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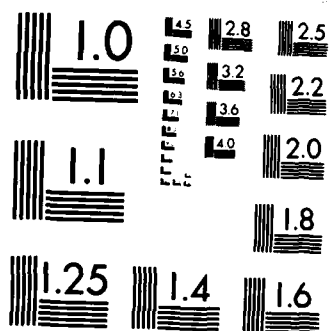
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APRIL 1985

**FLEET TRAINING REQUIREMENT ANALYSIS FOR AIR
INTERCEPT CONTROLLERS**

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**NAVY PERSONNEL RESEARCH
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April 1985

**FLEET TRAINING REQUIREMENT ANALYSIS FOR
AIR INTERCEPT CONTROLLERS**

Ernest Joy
John Ellis

Reviewed by
Edwin G. Aiken

Approved by
James S. McMichael

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Released by
J. E. Kohler
Commander, U.S. Navy
Commanding Officer

Navy Personnel Research and Development Center
San Diego, California 92152-6800

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FOREWORD

This effort was conducted under the Navy Science Assistance Program (NSAP) in response to a request from the Commander in Chief, Pacific Fleet (CINCPACFLT) to determine the possible causes of and suggest remedies for the high student attrition rate in the Air Intercept Controller (AIC) basic course. This effort was funded under the NSAP project number CPF-1-84. In this phase of the effort, recent course graduates and members of the air and surface warfare communities were surveyed to determine the validity of the current course objectives and address a number of issues concerning AIC training.

Results of this effort are intended for NSAP, CINCPACFLT, CINCLANTFLT, and Fleet Combat Training Centers, Atlantic and Pacific (FCTCLANT, FCTCPAC).

Appreciation is expressed to the instructors at FCTCLANT and FCTCPAC for providing subject matter expertise in the development and interpretation of the survey.

J. E. KOHLER
Commander, U.S. Navy
Commanding Officer

J. W. TWEEDDALE
Technical Director

A-1



SUMMARY

Problem

In August 1983, Commander, Training Command, Pacific Fleet expressed concern about high attrition rates for Navy Tactical Data System (NTDS) and, to a lesser degree, non-NTDS Air Intercept Controller (AIC) students at Fleet Combat Training Center, Pacific (FCTCPAC). Commander in Chief, Pacific Fleet established a Navy Science Assistance Program (NSAP) task, CPF-1-84, to identify deficiencies and recommend improvement in AIC training curriculum content, materials, and training methods.

Purpose

The purpose of this effort was to survey course graduates as well as members of the air and surface warfare communities to validate course objectives and address several issues in AIC training.

Approach

A survey covering two areas of interest was developed and administered. First, course objectives from both NTDS and non-NTDS curricula were evaluated by fleet personnel representing the major operational communities that provide or use AIC services. Second, the same respondents were asked to evaluate relevant issues in AIC training that had been identified through initial subject matter expert interviews.

Results and Discussion

Evaluation of Course Objectives

Survey respondents believed the overwhelming majority of course skill objectives are essential or important for basic AIC training. Most respondents also agreed, but to a lesser degree, that the knowledge factor objectives were valid and useful to prospective AICs. Results and discussion of significant discrepancies in course objective data are presented below.

1. Lesson topics relating to theory of aerodynamics, calibre of guns carried in U.S. aircraft, conversion of true to indicated air speed, and rote memorization of KIT/1A KIR/1A TSEC computer nomenclature are not essential to the AIC.
2. The aviation community, in sharp contrast with all other respondents, did not support a number of objectives. This is attributed to the predominant view that the AIC's role is coordination and support rather than control. These results make clear the need for closer communication and greater understanding between surface and aviation communities about the duties and responsibilities of the AIC. Resolution of these differences is essential to the effective employment of aircraft by a commander at sea.
3. Fleet Combat Training Center, Atlantic (FCTCLANT) graduates did not agree as much as FCTCPAC graduates that objectives concerned with threat and/or Soviet capabilities were necessary.

AIC Training Issues

The issues concerning AIC training that were evaluated in conjunction with this survey are discussed below.

1. A large majority of respondents agreed that "AICs (in conventional and NTDS-configured ships) should know how to calculate manually proper intercept geometry {desired aircraft} headings."

2. The majority of respondents agreed that "AICs should be taught to work with aircraft of other services in addition to USN aircrews."

3. The majority of respondents in all target populations agreed that "basic AIC school should provide additional training in the following areas: combat environment, target saturated air space, wide range of air speeds/altitudes, interpreting enemy tactics, refueling rendezvous, and NTDS failures."

4. The majority of respondents agreed that "levels of proficiency should be established and used Navy-wide as a means of matching controller capabilities to the requirements of the mission." AIC proficiency is all too often measured by the number of intercepts completed versus how effectively the controller performed the function.

5. There was general agreement that "basic AIC school should provide more training in friendly aircraft tactics."

6. The suggestion that "an AIC TACAID/handbook would be useful" evoked strong interest.

7. The aviation community agreed overwhelmingly that "AICs should be taught to conduct forward quarter intercepts and forward quarter reattacks."

8. A small majority of surface ship respondents and course graduates agreed that "the AIC should be taught to stop the bearing drift, vice being taught to maintain a predetermined planning bearing (target aspect angle)." However, results among aviation subgroups were nearly evenly divided. FCTCPAC teaches AIC students to stop the bearing drift and FCTCLANT requires them to maintain a predetermined planning bearing.

9. Both surface ship respondents and course graduates indicated relatively high disagreement that "as an AIC/AIC supervisor, provisions have been made for me to maintain controller proficiency." FCTCPAC gave insufficient air services as the primary reason for this situation.

10. As expected, there was major disagreement with the issue that "basic AIC school should concentrate on the 'basics' needed to perform a training setup mission." Consistent with this view is the fact that respondents were generally more supportive of course objectives under fleet AAW intercept conditions than in a training setup environment. These results reaffirm the commonly held axiom that you must train as you will fight.

Recommendations

The fleet training requirement analysis produced the following recommendations:

1. Objectives related to theory of aerodynamics, calibre of guns carried in U.S. aircraft, conversion of true to indicated air speed, and rote memorization of KIT/1A KIR/1A TSEC computer nomenclature should be deleted from the course. At a minimum, students should not be tested in these topics.
2. Representatives of the aviation and surface communities should meet to reduce and eliminate differences of opinion about the role of the AIC. Agreement reached should be promulgated by higher authority for Navy-wide implementation. Course revisions may be required to reflect this guidance once promulgated.
3. Course managers at FCTCPAC should determine if objectives concerned with threat and/or Soviet objectives should continue to be included in basic AIC training.
4. Intercept geometry should continue to be taught at both AIC schools as a backup in event of NTDS failures for use when the aircrew is unable to calculate intercept headings (e.g., the A-7 aircraft).
5. Discussions should be initiated with representatives of the Air Force and Marine Corps to expand control opportunities for AIC students on both coasts to work with aircraft from other services on a regular basis.
6. Basic AIC school should provide additional training in combat environment, target saturated air space, wide range of airspeeds/altitudes, interpreting enemy tactics, refueling rendezvous, and NTDS failures or a more advanced follow-on course should be developed.
7. Levels of proficiency for AICs based on the application of standardized evaluation criteria should be established. This would enable commanders to assess more precisely their unit's operational readiness and establish clearly identifiable professional goals for the AIC.
8. Basic AIC school should provide more training in friendly aircraft tactics and continue to teach forward quarter intercepts and reattacks.
9. An AIC TAACAID/handbook should be developed.
10. Standard policy should be established and promulgated Navy-wide about the correct intercept procedure for dealing with bearing drift.
11. AIC proficiency training programs such as Big Brother at FCTCPAC should be given sufficient priority to ensure regular and dependable aircraft services so that controllers can maintain their proficiency.

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INTRODUCTION

Problem and Background

In August 1983, Commander, Training Command, U.S. Pacific Fleet (COMTRAPAC 052117Z Aug 83) expressed concern about high attrition rates for students in the Navy Tactical Data System (NTDS) and, to a lesser degree, non-NTDS, Air Intercept Controller (AIC) basic course at Fleet Combat Training Center, Pacific (FCTCPAC). Commander in Chief, Pacific Fleet established a Navy Science Assistance Program task to identify deficiencies and recommend improvement in AIC training curriculum content, materials, and training methods.

The Navy Personnel Research and Development Center (NAVPERSRANDCEN) determined through interviews with subject matter experts that there were conflicting views of the duties, skills, and knowledge needed by the AIC in an operational environment (Nowell, 1984). Since the last review of the AIC job in 1975, major innovations that could impact the AIC's job have been made to the Navy's jet fighter aircraft inventory. Therefore, the need to conduct a fleet training requirements analysis for validating both the NTDS (K-221-0027) and non-NTDS (K-221-0007) AIC course curricula became readily apparent as the first step in the NSAP review process.

Purpose

The purpose of this effort was to survey course graduates as well as members of the air and surface warfare communities to validate the AIC course objectives and address several issues in AIC training.

METHOD

A survey that covered two areas of interest was developed and administered. First, course objectives from both NTDS and non-NTDS curricula were evaluated by fleet personnel representing each of the major operational communities who either provide or use AIC services. Second, these same respondents were asked to evaluate relevant issues in AIC training that had been identified through prior subject matter expert interviews. From these findings, curriculum strengths and weaknesses were identified and recommendations for improvement were developed.

Assumptions

The following assumptions were made in conducting this study.

1. Fleet personnel responding to the questionnaire, as users and/or providers of the AIC service, were capable of assessing course objectives as a result of prior training and/or experience related to the AIC function.
2. Respondents were honest, fair, and candid in their evaluation of course objectives and issues.
3. Respondents from surface ships and aviation units based in San Diego were representative of providers and users of AIC services Navy-wide.

Survey

The survey instrument in Appendix A was designed to obtain information about AIC course objectives and issues from personnel who provide and use AIC services. This section describes the design and development of the survey instrument and the manner in which it was administered.

AIC Basic Course Objectives Evaluation

Review of the curriculum outlines for the 6-week conventional AIC and 2-week NTDS AIC courses of instruction (Curriculum Outlines, 1984) identified 119 terminal and enabling objectives. These were divided into three categories: tasks taught (56), knowledge factors taught (51), and tasks taught for NTDS (12). Next, the following six-choice rating scale was designed to enable respondents to evaluate each objective in terms of the degree that an AIC requires each task or knowledge factor.

1. Don't know--Respondent does not have enough knowledge and/or experience to evaluate the task or knowledge factor.
2. Essential--The AIC must perform this task or know this information.
3. Important--The AIC should perform this task or know this information but it is not absolutely essential.
4. Desirable--The AIC may perform this task or the information is nice to know but it is neither essential nor particularly important.
5. Marginal--The AIC has little reason to perform this task or to know this information.
6. Unnecessary--The AIC does not perform this task at all or has no reason to know this information at all.

An AIC performs under two types of conditions. The training setup is the most common. Training setups are usually conducted under ideal conditions for basic training in effecting an intercept. The more critical condition, Fleet Anti-air Warfare Intercepts (AAW), involves conducting intercepts against unknown or presumed hostile targets under actual or exercise AAW conditions. The survey required respondents to evaluate each objective separately for each condition.

Issues in AIC Training

Interviews with subject matter experts revealed several issues in AIC training. Respondents in each target population were asked to evaluate these issues in Part Two of the survey. Again, a six-choice scale was designed to enable subjects to evaluate the extent to which they agreed or disagreed with each issue statement (i.e., unable to respond, totally agree, mostly agree, no opinion, mostly disagree, and totally disagree).

Comments

Respondents from the surface-ship and aviation communities were asked for their comments and suggestions to improve AIC training. A summary of the comments is provided in Appendix B. These comments may be helpful in undertaking a course revision.

Subjects and Survey Administration

Members of the following three major subject populations who have prerequisite knowledge and/or experience to evaluate AIC training were interviewed for this survey:

1. AIC course graduates who had completed either the NTDS or conventional course at FCTCPAC and FCTCLANT within the past 24 months.
2. San Diego based surface-ship-platform AICs who provide AIC services and officers who perform command and control duties involving AIC services.
3. Aviation personnel at Miramar Naval Air Station who use AIC services.

Each target population was divided into subgroups for comparing and analyzing the survey results in greater detail. Course graduates from FCTCPAC and FCTCLANT were separated. For the surface-ship-platform population, respondents from aircraft carriers and cruisers, whose primary mission includes AAW (surface ship primary), were separated from the remaining surface-ship respondents (surface ship secondary) (e.g., destroyers, frigates, and amphibious ships of various classes). The following three subgroups were identified within the aviation population: fighter aircrews assigned to VF-124, AIC instructors at the Airborne Early-Warning Training Squadron (VAW-110), and instructors from the Naval Fighter Weapons School (NFWS).

A pilot survey was administered to 15 AIC instructors at FCTCLANT in Dam Neck, Virginia (Joy, 1984). During this process, additional issues were identified and the questionnaire was revised.

Two methods were used to administer the final questionnaire. The AIC school graduates were mailed questionnaires via their unit Commanding Officer. Of 242 surveys mailed, 147 were returned completed, for a return rate of 61 percent. The ships and aircraft squadrons, which were all located in the San Diego area, were contacted personally. The respondents were selected by their immediate superior-in-command based on their availability to participate within a specified time frame. A total of 79 questionnaires from surface ships (primary and secondary) and 42 from aviation units (VF, VAW, NFWS) were completed.

RESULTS

Analysis of Course Objectives

The percentage of subjects responding don't know, essential, important, desirable, marginal, and unnecessary was calculated for each objective and grouped by target population (i.e., surface--primary and secondary platforms; aviation--VF, VAW, and NFWS), and graduates--FCTCLANT and FCTCPAC) and by type of objective (i.e., tasks, knowledge factors, and NTDS tasks taught for training setups and fleet AAW intercepts). Training setups are training exercises conducted aboard ship in which the student practices various types of nearest collision intercepts. Fleet AAW intercepts are performed during fleet war game exercises.

The percentage of subjects responding essential and important was summed to indicate the percentage of the respondents who agreed that the objective was necessary. Similarly, the percentage of subjects responding marginal and unnecessary was summed to

Table 7
Response Percentages on Six Additional Topic Areas

Item	Surface		Graduates		Aviation		
	Pri	Sec	FCTCPAC	FCTCLANT	VF	VAW	NFWS
Combat Environment							
Agree	87	61	93	93	96	58	91
Disagree	00	03	00	02	00	14	00
Target Saturated Air Space							
Agree	80	51	77	82	95	86	91
Disagree	02	03	03	02	05	00	00
Wide Range of Air Speeds/Altitudes							
Agree	82	58	89	83	100	86	100
Disagree	02	03	03	07	00	00	00
Interpreting Enemy Tactics							
Agree	72	51	94	68	83	58	82
Disagree	02	07	00	00	08	14	00
Refueling Rendezvous							
Agree	70	54	81	76	91	72	82
Disagree	10	06	11	00	04	14	09
NTDS Failures							
Agree	90	48	64	71	100	57	82
Disagree	00	06	03	02	00	14	00

6. Issue. Levels of AIC proficiency should be established and used Navy-wide as a means of matching controller capabilities to the requirements of the mission.

Response percentages.

Item	Surface		Graduates		Aviation		
	Pri	Sec	FCTCPAC	FCTCLANT	VF	VAW	NFWS
Agree	82	51	71	73	82	43	71
Disagree	00	12	05	05	09	14	00

Response percentages.

Item	Surface		Graduates		VF	Aviation	
	Pri	Sec	FCTCPAC	FCTCLANT		VAW	NFWS
Agree	64	49	78	72	43	86	27
Disagree	08	06	12	14	39	00	28

Discussion. At present, FCTCPAC teaches its students to stop the bearing drift in making an intercept, whereas FCTCLANT advises students to maintain a predetermined planning bearing. Nevertheless, surface respondents and course graduates, including students of FCTCLANT, generally agreed with this issue. More surprising was the nearly even split between responses of VF and NFWS subjects who agreed and disagreed. These results indicate a need to examine the issues more closely and select and train to the correct doctrine.

4. Issue. AICs should be taught to work with aircraft of other services in addition to USN aircrews.

Response percentages.

Item	Surface		Graduates		VF	Aviation	
	Pri	Sec	FCTCPAC	FCTCLANT		VAW	NFWS
Agree	42	76	83	91	100	71	100
Disagree	00	00	06	04	00	00	00

Discussion. All subgroups clearly agreed on this issue. At present, basic AIC school does not provide this training due to lack of air services.

5. Issue. Basic AIC school should provide additional training in the following areas: combat environment, target saturated air space, wide range of air speeds/altitudes, interpreting enemy tactics, refueling rendezvous, and NTDS failures.

Response percentages. See Table 7.

Discussion. This issue addresses six additional topic areas, five of which are not currently covered by either school. (Refueling rendezvous is currently being taught at both schools.) Most respondents clearly agree with providing additional training in these areas. The relatively low agreement on NTDS failures by secondary ship respondents is partly the result of 37 percent of respondents indicating don't know.

The data for issues common to all target populations are discussed first; next, issues pertaining to two target populations; and finally, issues that apply to only one target population. All data are reported as percentages of the target populations responding. The data from VAW respondents are presented but were not used in the analysis because there were so few respondents.

Issues Common to all Three Target Populations

1. Issue. The AIC's job should be a coordinating and supporting role more so than one of positive control.

Response percentages.

Item	Surface		Graduates		VF	Aviation	
	Pri	Sec	FCTCPAC	FCTCLANT		VAW	NFWS
Agree	44	18	41	41	73	71	55
Disagree	42	52	47	50	27	29	45

Discussion. The views of the aviation community respondents and the other two communities clearly differ on this issue. The majority of aviation respondents agreed with this issue, while slightly more surface respondents and graduates disagreed. These results confirm that there are mixed views in the fleet about the basic role of an AIC, as had been expressed earlier in interviews with subject matter experts. Fighter aircrews probably view the AIC's role as coordinating and support due to enhanced equipment in today's fighter aircraft. However, a positive control role may be required when working with less capable aircraft such as the A-7.

2. Issue. AICs (in conventional and NTDS-configured ships) should know how to calculate headings manually to obtain the proper intercept geometry.

Response percentages.

Item	Surface		Graduates		VF	Aviation	
	Pri	Sec	FCTCPAC	FCTCLANT		VAW	NFWS
Agree	93	70	96	98	91	86	100
Disagree	00	09	01	00	00	00	00

Discussion. Almost every respondent in all communities agreed with this issue. These results are totally consistent with course objectives in both the conventional and NTDS classes.

3. Issue. The AIC should be taught to stop the bearing drift, vice being taught to maintain a predetermined planning bearing (target aspect angle).

NTDS Tasks Taught--Fleet AAW Intercepts

As with NTDS tasks taught for a training setup environment, respondents from the surface community noted discrepancies for 11 of the 12 objectives surveyed. Again, secondary platform respondents indicated more than 19 percent less support than did the primary platform respondents because many secondary ships do not have NTDS.

More than 59 percent of the respondents agreed that 8 of the 12 objectives were necessary. The mean and range of the percentage of subjects responding essential or important for these six objectives for each community subgroup are presented in Table 6.

Table 6
Percent NTDS Tasks Taught for Fleet AAW Intercepts
Judged Necessary by Target Population

Item	Surface		Graduates		Aviation		
	Pri	Sec	FCTCPAC	FCTCLANT	VF	VAW	NFWS
Mean	89.9	61.0	60.4	55.3	79.0	80.6	83.1
Range	72-96	58-67	50-67	46-70	66-87	57-86	73-100

Discrepancies and/or lack of support were noted for objectives 2, 3, 6, and 9, which were discussed in the previous section. (See p. A-12 for numbered list of objectives.)

Analysis of Issues in AIC Training

Some of the issues respondents in each target population were asked to evaluate varied due to the perspective of a particular population (see pp. A-13 through A-15). For example, provisions for maintaining AIC proficiency would apply to surface ship respondents and school graduates, while other issues were common to all subgroups.

The analysis procedure was similar to the procedure used for course objectives. The percentage of subjects responding unable to respond, totally agree, mostly agree, no opinion, mostly disagree, and totally disagree was calculated for each issue. These data were grouped by target population (i.e., surface--primary and secondary platforms; aviation--VF, VAW, and NFWS; and graduates--FCTCLANT and FCTCPAC). To facilitate analysis and interpretation, the sum of the percentage of subjects responding totally agree and mostly agree was used to indicate the percentage of respondents that agreed with the issue. Similarly, the sum of the percentage of subjects responding mostly disagree and totally disagree was used to indicate the percentage of respondents that disagreed with the issue. Agree-disagree tabular data are presented for each issue. The percentage of respondents who evaluated any issue as unable to respond or no opinion was not included in this analysis. Issues were evaluated to determine if (1) respondents agreed or disagreed and (2) any discrepancies existed among the various target populations. Because of the wide range of the content of the issues, no standard evaluation criteria were imposed to identify discrepancies. Each issue was evaluated independently.

Table 5

Percent NTDS Tasks Taught for Training Setup Environment
Judged Necessary by Target Population

Item	Surface		Graduates		Aviation		
	Pri	Sec	FCTCPAC	FCTCLANT	VF	VAW	NFWS
Mean	84.3	60.0	54.2	57.8	82.0	69.5	74.5
Range	68-92	55-64	40-68	43-68	70-96	57-86	55-82

The discrepancies and/or lack of support for the remaining six objectives are described and discussed below. (See p. A-12 for numbered list of objectives.)

1. **Set up the UYA(VIO) for air intercept control** (objective 2). There was a difference of more than 39 percent between the respondents from the aviation community and primary surface platforms in regard to this objective; 35 percent of VF and 36 percent of NFWS respondents indicated support versus 79 percent support from primary surface platform respondents. This discrepancy is attributed to very high percentages of don't-know responses among aviation subgroups respondents. Specifically, VF respondents indicated 61 percent and NFWS respondents indicated 64 percent don't know due to unfamiliarity with the NTDS console nomenclature.

2. **Build two NTDS ownships weapon fighter symbols through the use of a console** (objective 3). For this objective, there was a difference of more than 39 percent between the aviation community and primary surface platform respondents; 43 percent of VF and 45 percent of NFWS respondents indicated support versus 91 percent support for primary surface platform respondents. Again, high percentages of don't-know responses (48% VF and 55% NFWS) caused this discrepancy.

3. **Track a bogey and combat air patrol concurrently using LINK 4A** (objective 5). For this objective, there was a difference of more than 39 percent between the NFWS respondents and course graduates; 100 percent of NFWS respondents indicated support versus 58 percent support from both FCTCLANT and FCTCPAC graduates. Subject matter experts agree that this objective is sound. The discrepancy is attributed to a high don't-know response rate among course graduates--many of whom are assigned to conventional ship platforms and do not have experience with LINK 4A; 38 percent of FCTCPAC and 33 percent of FCTCLANT respondents indicated don't know.

4. **Update the aircrew of the F-4, F-14, F-18 via data link** (objective 6); **conduct downlink operations** (objective 7); and **transmit magnetic bearing and range from the CAP to the bogey using LINK 4A** (objective 9). There was a difference of more than 39 percent between the aviation community respondents and course graduates for all three objectives. More than 90 percent of aviation respondents indicated that these objectives were important versus 49 to 58 percent among course graduates. Again, this discrepancy is attributed to the high percentage of don't-know responses (35-39%) from school graduates.

versus 89 percent for NFWS respondents. Differences between FCTCPAC and FCTCLANT graduates are similar to responses to other objectives about Soviet or threat capabilities.

3. **Describe the characteristics, capabilities, limitations, and firing envelopes of threat fighter air-to-air missiles** (objective 26). There was a difference of more than 39 percent among the VF respondents and respondents in the secondary ship and FCTCPAC graduate groups in regard to this objective; 44 percent of VF respondents indicated support versus 88 percent for both secondary and FCTCPAC respondents. Fighter aircrews are extensively trained in threat fighter air-to-air missile capabilities and may not understand the requirement for AICs to share this knowledge. AIC subject matter experts contend that there are situations (i.e., controlling an attack mission) where the AIC is in the best position to recognize air-to-air missile threat implications and advise the aircrew.

4. **State the functions and major components of the AIMS MK XII IFF** (objective 38) **and explain the use of each of the modes in the MK XII IFF system** (objective 39). There was a difference of more than 39 percent between the respondents from the aviation community and AIC school graduates on both objectives. For objective 38, 30 percent of VF and 33 percent of NFWS indicated support versus 85 and 86 percent support for FCTCPAC and FCTCLANT respondents respectively. Results were similar for objective 39. Aviation subgroup were split roughly in thirds on these objectives with 34.5 percent responding desirable for objective 38 and 20 percent indicating desirable for objective 39. The remaining third marked don't know or disagree. The fact that aircrews do not operate MK XII IFF equipment may have created confusion in these objectives.

5. **Explain safe passage procedures using AKA 283/285** (objective 40). There was a difference of more than 39 percent among respondents from NFWS and the surface community; 34 percent of NFWS respondents indicated support versus 79 percent for primary and 76 percent for secondary platform respondents. Low support by NFWS respondents was offset by a 33 percent don't-know response by the same subgroup. Of interest, 31 percent of VF respondents indicated don't know as well.

NTDS Tasks Taught--Training Setup Environment

For 11 of the 12 NTDS objectives surveyed, discrepancies were noted for respondents from the surface community. Specifically, respondents from the secondary platforms indicated more than 19 percent less support than did those from primary platforms. These discrepancies can be explained by the fact that many secondary ships do not have NTDS and, therefore, will not be discussed.

More than 54 percent of the respondents agreed that 6 of the 12 objectives were necessary. The mean and range of the percentage of subjects responding essential or important for these six objectives for each community subgroup are presented in Table 5. The lower percentages for secondary ship platforms reflect their lack of NTDS capability.

16. **Describe the peacetime search and rescue (SAR) organization (objective 46).** There is a difference of more than 19 percent among respondents from the aviation community regarding this objective; 54 percent of NFWS respondents supported it versus 74 percent of VF respondents. Under fleet AAW intercept conditions, results were slightly more positive and no discrepancies were observed in the data.

17. **Describe the carrier control area in terms of size, control responsibility, and separation requirements when given aircraft type and weather conditions (objective 51).** There is a difference of more than 19 percent among respondents from the aviation community in regard to this objective; 55 percent of NFWS respondents supported it versus 83 percent of VF respondents. Again, responses were uniformly in agreement under fleet AAW intercept conditions. The lesser support by NFWS respondents may be attributed to the fact that they do not normally conduct training in an aircraft carrier environment.

Knowledge Factors Taught--Fleet AAW Intercepts

In 28 of 51 objectives surveyed, more than 70 percent of the respondents indicated that the knowledge factors taught were important. The mean and range of the percentage of subjects responding essential or important for these 28 objectives are shown in Table 4 by subgroup.

Table 4

Percent Knowledge Factors Taught for Fleet AAW Intercepts
Judged Necessary by Target Population

Item	Surface		Graduates		VF	Aviation	
	Pri	Sec	FCTCPAC	FCTCLANT		VAW	NFWS
Mean	85.5	83.6	83.8	74.4	70.1	76.7	72.8
Range	63-98	64-97	64-96	63-89	48-88	29-100	11-100

There were discrepancies and/or lack of support for the remaining 23 objectives. Objectives not previously identified under training setup environment are described and discussed below. (See pp. A-8 through A-10 for numbered list of objectives.)

1. **Describe the factors to be considered in establishing an AAW defensive posture when given the force mission, capabilities, and limitations (objective 21).** Primary- and secondary-surface ship respondents differed by more than 19 percent in regard to this objective; 83 percent of primary respondents indicated support versus 63 percent of secondary respondents. This is attributed to the fact that secondary surface ships are not normally involved in planning and establishing the force AAW defensive posture.

2. **State the NATO name and designation of the missiles that can be launched by each Soviet bomber (objective 24).** There was a difference of more than 19 percent within the graduate and aviation communities; 63 percent of FCTCLANT respondents indicated support versus 85 percent of FCTCPAC. Also, 65 percent of VF respondents supported it

ship, 18 percent of NFWS, and 43 percent of VF respondents supported it. Each of these three subgroups indicated relatively high nonsupport as well with primary ships at 12 percent, NFWS at 36 percent, and VF at 23 percent. Results were similar under fleet AAW intercept conditions. As with objectives 5, 6, 7, and 8 dealing with aerodynamics, respondents questioned the requirement for the AIC to master this objective.

10. **Describe attack-reattack/conversion geometry when given a tactical situation (objective 31).** NFWS respondents differed more than 19 percent with VF respondents; 82 percent of VF respondents supported this objective versus 46 percent NFWS respondents. Results were similar under fleet AAW intercept conditions. All remaining subgroups supported this objective strongly. There is no clear evidence why NFWS respondents differed from the majority.

11. **Describe basic combat formations as applied by threat nations (objective 32).** FCTCLANT and FCTCPAC graduates differed by more than 19 percent--49 percent of FCTCLANT respondents supported it versus 74 percent of FCTCPAC respondents. Similar results were indicated under fleet AAW intercept conditions. All other subgroups were in general agreement with this objective. Students on the East Coast frequently attend a 2-week Enlisted Tactical Application Course (ETAC) that provides threat information such as that taught in AIC school. Lower support by FCTCLANT graduates is attributed in part to the availability of this course.

12. **Describe Soviet fighter tactics, and U.S. countertactics (objective 34).** Even though a majority in all subgroups agreed with this objective, the responses within both graduate and aviation communities differed by more than 19 percent; 73 percent of FCTCPAC respondents supported it versus 51 percent for FCTCLANT respondents; and 52 percent of VF respondents supported it versus 73 percent of NFWS respondents. Results were similar under fleet AAW intercept conditions and are in consonance with the response to objective 32 concerning combat formations of threat nations.

13. **Identify the reference documents containing combat rules of engagement (objective 36).** Three subgroups, including secondary ship respondents, disagreed with this objective by more than 15 percent. As expected, results under fleet AAW intercept conditions were much more positive. Rules of engagement are not normally exercised under training setup conditions.

14. **Explain the functions of the KIR-1A and KIT-1A TSEC computers (objective 43).** Less than 50 percent of all six subgroups indicated that this objective was important. A high percentage of don't-know responses for most subgroups indicates unfamiliarity with the equipment nomenclature, which is the most likely reason for low agreement with this objective.

15. **Locate the primary controls and indicators of the UPA-59/UPA-59A (objective 44) and describe each of the display presentations when all decoder groups UPA-59/UPA-59A controls have been properly set up for desired operational functions (objective 45).** The aviation community differs on both objectives by more than 39 percent from the surface and graduate communities. For objective 44, 27 percent of VF and 22 percent of NFWS respondents supported it versus 89, 88, 90, and 88 percent support for primary, secondary, FCTCPAC, and FCTCLANT respondents respectively. Similar results were obtained from objective 45. This sharp difference is the result of unfamiliarity with the terms UPA-59/UPA-59A among aviation respondents; 63 percent of VF and 73 percent of NFWS respondents indicated don't know.

graduates indicated it was important. Responses from the aviation community were 39 percent less supportive than those of other subgroups. Low support may be attributed to the narrow scope of this objective (i.e., calibre of guns vs. the usefulness of knowing at what distances U.S. aircraft can release their ordnance).

5. **State the characteristics, capabilities, and limitations of current U.S. attack aircraft (objective 15).** The NFWS subgroup differed with all remaining nonaviation subgroups by more than 19 percent; 39 percent of VF respondents supported this objective versus 18 percent of NFWS respondents. In addition, both aviation subgroups did not support this objective by 30 and 27 percent respectively. However, because aviation subgroups did support a similarly worded objective dealing with fighter aircraft (objective 11), this discrepancy is probably due to the fighter orientation of the aviation subgroups surveyed versus, for example, organizations whose mission is to conduct strike (land-attack) warfare.

6. **Explain Southern California operating areas (SOCAL OPAREAs) synopsis procedure (objective 17); state the purpose of the operational navigation chart (objective 18); and describe the contents of various flight information publications (objective 19).** For objective 17, there is a wide difference in views (e.g., 41% between primary ship and NFWS respondents; 87 percent of primary respondents supported it versus 46 percent of NFWS respondents. For objectives 18 and 19, aviation subgroups differed with primary ship respondents by more than 39 percent; 63 percent of primary respondents indicated support for objective 18 versus 31 percent and 18 percent for VF and NFWS respondents respectively. Similarly, 59 percent of primary respondents indicated support for objective 19 versus 17 and 18 percent for VF and NFWS respectively. Also, for objective 19, less than 50 percent of secondary platform respondents indicated support. These results again point out an apparent difference of views between aviation and surface respondents that may be attributed to not understanding of each other's requirements. Low support for objective 19 by secondary ship respondents may be explained by the fact that the majority of controlling performed by secondary ships is during deployment when there is little or no interface with commercial air traffic control. Flight information publications are used by primary ship AICs who control aircraft more frequently in the vicinity of commercial air corridors such as those found in SOCAL OPAREAs.

7. **State the NATO names of Soviet bomber aircraft capable of launching ASCMs (objective 23).** The responses of FCTCLANT graduates differed by more than 19 percent from those of FCTCPAC graduates in regard to this objective; 67 percent of FCTCPAC versus 43 percent FCTCLANT graduates supported it. However, only 10 percent of FCTCLANT graduates did not support it. As expected, greater support (68%) for FCTCLANT graduates as well as for all other subgroups was indicated for this objective under fleet AAW intercept conditions.

8. **State the rule of thumb for converting indicated air speed to true air speed (objective 29).** NFWS respondents differed by more than 39 percent from secondary platform respondents; 60 percent of secondary platform respondents indicated support versus 18 percent for NFWS respondents. Low support among all subgroups under fleet AAW intercept conditions was also indicated. Discussion with subject matter experts revealed that, in practice, conversion of true to indicated airspeed and vice-versa is not necessary for the AIC or for the aircrew.

9. **State the rule of thumb for determining aircraft turning diameter at a 45-degree angle of bank (objective 30).** Less than 50 percent of three subgroups, including primary ship platform respondents supported this objective. Specifically, 47 percent of primary

Table 3

Percent Knowledge Factors Taught for Training Setup Environment
Judged Necessary by Target Population

Item	Surface		Graduates		VF	Aviation	
	Pri	Sec	FCTCPAC	FCTCLANT		VAW	NFWS
Mean	75.1	74.6	71.0	67.8	63.4	54.6	63.0
Range	57-46	45-91	52-97	42-94	39-91	28-100	36-100

The discrepancies and/or lack of support for the remaining 23 objectives are described and discussed below. (See pp. A-8 through A-10 for numbered list of objectives.)

1. **Describe the primary and secondary methods of intercept control employed by Soviet block forces** (objective 2). Sixty-eight percent of primary platform respondents versus only 36 percent of secondary platform respondents indicated that this objective was important. A similar pattern existed among graduates with 67 percent from FCTCPAC compared to 43 percent from FCTCLANT supporting it. Less than 35 percent of aviation subgroups supported this objective. As expected, under fleet AAW intercept conditions, support was much higher for all subgroups.

2. **Describe the philosophy underlying the method of intercept control employed by Soviet block forces** (objective 4). More than 50 percent of three subgroups indicated that this objective was not important. Under fleet AAW intercept conditions, results are more favorable. However, secondary surface platform respondents and FCTCLANT graduates still indicated less than 50 percent support. Also, 18 percent of secondary ships and 13 percent of VF respondents did not support this objective under fleet AAW intercept conditions. These results are addressed in the recommendations.

3. **Describe factors such as lift, weight, thrust, and drag on an airplane in terms of how they interact to affect flight** (objective 5); **describe the functions of the control surfaces of an airplane when given the name of the control surface** (objective 6); **describe the three factors that determine the turning diameter of an airplane** (objective 7); and **describe the effect that "G" has on an airplane's capability to turn** (objective 8). Less than 50 percent of every subgroup in all communities indicated that these objectives were important. Support was only slightly higher under fleet AAW intercept conditions. More than 14 percent of three subgroups (excluding VAW) did not support these objectives. The VF and NFWS respondents registered the strongest disagreement. The failure of many secondary platform respondents to support these objectives suggests that elements of the surface community and the aviation community have similar views. Low support among all subgroups may be attributed to the view that aircrews know the capabilities and limitations of their aircraft best and will advise the AIC of their ability to comply with instructions to effect an intercept.

4. **State the calibre of guns carried on U.S. aircraft, given the aircraft designation** (objective 14). Fifty-seven percent of VF and 46 percent of NFWS respondents did not support this objective and only a small majority of surface community and course

mean and range of the percentage of subjects responding essential or important for these 53 objectives are presented in Table 2 by target populations.

Table 2
Percent Tasks Taught for Fleet AAW Intercepts
Judged Necessary by Target Population

Item	Surface		Graduates		VF	Aviation	
	Pri	Sec	FCTCPAC	FCTCLANT		VAW	NFWS
Mean	85.8	87.8	91.3	85.3	77.9	88.5	82.7
Range	72-100	73-97	77-99	62-94	56-96	43-100	46-100

Discrepancies were noted for objectives 17, 31, and 34. Objectives 17 and 31, which had not previously been identified as having discrepancies, are discussed below.

1. **Confirm CAP and tanker altitude** (objective 17). Only 27 percent of NFWS respondents indicated that this objective was important in contrast with 89 percent of primary platform respondents and 91 percent of FCTCPAC graduates. This discrepancy is attributed to the fact that 64 percent of NFWS respondents marked don't know.

2. **Provide area control assistance to aircrews during ACM** (objective 31). Eighty-six percent of FCTCPAC graduates supported this objective compared with only 45 percent of NFWS respondents. Also, 19 percent of NFWS respondents did not support this objective. The need for area control assistance during ACM is situational depending on the existence of boundaries. No clear evidence can be found to explain the discrepancy between NFWS and course graduates.

Knowledge Factors Taught--Training Setup Environment

In 28 of 51 objectives surveyed, over 54 percent of the respondents indicated that the knowledge factors taught in the training setup environment were essential or important. Both the number of objectives considered important and the mean percentage of respondents who considered them important are considerably lower for knowledge factors taught than for tasks taught. The mean and range of the percentage of respondents responding essential or important for these 28 objectives are shown in Table 3 by target population.

secondary platform respondents compared to 48 and 43 percent among VF and NFWS respondents respectively. In sharp contrast to the views of the surface community, fighter crews appear to be uncomfortable with estimated magnetic bearing and range information based on dead reckoning procedures.

5. **Determine probability of intercept (objective 34).** Seventy-nine percent of secondary platform respondents and 79 percent of FCTCPAC graduates indicated that this objective was important compared with 44 percent of VF and only 37 percent of NFWS respondents. Further, 38 percent of VF respondents indicated it was unnecessary as did 54 percent of NFWS respondents. Results were similar under fleet AAW intercept conditions. One explanation for the sharp division between surface and aviation communities on this objective could be a difference in perspective between the two communities. Command and control personnel aboard surface platforms need to know the probability of intercept and look to the AIC to make this determination. Aircrews, on the other hand, may have a more limited perspective, (i.e., whether or not the intercept can be made after it has been initiated). Under these circumstances, the aircrew may be best qualified to determine probability of intercept.

6. **Determine aircraft headings required to maintain a specific track (objective 37).** Here again, sharp contrast exists between responses from the surface and aviation communities; only 30 percent of VF and 55 percent of NFWS indicated this objective was important versus 87 percent of primary platform respondents and 91 percent of FCTCPAC graduates. Under fleet AAW intercept conditions, 48 percent of VF and 72 percent of NFWS respondents considered it important. The difference of views between aviation and surface communities may be attributed to the fact that fighter aircrews are given extensive training in intercept geometry and derive headings independently. However, not all aircrews have the equipment and/or training necessary to calculate headings to intercept bogeys independently. High agreement on this objective by surface respondents and course graduates supports the validity of this objective.

7. **Report the most threatening bogey following a split (objective 44).** In the aviation community, 91 percent of NFWS respondents considered this objective important versus 70 percent of VF respondents. No conclusive evidence could be found to explain the difference in views among aviation subgroups. A clear majority of respondents in all subgroups supported this objective.

8. **Inform TAO/Evaluator of CAP call sign and interceptor type after receipt by voice communication (objective 48).** This objective was considered important by 87 percent of FCTCPAC graduates versus only 45 percent of NFWS respondents. More than 79 percent of surface ship respondents supported it under training setup conditions and all communities supported it under fleet AAW intercept conditions. The task described in this objective has no impact on aircrews.

9. **Inform TAO/Evaluator of CAP state and status (objective 49).** Eighty-seven percent of primary platform respondents in contrast to 56 percent of NFWS respondents indicated that this objective was important. All subgroups indicated greater support for this objective under fleet AAW intercept conditions. Again, the task described in this objective does not apply to aircrews.

Tasks Taught--Fleet AAW Intercepts

Under fleet AAW intercept conditions, 77 percent of the respondents indicated that the tasks taught in 53 of the 56 objectives surveyed were essential or important. The

Table 1

Percent Tasks Taught for Training Setup Environment Judged
Necessary by Target Population

Item	Surface		Graduates		VF	Aviation	
	Pri	Sec	FCTCPAC	FCTCLANT		VAW	NFWS
Mean	83.2	84.9	86.7	89.5	75.1	82.9	78.0
Range	52-100	60-97	53-100	44-100	52-100	29-100	45-100

The discrepancies and/or lack of support for the other 10 objectives are described and discussed below. (See pp. A-4 through A-6 for numbered list of objectives.)

1. **Advise command during the planning stages of AAW on the capability, limitations, and employment of current U.S. and threat aircraft associated weapons systems (objective 1).** In the aviation community, only 39 percent of VF respondents and 18 percent of NFWS respondents indicated that this objective was essential or important. In addition, more than 14 percent of respondents in both surface (primary platform) and graduates (FCTCPAC) had a similar response. This objective pertains primarily to preparing students for fleet AAW intercept conditions rather than a training setup environment. All subgroups indicated that this objective was necessary under fleet AAW intercept conditions.

2. **Determine lost communications procedures prior to commencing initial intercept in a Nearest Collision Intercept (NCI) mission (objective 4).** In the aviation community, only 65 percent of VF respondents and 45 percent of NFWS respondents indicated that this objective was important. In addition, 18 percent of VF and 28 percent of NFWS respondents indicated that this objective was unnecessary. Lost communications procedures apply under training setup and fleet AAW intercept situations. More than 83 percent of surface and course graduate respondents agreed that this objective was necessary. Clearly, there is a difference of views. Aviators do not seem to agree with other groups that the AIC needs to know the aircrew's intentions in event of a loss of communications.

3. **After planning bearing is determined, calculate desired intercept geometry for each NCI intercept (objective 10).** In the surface community, 94 percent of secondary platform respondents compared to only 74 percent of primary platform respondents indicated that this objective was important. The most likely reason for this discrepancy is that primary platforms have NTDS, which automatically computes intercept geometry, while secondary platforms may not have NTDS and usually calculate intercepts manually. In spite of the relatively low agreement among primary platform respondents, the requirement exists for an AIC to be able to calculate the intercept geometry manually in the event of equipment casualty.

4. **Dead reckon (DR) bogey or CAP track when either or both are in a fade (objective 32) and transmit an estimated magnetic bearing and range from the CAP to the target when either or both are in a fade (objective 33).** These objectives were considered important by 96 percent of FCTCPAC graduates and 85.5 percent of primary and

indicate the percentage of respondents who disagreed that the objective was necessary. The percentage of respondents who evaluated any objective as desirable (nice to know) or don't know was not included in this analysis. The agree-disagree data were used to determine if (1) a significant number of respondents disagreed that the objective was necessary and (2) there were any discrepancies among the various target populations.

The following criteria were established to evaluate objectives. The criteria were based on the number of subjects in the target population and the standard deviations for questionnaire items. They are liberal in that they were designed to detect relatively small discrepancies and disagreements.

1. A discrepancy among the subgroups of the target communities was defined for the:

a. Surface community as a difference greater than 19 percent between responses of primary and secondary platform respondents.

b. Aviation community as a difference greater than 19 percent between responses of VF and NFWS respondents. Due to few respondents (8), VAW percentages were not used to detect discrepancies in data.

c. Course graduates as a difference greater than 19 percent between responses of graduates of FCTCPAC and FCTCLANT.

2. For all communities, a discrepancy was defined as:

a. A difference greater than 39 percent between members of two or more subgroups (excluding VAW).

b. More than 14 percent of members in three or more subgroups disagreeing with a course objective (excluding VAW).

3. For all communities, lack of support was defined as more than two subgroups indicating less than 50 percent agreement on any objective (excluding VAW).

The following sections present the results for each of the six types of course objectives. All values are reported as percentages.

Tasks Taught--Training Setup Environment

In the training setup environment, more than 75 percent of the respondents agreed that the tasks taught in 46 of the 56 objectives were necessary. The mean and range of the percentage of subjects responding essential or important for these 46 objectives are presented in Table 1 by target populations.

Discussion. Agreement among all subgroups was clearly evident in this issue.

Issues Pertaining to Two Target Populations

1. Issue. Basic AIC school should provide more training in friendly aircraft tactics.

Response percentages.

Item	Surface		Graduates	
	Pri	Sec	FCTCPAC	FCTCLANT
Agree	74	45	75	69
Disagree	05	15	11	11

Discussion. Graduates and surface community respondents agreed on this issue.

2. Issue. An air AIC TACAID/HANDBOOK would be useful.

Response percentages.

Item	Surface		Graduates	
	Pri	Sec	FCTCPAC	FCTCLANT
Agree	84	67	95	94
Disagree	03	06	01	02

Discussion. Agreement was strong among respondents from the surface community and particularly strong among graduates.

3. Issue. As an AIC/AIC supervisor, provisions have been made for me to maintain controller proficiency.

Response percentages.

Item	Surface		Graduates	
	Pri	Sec	FCTCPAC	FCTCLANT
Agree	54	36	47	55
Disagree	12	15	43	34

Discussion. Relatively high levels of disagreement exist among all subgroups. One explanation is that regular, dependable air service is not provided for training.

4. Issue. Basic AIC school should concentrate on the "basics" such as those knowledge factors and skills needed to perform in a training setup mission. Once proficient in basics, an AIC should attend a more advanced AIC course to develop those additional skills necessary to function in a fleet AAW defense mission.

Response percentages.

Item	Surface		Graduates	
	Pri	Sec	FCTCPAC	FCTCLANT
Agree	78	55	81	86
Disagree	14	21	10	10

Discussion. Subgroups were generally in agreement with this issue statement. Increased percentages of disagreement among primary and secondary ship platforms may be attributed to difficulty in scheduling potential AICs away from regular duties for more than one school period.

5. Issue. Basic AIC should prepare its graduates mainly to support aircrew training requirements as opposed to requirements of the combat environment.

Response percentages.

Item	Graduates		Aviation		
	FCTCPAC	FCTCLANT	VF	VAW	NFWS
Agree	15	41	13	28	00
Disagree	47	50	78	58	100

Discussion. As expected, there was major disagreement on this issue, based in part on the commonly held premise that you should train as you will fight. Mixed results from FCTCLANT graduates reflect the sentiment expressed (concerning the "basics" on which basic AIC school should concentrate) for a course that would focus on basic training setup functions. The 41 percent of FCTCLANT graduates in favor of this issue statement probably consider combat environment too advanced for basic-level training.

Issues Pertaining to a Single Target Population

1. Issue. In addition to frequent reporting of bogey dope, AICs should be trained primarily to provide threat information once the intercept has been initiated.

Response percentages.

Item	Aviation		
	VF	VAW	NFWS
Agree	82	86	100
Disagree	09	00	00

Discussion. The wide agreement among the respondents in the aviation subgroups is consistent with their view that the AIC should provide coordination and support rather than positive control (see p. 15).

2. Issue. AICs should be taught to conduct forward quarter intercepts.

Response percentages.

Item	Aviation		
	VF	VAW	NFWS
Agree	95	86	100
Disagree	05	00	00

Discussion. The aviation community agreed overwhelmingly on this issue. Forward quarter intercepts are being taught at FCTCPAC and FCTCLANT.

3. Issue. AICs should be taught to conduct forward quarter reattacks.

Response percentages.

Item	Aviation		
	VF	VAW	NFWS
Agree	91	86	73
Disagree	09	00	18

Discussion. Respondents from all aviation subgroups were in agreement on this issue. The 18 percent disagreement indicated by NFWS may be attributed to the particular tactics they employ in their role as the bogey in routine training operations. Forward quarter reattacks are taught by both schools.

CONCLUSIONS AND DISCUSSION

Evaluation of Course Objectives

Survey respondent believed the overwhelming majority of course objectives are essential or important for basic AIC training. In particular, the skills portion of the courses was considered to be of extremely high validity and usefulness to prospective AICs. Most respondents were also in agreement in regard to knowledge factors taught but to a lesser degree. Significant discrepancies in course objective data are addressed below.

1. Lesson topics relating to theory of aerodynamics, calibre of guns carried in U.S. aircraft, conversion of true to indicated air speed, and rote memorization of KIT/IA KIR/IA TSEC computer nomenclature are not essential to the AIC.

2. The aviation community, in sharp contrast with all other respondents, did not support a number of objectives. This is attributed to the predominant view that the AIC's role is coordination and support rather than control. These results make clear the need for closer communication and greater understanding between surface and aviation communities concerning the duties and responsibilities of the AIC. Resolution of these differences is essential to the effective employment of aircraft by a commander at sea.

3. FCTCLANT graduates did not agree as much as FCTCPAC graduates that objectives concerned with threat and/or Soviet capabilities were necessary.

AIC Training Issues

The issues concerning AIC training that were evaluated in conjunction with this survey are discussed below.

1. A large majority of respondents agreed that "AICs (in conventional and NTDS-configured ships) should know how to calculate manually proper intercept geometry {desired aircraft} headings."

2. The majority of respondents agreed that "AICs should be taught to work with aircraft of other services in addition to USN aircrews."

3. The majority of respondents in all target populations agreed that "basic AIC school should provide additional training in the following areas: combat environment, target saturated air space, wide range of air speeds/altitudes, interpreting enemy tactics, refueling rendezvous, and NTDS failures."

4. The majority of respondents agreed that "levels of proficiency should be established and used Navy-wide as a means of matching controller capabilities to the requirements of the mission." AIC proficiency is all too often measured by the number of intercepts completed versus how effectively the controller performed the function.

5. There was general agreement that "basic AIC school should provide more training in friendly aircraft tactics."

6. The suggestion that "an AIC TACAID/handbook would be useful" evoked strong interest.

7. The aviation community agreed overwhelmingly that "AICs should be taught to conduct forward quarter intercepts and forward quarter reattacks."

8. A small majority of surface ship respondents and course graduates agreed that "the AIC should be taught to stop the bearing drift, vice being taught to maintain a predetermined planning bearing (target aspect angle)." However, results among aviation subgroups were nearly evenly divided. FCTCPAC teaches AIC students to stop the bearing drift and FCTCLANT requires them to maintain a predetermined planning bearing.

9. Both surface ship respondents and course graduates indicated relatively high disagreement that "as an AIC/AIC supervisor, provisions have been made for me to maintain controller proficiency." FCTCPAC gave insufficient air services the primary reason for this situation.

10. As expected, there was major disagreement with the issue that "basic AIC school should concentrate on the 'basics' needed to perform a training setup mission." Consistent with this view is the fact that respondents were generally more supportive of course objectives under fleet AAW intercept conditions than in a training setup environment. These results reaffirm the commonly held axiom that you must train as you will fight.

RECOMMENDATIONS

The fleet training requirement analysis produced the following recommendations:

1. Objectives related to theory of aerodynamics, calibre of guns carried in U.S. aircraft, conversion of true to indicated air speed, and rote memorization of KIT/1A KIR/1A TSEC computer nomenclature should be deleted from the course. At a minimum, students should not be tested in these topics.

2. Representatives of the aviation and surface communities should meet to reduce and eliminate differences of opinion about the role of the AIC. Agreement reached should be promulgated by higher authority for Navy-wide implementation. Course revisions may be required to reflect this guidance once promulgated.

3. Course managers at FCTCPAC should determine if objectives concerned with threat and/or Soviet objectives should continue to be included in basic AIC training.

4. Intercept geometry should continue to be taught at both AIC schools as a backup in event of NTDS failures for use when the aircrew is unable to calculate intercept headings (e.g., the A-7 aircraft).

5. Discussions should be initiated with representatives of the Air Force and Marine Corps to expand control opportunities for AIC students on both coasts to work with aircraft from other services on a regular basis.

6. Basic AIC school should provide additional training in combat environment, target saturated air space, wide range of air speeds/altitudes, interpreting enemy tactics, refueling rendezvous, and NTDS failures or a more advanced follow-on course should be developed.

7. Levels of proficiency for AICs based on the application of standardized evaluation criteria should be established. This would enable commanders to assess more precisely their unit's operational readiness, and establish clearly identifiable professional goals for the AIC.

8. Basic AIC school should provide more training in friendly aircraft tactics and continue to teach forward quarter intercepts and reattacks.

9. An AIC TAACAID/handbook should be developed.

10. Standard policy should be established and promulgated Navy-wide about the correct intercept procedure for dealing with bearing drift.

11. AIC proficiency training programs such as Big Brother at FCTCPAC should be given sufficient priority to ensure regular and dependable aircraft services so that controllers can maintain their proficiency.

REFERENCES

COMTRAPAC 052117Z. (August 1983). Air intercept control training; NSAP request for assistance. San Diego: Commander Training Command, U.S. Pacific Fleet.

Curriculum Outline, AIC NTDS (K-221-007). (April 1984). San Diego: Fleet Combat Training Center, Pacific.

Curriculum Outline, AIC NTDS (K-221-027). (April 1984). San Diego: Fleet Combat Training Center, Pacific. (February 1969) Alexandria, VA.

Joy, E. (April 1984). Fleet Combat Training Center, Atlantic, Trip report for period 16-17 April 1984. San Diego: Navy Personnel Research and Development Center.

Nowell, L. (January 1984). Identifying shipboard air intercept controller (AIC) problems to improve performance (Unpublished Manuscript). San Diego: Fleet Combat Training Center.

APPENDIX A

**FLEET TRAINING REQUIREMENTS ANALYSIS QUESTIONNAIRE FOR
BASIC AIR INTERCEPT CONTROL (AIC) TRAINING**

Appendix A

FLEET TRAINING REQUIREMENTS ANALYSIS QUESTIONNAIRE

for

Basic Air Intercept Control (AIC) Training

Privacy Act Statement

The information you provide will assist in developing the education and training programs for Basic Air Intercept Control (AIC) Training. Under the authority of 5USC301 as reflected in OPNAV 5450 of 17 April 1975, information is requested regarding your knowledge and experience relevant to existing AIC course objectives as well as knowledge factors which enable the AIC to perform properly. The information will be used by the Commander Training Command, U. S. Pacific Fleet to identify training required for AIC jobs.

This questionnaire is being administered by Commander Training Command, U. S. Pacific Fleet in order to obtain fleet feedback regarding basic AIC training conducted at Fleet Combat Training Center, Pacific. You are not required to identify yourself or your command so that you may respond with complete accuracy. Your answers will help us evaluate the extent to which existing basic AIC course objectives reflect actual tasks conducted by an AIC as well as knowledge factors which enable the AIC to perform properly.

In Part One you are given the *tasks taught*, and *knowledge factors taught* for the basic 6 week AIC conventional qualification course. (NTDS students attend both conventional and NTDS courses.) Instructions are provided with each section to help you evaluate and mark your answer for each objective.

In Part Two, you are asked to evaluate several issues in AIC training which will also help us determine what changes, if any, are necessary in the way we conduct training.

Finally you are invited to write-in any comments or suggestions you feel would help us improve AIC training. Monitors are standing-by to assist you should you have any questions. Please turn the page, read the instructions carefully, and begin.

Part One

Section I - Administrative Information

Instructions: Officers are to complete items 1 through 3 and then proceed to Section II. Enlisted personnel are to complete items 4 through 9, as applicable, and then proceed to Section II.

1. What is your rank? _____
2. What is your designator? _____
3. In what job category(s) are you now or have you been assigned in which you have had an opportunity to evaluate the role of an AIC?
If you have not had an opportunity to observe AICs please consult with the questionnaire monitor before proceeding.

-
4. What is your rating? _____
 5. What is your rate? _____
 6. Which of the following NECs do you presently hold, or have held in the past 10 years? (Mark more than one block as applicable.)
___ 0313 (Conventional AIC)
___ 0318 (NTDS AIC)
___ 0319 (AIC Supervisor)
___ Other _____
___ don't know

Note: If you marked an X next to NEC 0318, 0313, or 0319 then proceed with questions 7 through 9. If not, consult with a questionnaire monitor before proceeding.

7. What is your proficiency level as a controller in terms of number of live intercepts to date? _____
8. If you are or have been qualified as an AIC supervisor, what is your proficiency in terms of number of live intercepts supervised to date?

9. Are your qualifications to control live intercepts current? (minimum of 40 intercepts every 6 months, 20 of which are live). ___yes ___no
___ don't know.

Section II - AIC Basic Course Objectives Evaluation

Instructions: In this section are listed the learning objectives for the basic AIC 6-week course through which *all* Basic AIC students pass. Keep in mind that these objectives are designed for students bound for both conventional platforms and NTDS-capable ships as well. (In Section III, you will be asked to evaluate additional tasks which are taught only to the NTDS-bound students in a follow-on two-week course). Learning objectives are broken out into two categories as follows:

A. *Tasks Taught* (skills or tasks-things you can observe the AIC doing.)

B. *Knowledge Factors Taught* (information which is remembered by the AIC).

For each item, evaluate the degree to which that task or knowledge factor taught is required of an AIC under each of the following conditions:

Training Set-Ups - live intercept training as conducted in local SOCAL OPAREAS.

Fleet AAW Intercepts - live intercepts against unknown and/or presumed hostile targets under actual or exercise conditions.

To assist you in evaluating *tasks* taught, the following choices and their meanings are provided:

Don't know - you don't have enough knowledge and/or experience to evaluate this task.

Essential - The AIC *must perform* this task.

Important - The AIC *should perform* this task but it is not absolutely essential.

Desirable - The AIC *may perform* this task, but it is neither essential or particularly important.

Marginal - the AIC has *little reason to perform* this task.

Unnecessary - the AIC *does not perform* this task at all.

You are now ready to begin Section II. Read each item carefully and indicate your evaluation by placing an X in *only one block* under the heading, "Training Set-Ups"; and an X in *only one block* under the heading, "Fleet AAW Intercepts".

TASKS TAUGHT	0	1	2	3	4	5	a	b	c	d	e	f			
[41] Provide assistance to aircrews under radar or radio jamming conditions	0	1	2	3	4	5	a	b	c	d	e	f			
[42] Relay orders concerning CAP Missile coordination.	0	1	2	3	4	5	a	b	c	d	e	f			
[43] Detect target splits	0	1	2	3	4	5	a	b	c	d	e	f			
[44] Report the most threatening bogey following a split	0	1	2	3	4	5	a	b	c	d	e	f			
[45] Determine the track and ground speed of an air contact.	0	1	2	3	4	5	a	b	c	d	e	f			
[46] Transmit target track and ground speed of an air contact.	0	1	2	3	4	5	a	b	c	d	e	f			
[47] Maintain a grease-pencil plot of target and CAP tracks on the plotting head	0	1	2	3	4	5	a	b	c	d	e	f			
[48] Inform TAO/Evaluator of CAP call sign and interceptor type after receipt by voice communication	0	1	2	3	4	5	a	b	c	d	e	f			
[49] Inform TAO/Evaluator of CAP state and status	0	1	2	3	4	5	a	b	c	d	e	f			
[50] Relay engagement orders from TAO/Evaluator to the CAP using voice communications	0	1	2	3	4	5	a	b	c	d	e	f			
[51] Respond to contact calls from the aircrew.	0	1	2	3	4	5	a	b	c	d	e	f			
[52] Respond to judy calls	0	1	2	3	4	5	a	b	c	d	e	f			
[53] Respond to lost contact calls	0	1	2	3	4	5	a	b	c	d	e	f			
[54] Identify an aircraft/aircrew emergency condition	0	1	2	3	4	5	a	b	c	d	e	f			
[55] Respond to an aircraft/aircrew emergency condition	0	1	2	3	4	5	a	b	c	d	e	f			
[56] Assist in the conduct of a search and rescue mission	0	1	2	3	4	5	a	b	c	d	e	f			

19. More training in stern conversions (NCIC)--graded. (5)
20. More thorough knowledge/use of intercept geometry. (5)
21. COI emphasizes curriculum vice performance. Should be reversed. (3)
22. School hardware/software is limited to one ship class--students have to relearn when they report aboard. (5)
23. After AIC reports to ship, a training running mate should be assigned to evaluate/coach/improve his proficiency for a minimum of 20 live intercepts. (1)
24. Add lesson on buffer zone procedures in proximity to territorial airspace (ADIZ).
25. More information/lecture on overall AAW picture (refueling, typical/BG defense picture). (6)
26. Provide training to officers (TAO) on duties/responsibilities of AIC--this is missing in TAO and other officer curricula. (3)
27. A refresher COI just prior to deployment to emphasize threat tactics for area to be deployed and several days of intense controlling (maybe TAI to CV). (1)
28. More U.S. interservice and multinational training in A/C tactics/capabilities. (2)
29. Emphasize need for smooth and complete flow of information between AIC and TAO--"teamwork." (3)
30. Provide an AIC/NTDS mode in DD 963 class ships. (3)
31. Provide special indoctrination for DD 963 bound AICs in how to use non-AAW NTDS program. (3)
32. An AIC TACAID is a good idea. (1)
33. Send only most proficient/confident AIC grads to independent duty (let school determine who goes). (2)
34. Or, send only AICs to independent duty and increase class size for AICs. (2)
35. Return to E-6 and above only and reinstate pro-pay. (1)
36. Open big brother to weekend training (get reserves to fly). (1)
37. Need to teach cats-eye intercept. (1)
38. More FAA requirements--need better interface. (1)
39. Teach the threat. (1)
40. More jamming (EW) training needed. (1)

COMMENTS AND SUGGESTIONS OF SURVEY RESPONDENTS¹ FROM SURFACE SHIPS AND AVIATION COMMUNITIES

1. F-14 crew can run intercepts better with AIC calling bogey dope and making commendations vice controlling. (1)
2. Have FITRON reps make guest lectures on fighter tactics/ROE/A/C characteristics--more close to reality. (6)
3. AIC should be competent in rating/leadership in CIC first, then AIC second. Only second termers should go to AIC school. (4)
4. More training in vector logic procedures. (6)
5. More emphasis on Mode III operations. (1)
6. Basic COI {course of instruction} is too short/too basic for fleet needs. (1)
7. Services for AIC refresher should be more readily available--including remote areas (on deployment too!). (9)
8. Curriculum now not as rigid as it used to be: AIC grads not as confident today as back in 80-81. (3)
9. Set up AIC school as basic "A" school, follow by more advanced "B" and "C" COIs emphasize threat and tactics, vector logic, etc. and control OJT. (10)
10. AICs on shore duty should have access to FACSFAC (E&W) to maintain qualifications. (1)
11. AICs assigned to small "boys" should be given a yearly one-week refresher/evaluation COI due to low frequency of runs. (3)
12. Have all AIC grads go to CV underway for {experience/OJT} prior to reporting to the next duty station. Good opportunity to meet with RIOs and therefore increase their value to the fleet. (5)
13. More live intercepts before graduating. (4)
14. Extend NTDS portion and include more thorough covering of LINK 4A. (5)
15. Close-loop detailing of fleet AICs. (1)
16. Top Gun/Red Flag should be available to senior controllers. {Note. It is.} (7)
17. Use actual military A/C for training--not Lear jets. (5)
18. Increase training on U.S. aircraft tactics and tactics of Soviet block countries. (1)

¹The number of respondents who made that comment follows each comment in parentheses.

APPENDIX B

COMMENTS AND SUGGESTIONS OF SURVEY RESPONDENTS FROM SURFACE SHIPS AND AVIATION COMMUNITIES

Part Three - Comments and suggestions to improve AIC proficiency through training.

All suggestions will be carefully considered. This is your opportunity to feedback to the school any ideas you may have to improve the quality of AIC proficiency in the fleet. Take as much time and space as necessary, and be as specific as possible. Again, thanks for your cooperation and input.

Part Three - Comments and suggestions to improve AIC proficiency through training.

All suggestions will be carefully considered. This is your opportunity to feedback to the school any ideas you may have to improve the quality of AIC proficiency in the fleet. Take as much time and space as necessary, and be as specific as possible. Again, thanks for your cooperation and input.

TACAN certification	☐ Yes	☐ No
Star Exercises	☐ Yes	☐ No
Missile/gun Tracking - Shoots	☐ Yes	☐ No
FXP Exercises	☐ Yes	☐ No
Fleet AAW events	☐ Yes	☐ No
Vector Logic Grids Control	☐ Yes	☐ No
Air Combat Maneuvering	☐ Yes	☐ No

6. As a NTDS AIC were Mode 3 functions training sufficient? How might it be improved?

7. Did you feel sufficiently trained to perform in the Fleet AAW environment as it related to internal CIC Command & Control functions, i.e., SWC to IC to TAO ?.

Part Two - Issues in AIC Training - Course Graduates

Instructions: Read each of the statements carefully and decide the extent to which you agree or disagree. For each statement, mark *one X only* in the block to the right which best describes your opinion about that statement.

	0	1	2	3	4	5
AIC ISSUES	0	1	2	3	4	5
1. The AIC's job should be a coordinating and supporting role more so than one of positive control.	0	1	2	3	4	5
2. Basic AIC school should prepare its graduates mainly to support aircrew training requirements as opposed to requirements of the combat environment.	0	1	2	3	4	5
3. AIC's (conventional and NTDS) should know how to manually calculate headings to obtain the proper intercept geometry.	0	1	2	3	4	5
4. The AIC should be taught to stop the bearing drift, vice being taught to maintain a predetermined planning bearing (target aspect angle).	0	1	2	3	4	5
5. AIC's should be taught to work with aircraft of other services in addition to USN aircrews.	0	1	2	3	4	5
6. Basic AIC school should provide more training in friendly aircraft tactics.	0	1	2	3	4	5
7. An AIC TACAID/HANDBOOK would be useful.	0	1	2	3	4	5
8. As an AIC/AICS adequate provisions have been made for me to maintain controller proficiency.	0	1	2	3	4	5
9. Basic AIC school should provide additional training in the following areas: (Answer each separately.)						
a. Combat environment	0	1	2	3	4	5
b. Target saturated air space	0	1	2	3	4	5
c. Wide range of airspeeds/altitudes	0	1	2	3	4	5
d. Interpreting enemy tactics	0	1	2	3	4	5
e. Refueling rendezvous	0	1	2	3	4	5
f. NTDS failures	0	1	2	3	4	5
10. Levels of AIC proficiency should be established and used Navy-wide as a means of matching controller capabilities to the requirements of the mission.	0	1	2	3	4	5
11. Basic AIC school should concentrate on the "Basics" such as those knowledge factors and skills needed to perform in a training set-up mission. Once proficient in basics, the AIC should attend a more advanced AIC course to develop those additional skills necessary to function in a Fleet AAW defense mission.	0	1	2	3	4	5

Part Two - Issues in AIC Training - Surface Community

Instructions: Read each of the statements carefully and decide the extent to which you agree or disagree. For each statement, mark *one X only* in the block to the right which best describes your opinion about that statement.

	0	1	2	3	4	5
AIC ISSUES	0	1	2	3	4	5
1. The AIC's job should be coordinating and supporting role more so than one of positive control.	0	1	2	3	4	5
2. AIC's (conventional and NTDS) should know how to manually calculate headings to obtain the proper intercept geometry.	0	1	2	3	4	5
3. The AIC should be taught to stop the bearing drift, vice being taught to maintain a predetermined planning bearing (target aspect angle).	0	1	2	3	4	5
4. AIC's should be taught to work with aircraft of other services in addition to USN aircrews.	0	1	2	3	4	5
5. Basic AIC school should provide more training in friendly aircraft tactics.	0	1	2	3	4	5
6. An AIC TACAID/HANDBOOK would be useful.	0	1	2	3	4	5
7. As an AIC/AICS provisions have been made for me to maintain controller proficiency.	0	1	2	3	4	5
8. Basic AIC school should provide additional training in the following areas: (Answer each separately.)						
a. Combat environment	0	1	2	3	4	5
b. Target saturated air space	0	1	2	3	4	5
c. Wide range of airspeeds/altitudes	0	1	2	3	4	5
d. Interpreting enemy tactics	0	1	2	3	4	5
e. Refueling rendezvous	0	1	2	3	4	5
f. NTDS failures	0	1	2	3	4	5
9. Levels of AIC proficiency should be established and used Navy-wide as a means of matching controller capabilities to the requirements of the mission.	0	1	2	3	4	5
10. Basic AIC school should concentrate on the "Basics" such as those knowledge factors and skills needed to perform in a training set-up mission. Once proficient in basics, the AIC should attend a more advanced AIC course to develop those additional skills necessary to function in a Fleet AAW defense mission.	0	1	2	3	4	5

Part Two - Issues in AIC Training - Air Community

Instructions: Read each of the statements carefully and decide the extent to which you agree or disagree. For each statement, mark *one X only* in the block to the right which best describes your opinion about that statement.

	0	1	2	3	4	5
AIC ISSUES	0	1	2	3	4	5
1. The AIC's job should be a coordinating and supporting role more so than one of positive control.	0	1	2	3	4	5
2. Basic AIC school should prepare its graduates mainly to support aircrew training requirements as opposed to requirements of the combat environment.	0	1	2	3	4	5
3. AIC's (conventional and NTDS) should know how to manually calculate headings to obtain the proper intercept geometry.	0	1	2	3	4	5
4. In addition to frequent reporting of bogey dope, AIC's should be trained primarily to provide threat information once the intercept has been initiated.	0	1	2	3	4	5
5. Aircrews should never require the AIC to vector an aircraft to a stern conversion intercept.	0	1	2	3	4	5
6. The AIC should be taught to stop the bearing drift, vice being taught to maintain a predetermined planning bearing (target aspect angle).	0	1	2	3	4	5
7. AIC's should be taught to work with aircraft of other services in addition to USN aircrews.	0	1	2	3	4	5
8. Basic AIC school should provide additional training in the following areas: (Answer each separately)						
a. Combat environment	0	1	2	3	4	5
b. Target saturated air space	0	1	2	3	4	5
c. Wide range of airspeeds/altitudes	0	1	2	3	4	5
d. Interpreting enemy tactics	0	1	2	3	4	5
e. Refueling rendezvous	0	1	2	3	4	5
f. NTDS failures	0	1	2	3	4	5
9. Levels of AIC proficiency should be established and used Navy-wide as a means of matching controller capabilities to the requirements of the mission.	0	1	2	3	4	5
10. AICs should be taught to conduct forward quarter intercepts.	0	1	2	3	4	5
11. AICs should be taught to conduct forward quarter reattacks.	0	1	2	3	4	5

Section III - AIC Basic Course (NTDS Qualification) Objectives Evaluation

Instructions: This section lists the additional *tasks taught* to students who attend the 2-week follow-on course for qualification in NTDS platforms (there are no additional knowledge factors taught in this course). To assist you in evaluating these additional NTDS-related tasks taught, the following choices and their meanings are provided.

Don't know - you don't have enough knowledge and/or experience to evaluate the task.

Essential - the AIC *must perform* this task.

Important - the AIC *should perform* this task but it is not absolutely essential.

Desirable - the AIC *may perform* this task, but it is neither essential nor particularly important.

Marginal - the AIC *has little reason* to perform this task.

Unnecessary - the AIC *does not perform* this task at all.

Read each item carefully and indicate your evaluation by placing an X in *only one block* under the heading "Training Set-Ups"; and an X in *only one block* under the heading "Fleet AAW Intercepts".

B. Knowledge Factors Taught

Instructions: to assist you in evaluating *knowledge factors taught*, the following choices and their meanings are provided:

Don't know - you don't have enough knowledge and/or experience to evaluate this item.

Essential - the AIC *must know* this information.

Important - the AIC *should know* this information, but it is not absolutely essential.

Desirable - *nice to know* information, but it is neither essential nor particularly important.

Marginal - the AIC has *little reason to know* this information.

Unnecessary - the AIC has *no reason to know* this information at all.

Read each item carefully and indicate your evaluation by placing an X in *only one block* Under the heading "Training Set-Ups": and an X in *only one block* under the heading "Fleet AAW Intercepts".

41. In a training setup situation, more often than not, aircrews will take over most intercepts at the turn-in unless specifically asked not to in order to enhance AIC training. In a fleet intercept, aircrews pay little or no attention to the AIC once radar contact is made. This may seem to be an aircrew/GCI interface problem, but if AICs are not trained to expect this, his confidence may falter; or, he may get too aggressive with the aircrew resulting in a "Judy" call just to shut him up. (2)

42. Make AIC a rating--not just a collateral duty. (2)

43. Face-to-face briefs/debriefs with AIC/aircrew between FCTCP/Miramar on a regular basis. (Run bus as required.) (9)

44. More training in "Dolly" procedures (recommended by an aviator). (3)

45. Move basic AIC schools to NAS (Miramar and Oceana) for more direct interface with aircrews. (2)

46. Assign fleet AICs to air squadrons on a permanent basis (PCS) for greater cross-mix community. (3)

47. Put Pilots/RIOs in the job as AICs--then we would have optimal AIC performance. (1)

48. Happy Hunter radar and VHF radios are unreliable--poor performance. Need updating/replacement. (5)

49. Emphasize concept of target aspect angle and its effect on use of air-to-air weapons by CAP. (1)

50. Create and use realistic scenarios in AIC training--train as you will fight. (1)

51. AIC must be comfortable with all intercept techniques: stop bearing drift, control of target aspect angle, control of lateral separation, and vertical conversions. (1)

52. RAGS should be required to utilize AIC services--provides AICs with more live runs. (1)

53. Send AICs to F14 FRS to attend basic intercept/weapons employment lectures. (1)

54. Should a reattack be necessary, use of clock-codes, distance, and angles would be of more value than a reattack heading for the fighter to fly. For example, "your bogey is right 3 o'clock, 3 miles angle 18." (1)

55. Prescreen more effectively incoming students so that only the most fit attend AIC school. (1)

56. Pay close attention to "spill-outs" during ACM; keep CAP informed of MIG alerts. (1)

57. Emphasize continuous two-way communications between aircrew and AIC. Silence by an AIC when asked a question creates doubt in the mind of the aircrew. (1)

58. I don't need an AIC to tell one what collision bearing is, or how to run a reattack. I need an AIC to find the bogey, so I can decide best how to kill him. (1)

59. AIC proficiency is the ability to control aircraft and complete intercepts under various conditions such as fades, system degradation, and jinking. Things such as determining threats or knowing doctrine are nice to know but not necessary to the AIC. Put more emphasis on air controlling and less on doctrine. (1)

60. Place AIC school graduates in positions aboard ships where they can immediately get OJT and more practice. (Avoid MAA duty.) (1)

61. Great idea to have all AICs go through conventional training first, then NTDS for those who need it. (1)

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