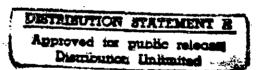DOT/FAA/AM-97/16

Office of Aviation Medicine
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An Evaluation of Safety Seminars

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Washington, DC 20591

July 1997

Final Report

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16. Abstract

Four versions of an evaluation form, each of which had a set of common items, were distributed at safety seminars conducted by the Federal Aviation Administration. These evaluation forms assessed participant satisfaction with seminars, perceptions of the seminar content and the presenter, frequency of attendance at seminars, aviation qualifications and experience, seminar content, format and venue preferences, access to computer and video technology for training delivery, self-perceived knowledge and proficiency, training activities, and maintenance activities. Seminar evaluation forms were received for 226 seminars, representing approximately 66% of the FAA Flight Standards District Offices. A total of 5,615 seminar forms were received, approximately equally divided among the four form versions. This represents approximately 44% of the reported attendance at the 226 safety seminars. Seminar participants consistently rated the seminars favorably. Of the participants, 99% reported that they were satisfied with the seminar, 99% would recommend seminars to fellow pilots, and 96% either definitely or probably will attend another safety seminar in the next year. Data on computer and video ownership and use suggest that computer-based training might be a feasible means for disseminating training programs. Over half of the participants reported membership in at least one flying organization, and almost half reported that they had performed some preventive maintenance on an aircraft during the previous six months. The data provided by the study may be used to guide the content and format of future seminars, while supporting the development of alternative forms of training delivery.

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TABLE OF CONTENTS

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TABLE OF CONTENTS
(CONTINUED)

AN EVALUATION OF SAFETY SEMINARS

INTRODUCTION

This report describes a large-scale, nationwide evaluation of aviation safety seminars conducted by the Federal Aviation Administration (FAA). These seminars are the primary means utilized by the FAA to provide continuing education on safety and other aviation issues to the pilot population. They are generally aimed at private and commercial pilots who do not otherwise receive training from their employer or some other source. Many of the seminars are conducted by FAA Aviation Safety Program Managers (SPMs) located at each of the 78 Flight Standards District Offices (FSDOs). In addition, Aviation Safety Counselors (ASCs), volunteers with expertise in aviation, also conduct many seminars, both with and without direct participation by the local SPM.

Despite the importance of the safety seminars as a means of disseminating safety information, no data beyond the most rudimentary enumeration of total seminars and attendees had previously been collected. Therefore, individual SPMs might have developed a general knowledge of the characteristics of attendees, particularly those who attended often, so as to become acquainted with the SPM; however, SPMs lacked detailed information on the majority of seminar attendees. This is an undesirable position, since to some degree, the attendees can be viewed as customers of the SPMs. In this case, the primary dictum applies, "Know your product, and know your customer." SPMs, because of their extensive aviation experience, know their product very well. Unfortunately, they often do not have the information required to enable them to know their customers as well.

Knowing the customers — who they are, what they are like, what they want, how they want it, when they want it, where they want it, what they need — enables the SPMs to shape their product to meet the customers'

demands. In selling their product — aviation safety information — the SPMs are competing with many other alternative uses of the customers' resources — including time and effort. Time and effort devoted to attending safety seminars cannot also be devoted to other activities, such as scout meetings, business functions, and simply being at home with the family. The customer, if he or she is to buy the SPM's product by attending a seminar, must perceive that the benefit of the seminar justifies the cost. (See Kotler & Andreasen, 1991, for a comprehensive overview of marketing in this area.) Besides having a high quality product, we must also tailor the format and delivery of that product so as to maximize its utilization by the target population. This means that we must know the characteristics of the seminar attendees so that we may tailor the product to fit their needs and capabilities. An excellent product for high-time instrument-rated pilots may be useless for novice private pilots, and vice versa.

This study was designed to meet the needs of the SPMs for detailed information on the characteristics of seminar attendees. In addition to collecting attendee demographics that could be used to focus training content and delivery, satisfaction measures were also included. These measures provided information on attendees' satisfaction and views of the existing seminars and provided a baseline against which future modifications could be compared. These data, combined with data from other studies of the pilot population (Hunter, 1995; Rakovan, Wiggins, Jensen, & Hunter, in press) also could be used to shape the development of both the content and format of new training products. For example, data on personal computer access could be used to evaluate the feasibility of disseminating new training products through a computer-based training format. Thus, the

study would serve both an immediate and long-term need for detailed information on seminar attendee characteristics, perceptions, and attitudes.

METHOD

Instrument Development

Through discussions with SPMs, their regional and national managers, and researchers, several areas of interest were identified that would be addressed in the evaluation instrument. These interest areas were:

- Satisfaction with seminar
- Perceptions of the seminar content and the presenter
- Frequency of attendance at seminars
- Aviation qualifications and experience
- Seminar content, format, and venue preferences
- Access to computer and video technology for training delivery
- Self-perceived knowledge and proficiency
- Training activities
- Maintenance activities

From these interest areas, a preliminary instrument was developed and field-tested at a safety seminar. Attendees were encouraged to comment upon the adequacy of the instructions, the clarity and relevance of the questions, and to suggest other items that should be included. Following this trial, the instrument was circulated among a group of SPMs for comment. The general result from both the pilots at the safety seminar and the SPMs was that the instrument was too long and that participants would be reluctant to complete such a lengthy instrument. In addition, doing so would detract from the time available for the seminar. Based upon these comments, it was decided to limit the amount of information that a single participant would be asked to provide to that which could be contained on the front and back of a single sheet of paper. To enable the collection of information on all the areas of interest, multiple versions of the instrument were developed.

A minimum set of information on participant satisfaction, perceptions of the seminar, and aviation qualifications and experiences was identified, and questions regarding these areas were placed on the front page of each version. Each of the four versions of the instrument contained a different set of questions on the reverse side of the sheet. This approach allowed us to collect a common data set on certain critical issues for all participants, while at the same time collecting information on all the other areas of interest without overburdening the participants. Following a final review by regional SPMs and the national manager for safety programs, the four instruments were printed as optically-scannable forms.

In addition to the Seminar Evaluation Forms to be completed by the seminar participants, an additional Seminar Leader's Form was prepared. This form was to be completed by the seminar leader to record such information as seminar content and venue and number of attendees.

Distribution

Approximately 45 days prior to the distribution of the forms, a message was sent from the Manager, National Safety Program, to all SPMs advising them of the forthcoming mailing and asking them for their support. This was followed approximately 15 days later by a mailing to all Regional Safety Program Managers in which they were provided a copy of the instruments to be used in the study and were requested to encourage all of the SPMs within their respective regions to participate in the study.

The Seminar Evaluation Forms (SEFs) and Seminar Leader Forms (SLFs) were mailed to safety program managers in 75 of the 78 Flight Standards District Offices during August of 1995. Forms were not mailed to three FSDOs at which there was no SPM.

The package provided to each SPM included a cover letter from the Manager, National Safety Program, briefly explaining the purpose of the study and requesting the SPM's assistance. Detailed instructions on the completion of the SLF and the SEF were

also provided, along with a package of self-addressed mailing labels that the SPM could use to return the completed forms.

The SPMs were instructed to begin handing out the evaluation forms at all seminars conducted on or after September 18, 1995. Evaluation forms were to be distributed at seminars until the supplies of the forms were exhausted. The numbers of evaluation forms provided to each SPM were determined by stratification based upon regional pilot populations with 50% oversampling for Alaska and New England regions to ensure a sufficient number of completed forms for analysis. Within each region, equal numbers of each version of the form were provided to each FSDO.

Approximately 90 days after the scheduled start date (September 18) a follow-up message was sent to all SPMs reminding them of the program and asking that they distribute the forms at their seminars.

RESULTS

Of the 24,000 evaluation forms distributed to the FSDOs, 5,615 were returned. Approximately 75% of the returned forms were received during the first three months of the data collection period (October through December 1995), with virtually all the remainder being received during the next three month period (January through March 1996). Seminar Leader Forms were received for 226 seminars.

Total reported attendance (from the SLF) at the 226 seminars was 12,874; participation rate among seminar attendees was therefore 44% (5,615/12,874).

However, some (25) of the 75 FSDOs did not return any of the forms. It is possible that those offices did not receive their shipment of forms or failed to recognize them and properly route them to the SPM. It is also possible, though rather unlikely, that no safety seminars were conducted by that office. Alternatively, none of the participants in any of the seminars may have elected to complete and return the forms, or the local SPM did not choose to participate in the evaluation. The latter explanation seems most likely, as this was a voluntary program for the SPMs

and some of them may have been unconvinced of its benefit, regardless of the advance notification and reminders from FAA Headquarters.

Thus, while 66% of the SPMs responded by participating in the study, 33% did not. Further, there was considerable variation in the participation rates across the regions, with some regions having 100% participation, while in others data were available for only about half of the FSDOs. Table 1 shows the numbers of forms provided to each FSDO in each region, the numbers of forms received from each region, and the participation rates among regions, defined as the percentage of FSDOs that provided seminar evaluation forms for at least one seminar.

Unfortunately, the limited participation confounds the interpretation of the data and limits generalizability of the results. Particularly for those regions with relatively low participation, we cannot know the extent to which their nonparticipation biases the results. One might speculate that SPMs whose safety seminars are not well received by the pilot population might be more likely not to participate, out of a fear of obtaining derogatory information. Since we cannot know the extent or direction of these effects, users of these data must remain aware of these possible effects and exercise due caution in interpreting the results. Generalizations should be limited to those FSDOs for which data are available and users should be aware that overall results reported here may not apply for those regions with low participation rates.

In the sections that follow, we will first present the data from the Seminar Leader's Forms for the 226 seminars, then the combined data from the common front page of all four evaluation forms, and finally, the data from each of the unique back pages of the evaluation forms.

Seminar Leader's Form

The Seminar Leader's Form (SLF) provided the mechanism for collecting information on the content and venue of the safety seminars. By having the FAA Region, FSDO Number, and a unique code number entered both on the SLF and on the Seminar Evaluation Forms (SEF), it was also possible to match

Table 1. Distribution and receipt of forms

Region	Number of Forms Provided [1]	Number of Forms Received [2]	Number of FSDOs Participating	Percent of FSDOs Participating
Alaska	2400	235	3	100
Central	2400	914	4	80
Eastern	2400	542	5	45
Great Lakes	3200	1014	9	69
New England	2400	430	3	100
Northwest Mountain	2400	211	5	71
Southern	3200	1096	9	75
Southwest	2400	530	7	78
Western Pacific	3200	443	6	50

Note 1: The total number of forms provided to each region comprised equal numbers of each of the four form versions.
Note 2: This column does not total to 5615 because regional identification was not provided on some forms. Of the total 5615 forms returned, the composition was: Version 1 - 1356; Version 2 - 1438; Version 3 - 1438; Version 4 - 1383.

information from the two sources. Thus, it would be possible to perform analyses that dealt with the impact of day of week, duration of seminar, or other seminar attributes of the seminar attendees' opinions. It also allowed seminar leaders to obtain feedback on participants' evaluations for specific seminars, since each seminar was uniquely identified by the combination of Region, FSDO, and code numbers.

From the SLF we find that the mean reported attendance at the 226 seminars was 57, with a standard deviation of 58 and a range of 3 to 478. The median reported attendance was 36. The histograph in Figure 1 shows the distribution of seminar attendance, excluding two seminars with over 300 attendees.

Table 2 shows the numbers of seminars held in each region. The unit of analysis is therefore, seminars, not attendees. The Southern Region had, by far, the largest number of seminars, accounting for 26% of the 226 seminars in this sample. Although some data are available from the Flight Standards Performance Measuring System on the numbers of seminars held in each region annually, those data are somewhat suspect due to confounding with other activities that were not

clearly formal safety seminars. Therefore, no analyses were undertaken to compare frequencies of seminars in this sample to the general frequency of seminars in each region. However, this topic will be addressed, in terms of pilot attendees, later in this report.

Tables 3 through 5 provide information on when and where the seminars took place. Predominately, the seminars were held in the evenings in the middle of the week, and most lasted about two hours. The SLF failed to adequately capture the location, since "Other" was the modal response (41%). Meeting rooms at Fixed Base Operators (FBOs) or flying clubs was the second most common response.

Since more than one topic is usually addressed at a safety seminar, the question regarding Subject of the Seminar allowed for multiple responses. From Table 6 we see that Judgment and Decision Making was discussed at almost half of the seminars. Federal Aviation Regulations (FARs) and flight hazards (i.e., weather) were discussion topics at about one-third of the seminars. Least often discussed was the topic of aerial maneuvers, arguably the most difficult to address in a seminar setting. Interestingly, this seems to

Figure 1

Reported numbers of attendees at safety seminars

Table 2. Seminars held in each region

Region	Frequency	Percent
Alaska	5	2
Central	18	8
Eastern	16	7
Great Lakes	34	15
New England	15	7
Northwest Mountain	29	13
Southern	59	26
Southwest	20	9
Western Pacific	30	13

Table 3. Day of week and time of day when seminars were held

Day of Week	Frequency	Percent
Sunday	3	1
Monday	11	5
Tuesday	56	25
Wednesday	53	24
Thursday	69	31
Friday	6	3
Saturday	26	12
Time of Day		
Morning	25	11
Afternoon	8	4
Evening	192	85

Table 4. Duration of seminars

Duration	Frequency	Percent
1 hour	9	4
1 1/2 hours	16	7
2 hours	127	56
3 hours	56	25
over 3 hours	16	7

Table 5. Location of seminars

Location	Frequency	Percent
Airport hangar	36	13
FBO or flying club	50	22
Hotel meeting room	12	5
College classroom	29	13
Other	93	41

Table 6. Subjects covered during seminar

Subject	Frequency	Percent
Aerial maneuvers	13	6
Airport operating procedures	46	20
Air space classification	39	17
ATC procedures	46	20
Aircraft systems and performance	45	20
Emergency procedures	51	23
Federal aviation regulations	73	32
Flight hazards	71	32
IFR procedures and techniques	18	8
Judgment/decision making	107	47
Navigation aids and procedures	28	12
Preflight	26	12
Takeoff and landing procedures	41	18
Other	97	43

correspond well to the attendees' perceptions of the optimal settings for learning about these topics, as we will see later in Table 18.

To maximize attendance, Safety Program Managers (SPMs) often seek support in staging seminars from other organizations such as flying clubs, pilot organizations or alumni groups. From Table 7, we see that 78% of the 226 seminars in this sample had such a co-sponsor. Another inducement to attendance, the door prize, was offered in almost half of the seminars.

As an inducement to the seminar leader to participate in this evaluation, the instructions to the seminar leader included an offer to provide feedback on the results of the evaluation to any seminar leader who wished to receive it. This feedback was in the form of collated responses to the questions on the evaluation forms from the seminars conducted by that individual

seminar leader. Table 7 shows that almost all the seminar leaders indicated they wished to take advantage of this offer and requested that they be provided with feedback.

Seminar Evaluation Form - Common Page

The common first page of each of the four evaluation forms contained space to record the FAA region in which the seminar was held, along with the identification number of the sponsoring FSDO and the unique code number for that particular seminar. Table 8 presents the numbers of evaluation forms received from each of the nine FAA regions and the percentage of the total number of evaluation forms. For comparison, the percentage of the total pilot population for each region is also given. The numbers of responses range from a low of 211 for the Northwest Mountain

Table 7. Other seminar information

	Frequency - Yes	Percent - Yes
Co-sponsor	176	78
Door prize	109	48
Want feedback	212	94

Table 8. Distribution of seminar attendees and pilot population by FAA region

Region	Frequency	Attendees Percent	Population Percent
New England	430	8	5
Eastern	542	10	13
Southern	1096	20	19
Great Lakes	1014	19	17
Central	914	17	5
Southwest	530	10	12
Northwest Mountain	211	4	10
Western Pacific	443	8	17
Alaska	235	4	2

region, to a high of 1,096 for the Southern region. In comparing the percentage of attendees to the pilot population in the regions, we see that the Central region is considerably overrepresented in the sample, while the Northwest Mountain, and to a slightly lesser extent, Western Pacific regions, are underrepresented. Overrepresentation for the New England and Alaska regions is the result of deliberate oversampling for those two regions in an attempt to ensure adequate samples.

Tables 9 and 10 show the responses to the adjective checklist items that captured the attendees' views of the seminar they had just attended. For some of the items, there is no obvious better direction of response, at least not at this global level of analysis. For example,

the first 2 items in Table 9 show that the subjects of the seminar were judged "familiar" by 65% of the attendees, while 35% found that the subjects were "new" (at least to them). Similarly, the level of presentation was thought to be "advanced" to 55% of the attendees, and "elementary" to 45%. One cannot say, in the absence of any further information, whether these are satisfactory levels for these attributes or whether some effort is needed to change them. More detailed analyses, utilizing specific attendee groups (such as student or private pilots) and specific seminar topics (for example, decision making or ATC procedures), would provide more enlightening results. Such analyses, where feasible and requested by the sponsoring organization, may be accomplished in the future.

8

Table 9. Attendees descriptions of seminar

		Frequency	Percent
Subjects were:			
	Familiar	3430	65
	New	1831	35
Level of presentation:			
	Advanced	2780	55
	Elementary	2271	45
Quality of materials:			
	High	4862	94
	Low	305	6
Speaker's knowledge:			
	High	5202	99
	Low	54	1
Speaker's presentation:			
	Clear	5179	98
	Confusing	99	2
Information presented:			
	Useful	5261	99
	Not relevant	64	1
Seminar designed for:			
	Novices	3177	74
	Experts	1122	26
Presentation was:			
	Interesting	5135	98
	Boring	113	2
Overall, I am:			
	Satisfied	5225	99
	Dissatisfied	79	1

9

For many of the items, however, the preferred orientation is obvious. Virtually everyone would agree that interesting seminars are better than boring ones and that having speakers with a high level of knowledge is preferable to having speakers who don't know what they are talking about. On all items of this type, the responses of the attendees were overwhelmingly positive. The last item in Table 9 shows that 99% of the attendees were "satisfied" with the seminar. Likewise, from Table 10, 99% of the attendees would recommend seminars to other pilots.

Table 11 gives the primary reason for attending the safety seminar. The topic to be discussed, and their past experience with seminars together accounted for the majority of the responses to this item. Since seminar topic is a major determinant of attendance, the choice and advertising of topics, within a strategy of meeting a variety of training needs, becomes very important. Although not addressed in the current study, topics may repel as well as attract attendees, and there may well be a differential effect, which is moderated by demographic, skill, and other experimental variables. Clearly, this would be an interesting and potentially valuable subject for future research.

Another measure of attendees' satisfaction with the safety seminars, beyond their simple statements of satisfaction, is their intent to attend another seminar. Of the attendees, 96% either "definitely" or "probably" will attend another safety seminar during the next year, as shown in Table 12. This strongly supports the results noted earlier.

One impression held by those who conduct safety seminars was that they "preached to the choir" and, for the most part, the same people attended safety seminars repeatedly, with little new influx. The data given in Table 13 indicate that such a perception may not be entirely correct. These data show that about one- third of seminar attendees have not been to another safety seminar in the last year, and that another third had only attended one seminar in the previous year. Only about one-third of the seminar attendees seems to constitute the "choir" who attend multiple seminars during a single year. It is hard to

understand how to interpret these data, particularly in light of the data given in Table 12, which showed that almost all the attendees intend to attend another seminar within the next year. Perhaps intentions are fleeting, or the relationships among intentions, topics to be discussed, and opportunities to attend (which are not addressed here) are too complex to be captured by a single question.

The certificate levels, ratings, and total and recent experience of the attendees are reported in Tables 14 through 17. The safety seminars attract a higher proportion of private pilots than exist in the overall pilot population (53% compared to 42%). They also draw a correspondingly lower proportion of airline transport pilots than make up the pilot population (7% versus 20%). The proportions of student and commercial pilots in the seminars are approximately equal to their proportions in the pilot population.

There were substantially more Certified Flight Instructors among the attendees than are found among the pilot population (18% compared to 11%), while the proportion of attendees with instrument ratings (40%) was considerably less than the pilot population (54%). The latter finding is probably due to the relatively high proportion of private pilots among attendees.

The reported total and recent flight experience, given in Tables 16 and 17, respectively, approximate the values found in an earlier survey of the total pilot population (Hunter, 1995). Like the general population of private pilots, the majority of attendees had 500 hours or less of total flight experience. The recent experience was also similar to that of the private pilot population. Hunter (1995) reported that half of the private pilots in his survey had flown 30 or fewer hours in the previous year; or, roughly 2.5 hours per month. Of the seminar attendees, 44% reported having flown 10 hours or less in the previous 90 days; or, roughly 3.3 hours per month.

The evaluation form also asked for the age of the participants. The mean age was 46, with a standard deviation of 15.

Table 10. Attendees evaluation of seminar

		Frequency	Percent
Learned something new:			
	Yes	5068	94
	No	309	6
Refreshed old skills and knowledge:			
	Yes	4797	92
	No	403	8
Had my questions answered:			
	Yes	4927	98
	No	84	2
Would recommend seminars:			
	Yes	5207	99
	No	47	1

Table 11. Primary reason for attending seminar

	Frequency	Percent
Curiosity	396	8
Friend's recommendation	391	8
Topic to be discussed	1602	32
Professional obligation	812	16
Reputation of speaker	344	7
Good previous seminar	1454	29

Table 12. Intent to attend another safety seminar

	Frequency	Percent
Definitely will	3894	72
Probably will	1317	24
Undecided	148	3
Probably will not	30	1
Definitely will not	4	0

Table 13. Number of seminars attended in previous 12 months

	Frequency	Percent
None (0)	1710	31
1	1593	29
2 to 4	1690	31
5 to 7	306	6
8 to 12	110	2
More than 12	84	2

Table 14. Highest certificate level

	Frequency	Percent
Student	728	14
Recreational	8	0
Private	2845	53
Commercial	1421	26
Air Transport	391	7

Table 15. Other ratings and aircraft ownership

	Frequency - Yes	Percent - Yes
CFI certificate	1022	18
Instrument rating	2194	40
Multi-engine rating	1395	26
Own an aircraft	2372	43

Table 16. Total flight hours

	Frequency	Percent
Less than 100	995	18
100 to 500	1991	36
501 to 1,000	870	16
1,001 to 3,000	852	16
3,001 to 10,000	559	10
More than 10,000	205	4

Table 17. Flight hours during previous 90 days

	Frequency	Percent
None (0)	748	14
1 to 10	1624	30
11 to 20	1423	26
21 to 50	1125	21
51 to 100	327	6
More than 100	218	4

SEMINAR EVALUATION FORM - VERSION 1

The unique items contained on the reverse side of Version 1.0 of the SEF primarily addressed the attendees' opinions and preferences regarding seminars in general — not specifically the one they had just attended. The data contained in Tables 18 through 25 are potentially useful for SPMs and others deciding on the best day and time to hold a safety meeting so as to attract the largest participation. Clearly, Mondays and Fridays (Table 21) are poor choices, as are meetings held at someone's house (Table 19) or meetings in which only a video is shown without an accompanying speaker (Table 23). Lunchtime seminars also seem unlikely to attract attendees (Table 20); although, the lunchtime seminars held in New York City are usually filled to capacity (R. Baker, personal communication, July 1996).

These data are also potentially useful in the design and implementation of new training products. The data in Table 18 show that seminar attendees have some definite expectations about what subjects can and cannot be effectively addressed in a seminar format. Not surprisingly, aerial maneuvers (for example, slow flight or stall recovery procedures) are generally thought best learned from a certified flight instructor (CFI). Alternatively, there are some subjects for which seminars are clearly the preferable format. Flight hazards (for example, weather), pilot decision making, human factors, and crew resource management are all topics for which the seminar was considered the most effective method of instruction.

It is interesting to note that computer-based training was very infrequently chosen as the preferred training medium, even though some topics, such as navigation aids and procedures, might be very well addressed through such a medium. It seems likely that this reflects a very limited exposure to computer-based training by the pilots, rather than a bias against that medium based upon personal experiences with unsatisfactory computer-based training, since (from Table 27) the vast majority indicated they would use computer safety programs developed by the FAA.

Although they may be willing to try computer-based training (presumably at home), the preference of attendees for a live speaker in seminars is quite clear from the data shown in Table 23. Of the seminar formats given, the combination of live speaker and video was the preferred format for almost half of the attendees, while a lecture by a safety expert accounted for most of the remainder.

The preference of the attendees for a live speaker who can discuss the aviation safety topic knowledgeably places a significant burden on those arranging safety seminars. As anyone who has attended a safety seminar (or any similar lecture by a technical expert) is well aware, some speakers are able to make the most pedestrian of subjects seem fascinating and can hold the audience's attention almost effortlessly, while other speakers can make the most exciting of topics as dull as the shine on a two-dollar pair of shoes and induce profound drowsiness in the most insomniac of listeners. Perhaps these experiences are reflected in the data given in Table 24, which show that the single best way to improve attendance at seminars is to provide more exciting presentations.

13

Table 18. Most effective method for learning about aviation topics (% by row)

	Talk to other pilots	Safety seminars	CFI	Books or manuals	Videotape	Computer based training
Aerial maneuvers	6	10	69	7	6	2
Airport operating procedures	13	31	20	28	7	1
Air space classification & use	2	36	15	35	11	2
Air traffic control procedures	3	37	20	28	10	2
Aircraft systems & procedures	6	10	19	56	7	2
Emergency procedures	3	20	44	27	4	2
Federal aviation regulations	1	32	8	52	5	2
Flight hazards	7	47	13	18	14	1
IFR procedures & techniques	2	15	52	19	10	3
Navigation aids & procedures	3	18	28	36	13	3
Preflight	3	8	30	52	5	3
Takeoff & landing procedures	5	11	61	16	5	2
Pilot decision making	10	46	26	10	6	1
Human factors	11	52	10	19	6	1
Crew resource management	11	45	12	21	10	2

Table 19. Preferred location for seminars

	Frequency	Percent
Airport hangar	270	23
FBO or club	483	41
Hotel	135	11
College classroom	297	25
Friend's house	1	0

Table 20. Preferred time of day for seminars

	Frequency	Percent
Morning	71	6
Lunchtime	8	1
Afternoon	22	2
Evening	1171	92

Table 21. Preferred day of week for seminars

	Frequency	Percent
Sunday	25	2
Monday	94	8
Tuesday	234	21
Wednesday	308	28
Thursday	246	22
Friday	44	4
Saturday	165	15

Table 22. Preferred duration of seminars

	Frequency	Percent
1/2 hour	1	0
1 hour	58	5
1 1/2 hours	228	18
2 hours	737	58
3 hours	210	17
Over 3 hours	32	3

Table 23. Preferred seminar format

	Frequency	Percent
Lecture by safety expert	265	25
Speech by celebrity	15	1
Panel discussion with experts	68	6
Open discussion	30	3
Testimonials by fellow pilots	14	1
Videos with live speaker	471	44
Videos without speaker	9	1
Short presentations with open discussion	117	7
Panel discussion with experts, celebrities & pilots	71	7

Table 24. Best way to increase attendance at seminars

	Frequency	Percent
More relevant topics	0	0
More exciting presentations	342	31
Encourage group participation	211	19
More advance notice	67	6
Better meeting location	96	9
Better meeting time	41	4
Provide baby sitting	23	2
Get friends to attend	7	1
Offer door prize	26	2
Better publicity	41	4
More local involvement	107	13

Table 25. Time attendees are willing to travel to get to seminar

	Frequency	Percent
15 minutes	72	6
30 minutes	419	33
45 minutes	288	23
60 minutes	361	29
90 minutes	67	5
120 minutes	59	5

SEMINAR EVALUATION FORM - VERSION 2

The questions on the reverse side of Version 2.0 of the SEF were concerned with two possible training product delivery mechanisms — computer-based training and videotapes. It is recognized that pilots do not attend every safety seminar offered in their local area, and that many pilots never attend safety seminars. There is a variety of possible reasons for this, ranging from a simple lack of interest in safety issues to lack of opportunity to attend. For the most part, safety seminars are held in the evening, and for many pilots attending an evening function involves some considerable sacrifice. As Kotler and Andreasen (1991) indicate, there is always a cost involved for the individual even when partaking of ostensibly free services. That cost includes not only the obvious elements such as transportation expenses, but also other hidden opportunity costs — a pilot attending one of our seminars cannot, at the same time, attend an evening college course, make rounds at the hospital, call upon customers, visit with his or her family, or simply relax. Our seminars must compete with these alternative activities for the expenditure of the pilot's time and resources. However, there will always be some number of pilots who will elect not to attend. For these pilots, alternative methods of training delivery must be developed in order to disseminate our training and improve aviation safety.

Computer-based training and videotapes are two mechanisms for providing training to pilots who cannot or will not attend safety seminars. Computer-based training has many advantages that recommend it as a training medium including provisions for interactive learning, adaptive training based upon skill and knowledge assessment, and low duplication and distribution costs. However, as was shown in Table 18, few pilots would consider it the training medium of first choice, possibly because of their unfamiliarity with this medium.

The earlier survey of the general pilot population (Hunter, 1995) indicated that approximately two-thirds of pilots own or have access to a personal computer that could be used for training. The current results (shown in Table 26) replicate that finding. In addition, a large portion of those who do not currently have a home computer intend to purchase one during the next year. This large proportion of pilots who possess personal computers makes feasible the use of computer-based training as a delivery mechanism. This is supported by the data in Table 27, that indicate that a large number of pilots would use computer-based training program developed by the FAA. It might also be possible, as the data in Table 28 suggest, to recover part of the costs of production and distribution, since pilots were generally willing to pay more than $5 to purchase such training programs. That conclusion must be tempered somewhat, however, since the pilots who do not attend safety seminars, although they have access to computers in approximately the same proportion, might not be as willing to use or purchase computer training programs as the seminar attendees sampled in this study.

The data on preferred ways to distribute computer-based training programs (Table 29) present something of a dilemma with respect to developing a cost effective delivery mechanism. The pilots' preferred delivery method, mail-order, is the one which would present the most organizational difficulty and expense. The FAA is not staffed or organized to function as a mail-order house. Therefore, functions of this sort must be transferred either to another government agency (such as the National Technical Information Service) or to a contractor.

The alternative distribution mechanisms allow the FAA to function more in its traditional role of a technology developer and, in effect, wholesaler of training products. Particularly attractive is the possibility of disseminating new training through computer networks — both commercial networks such as CompuServe and America On Line and the World Wide Web. This prospect virtually removes all distribution costs and allows for a very rapid modification and expansion of the training suite as new products are developed. Based upon the results shown in Table 29, at least one-fourth of the pilots have access to such a network, and if the geometric growth in utilization

18

Table 26. Computer ownership and use

	Frequency - Yes	Percent - Yes
Use computer at home	918	67
Will buy home computer within next year	397	32
Have used computer flight simulation program	739	54

Table 27. Would use FAA computer safety programs

	Frequency	Percent
Certainly	594	44
Possibly	554	41
Uncertain	126	9
Not likely	84	6
Never	6	0

Table 28. Maximum attendees would pay to purchase FAA computer program

	Frequency	Percent
Will not use	125	9
Nothing ($0)	130	10
Less than $5	186	14
$5 to $15	646	49
More than $15	126	18

Table 29. Best way to distribute FAA computer program

	Frequency	Percent
Will not use	136	11
Download from network	285	23
Buy at computer store	74	6
Order through mail	468	37
Buy at FBO	301	24

of the World Wide Web is any indicator, that proportion should increase rapidly, making this a viable means of training delivery to a large segment of the pilot population. In addition, as shown in Table 30, substantial numbers of pilots now have the newer generation computer systems with faster processors and CD-ROM drives. These more powerful systems allow program developers to utilize multimedia presentation techniques that capitalize upon the capabilities of these systems. Thus, it might be feasible to develop and distribute simulation-based training and other complex instructional packages that could not be used with the older, more limited personal computers.

Virtually all the seminar attendees reported that they had a videotape player in their home, and over two-thirds reported that they had viewed safety videos in the past (Table 31). Likewise, almost all the attendees indicated they would view safety videos produced by the FAA (Table 32). The order of preference for the best way to distribute videos was reversed from that given for the computer-based training programs. For videos, the first choice was to obtain them from the local Fixed Base Operator (FBO), while mail-order was the second choice (Table 33).

As with the computer programs, attendees expressed a willingness to invest reasonable amounts either to buy (Table 34) or to rent (Table 35) FAA safety videos. This is a particularly important issue, since the

cost of duplication and distribution (for example, packaging and mailing) of videotapes is far greater than the corresponding costs for computer-based training programs. These costs would generally preclude a mass-mailing of videos to pilots, except where relatively small groups of pilots who were particularly at risk for accident involvement could be identified.

SEMINAR EVALUATION FORM - VERSION 3

Table 36 contains the attendees' self-ratings of knowledge and proficiency in a number of aviation areas. Since pilots generally rate themselves as above average on flying and related activities, it is not too surprising that the ratings were heavily skewed toward the competent side of the scale. The notable exception to that trend was the self-ratings of instrument flying, in which 40% of the attendees rated themselves as somewhat or very rusty. Conversely, 60% of the attendees rated their instrument flying knowledge and proficiency as adequate or better; however, only 40% of the attendees indicated they had an instrument rating. This suggests that about 20% of the attendees think they can adequately fly on instruments, even though they do not have an instrument rating. Whether that assessment is valid is, of course,

Table 30. Personal computer equipment features

	Frequency - Yes	Percent - Yes
Macintosh	161	11
IBM compatible	809	56
3.5" disk	666	46
CD-ROM	430	30
Color monitor	689	48
386 CPU	157	11
486 CPU	403	28
Pentium CPU	196	14

Table 31. Videotape player ownership and usage

	Frequency - Yes	Percent - Yes
Videotape player at home	1347	98
Have viewed safety videotapes at home	931	68

Table 32. Would view FAA safety videos

	Frequency	Percent
Certainly	928	67
Possibly	396	29
Uncertain	39	3
Not likely	16	1
Never	2	0

Table 33. Best way to distribute FAA safety videos

	Frequency	Percent
Local FSDO	117	10
Local FBO	457	38
Public library	210	17
Video rental outlet	120	10
Order through mail	306	25

Table 34. Maximum willing to pay to buy FAA safety video

	Frequency	Percent
Will not use	30	2
Nothing ($0)	126	9
Less than $5	249	19
$5 to $10	707	53
More than $10	227	17

Table 35. Maximum willing to pay to rent FAA safety video

	Frequency	Percent
Will not use	29	2
Nothing ($0)	122	9
Less than $3	659	49
$3 to $5	476	35
More than $5	65	5

Table 36. Self-rating of knowledge and proficiency (% by row)

	Very Good	Good	Adequate	Somewhat Rusty	Very Rusty
Weather	20	40	27	11	3
ATC procedures	18	35	28	13	6
Air space regulations	16	35	30	16	4
Basic VFR flying techniques	33	43	19	4	2
Takeoff and landing procedures	31	46	17	4	2
Emergency procedures	18	36	31	13	3
Instrument flying	12	23	24	20	20
Preflight planning	29	42	21	6	2
Ground handling	31	44	20	3	2
Radio navigation	27	37	23	9	4
Navigation by pilotage	26	40	23	7	3
Aviator decision making	24	43	24	6	3
Cross-wind landing	22	34	29	10	5

not testable from the data in this study. One might speculate, however, that overestimation of skill in this area, so often associated with fatal accidents, might explain in part why some pilots are willing to continue VFR flight into deteriorating weather conditions, believing that they have the skills necessary to fly under instrument conditions should that be the last resort.

One might suppose that pilots who attend safety seminars have an interest in safety issues, and that interest might also be reflected in other safety-related activities. Table 37 presents the data on self-reported safety activities for the seminar attendees. Although the data cannot address the depth of understanding achieved or the degree of involvement in the safety activities, they do suggest a substantial degree of participation across all the various activities. Some activities, such as reading a magazine article on safety, obviously do not reflect the same degree of participation as hiring a certified flight instructor (CFI) for training; nevertheless, overall it would seem that this is a group of pilots who are actively concerned with safety.

The last two items in Table 37 provide a rough index of the level of application of the safety lessons learned from some of the training activities. Although there are undoubtedly regional variations in the need to compute density altitude and similar variation in the need to compute aircraft weight and balance, more of these activities is clearly better than less. For pilots in a region that is characterized by high-altitude runways and high ambient temperatures, the propensity to make density altitude computations might well be an interesting index of their commitment to safety — a notion that will be explored in later research.

Tables 38 and 39 provide additional information on the level of aviation-related activities by the seminar attendees. These data also provide information that may be pertinent to the marketing of new aviation safety products, both through cooperative agreements with flying associations and clubs and through the choice of print media to maximize the exposure of a new product. Although the FAA may well wish to publicize its new products initially through its internal publication, the *FAA Aviation News*, the dissemination of new product information through articles in magazines such as the *AOPA Pilot* and *Flying* will reach a far larger audience.

SEMINAR EVALUATION FORM - VERSION 4

Earlier, in Table 15, we saw that 43% of the seminar attendees own their own aircraft, either by themselves or as part of a partnership. The questions on the reverse side of Version 4.0 of the SEF were designed to assess the level, and in some cases the frequency, of the self-performed aircraft maintenance being conducted by pilots, in particular aircraft owners. Tables 40 through 44 show that seminar attendees predominately fly aircraft in the normal and utility categories, and that almost half of them have performed some sort of maintenance activity on their aircraft — most frequently, changing the oil in the aircraft. Almost a fourth of the attendees reported having performed some self-maintenance on their aircraft three or more times during the previous six months.

Although one might think that maintenance is solely within the province of the aircraft owner, in a sense every pilot performs a preventive maintenance function with every preflight inspection. Simply verifying the condition of the aircraft structures and fluid levels serves a vital safety function whose importance cannot be overestimated.

The data provided in Table 45 show that, in the area of maintenance, pilots would most like to see seminars dealing with preflight inspections and with the maintenance activities that they might perform that are sanctioned by the FAA. Although the two topics were approximately equally chosen, the former would probably be more widely received, since the preflight inspection must be performed by all pilots, while self-maintenance activities are generally limited to aircraft owners.

Table 38. Membership in flying organizations

	Frequency - Yes	Percent - Yes
Aircraft Owners & Pilots Association	846	59
Experimental Aircraft Association	313	22
Ninety-Nines	36	3
National Business Aircraft Association	22	2
National Air Transportation Association	14	1
Helicopter Association International	8	1
Local flying club	407	28
Vocation-related organization	37	3
Aircraft owner's club	177	12

Table 39. Flying magazines regularly read

	Frequency - Yes	Percent - Yes
FAA Aviation News	387	27
Aviation Safety	342	24
Plane & Pilot	472	33
AOPA Pilot	909	63
Aviation Consumer	113	8
Professional Pilot	140	10
Flying	588	41
EAA Sport Aviation	309	22
Air Progress	88	6
Business & Commercial Aviation	141	10

Table 40. Category of aircraft normally flown

	Frequency	Percent
Normal	921	82
Utility	149	13
Acrobatic	6	1
Transport	10	1
Glider	6	1
Experimental	19	2
Restricted	11	1

Table 41. Maintenance activities and experiences

	Frequency - Yes	Percent - Yes
Perform preventive maintenance on aircraft	518	45
Have an A&P certificate	108	9
Have military experience in aircraft maintenance	176	14
Have signed off on ADs for aircraft	91	8
Have a copy of the Manufacturers Maintenance Manual for aircraft	500	44
Routinely record all preventive maintenance you perform in logbook	481	45
Aircraft is hangared	591	55
Have had a mechanical or electrical failure in flight	617	49
Have replaced damaged or worn tire	434	35
Personally observe refueling of aircraft	850	68
Have serviced aircraft oleo strut	372	30
Have replaced or serviced aircraft sparkplugs	428	35
Have changed oil in aircraft	580	47

Table 42. Frequency of self-maintenance during previous 6 months

	Frequency	Percent
None	664	58
1 to 2 times	210	18
3 to 4 times	144	13
5 to 6 times	45	4
7 or more times	80	7

Table 43. Frequency of aircraft tire inflation checks

	Frequency	Percent
Before every flight	688	56
Once a week	34	3
Once a month	145	12
When they look low	309	25
Never	61	5

Table 44. Frequency of oil and hydraulic fluid checks

	Frequency	Percent
Before every flight	1136	93
Once a week	8	1
Once a month	21	2
Only during scheduled maintenance checks	51	4

Table 45. Maintenance topic most wanted at safety seminar

	Frequency	Percent
FARs dealing with maintenance	109	12
Acceptable maintenance practices	228	24
Preventive maintenance	150	16
Aircraft systems	185	20
Aircraft hardware	20	2
Preflight inspections	233	25
Maintenance publications	17	2

DISCUSSION AND CONCLUSIONS

The results of this study provide important information to the managers of the FAA safety seminar program to allow them to target their seminar content, format, and venue toward participants' expressed preferences. The results should also be noted by those managers and others interested in assessing user satisfaction with FAA services. In addition, researchers developing new training programs intended for use in safety seminars may also find these results of value. While these results can only be generalized to the districts from which data were obtained, the levels of satisfaction with seminars and participant preferences and characteristics may be applicable to other districts.

The results of this study indicate that most pilots are satisfied with the current FAA safety seminars. This high level of satisfaction is indicated by near total agreement (99%) with the statement "Overall, I am satisfied," by participants willing to recommend seminars to other pilots, and by their expressed intent to attend future seminars. This finding is comparable to that obtained by Manning and Schroeder (1990) in a localized survey of pilot satisfaction with FAA flight service station services. In that survey, 96% of pilots were moderately to greatly satisfied with the services they received.

Contrary to the expectations expressed by seminar leaders, attendance at seminars is relatively fluid, since approximately one-third of the participants had not attended a seminar during the previous year. Although it is impossible to fully appreciate the significance of this datum without having a great deal more information on the dynamics of pilot participation in seminars and in flying in general, it at least suggests that the FAA safety messages are reaching a large number of previously untouched pilots with each seminar.

The questions dealing with computer and videotape ownership indicated that a majority of the pilots possessed a home computer, while almost all the remainder intended to purchase one in the coming year. Virtually everyone had a videotape player. Participants were generally willing to use safety training computer programs and videotapes developed by the FAA and were often willing to pay for their purchase

or rental. Given the turnover in seminar participation, use of these media for follow-on training may prove an effective means of disseminating information to those who are unable to attend seminars regularly. This may prove especially advantageous in those geographically large districts in which seminars are only infrequently offered within a reasonable commuting distance of pilots' homes. Computer-based instruction and videotapes also are better suited for some types of training than the typical lecture format used in seminars; the finding that these media are widely available among pilots may encourage researchers to develop new training programs utilizing the capabilities of those formats.

The self-ratings of knowledge and proficiency indicate that pilots have a generally positive self-image of their capabilities. Except in the area of instrument flying, all the items in this area were heavily skewed toward a positive assessment of knowledge or skill. While it is certainly possible that these pilots are as skilled as they believe, the fact that half of them have fewer than 500 total hours of experience and almost half of them had flown 10 hours or less in the previous 90 days at least suggests they are being overly optimistic in their self-evaluations. On the other hand, the data on safety-related activities suggest that, as a group, the seminar participants frequently took part in activities that might be expected to enhance their knowledge and proficiency. Ultimately these data cannot be used to definitively assess skills and knowledge in anything more than relative terms, and are better used to identify topics (such as air space regulations) that should be addressed in seminars because a large number of pilots indicate their knowledge in a particular area is less than adequate.

The data provided by this study, in combination with other studies of the pilot population, may provide guidance on the preferred content and format of seminars, while at the same time supporting the development of alternative forms of training delivery. The data clearly show, at least for the FAA districts for which data were available, that participants in safety seminars overwhelmingly report that they are satisfied with them. While this finding is heartening, it must also be remembered that only about half of the active

28

pilot population regularly attend safety seminars (Hunter, 1995). Thus, a challenge exists to develop new seminar programs to attract a greater share of the potential market, while maintaining the existing high levels of satisfaction. In a matter as important as the delivery of safety training, there is no such thing as too successful.

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APPENDIX A

Safety Seminar Evaluation
Seminar Leader's Form

1. Region:	2. FSDO Number:	3. Code number:
O NE	1 ⊙ ⊙	1 ⊙
O EA	2 ⊙ ⊙	2 ⊙
O SO	3 ⊙ ⊙	3 ⊙
O GL	4 ⊙ ⊙	4 ⊙
O CE	5 ⊙ ⊙	5 ⊙
O SW	6 ⊙ ⊙	6 ⊙
O NM	7 ⊙ ⊙	7 ⊙
O WP	8 ⊙ ⊙	8 ⊙
O AL	9 ⊙ ⊙	9 ⊙
	0 ⊙ ⊙	10 ⊙

4. On what day was this seminar held?

O Sunday   O Thursday

O Monday   O Friday

O Tuesday   O Saturday

O Wednesday

5. What time did this seminar begin?

O Morning   O Afternoon

O Lunchtime   O Evening

6. How long did this seminar last?

O 1/2 hour   O 2 hours

O 1 hour   O 3 hours

O 1 1/2 hours   O over 3 hours

7. How many people attended?

8. Date of seminar?

Year   Month   Day

9. Where did this seminar take place?
O Airport Hangar
O FBO or flying club meeting room
O Hotel meeting room
O College classroom
O Pilot's house
O Other - please specify _____

10. What was the subject of this seminar? Mark ALL that apply.
O Aerial maneuvers (e.g., stalls)
O Airport operating procedures
O Air space clasification & use
O Air traffic control procedures
O Aircraft systems & performance
O Emergency procedures
O Federal aviation regulations
O Flight hazards (e.g., weather)
O IFR procedures & techniques
O Judgement / Decision-making
O Navigation aids & procedures
O Preflight (e.g., weight & balance)
O Takeoff & landing procedures
O Other - please specify _____

11. Was there a co-sponsor for this seminar
O Yes   O No

12. Was there a door prize at this seminar?
O Yes   O No

13. Do you want to receive feedback?
O No   O Yes ⟶

Enter the first four letters of your last name:

Draft

A1

Federal Aviation Administration
Safety Seminar Evaluation

1. Please choose the words that best describe this seminar:

Subjects discussed were.........	◯ familiar	◯ new
Level of presentation was.......	◯ advanced	◯ elementary
Quality of materials was.........	◯ low	◯ high
Speaker's knowledge was.......	◯ low	◯ high
Speaker's presentation was.....	◯ clear	◯ confusing
Information presented was......	◯ useful	◯ not relevant
Seminar was designed for.......	◯ novices	◯ experts
Presentation was....................	◯ boring	◯ interesting
Overall, I am..........................	◯ satisfied	◯ dissatisfied

2. Would you say that you:

Learned something new.....................................	◯ yes	◯ no
Refreshed old skills or knowledge......................	◯ yes	◯ no
Had your questions answered satisfactorily.........	◯ yes	◯ no
Would recommend seminars to other pilots.........	◯ yes	◯ no

3. Which ONE of the following best describes why you attended this safety seminar?

◯ Curiosity
◯ Friends' recommendation
◯ Topic to be discussed
◯ Professional obligation
◯ Reputation of speaker(s)
◯ Good previous seminar

4. Which ONE of these statements best describes your intent to attend more safety seminars during the next 12 months?

◯ I will definitely attend another seminar.
◯ I will probably attend another seminar.
◯ I am undecided - I may or may not attend.
◯ I probably will not attend another seminar.
◯ I definitely will not attend another seminar.

5. How many other FAA sponsored safety seminars have you attended in the last 12 months?

◯ None (0)
◯ 1
◯ 2 - 4
◯ 5 - 7
◯ 8 - 12
◯ More than 12

6. What is your highest pilot certificate?

◯ Student
◯ Recreational
◯ Private
◯ Commercial
◯ Air Transport

7. Do you have a CFI certificate?

◯ yes   ◯ no

8. Do you have an instrument rating?

◯ yes   ◯ no

9. Do you have a multi-engine rating?

◯ yes   ◯ no

10. Do you own your own plane either by yourself or as part of a partnership?

◯ yes   ◯ no

11. How many TOTAL hours have you flown?

◯ Less than 100
◯ 100 to 500
◯ 501 to 1,000
◯ 1,001 to 3,000
◯ 3,001 to 10,000
◯ More than 10,000

12. How many hours have you flown in the last 90 DAYS?

◯ 0 (Zero)
◯ 1 - 10
◯ 11 - 20
◯ 21 - 50
◯ 51 - 100
◯ More than 100

13. How old are you?

REGION

NE ◯
EA ◯
SO ◯
GL ◯
CE ◯
SW ◯
NM ◯
WP ◯
AL ◯

FSDO NO

⓪⓪
①①
②②
③③
④④
⑤⑤
⑥⑥
⑦⑦
⑧⑧
⑨⑨

CODE

① ⑥
② ⑦
③ ⑧
④ ⑨
⑤ ⓪

If you are unable to finish this evaluation during the seminar, please complete it later and mail it to:

**Federal Aviation Administration
AAM-240 (Dr. David Hunter)
800 Independence Ave., SW
Washington, DC 20591**

APPENDIX C

Seminar Evaluation Form — Version 1.0

14. If you wanted to learn more about these topics, which would be the most effective method for you?

	Talk to other pilots	Attend Safety Seminars	Meet with CFI	Read books or manuals	Study Video-tapes	Use Computer Training
Aerial maneuvers (e.g. stalls)	O	O	O	O	O	O
Airport operating procedures	O	O	O	O	O	O
Air space classification & use	O	O	O	O	O	O
Air traffic control procedures	O	O	O	O	O	O
Aircraft systems & performance	O	O	O	O	O	O
Emergency procedures	O	O	O	O	O	O
Federal Aviation Regulations	O	O	O	O	O	O
Flight hazards (e.g. weather)	O	O	O	O	O	O
IFR procedures & techniques	O	O	O	O	O	O
Navigation aids and procedures	O	O	O	O	O	O
Preflight (e.g weight & balance)	O	O	O	O	O	O
Takeoff & landing procedures	O	O	O	O	O	O
Pilot decision making	O	O	O	O	O	O
Human factors	O	O	O	O	O	O
Crew resource management	O	O	O	O	O	O

15. Which meeting location for seminars would be best for you?

O Airport hangar
O FBO or flying club meeting room
O Hotel meeting room
O College classroom
O Friend's house

16. What time of day for seminars is best for you?

O Morning
O Lunchtime
O Afternoon
O Evening

17. What day of the week for seminars is best for you?

O Sunday
O Monday
O Tuesday
O Wednesday
O Thursday
O Friday
O Saturday

18. What length of seminar is best for you?

O 1/2 hour
O 1 hour
O 1 1/2 hours
O 2 hours
O 3 hours
O over 3 hours

19. What seminar format do you prefer?

O Lectures by safety experts
O Speeches by celebrities
O Panel discussion involving numerous experts
O Open discussion (town hall format)
O Testimonials by fellow pilots
O Videos, with presentation by live speaker
O Videos, with no presentation by live speaker.
O Short presentations followed by open discussion.
O Panel discussion involving mix of experts, celebrities and fellow pilots.

20. What is the ONE best way to get you to attend more safety seminars?

O Discuss more relevant topics
O Offer more exciting presentations
O Encourage more group participation
O Provide more advance notice
O Provide a better meeting location
O Set a more convenient meeting time
O Provide baby-sitting services
O Get more of my friends to attend
O Offer an incentive (door prize)
O Provide better publicity
O Get more local pilots involved in the planning and presentation

21. How long are you willing to travel to get to a safety seminar?

O 15 minutes
O 30 minutes
O 45 minutes
O 60 minutes
O 90 minutes
O 120 minutes

APPENDIX D

Seminar Evaluation Form — Version 2.0

14. Do you use a computer at home?

      O yes   O no

15. Is it likely you will buy a computer for your home in the next year?

      O yes   O no

16. Have you used a computer flight simulation program?

      O yes   O no

17. If the FAA provided interactive computer safety program for pilots, would you use them?

O Certainly
O Possibly
O Uncertain
O Not likely
O Never

18. If the FAA prepared computer safety programs for sale to pilots, what is the most you would be willing to pay for one?

O Will not use
O Nothing ($0)
O Less than $5
O $5 to $15
O More than $15

19. If the FAA prepared computer safety programs for pilot use, what is the best way to make them available to you?

O Will not use
O Download from a network (AOL or Compuserve)
O Buy at computer store
O Order through the mail
O Buy at a FBO

20. Which of the following describes your computer equipment? MARK ALL THAT APPLY.

O Macintosh
O IBM Compatible
O 3.5" floppy disk
O CD-ROM
O Color monitor
O 386 CPU
O 486 CPU
O Pentium CPU

21. Do you have a videotape player at home?

      O yes   O no

22. Have you ever viewed an aviation safety video at home?

      O yes   O no

23. If the FAA prepared aviation safety videos for pilots, would you view them?

O Certainly
O Possibly
O Uncertain
O Not likely
O Never

24. If the FAA prepared aviation safety videos for pilots, what is the best way to make them available to you?

O Local FSDO
O Local FBO
O Public library
O Video rental outlet
O Order through the mail

25. If the FAA prepared aviation safety viedos for sale to pilots, what is the most you would willing to pay to BUY one?

O Will not use
O Nothing ($0)
O Less than $5
O $5 to 10
O More than $10

26. If the FAA prepared aviation safety videos for pilots, what is the most you would be willing to pay to RENT one?

O Will not use
O Nothing ($0)
O Less than $3
O $3 to $5
O More than $5

APPENDIX E

Seminar Evaluation Form — Version 3.0

14. Please rate your level of knowledge or proficiency as a pilot in each of the following areas:

	Very good	Good	Adequate	Somewhat rusty	Very rusty
Weather and its impact on flight	O	O	O	O	O
Air traffic control procedures	O	O	O	O	O
Air space regulations	O	O	O	O	O
Basic VFR flying techniques	O	O	O	O	O
Takeoff and landing procedures	O	O	O	O	O
Emergency procedures	O	O	O	O	O
Instrument flying	O	O	O	O	O
Preflight planning	O	O	O	O	O
Ground handling	O	O	O	O	O
Radio navigation	O	O	O	O	O
Navigation by pilotage	O	O	O	O	O
Aviator decision making	O	O	O	O	O
Cross-wind landing	O	O	O	O	O

15. In the last 12 MONTHS, how often did you:

	0 (None)	1 - 5 times	6 - 10 times	11 + times
Use a computer flight simulation program	O	O	O	O
Read a book on aviation safety	O	O	O	O
View a video on aviation safety	O	O	O	O
Read a magazine article on safety	O	O	O	O
Hire a CFI for training	O	O	O	O
Read an FAA publication	O	O	O	O
Refer to an aircraft operation manual	O	O	O	O
Ask another pilot a safety question	O	O	O	O
Answer another pilot's safety question	O	O	O	O
Use a computer-based learning program	O	O	O	O
Compute aircraft weight and balance	O	O	O	O
Compute the density altitude	O	O	O	O

16. To what flying organizations do you belong?
MARK ALL THAT APPLY

O Aircraft Owners & Pilots Association
O Experimental Aircraft Association
O Ninety-Nines
O National Business Aircraft Association
O National Air Transportation Association
O Helicopter Association International
O A local flying club
O Vocation related organization (e.g. Flying Farmers)
O Aircraft owner's club (e.g. Cessna Pilot's Association)

17. What flying magazines do you read regularly
MARK ALL THAT APPLY

O FAA Aviation News
O Aviation Safety
O Plane & Pilot
O AOPA Pilot
O Aviatio Consumer
O Professional Pilot
O Flying
O EAA Sport Aviation
O Air Progress
O Business & Commercial Aviation

APPENDIX F

Seminar Evaluation Form — Version 4.0

14. What category aircraft do you normally fly?

○ Normal
○ Utility
○ Acrobatic
○ Transport
○ Glider
○ Experimental
○ Restricted

15. As the owner or operator, do you perform any preventive maintenance on your aircraft?

○ yes   ○ no

16. How often in the past SIX MONTHS have you performed some type of maintenance on your aircraft?

○ 0 (None)
○ 1 - 2 times
○ 3 - 4 times
○ 5 - 6 times
○ 7 or more times

17. Do you have an A&P certificate?

○ yes   ○ no

18. Do you have military experience in aircraft maintenance?

○ yes   ○ no

19. Have you, as the owner or operator, ever signed off on any Airworthiness Directives issued for your aircraft?

○ yes   ○ no

20. Do you have a copy of the Manufacturers Maintenance Manual for your aircraft?

○ yes   ○ no

21. As the owner or operator, do you routinely record all preventive maintenance performed by yourself in the maintenance logbook?

○ yes   ○ no

22. Is your aircraft hangered?

○ yes   ○ no

23. Have you ever had a mechanical or electrical failure in flight?

○ yes   ○ no

24. Have you ever replaced a damaged or worn tire?

○ yes   ○ no

25. How often do you check for proper inflation of your aircraft tires?

○ Before every flight
○ Once a week
○ Once a month
○ When they look low
○ Never

26. Do you personally observe the refueling process every time to insure for proper guel grade?

○ yes   ○ no

27. How often is your oil and hydraulic fluid level checked?

○ Before every flight
○ Once a week
○ Once a month
○ Only during scheduled maintenance checks

28. Have you ever serviced an aircraft oleo strut with hydraulic fluid or air?

○ yes   ○ no

29. Have you ever replaced or serviced your aircraft sparkplugs?

○ yes   ○ no

30. Have you ever changed the oil in your aircraft?

○ yes   ○ no

31. What topic would you MOST like to see discussed by an A&P or an IA at a Safety Seminar?

○ FARs dealing with maintenance
○ Acceptable maintenance practices
○ Preventive maintenance
○ Aircraft systems
○ Aircraft hardware
○ Preflight inspections - what to look for
○ Maintenance publications