

In November 1983, the Directorate of Flight Training (now the Aviation Training Brigade: ATB) revised the syllabus for the Flight Surgeon training program by deleting a solo flight and substituting a formal checkride evaluation at the 14-hour flight level. The revision was designed as a preventive safety measure: there had been a dramatic increase in the frequency of engine failures in the training helicopter (TH-55) fleet and a Flight Surgeon student had recently experienced an accident during his solo flight. However, the Army Aeromedical Activity (AAMA) contended that the syllabus change could be detrimental to the Flight Surgeon program. As a result, the syllabus change was implemented on a one-year trial basis, and the U.S. Military Academy (USMA) and the Army Reserve Officer Training Corps (ROTC) Cadet Summer Training programs were included in the trial revision. Subsequently, the assistance of the Army Research Institute (ARI) was requested in evaluating the effects of the Flight Surgeon Course syllabus change during the trial year.

OBJECTIVES

A preliminary investigation was conducted by collecting and analyzing previous Flight Surgeon training records and TH-55 helicopter performance records, and by interviewing representatives of AAMA, the Army Safety Center, the Aviation Medicine Department, the Office of Accident Prevention (OAP), and Aviation Contract Employees, Inc. (ACE). The conclusion drawn from the investigation was that the degree of risk

involved in a solo flight at the 14 hour level is relatively small. However, a solo flight was considered an unnecessarily hazardous criterion for non-aviation students unless the syllabus change resulted in negative effects on the training programs. The investigation identified three areas of potential negative impact: (1) the change may reduce the attractiveness of the program to potential applicants, (2) the criterion change may reduce the level of student motivation during training, and (3) the no-solo syllabus may adversely affect the Flight Surgeons' ability to perform their professional duties. Accordingly, the evaluation of these three areas constitutes the technical objectives of the project:

- evaluate the effect of the syllabus change on the recruitment of Flight Surgeons,
- evaluate the effect of the syllabus change on the attitude and performance of the Flight Surgeons during training, and
- evaluate the effect of the syllabus change on the professional performance of the Flight Surgeons.

RESEARCH APPROACH

In January 1984, an in-process review was conducted by ATB with representatives of AAMA, ACE, OAP, ARI, and the Directorate of Evaluation and Standardization. At that meeting, an evaluation approach was submitted for each of the specific objectives. First, an "Incentive Factors Survey" was proposed to address the recruitment issue. The survey requires the Flight Surgeons to rate the importance of several factors, including the opportunity to fly solo, on their decision to apply for the Flight Surgeon Program. The "Incentive Factors Survey" approach was expanded to include the USMA and ROTC classes during the trial year.

Two procedures were recommended to assess the performance of the Flight Surgeons during flight training. First, routine evaluation records would be reviewed to determine their utility for comparing Flight Surgeon performance under the solo and checkride training criteria. Second, a "Flight Training Survey" would be developed to obtain instructor pilot (IP) ratings of Flight Surgeon performance, ability, attitude, and motivation during training.

Finally, a "Critical Incident Survey" was proposed to assess the effect of the syllabus change on professional performance. The survey would be administered to experienced Flight Surgeons attending an advanced training course at Fort Rucker. The Flight Surgeons would be asked to identify specific incidents in which their solo (or lack of solo) experience affected their professional performance. However, subsequent evaluation of the critical incidents approach led to the conclusion that professional performance effects could not be reliably evaluated. The decision was based on the multiplicity of factors that influence professional performance and the lack of an absolute requirement for solo flight under the previous syllabus (i.e., nearly half the Flight Surgeons did not solo). With the concurrence of AAMA, the evaluation of professional performance effects were deleted from the objectives.

RECRUITMENT INCENTIVES EVALUATION

METHOD

Three "Incentive Factors Survey" forms (see Appendix A) were developed to assess the relative importance of the major recruitment incentives in each student's decision to apply for flight training. The major incentives were developed on the basis of available recruiting brochures, training materials, and interviews with representatives of AAMA, USMA, and ROTC. There are ten incentives listed for Flight Surgeons and nine incentives for USMA and ROTC students. Three of the incentives are common to all forms: the opportunities to enhance military career, to receive flight training, and to fly solo. The opportunity for assignment also appears on all forms, but the assignment opportunities are different for Flight Surgeons (a position such as research or a specific location) and the USMA and ROTC students (branch assignment). Four other incentives (evaluate a career in Army aviation, visit southeast U.S., earn a distinctive patch, and test flying skills) are common to the USMA and ROTC forms. The remaining incentives are unique to each form (e.g., medical training and practice for Flight Surgeons).

The "Incentive Factors Survey" was administered to each class during in-processing. The students were required to distribute 100 points among the factors that positively influenced their decision to apply for their respective programs. The students were also required to indicate any factors that were neutral as incentives or that were disincentives (i.e., reduced the attractiveness of the programs) in

their decisions. Students were not required to identify themselves, although some biographical information (e.g., prior flight experience) was requested. The total administration time was approximately 15 minutes, and no difficulties in completing the survey were reported by the students or indicated by their responses.

RESULTS

Flight Surgeon Incentive Factors

A total of 88 Flight Surgeon students from Classes 84-2 (n = 34), 84-3 (n = 41), and 85-1 (n = 13) completed the survey. One student in Class 84-2 was eliminated from the study because his responses indicated he had applied involuntarily. The majority of students were married, male captains in the active Army. Only 23 (26%) of the students had any previous flight experience. As can be seen in Table 1, however, the Flight Surgeon students comprise a highly diverse group, especially in terms of grade, age, and flight experience.

As a group, the most important incentives (based on the mean rating out of a possible 100 points) for the Flight Surgeon students were the opportunities to: (1) enhance military career (mean = 16.6), (2) receive flight training (mean = 15.5), and (3) study aviation medicine (mean = 14.5). The opportunity to fly solo received the fourth highest rating (mean = 10.8), followed by the opportunities to practice aviation medicine (mean = 9.4) and to obtain a preferred assignment (mean = 9.4). The remaining incentives were rated as relatively less important factors in the decision to apply for the program.

TABLE 1
FLIGHT SURGEON STUDENT DEMOGRAPHICS (N = 87)

<u>COMPONENT</u>						
Active Army: 64		Reserve: 11		National Guard: 10		
Coast Guard: 1		Air Force: 1				
<u>GRADE</u>						
CW2: 11	CW3: 4	O-1: 8	O-3: 50	O-4: 4	O-5: 1	O-6: 9
<u>SEX</u>						
Male: 81		Female: 6				
<u>MARITAL STATUS</u>						
Single: 14		Married: 66		Separated: 2		Divorced: 5
<u>AGE</u>						
Minimum: 25 yrs, 6 mo		Median: 31 yrs, 5 mo		Maximum: 59 yrs, 6 mo		
<u>FLIGHT EXPERIENCE (n = 23)^a</u>						
Minimum: 7 hours		Median: 110 hours		Maximum: 2800 hours		

^aFlight hours based on 23 students that were flight experienced; 64 students had no flight experience.

The mean ratings should be interpreted cautiously. The standard deviations for the factors indicate large individual differences in the importance of the incentives. These differences can be clarified by considering the number of students who were indifferent to or negatively influenced by each factor, and the number of students who assigned a relatively high value (20 or more points) to each factor.

As can be seen in Table 2, the three highest rated incentives were positive influences in the decisions of nearly all the students. The enhancement of the individual's military career received the most negative or zero ratings of the three major incentives, but it also

TABLE 2
FLIGHT SURGEON INCENTIVE FACTORS RATINGS (N = 87)

FACTOR	MEAN	S.D.	NEG	ZERO	≥20
ENHANCE MILITARY CAREER	16.6	16.2	1	16	37
FLIGHT TRAINING	15.5	10.6	0	10	36
STUDY AVIATION MEDICINE	14.5	10.3	0	6	31
FLY SOLO	10.8	11.7	2	25	19
PRACTICE AVIATION MEDICINE	9.4	8.0	0	22	15
ASSIGNMENT	9.4	16.2	8	39	20
FLIGHT PAY	8.0	9.3	1	29	11
ASSOCIATE WITH AVIATORS	6.3	9.2	2	39	9
FLIGHT DUTY	6.1	7.8	1	41	9
FULFILL UNIT REQUIREMENTS	3.2	10.0	4	66	7

Note: S.D. = standard deviation; NEG = number of negative ratings; ZERO = number of zero ratings; ≥20 = number of ratings of 20 or more points.

received the most ratings of 20 or more points. The solo flight opportunity was a positive influence for 60 (69%) of the students. Only 19 (22%) of the students rated the solo flight as 20 or more points, while two (2%) of the students perceived a solo flight as a negative influence. The remaining incentives, except the opportunity to practice aviation medicine, were positive influences in the decisions of even fewer students.

The large individual differences in ratings are partially attributable to the heterogeneity of the students. Therefore, the same statistics (see Table 3) were computed for active Army captains (AACs), a more homogeneous subgroup that includes 52% (n = 45) of the Flight Surgeon students. The AACs, in contrast to the non-AACs, were slightly less attracted by the opportunities to fulfill unit requirements, to study aviation medicine, and to practice aviation medicine; the AACs were slightly more attracted by the opportunities for flight training,

TABLE 3
ACTIVE ARMY CAPTAIN INCENTIVE FACTORS RATINGS (N = 45)

FACTOR	MEAN	S.D.	NEG	ZERO	≥20
ENHANCE MILITARY CAREER	17.0	16.5	0	7	17
FLIGHT TRAINING	16.7	11.1	0	3	20
ASSIGNMENT	12.7	19.4	3	18	13
FLY SOLO	11.9	12.6	0	11	10
STUDY AVIATION MEDICINE	11.8	8.7	0	5	11
FLIGHT PAY	7.9	7.1	1	10	4
PRACTICE AVIATION MEDICINE	7.8	6.7	0	12	3
ASSOCIATE WITH AVIATORS	6.9	10.2	2	18	5
FLIGHT DUTY	6.5	7.6	0	19	4
FULFILL UNIT REQUIREMENTS	1.1	3.2	3	37	0

solo flight, and assignment. The differences in mean ratings for these factors are probably not of practical significance. The mean rating for the opportunity for assignment showed the largest difference. This probably indicates that the course is a requirement for an AAC to be assigned as a Flight Surgeon. For other groups (e.g., warrant officers, National Guard), assignment opportunities may not be substantially influenced by attending the Flight Surgeon course. Of the 20 students who rated the assignment opportunity as 20 or more, 13 (65%) were AACs. Conversely, the opportunity to fulfill unit requirements was a positive factor in 29% of the non-AACs decisions, in contrast to 11% of the AACs. The non-AACs were probably already assigned to a position or unit that required training as a flight surgeon.

There are several other noteworthy changes in the rating frequencies. Only 24% of AACs rated the opportunity to study aviation medicine as 20 or more, in contrast to 48% of non-AACs. Presumably, the AACs believed their current level of training was adequate or nearly so.

A similar result occurs with the opportunity to practice aviation medicine: only 7% of AACs, in contrast to 29% of non-AACs, assigned this factor a rating of 20 points or more. Again, most AACs are presumed to be currently practicing medicine. Finally, flight pay was assigned a positive rating by 76% of the AACs but only by 55% of the non-AACs. Flight pay was probably less an incentive to non-AACs who may hold a higher grade or who are in private medical practice.

The AACs were more influenced by the flight training and solo flight incentives, although the differences between groups are not as large as on the other factors. More AACs were positively influenced by the flight training (93% vs 83%) and solo flight (76% vs 62%) opportunities than the non-AACs. However, the proportions assigning relatively high values (i.e., 20 points or more) were virtually identical for the AAC and non-AAC groups (44% vs 38% for flight training and 22% vs 21% for solo flight).

In summary, the most important incentives in the decision to apply for the Flight Surgeon course were the opportunities to enhance the individual's military career, to receive flight training, and to study aviation medicine. This conclusion is based on the high mean ratings and on the low frequency of negative or indifferent (i.e., zero) responses to these factors. The opportunity to fly solo, the focus of the research project, was rated the fourth most important incentive but there were substantial individual differences. Specifically, 31% of the students were either negatively influenced or indifferent to this incentive, while 47% of the students indicated it was a modest, positive

influence. The remaining 22% of the students assigned it a relatively high value, but only one student rated it higher than 40 points.

USMA Incentive Factors

An "Incentive Factors Survey" was adapted (see p. 4; Appendix A) and administered to 102 USMA cadets attending the Aviation Military Specialty Training program.. As expected, the cadets were more homogeneous in terms of demographics than the Flight Surgeons: 96 were males; the median age was 20 years, 3 months with a range of 19 years, 5 months to 23 years, 9 months; only 10 had any previous flight experience (maximum of 55 flight hours). The three highest rated incentives were: (1) the opportunity to receive flight training (mean = 33.5), (2) the opportunity to evaluate a career in Army aviation (mean = 29.1), and (3) the opportunity for future assignment to the Aviation Branch (mean = 14.5).

The opportunity to fly solo was the fifth highest incentive, with a mean of 7.3 points. The low average rating and the high proportion (45%) of negative and indifferent responses indicate that solo flight is not a major recruiting incentive to the academy cadets. Only 15% of the cadets assigned solo flight a rating of 20 or more points, and none assigned a value higher than 35 points.

ROTC Incentive Factors

A third "Incentive Factors Survey" form was adapted (see p 4; Appendix A) and administered to 57 ROTC cadets attending the Flight

Training and Orientation Program. The ROTC cadets were demographically similar to the USMA cadets, except that the median age was 21 years, 5 months with a range of 19 years, 6 months to 29 years, 8 months. The same three factors were rated as the most important recruiting incentives, although with substantially different mean ratings. The opportunity for future assignment to the Aviation Branch (mean = 29.6) and the opportunity to receive flight training (mean = 29.5) were clearly the most important factors. The opportunity to evaluate a career in Army aviation was third with a mean rating of 13.6 points.

The opportunity to fly solo was the fifth highest rated incentive (mean = 8.6). Fifteen (26%) of the ROTC cadets assigned a zero value to the solo opportunity while 11 (19%) assigned a value of 20 points or more. The highest rating was 50 points. Again, the results do not indicate that a solo flight opportunity is a primary incentive to the majority of ROTC students in deciding to apply for the flight training program.

FLIGHT TRAINING EVALUATION

DAILY TRAINING RECORDS

Instructor Pilots (IPs) evaluate Flight Surgeon performance and attributes on each training day using the Presolo Performance Record, a standard student rating form. Students are rated on ground operations, radio procedures, nine flight maneuvers, ten "basic qualities," and overall performance on an A, B, C, U scale. The letter grades correspond to above average, average, below average, and unsatisfactory, respectively. Since the opportunity to fly solo is perceived as an overall training incentive, the daily ratings of overall performance, attitude, and motivation are particularly relevant to the project objectives. If the ratings are psychometrically sound, the daily grades would provide a readily available criterion measure that could be compared from one class to another. In this case, the performance of students rated before the syllabus change could be compared with the performance of students rated after the syllabus change.

The course grade folders for Flight Surgeon Class 83-3 were obtained and the daily grades for attitude, motivation, and overall performance were evaluated to determine their utility as training criteria. Assigning values of A=3, B=2, C=1, and U=0, the average daily performance grade was 2.26, with a standard deviation of .32. This indicates that most of the students received overall grades of B on most training days. There was less variability in the other ratings, both across training days and among students. The mean (and standard deviation across students) was 2.90 (.23) for attitude and 2.86 (.24)

for motivation. Only two students received a majority of B grades on these ratings.

Of the 42 students in the class, 15 (36%) soloed with a grade of A, 11 (26%) soloed with a grade of B, 1 (2%) attempted a solo flight that was graded as unsatisfactory; the remaining 15 (36%) did not attempt a solo flight. There is no apparent relationship between the average daily flight grade and whether the student is allowed to solo ($r = .25$) or between the average daily flight grade and the solo evaluation grade ($r = -.08$). However, the actual relationships may not be reflected by these statistics, since the correlations are affected by the lack of variability in the ratings.

Based on these psychometric characteristics, the routine records were judged to be unsatisfactory for evaluating the syllabus change. The solo flight was relatively independent (statistically) of rated training performance, and the attitude and motivation ratings did not reflect enough individual differences to permit further analysis. (Note: this review is not a critique of the Presolo Performance Record for its intended use; it is only a critique of its use as a method to evaluate the syllabus change.)

FLIGHT TRAINING SURVEY

Method

A flight training survey form (see Appendix B) was developed to obtain data on the performance and personal attributes of the Flight Surgeon students during flight training. On the form, IPs are asked to

rate each of their students on overall attitude, motivation level, ability level, and performance level using seven-point scales. The IPs are also asked to indicate the direction and degree of change in attitude, motivation, and performance from the beginning to the end of the course. IPs who have prior experience in training Flight Surgeons are asked to make normative judgments of their students' attitude, motivation, ability, and performance. Finally, IPs are asked to describe any positive or negative training effects that could be attributed to the syllabus change.

The survey was administered to the IPs of Flight Surgeon Classes 84-2, 84-3, and 85-1. Immediately following the course completion, the forms were distributed to the IPs along with instructions for completing them. The IPs were asked to rate each of their students and return the completed forms to the Flight Commander. All 33 IPs completed the survey forms on 95 Flight Surgeon students (the number of students is different [cf. 87 who completed the Incentive Factors Survey] since some prior students returned only for flight training while others began the program but will complete the flight training at a later date). Four IPs trained two students each; the remaining 29 IPs trained three students each.

Attitude and Motivation Rating Results

The IP ratings indicate that the majority of the Flight Surgeon students had a positive attitude and were highly motivated (see Tables 4 and 5). Only five students were rated as exhibiting a negative or indifferent attitude and/or an unsatisfactory level of effort. The

TABLE 4
ATTITUDE RATINGS

OVERALL ATTITUDE DURING TRAINING	FREQUENCY	PERCENT
EXTREMELY POSITIVE	48	50.5
VERY POSITIVE	31	32.6
SLIGHTLY POSITIVE	12	12.6
INDIFFERENT	1	1.1
SLIGHTLY NEGATIVE	2	2.1
VERY NEGATIVE	1	1.1
EXTREMELY NEGATIVE	0	0.0
ATTITUDE CHANGE DURING TRAINING	FREQUENCY	PERCENT
STABLE	31	32.6
MUCH MORE POSITIVE	33	34.7
SLIGHTLY MORE POSITIVE	20	21.1
SLIGHTLY MORE NEGATIVE	7	7.4
MUCH MORE NEGATIVE	0	0.0
VARIED SLIGHTLY	4	4.2
VARIED A LOT	0	0.0

TABLE 5
MOTIVATION RATINGS

OVERALL EFFORT DURING TRAINING	FREQUENCY	PERCENT
EXTREME EFFORT	33	34.7
VERY HIGH EFFORT	31	32.6
HIGH EFFORT	17	17.9
MODERATE EFFORT	11	11.6
SLIGHT EFFORT	2	2.1
MINIMUM EFFORT	1	1.1
NO EFFORT	0	0.0
CHANGE IN MOTIVATION DURING TRAINING	FREQUENCY	PERCENT
STABLE	37	38.9
MUCH MORE MOTIVATED	24	25.3
SLIGHTLY MORE MOTIVATED	20	21.1
SLIGHTLY LESS MOTIVATED	5	6.3
MUCH LESS MOTIVATED	0	0.0
VARIED SLIGHTLY	8	8.4
VARIED A LOT	0	0.0

attitudes and effort levels of these students were generally stable or changed only slightly during the training program. Their IPs did not attribute any negative effects to the syllabus change. The attitudes and motivation levels of the other students were generally stable or showed improvement during the course. Although a few students showed slight declines in attitude and/or motivation, their overall ratings were generally high.

Ability and Performance Rating Results

The attitude and motivation ratings were very positive, but there was sufficient variation to indicate better discrimination on the survey form than on the standard gradeslip. The ratings of ability and performance were even more heterogeneous (see Tables 6 and 7). Approximately one-half the students were rated as having high or very high ability and exhibiting very good or excellent performance. Slightly more than one-third of the students exhibited intermediate levels of ability and performance; the remaining students showed low levels of ability and performance. Performance generally improved over the course of training.

TABLE 6
ABILITY RATINGS

ABILITY LEVEL	FREQUENCY	PERCENT
VERY HIGH	19	20.0
HIGH	25	26.3
SUBSTANTIAL	22	23.1
MODERATE	17	17.9
LIMITED	7	7.4
MINIMUM	2	2.1
NOT CAPABLE	3	3.2

TABLE 7
PERFORMANCE RATINGS

OVERALL PERFORMANCE DURING TRAINING	FREQUENCY	PERCENT
EXCELLENT	33	34.7
VERY GOOD	31	32.6
GOOD	17	17.9
SATISFACTORY	11	11.6
LOW	2	2.1
MINIMUM	1	1.1
UNSATISFACTORY	0	0.0
CHANGE IN PERFORMANCE DURING TRAINING	FREQUENCY	PERCENT
STABLE	37	38.9
MUCH IMPROVED	24	25.3
SLIGHTLY IMPROVED	20	21.1
SLIGHTLY DECREASED	6	6.3
MUCH DECREASED	0	0.0
VARIED SLIGHTLY	8	8.4
VARIED A LOT	0	0.0

Normative Rating Results

The 14 IPs who had previous experience with Flight Surgeon classes provided normative ratings on 41 students (see Table 8). When compared to previous Flight Surgeon students, 76% of the current students were rated as "above average" or "well above average" on overall attitude and motivation. The ratings of ability were more evenly distributed over all the rating categories, except "well below average." The rated performance of the students is generally commensurate with their level of ability, although in some cases student performance exceeds the ability expectation as a result of high levels of attitude and effort. Certainly, there is no indication in the normative ratings of any negative effects that could have resulted from the change in the training syllabus.

TABLE 8
FREQUENCIES (AND PERCENTAGES) OF THE NORMATIVE RATINGS (N = 41)

RATING	ATTITUDE	MOTIVATION	ABILITY	PERFORMANCE
WELL ABOVE AVERAGE	16 (39.0)	20 (48.8)	12 (29.2)	13 (31.7)
ABOVE AVERAGE	15 (36.6)	11 (26.8)	10 (24.4)	14 (34.2)
AVERAGE	8 (19.5)	7 (17.1)	10 (24.4)	5 (12.2)
BELOW AVERAGE	2 (4.9)	3 (7.3)	7 (17.1)	8 (19.5)
WELL BELOW AVERAGE	0 (0.0)	0 (0.0)	2 (4.9)	1 (2.4)

Direct Training Effects

The IPs were also asked to describe any effects, either positive or negative, on each student's attitude, motivation, or performance that were caused by the syllabus change. The IPs indicated that 18 of the 95 students were directly affected. A few of the effects were positive, especially with individuals who were initially apprehensive about flying. The majority of effects were negative, although not very severe. Representative comments were "...disappointed," "...expressed a desire to solo," "...a bit less motivated," and "...checkride was anticlimatic." The overall ratings for these students were generally very high.

Three students were described as being severely affected by the syllabus change. However, the attribution of negative effects to the "no solo" syllabus are contraindicated by other sections of the surveys. For example, the personal frustration (of not getting to fly solo) of one student did not interfere with the training program. The student was rated as having an extremely positive attitude and having given an

extreme effort. Another "frustrated" student exhibited poor psychomotor ability and would not have been allowed to solo at 14 hours if the opportunity had existed, according to comments by the IP.

DISCUSSION

The results of the Incentive Factors Survey and the Flight Training Survey do not indicate that the change from a solo criterion to a checkride criterion has a substantial negative effect on the Flight Surgeon training program. The solo flight opportunity was a major recruiting incentive to only a few of the Flight Surgeon students; in some cases it was a disincentive in the decision to apply for the program. Most, if not all, of the students would probably have applied for the program even knowing that the syllabus had been changed. The opportunity to receive flight training was generally more important as an incentive than the solo opportunity. The opportunities to enhance the student's military career and to study aviation medicine were also generally perceived as more important incentives.

The solo flight opportunity was less important as a recruitment incentive to the USMA and ROTC students. There are several explanations for this result. In contrast to the Flight Surgeons, the cadets are evaluating a career in Army aviation rather than making a career commitment. Second, the cadets perceive that successful completion of the summer training program will enhance their opportunity for assignment to the Aviation Branch, if requested (the perception is accurate for the ROTC cadets but not for the USMA cadets). Finally, the cadets will have the opportunity to fly solo during Initial Entry Rotary Wing Training if they are assigned to the Aviation Branch. It is extremely unlikely that the syllabus change will have any negative effects on the USMA and ROTC programs.

The results of the "Flight Training Survey" indicate that the attitudes, motivation, and performance of the Flight Surgeon students trained under the checkride syllabus were not only satisfactory but generally exemplary. Most of the students exhibited at least a very positive attitude, exerted at least a high level of effort, and performed to the maximum that their abilities permitted. There were exceptions, but these were either not attributable to the syllabus change or did not result in negative training effects.

The survey results are corroborated by the high success rate (98%) on the checkride and by the comments of the IPs and the Flight Commanders. In addition, the validity of the survey data is supported by the pattern of variable interrelationships. As expected, the ratings of ability and performance were highly correlated ($r = .91$). The ratings of attitude and motivation were also closely related ($r = .69$), but they were only moderately correlated with performance ($r = .51, .32$, respectively). This pattern of intercorrelations is consistent with the literature on attitudes, motivation, and work performance.

In conclusion, negative effects of the syllabus change on the Flight Surgeon program appear to be neither severe nor pervasive. Very few students indicated that the solo flight opportunity was an extremely important recruiting incentive. Likewise, the disappointment expressed by some students at not being permitted to solo was not manifested in poor attitudes, minimal effort, or unsatisfactory performance. The survey data certainly do not provide any compelling evidence to revert to a solo flight criterion. However, the results must be placed in

perspective: both surveys were retrospective reports, and there is no directly comparable control group. The Flight Surgeon, USMA, and ROTC programs should continue to be monitored for any deterioration in application rates or student performance that could be attributed to the syllabus change.

A P P E N D I X A

THE "INCENTIVE FACTORS SURVEY" FORMS

U.S. ARMY FLIGHT SURGEON COURSE

Incentive Factors Survey

There are many reasons why an individual decides to apply for the Army Flight Surgeon Course. An inventory of incentives that have influenced other flight surgeons' decisions is shown on the following page. The purpose of this survey is to assess the relative importance of these incentives.

The attached form has been designed to determine the relative importance of the incentives that influenced your decision to apply for the Flight Surgeon Course. First, read the entire inventory of incentive factors. Then, place a minus sign beside any factors that were disincentives, and a zero beside any factors that did not influence your decision.

The remaining incentives should account for 100% of the positive factors in your decision. Distribute 100 points among these incentives according to their relative importance in your career decision. Each remaining incentive must receive at least 1 point, and the total must equal 100 points. The ratio between points for any two incentives should approximate the relative importance of each incentive factor.

For instance, if there were two positive factors, and one was twice as important as the other, assign 67 points to the former and 33 points to the latter. If four factors contribute equally, assign 25 points to each. It may be helpful to select the most important factor first and weight its relative importance against all other factors. Then select the second most important factor, compare it to all remaining factors, and assign the relative proportion of the remaining points to that factor.

When you have distributed the 100 points among the incentives, please complete the biographical data section. This information is for correlational analyses, and will not affect your status in the program in any way.

Thank you for your assistance.

**U.S. ARMY FLIGHT SURGEON
Incentive Factors Survey**

POINTS INCENTIVE FACTORS

- _____ OPPORTUNITY TO ENHANCE MILITARY CAREER
- _____ OPPORTUNITY TO FULFILL UNIT REQUIREMENTS
- _____ OPPORTUNITY TO STUDY AVIATION MEDICINE
- _____ OPPORTUNITY TO RECEIVE FLIGHT TRAINING
- _____ OPPORTUNITY TO FLY SOLO
- _____ OPPORTUNITY FOR ASSIGNMENT (SPECIAL OR LOCATION)
- _____ OPPORTUNITY TO PRACTICE AVIATION MEDICINE
- _____ OPPORTUNITY TO FLY AS REGULAR DUTY
- _____ OPPORTUNITY TO RECEIVE FLIGHT PAY
- _____ OPPORTUNITY TO ASSOCIATE WITH AVIATION COMMUNITY

**BIOGRAPHICAL INFORMATION
(Check or enter as appropriate)**

ARMY COMPONENT: Active Army _____ Reserve _____ National Guard _____

GRADE: _____ SEX: Male _____ Female _____

MARITAL STATUS: Single _____ Married _____ Separated _____ Divorced _____ Widowed _____

AGE: _____
 Yrs. Mos.

TOTAL FLIGHT _____ Hours Airplane
EXPERIENCE: _____ Hours Helicopter

U.S. ARMY FLIGHT CMST COURSE
Incentive Factors Survey

There are many reasons why an individual decides to apply for the Flight CMST Course. An inventory of incentives that have influenced other cadets' decisions is shown on the following page. The purpose of this survey is to assess the relative importance of these incentives.

The attached form has been designed to determine the relative importance of the incentives that influenced your decision to apply for the Flight CMST Course. First, read the entire inventory of incentive factors. Then, place a minus sign beside any factors that were disincentives, and a zero beside any factors that did not influence your decision.

The remaining incentives should account for 100% of the positive factors in your decision. Distribute 100 points among these incentives according to their relative importance in your career decision. Each remaining incentive must receive at least 1 point, and the total must equal 100 points. The ratio between points for any two incentives should approximate the relative importance of each incentive factor.

For instance, if there were two positive factors, and one was twice as important as the other, assign 67 points to the former and 33 points to the latter. If four factors contribute equally, assign 25 points to each. It may be helpful to select the most important factor first and weight its relative importance against all other factors. Then select the second most important factor, compare it to all remaining factors, and assign the relative proportion of the remaining points to that factor.

When you have distributed the 100 points among the incentives, please complete the biographical data section. This information is for correlational analyses, and will not affect your status in the program in any way.

Thank you for your assistance.

U.S. MILITARY ACADEMY
CMST FLIGHT PROGRAM
Incentive Factors Survey

<u>POINTS</u>	<u>INCENTIVE FACTORS</u>
_____	OPPORTUNITY TO ENHANCE MILITARY CAREER
_____	OPPORTUNITY TO FULFILL CMST REQUIREMENTS
_____	OPPORTUNITY TO EVALUATE A CAREER IN ARMY AVIATION
_____	OPPORTUNITY TO RECEIVE FLIGHT TRAINING
_____	OPPORTUNITY TO FLY SOLO
_____	OPPORTUNITY FOR FUTURE ASSIGNMENT (BRANCH)
_____	OPPORTUNITY TO VISIT SOUTHEAST U.S.
_____	OPPORTUNITY TO EARN A DISTINCTIVE PATCH
_____	OPPORTUNITY TO TEST FLYING SKILLS

BIOGRAPHICAL INFORMATION
(Check or enter as appropriate)

USMA CLASS #: _____ SEX: Male _____ Female _____

AGE: _____ PREVIOUS FLIGHT EXPERIENCE: _____ Hours Airplane
Yrs. Mos. _____ Hours Helicopter

RANK ORDER YOUR TOP THREE CHOICES OF CMST PROGRAMS:

1 _____ 2 _____ 3 _____

**U.S. ARMY ROTC
FLIGHT TRAINING AND ORIENTATION PROGRAM**

Incentive Factors Survey

There are many reasons why an individual decides to apply for the Flight Training and Orientation Program. An inventory of incentives that have influenced other cadets' decisions is shown on the following page. The purpose of this survey is to assess the relative importance of these incentives.

The attached form has been designed to determine the relative importance of the incentives that influenced your decision to apply for the Flight Training and Orientation Program. First, read the entire inventory of incentive factors. Then, place a minus sign beside any factors that were disincentives, and a zero beside any factors that did not influence your decision.

The remaining incentives should account for 100% of the positive factors in your decision. Distribute 100 points among these incentives according to their relative importance in your career decision. Each remaining incentive must receive at least 1 point, and the total must equal 100 points. The ratio between points for any two incentives should approximate the relative importance of each incentive factor.

For instance, if there were two positive factors, and one was twice as important as the other, assign 67 points to the former and 33 points to the latter. If four factors contribute equally, assign 25 points to each. It may be helpful to select the most important factor first and weight its relative importance against all other factors. Then select the second most important factor, compare it to all remaining factors, and assign the relative proportion of the remaining points to that factor.

When you have distributed the 100 points among the incentives, please complete the biographical data section. This information is for correlational analyses, and will not affect your status in the program in any way.

Thank you for your assistance.

Incentive Factors Survey

- _____ OPPORTUNITY TO ENHANCE MILITARY CAREER
- _____ OPPORTUNITY FOR INCREASED EXPOSURE TO MILITARY LIFE STYLE
- _____ OPPORTUNITY TO EVALUATE A CAREER IN ARMY AVIATION
- _____ OPPORTUNITY TO RECEIVE FLIGHT TRAINING
- _____ OPPORTUNITY TO FLY SOLO
- _____ OPPORTUNITY FOR FUTURE ASSIGNMENT (BRANCH)
- _____ OPPORTUNITY TO VISIT SOUTHEAST U.S.
- _____ OPPORTUNITY TO EARN A DISTINCTIVE BADGE
- _____ OPPORTUNITY TO TEST FLYING SKILLS

AGE:
 Yrs. Mos.

PREVIOUS FLIGHT
EXPERIENCE: Hours Airplane
 Hours Helicopter

SEX: Male Female College Major

What month and year did you apply for the FTOP?

A P P E N D I X B
THE "FLIGHT TRAINING SURVEY" FORM

FLIGHT SURGEON

FLIGHT TRAINING SURVEY

Attached is a survey designed to collect information about the attitudes, motivation levels, and performance levels of the Flight Surgeons attending the Flight Training Course. Complete the survey for each Flight Surgeon you have trained and return the completed surveys to the Flight Commander.

Please read each question and the accompanying checklist or scale carefully (note that some scales have positive and negative values while others have only positive values). On each question, mentally review your experience with the Flight Surgeon being rated. Then, select the most appropriate answer and indicate your response on the survey. If you are not sure of an answer, give your best estimate and add a comment on the last page. Be sure to answer all the questions.

Questions 13b and 13c ask you to describe the effects of the syllabus change on the Flight Surgeon you are evaluating. Be as specific as possible. Indicate what attributes were affected and whether the effects were positive or negative. If more space is needed, continue on the reverse side of the page. Finally, your comments on the Flight Training Program and/or the Flight Surgeon are requested in Item 14.

The information you provide on the survey is confidential. It will be used for research purposes only, and will not be entered in the Flight Surgeon's record. Research reports will not include information about any individual; they will include information about groups only (that is, averages, etc.).

Thank you for your assistance in completing the survey.

FLIGHT SURGEON

FLIGHT TRAINING SURVEY

CLASS _____

FLIGHT SURGEON NAME _____ DATE _____

1. Use the following scale to describe the general feeling or opinion of the Flight Surgeon about the flight training program. That is, what was the Flight Surgeon's overall attitude toward the training program?
(Enter the scale value in the space on the left: indicate + or -).

EXTREMELY NEGATIVE	VERY NEGATIVE	SLIGHTLY NEGATIVE	INDIFFERENT	SLIGHTLY POSITIVE	VERY POSITIVE	EXTREMELY POSITIVE
'	'	'	'	'	'	'
-3	-2	-1	0	+1	+2	+3

2. Check the statement that best describes the Flight Surgeon's change in attitude from the beginning to the end of flight training.
(Check only one.)

☐ Stable, did not change
☐ Slightly more positive
☐ Slightly more negative
☐ Much more positive
☐ Much more negative
☐ Varied slightly from day to day
☐ Varied a lot from day to day

3. Use the following scale to describe the amount of effort, regardless of ability, the Flight Surgeon expended during flight training. That is, what was the Flight Surgeon's overall level of motivation during the training program?
(Enter the scale value in the space on the left.)

NO EFFORT	MINIMUM EFFORT	SLIGHT EFFORT	MODERATE EFFORT	HIGH EFFORT	VERY HIGH EFFORT	EXTREME EFFORT
'	'	'	'	'	'	'
0	1	2	3	4	5	6

4. Check the statement that best describes the change in the Flight Surgeon's motivation from the beginning to the end of flight training.
(Check only one.)

☐ Stable, did not change
☐ Slightly more motivated
☐ Slightly less motivated
☐ Much more motivated
☐ Much less motivated
☐ Varied slightly from day to day
☐ Varied a lot from day to day

5. Use the following scale to describe the Flight Surgeon's aptitude or overall level of ability in learning to fly.
(Enter the scale value in the space on the left.)

NOT CAPABLE	MINIMUM ABILITY	LIMITED ABILITY	MODERATE ABILITY	SUBSTANTIAL ABILITY	HIGH ABILITY	VERY HIGH ABILITY
'	'	'	'	'	'	'
0	1	2	3	4	5	6

6. Use the following scale to describe how skillfully the Flight Surgeon performed the syllabus tasks during flight training.
(Enter the scale value in the space on the left.)

UNSATIS- FACTORY	MINIMUM PERFORMANCE	LOW PERFORMANCE	SATISFACTORY PERFORMANCE	GOOD PERFORMANCE	VERY GOOD PERFORMANCE	EXCELLENT PERFORMANCE
'	'	'	'	'	'	'
0	1	2	3	4	5	6

7. Check the statement that best describes the change in the Flight Surgeon's performance from the beginning to the end of flight training.
(Check only one.)

☐ Stable, did not change
☐ Slightly improved
☐ Slightly decreased
☐ Much improved
☐ Much decreased
☐ Varied slightly from day to day
☐ Varied a lot from day to day

8. How many Flight Surgeons have you trained to fly, prior to this class?

If your answer to question 8 is zero (0), skip to question 13.

Use the following scale to answer questions 9 through 12. These questions require you to compare the Flight Surgeon you are rating to the other Flight Surgeons you have trained. (Enter the scale value in the spaces on the left; indicate + or -.)

WELL BELOW AVERAGE	BELOW AVERAGE	AVERAGE	ABOVE AVERAGE	WELL ABOVE AVERAGE
-2	-1	0	+1	+2

9. _____ How does the overall attitude of this Flight Surgeon compare to other Flight Surgeons you have trained?
10. _____ How does the overall motivation level of this Flight Surgeon compare to other Flight Surgeons you have trained?
11. _____ How does the overall ability level of this Flight Surgeon compare to other Flight Surgeons you have trained?
12. _____ How does the overall performance of this Flight Surgeon compare to other Flight Surgeons you have trained?
- 13a. Did the change in the syllabus from a solo flight to a formal checkride cause any effects, either positive or negative, on this Flight Surgeon's attitude, motivation, and/or performance? (Check only one.)
- _____ Definitely yes (complete 13b and/or 13c)
- _____ Probably yes (complete 13b and/or 13c)
- _____ Probably no (13b and/or 13c are optional)
- _____ Definitely no (skip 13b and 13c)
- 13b. Please describe any effects on this Flight Surgeon that may be due to the absence of a solo flight opportunity (be as specific as possible):
- _____
- _____
- _____
- 13c. Please describe any effects on this Flight Surgeon that may be due to the presence of a formal checkride (be as specific as possible):
- _____
- _____
- _____
14. _____ If you wish to make any additional comments, please do so on the reverse of this page. Thank you for your assistance in completing this survey.