

## **CHAPTER 4: LEADERSHIP DEVELOPMENT REQUIREMENTS (LDR) PROGRAMS**

### **SECTION 1: KITTY HAWK AIR SOCIETY (KHAS)**

KHAS is the academic honor society of AFJROTC that promotes high academic standards, school and community service, self-confidence, and initiative. KHAS also develops leadership abilities, recognizes academic excellence, and furthers members' knowledge of the Air Force role in aerospace. KHAS has the flexibility to include objectives of local unit chapters under a single umbrella with the advantages of national stature. Consult WINGS for complete details.

To establish a chapter of Kitty Hawk Air Society, you should write by-laws to the Constitution of your National Association of Kitty Hawk Air Society and keep it on file. You can use the enclosed constitution and by-laws as a guide because the constitutions of all state associations are much the same. You may print your charter certificate along with the recognition and membership certificates from WINGS/Certificates

Badges may be ordered on WINGS| Logistics | Locate the item | Enter the quantity| Click Submit Final.

Membership certificates and badges are awarded to each qualified cadet. Active members may wear a light blue cord with their AFJROTC uniform. Recognition certificates are awarded to honorary members e.g., instructors, school administrators, Air Force Association officials, and distinguished visitors.

We encourage each unit to set up their own requirements so that about 20% of their cadets qualify for membership. Chapters need to review and revise their requirements to keep the membership at about that level.

### **HISTORY OF KITTY HAWK SOCIETY**

During Academic Year (AY) 1971-72, AFJROTC NC-023 initiated a Junior ROTC Air Society to further academic achievement. Lt Col E. H. Cryer, USAF (Ret), Senior Aerospace Science Instructor (SASI), noted a need for a cadet organization to function as a club within the high school activities program. Lt Col Cryer designed the Constitution for the high school level organization in such a way that it would be an academic society with the following board objectives:

- An incentive for academic excellence Develop an interest in a college education
- A means for cadets to participate as a club in school activities
- To provide additional areas for leadership experiences and development

The name Kitty Hawk Air Society was chosen for the organization since it, like AFJROTC, relates to the beginning of aerospace activities. Thirteen above average cadets, from AE-II and AE-III were identified during the first semester and were ready to identify and invited new AE- I cadets to join. Sixteen of thirty cadets invited to join completed a pledge program under a “Big Brother” leadership assistance system. The sixteen successful pledges became active members at a formal “Dining-In” held in April 1972. The Dining-In was extremely popular with the group and it has become an annual affair.

During the organizational phase of development, benevolence, as well as leadership growth, were established as aims of the group. As an example, each year a needy family in our community was given support.

Since initial organization the membership criteria, the objectives, and the aims of the KHAS have remained basically the same. Headquarters AFROTC was advised of the establishment of KHAS by letter dated 25 July 72. Annual membership exceeded 40 cadets each year since the first year.

During the AFJROTC Workshop in conjunction with the Air Force Association Annual National Convention 16-20 September 1973 in Washington DC, a briefing regarding the Kitty Hawk Air Society was given by Lt Col Cryer to the JROTC group. All participants indicated an interest in the organization and detailed information was sent to them following the workshop.

During an AFJROTC workshop held at Pope AFB in August 77, Lt Col Cryer gave a briefing regarding KHAS and all participants indicated a sincere interest in forming a similar organization. Each unit represented at the conference was given a detailed information packet.

Announcements regarding KHAS in the AFJROTC Newsletter prompted information packets to be sent to units nationwide

Enthusiastic support for the organization displayed by Lt Col Robert Tickle and Maj Joseph Cafazzo of the Middle Atlantic Area of ROTC was largely responsible for eleven active chapters in the area.

As new units were formed it became appropriate to identify groups as chapters of KHAS. During AY 76-77, the members of the unit at Southern Wayne Senior High School selected “Kill Devil Hill” as the Chapter name to continue the relationship with the origin of powered flight. Also using the letter symbol of the organization, the motto “Keep Honor Above Self” was adopted.

Colonel Lindy C. Gunderson, Commandant, Middle Atlantic Area, AFROTC, contacted Colonel William Bowden, USAF (Ret), President, North Carolina Air Force Association and Colonel Bowden was most agreeable to place it on the agenda of a meeting of North Carolina AFA chapter representatives to be held at Seymour-Johnson AFB on 11 Feb 78.

On 9 Feb 78, Colonel Gunderson organized a luncheon meeting with high school administrators involved with the charter chapter (Kill Devil Hill Chapter) of KHAS. Dr. John K. Wooten,

Superintendent of Wayne County Schools, and Mr. Walter G. Fulcher, Principal of Southern Wayne Senior High School attended the meeting and repository for records of the organizations. Also in attendance at the meeting were Lt Col Robert Tickle, Major John G. Rylee of the middle Atlantic Area office and Lt Col Cryer, SASI, Southern Wayne Senior High School.

Colonel Lindy Gunderson introduced the matter of interest of AFJROTC Honor Societies to the North Carolina AFA Executive Council assembled on 11 Feb 78 and Lt Col Cryer presented a detailed briefing on the topic. Mr. Bob Gill, President of the Scott Berkley Chapter of AFA, presented a motion for affiliation with the KHAS. The assembled group was unanimous in their response to a motion to help organize and support a statewide KHAS. Dr. Daniel F. Cathan, National Vice President of AFA, noting the enthusiastic support, suggested that a briefing be prepared for the National Board of AFA. He suggested that national AFA support be solicited stating that the time had arrived for national consideration. Dr. Cathan forwarded a letter to National Air Force Association. Colonel Gunderson confirmed telephonic approval had been received from Brigadier General David B. Easson, Commandant, AFROTC, to proceed in planning a national KHAS.

## SAMPLE CONSTITUTION

### Preamble

We, the members of the Kitty Hawk Air Society (KHAS), in order to uphold academic standards and promote further interest in academic achievement, create a closer and more efficient relationship within the Junior Reserve Officers Training Corps (ROTC), serve the high school and community, support airpower in its role in national security, and develop patriotism and good citizenship, do hereby establish this constitution. We acknowledge our affiliation with the Air Force Association and will support their efforts to further aerospace education.

### Article I

Section 1 - Name. This organization will be known as the KHAS. The name of each individual chapter will become part of the bylaws.

Section 2 - Objectives. The objectives of KHAS shall be to promote higher academic standards, to be of service to the school and community, promote self-confidence and initiative, develop leadership abilities, and to encourage academic excellence and continued educational development in the post high school years. Additionally, an objective of the KHAS will be to further knowledge of the Air Force role in aerospace education.

### Article II

Section 1 - Membership. There will be three classes of membership: active, honorary, and probationary.

a. Active: An active or reserve member in the Air Force Junior ROTC (AFJROTC) unit as a full time high school student. An invitation to join KHAS will be extended only to those students

who have a minimum academic average of a “B” in AFJROTC and an overall “C” average without any failing grades during the preceding grading period. Local chapter bylaws may equate the minimum letter grades to numerical grades in order to provide members with clearly defined academic standards. Higher standards are encouraged and other restrictions may be established in the bylaws. A member must maintain these standards to remain active.

b. **Honorary:** The superintendent, principal, the State President of AFA and Air Force Junior ROTC instructors will automatically be honorary members. Other individuals will be elected from those recommended by the membership committee.

c. **Probationary:** Any member who fails to meet the standards set forth in Article II, Section 1a, and any other standards established in the bylaws will be placed on probationary status. Such individuals will not be permitted to vote or hold office.

Probationary members who meet the requirements for active membership during the next grading period will return to active status. Those who fail to meet standards on the next grading period will be expelled. Any member who is expelled or suspended from school will be expelled from the organization.

Section 2 - Membership Procedures. Individuals who wish to become active members must meet the criteria of Article II, Section 1a. These individuals must be recommended to the membership committee. The membership committee will be responsible for ascertaining that prospective members have met all membership eligibility requirements. The membership committee and the KHAS advisors must approve membership. The membership committee will also nominate individuals who have made outstanding contributions to KHAS for honorary membership.

Section 3 - Induction. Requirements for induction into KHAS will be set forth in the bylaws. ***Hazing and degradation are prohibited.*** Induction ceremonies should be planned for the fall semester and/or spring semester.

Section 4 - Due Process. Members who have been expelled from the organization for other than academic reasons may protest by notifying the commander, in writing, within ten days after change of status. The commander, within five days, along with the membership committee will discuss the protest and make recommendations to the advisors. The advisors and school principal will determine final action.

Section 5 - Discipline. Any officer, who misses two consecutive meetings without the approval of the advisors, will be required to resign from office. Any member who misses two or more consecutive meetings without an excuse will be referred to the membership committee for disciplinary action. Advisors will determine final action.

### Article III

Section 1 - Organization. The KHAS will be organized so as to conform to school policies concerning other like organizations. As a minimum there will be a Commander (President), Vice Commander (Vice President), Administration Officer (Secretary) and Finance Officer

(Treasurer). New Officers will be elected at least once per academic year by a majority vote of the organization's general membership.

Section 2 - Commander. It shall be the duty of the commander to preside at all meetings of the organization and to further with all due earnestness the interests thereof. The commander will be an ex officio member of all committees. The commander will be a special assistant to the corps commander and will ensure that the activities of KHAS do not conflict with those of the corps.

Section 3 - Vice Commander. It shall be the duty of the vice commander to perform the duties of the commander in his absence or inability to act. The vice commander will be assigned additional responsibilities as determined by the commander. The vice commander will be the chairperson of the membership committee.

Section 4 - Administration Officer. The administration officer will record all meetings, maintain necessary files, and handle routine correspondence.

Section 5 - Finance Officer. The finance officer will oversee all financial matters related to the society and if applicable will serve as the chairperson of the finance committee. Faculty advisors will annually review the financial control procedures to ensure that all funds are accountable.

Section 6 - Advisors. Faculty advisors or sponsors for the Kitty Hawk Air Society will be SASI and the Aerospace Science Instructor (ASI). In special situations, the principal may also select additional non-AFJROTC faculty advisors who have a high interest in aerospace activities and the improvement of citizenship. The local AFA chapter will be invited to name an advisor.

Section 7 - Committees. There will be at least one permanent standing committee, that being the membership committee. Other permanent standing committees may be formed by a majority vote of the general membership. The commander with the approval of the advisors will select members for permanent committees. The commander may also appoint other temporary committees as the need arises.

Section 8 - Meeting Procedures. The rules of order contained in ROBERTS RULE OF ORDER shall govern the organization in all cases to which they are applicable and in which they are not inconsistent with the rules of order of this organization.

#### Article IV

Section 1 - Chapter Dues. In order to promote the objectives of this organization, dues will be required of the members. Dues will be determined by a majority vote of the general membership. Dues will be used to support each local chapter of the KHAS.

Section 2 - Fund Raising Projects. Fund raising projects are permitted so long as they are in accordance with school policy. All fund raising activities must have the approval of the school principal.

#### Article V

Section 1 - Bylaws. All proposed bylaws must be presented to and read before the membership in a general meeting at least 10 school days before it can be adopted or rejected. Adoption will require a majority vote of all active members and the approval of the advisors.

### **SAMPLE—AFJROTC NC-023**

## **SOUTHERN WAYNE HIGH SCHOOL DUDLEY NC 28333**

### CADET POLICY GUIDANCE NUMBER TWELVE

#### REVISED 24 AUGUST 1993 KILL DEVIL HILL CHAPTER BYLAWS TO THE NORTH CAROLINA STATE CONSTITUTION OF THE KITTY HAWK AIR SOCIETY

1. **PURPOSE:** This cadet policy guidance briefly outlines the objectives of the Kill Devil Hill Chapter, of the North Carolina Kitty Hawk Air Society, for the information and action of all cadets. This policy guidance supersedes and replaces previously adopted bylaws to the North Carolina State Constitution of Kitty Hawk Air Society.
2. **GENERAL:** The Kitty Hawk Air Society (KHAS) Chapter at NC-023 AFJROTC will be known as the Kill Devil Hill Chapter. This chapter is organized at Southern Wayne High School, Dudley, North Carolina.
3. **OBJECTIVES:** KHAS shall promote higher academic standards, be of service to the school and community, promote self-confidence and initiative, develop leadership ability, encourage academic excellence, and further educational development in the post high school years.
4. **MEMBERSHIP:** The members of the organization must be enrolled at Southern Wayne High School as full time high school students and must be registered for at least one Aerospace Science Course during the school year.
  - 4.1. All cadets enrolled in the AFJROTC program are considered for an invitation to join this honor society. An invitation to join will be extended only to those students of good character who earn a minimum academic grade of 93 in their Aerospace Science course and earn no grade below 85 for any course in which they are enrolled. The decision to extend or not extend an invitation will be based primarily upon three factors. First, the comments of a school official who has access to student discipline records will be considered. Second, each cadet's record of behavior and duty performance in AFJROTC and other school classes and activities will be considered. Third, each potential member must achieve the currently established grade standards for Aerospace Science and other courses. The grade standards must be achieved for the most recent grading period prior to induction. Exam grades will not be considered.
  - 4.2. Members must maintain Kitty Hawk standards. The performance of each member will be evaluated at the end of each grading period. Factors considered in evaluating members will be

the same as those used to evaluate potential members. Any member who fails to maintain the grade standards and all other standards of the Honor Society will be placed on probationary status until they again satisfy established standards.

4.2.1. Members on probationary status may not wear the accouterments associated with Kitty Hawk membership.

4.2.2. Members on probationary status may attend Kitty Hawk meetings and activities; but, they may not hold office in the Kill Devil Hill Chapter, vote on any club business, or serve as a big brother or big sister in the pledge program, during their probationary period.

4.3. Adults, such as school officials and distinguished visitors, may be made honorary members from time to time. They will be presented with a badge and a certificate of honorary membership.

4.4. Induction: Cadets desiring to become members shall complete a pledge program composed of reasonable tasks established by the membership and approved by the SASI. Induction ceremonies will be conducted as soon as is practical following completion of a pledge program. Induction will normally be held during a formal Dining-In or other appropriate ceremonial event.

4.5. Insignia: Active members in good standing are authorized to wear the Kitty Hawk badge and blue shoulder cord while in uniform.

4.5.1. Active members and honorary members may wear the Kitty Hawk badge when not in uniform.

4.5.2. Graduating seniors who are active members in good standing are authorized a blue honor cord for wear with their cap and gown.

5. ORGANIZATION: The organization will be organized in accordance with NC-023 AFJROTC Cadet Policy Guidance Number Three, Organization of the Cadet Corps.

5.1. Commander: It shall be the duty of the Commander to preside over all activities of the organization and to serve as the Cadet Evaluation Reporting Official for each member serving in a leadership or staff position in the organization. It shall also be the duty of the Commander to accomplish the duties associated with any position in the organization if the position is vacant or the incumbent does not accomplish those duties.

5.2. Deputy Commander: It shall be the duty of the Deputy Commander to preside in the absence of the Commander and to ensure that all staff actions are properly accomplished in a timely fashion that complies with the suspense's and deadlines that are imposed upon or generated by the organization.

5.3. NCOIC Operations: It shall be the duty of the NCOIC Operations to plan and organize all training and activities of the organization. It shall be the duty of the NCOIC Operations to

prepare a calendar of scheduled training and activities for approval by the

Commander and to provide copies of the approved calendar to the NCOIC Information Management for distribution within the organization and to the Wing Deputy for Operations for approval and inclusion in the Wing Calendar of events. It shall also be the duty of the NCOIC Operations to prepare Operations Plans for all activities and training, indicating required resources, all required actions, the target dates and persons responsible for accomplishment of the actions. It shall be the responsibility of the NCOIC Operations to prepare Operations Plans for approval and implementation by the Commander no later than ten school days prior to when action must be taken to meet the earliest target date included in each plan.

5.4. NCOIC Information Management: It shall be the duty of the NCOIC Information Management to record meetings and activities of the organization. It shall be the duty of the NCOIC Information Management to maintain publications, computer records, files, and stocks of forms for the organization. It shall be the duty of the NCOIC Information Management to publish orders and plans generated by and for the organization. It shall be the duty of the NCOIC Information Management to process the correspondence and other communications of the organization. It shall be the duty of the NCOIC Information Management to control and keep a record of all communications going out of and coming into the organization.

5.5. NCOIC Personnel: It shall be the duty of the NCOIC Personnel to assure that the assignments, training, accomplishments, and awards, pertaining to the members of the organization, are properly documented in the unit records of the members. It shall also be the duty of the NCOIC Personnel to provide properly headed Cadet Evaluation Forms for accomplishment by the Commander, at least twenty school days prior to the evaluation suspense date established by the Wing, and to assure that evaluations are accomplished and forwarded to the Flight Commanders of the evaluated members prior to the evaluation suspense date established by the Wing.

NCOIC Public Affairs: It shall be the duty of the NCOIC Public Affairs to publicize the activities of the organization. The NCOIC Public Affairs will prepare an advance publicity news release for any news worthy organizational activity and forward it to the Wing Deputy for Public Affairs, for public release, at least 20 school days prior to the scheduled activity. The NCOIC Public Affairs will ensure the accomplishment of photo and video coverage of news worthy organizational activities. The NCOIC Public Affairs will prepare a news release following any news worthy organizational activity and forward it with photos, to the Wing Deputy for Public Affairs, for public release, no later than the close of the second school day following the activity. The NCOIC Public Affairs is responsible for internal information and will forward news releases concerning assignments, awards, accomplishments, and activities of the members, to the Wing Deputy for Public Affairs, for inclusion in the Wing Newsletter. At least one internal information news release will be forwarded prior to the suspense date for each issue of the Wing Newsletter and if there is no news worthy activity of internal interest to support, the NCOIC Public Affairs will generate and forward a feature story pertaining to the organization or its members. It shall also be the duty of the NCOIC Public Affairs to serve as the historian of the organization and to maintain a scrapbook of photos, news stories, and other memorabilia for the organization. It shall

also be the duty of the NCOIC Public Affairs to forward an appropriately labeled copy of any video tape which pertains to the organization, to the SASI, no later than the close of next school day following the taping.

5.6. NCOIC Finance: It shall be the duty of the NCOIC Finance to oversee all financial matters related to the organizations and to serve as chairperson of the finance committee of the organization. It shall be the responsibility of the NCOIC Finance to coordinate with other staff members in the organization to project all expenditures and income which will be generated by and for the organization and to prepare a budget request for the organization for approval by the Commander. It shall be the responsibility of the NCOIC finance to forward the approved budget request to the Wing Comptroller for approval and inclusion in the Wing budget no later than the budget suspense date established by the Wing Comptroller. It shall be the duty of the NCOIC Finance to prepare school purchase order requests for any proposed purchases by and for members of the organization. It shall also be the duty of the NCOIC Finance to instructor the members in purchase discipline to assure that no expenditures are made by and for members of the organization unless an approved school purchase order for no less than the amount of the purchase has been obtained. It shall also be the duty of the NCOIC finance to monitor the expenditures and income of the organization and to inform the Commander and the Wing Comptroller of any deviation from the budget (schedule of income and expenditures) which has been approved by the Wing for the organization.

5.7. NCOIC Logistics: It shall be the duty of the NCOIC Logistics to serve as the custodian of all equipment and supplies possessed by the organization. It shall be the duty of the NCOIC Logistics to maintain an accurate inventory of equipment and supplies and to maintain stock levels to satisfy anticipated requirements. It shall be the responsibility of the NCOIC Logistics to coordinate with the Commander and staff to determine anticipated requirements. It shall be the duty of the NCOIC Logistics to obtain purchase orders from the NCOIC Finance and to make required purchases or otherwise procure needed equipment and supplies for the organization well in advance of anticipated requirements. The NCOIC Logistics, the Commander, and the AFJROTC instructors are the only persons who are authorized to make purchases or commit funds on behalf of the organization.

6. DUES: Members and pledges are not required to pay dues; but they are expected to participate in fund raising projects which the Cadet Wing conducts. Members and pledges are expected to raise a fair quota of required funds through the sale of fund raising merchandise, or pay an equivalent amount in cash, once each school year.

6.1. Once each school year, members need to turn in 30 % from the sale of NCOIC fund raising merchandise, or pay 15 % in cash. The 15% requirement is reduced by half of any sales money turned in. Members participating in KHAS during the fall semester must satisfy this requirement prior to the fall semester dining-in. Members not participating in KHAS until the spring semester must satisfy this requirement prior to the spring semester dining- in. Members who fail to meet these deadlines will be placed on probation until the requirement is satisfied.

6.2. Pledges need to turn in 60 % from the sale of ROTC fund raising merchandise, or pay 30

% in cash. The 30% requirement is reduced by half of any sales money turned in. Pledges must satisfy this requirement prior to induction into active membership. Pledges will have satisfied their fund raising obligations for the remainder of the current school year when they satisfy this requirement.

7. **FUND RAISING:** Fund raising by and for this organization will normally be done as part of a Wing wide fund raising effort. Normally, all funds required by the organization will be raised by the major Wing sponsored fund raising projects and funds will be allocated by the Wing to cover the authorized expenditures which are included in the budget approved for the organization by the Wing. All fund raising must be approved by the SASI and the school administration and be scheduled on the school calendar to avoid conflicts with other school organizations.

8. **CALENDAR:** All meetings, activities, and events conducted by and for organization members will be approved by the SASI and school administration and scheduled on the school calendar to avoid conflicts with other organizations and to assure coverage by school insurance.

8.1. **Activities:** Some of the activities planned annually include:

8.1.1. Participation in school club activities, striving to achieve the distinction of being designated a "gold star" club.

8.1.2. Sponsorship of the military ball.

8.1.3. Sponsorship of dining-in.

8.1.4. Sponsorship of a cook out.

8.2. **Service:** Annual service projects include:

8.2.1. Sponsorship of school service projects, such as campus clean-up, or providing peer tutoring for students.

8.2.2. Participation in community service activities such as Thanksgiving basket, Christmas stocking fund, and empty stocking fund, as a school club.

8.3. **Trips:** Annual trips include:

8.3.1. A visit to a senior AFROTC detachment on a college campus.

8.3.2. Visits to the site of the Wright Brothers first flight or other locations significant to the heritage of aerospace achievements.

9. **INSURANCE:** Each member and pledge must have insurance which will cover the cost of emergency medical treatment of purchase school insurance each school year prior to participating in any functions of the organization.

APPROVED

ROBERT E. ARMBRUST, Lt Col, USAF (Ret)  
Senior Aerospace Science Instructor

3 Attachments

1. Invitation to Join
2. KHAS Pledge Program
3. Certificate on Form

**SAMPLE KITTY HAWK AIR SOCIETY PLEDGE PROGRAM**

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(First and Last Name of Cadet Pledge)

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(Name of Big Brother or Big Sister)

The pledge program is designed as an opportunity for cadets to display initiative, cooperation, and enthusiasm for the KHAS pledge program and the ideals of the Society.

The KHAS Commander has overall responsibility for the pledge program. Each pledge is individually responsible for completing the required elements of the pledge program. Each pledge is assigned a KHAS Big Brother or Big Sister who provides encouragement and advice and presents the pledge for membership at the induction ceremony.

Each pledge is required to accomplish the following:

- Get the signature of each active member of KHAS.
- Get signatures of KHAS staff 3 times at different times.
- Memorize and recite:
  - The Preamble of the KHAS Constitution
  - Purpose of the Pledge Program
  - What to Say When You Don't Know
  - Definition of Duty
  - Definition of a Salute or Scholfield's Quotation or Air Force Song
- Complete three of the following five items:
  - Help with a KHAS student council project such as the homecoming banner, the pumpkin carve up, or the Christmas Door.
  - Participate in Campus Beautification or other KHAS service project.
  - Complete an individual task assigned by the KHAS Commander.
  - Perform a voluntary 2-hour task for your parents.
  - Perform a voluntary 2-hour task for any teacher.
- Turn in your completed Pledge Checklist no later than the established deadline date. Present yourself for membership at an induction ceremony.

**MEMORY WORK**

**Preamble to the Constitution of the Kitty Hawk Air Society:**

"We the members of the Kitty Hawk Air Society, in order to uphold academic standards and promote further interest in academic achievement, create a closer and more efficient relationship within the Junior Reserve Officer Training Corps, serve the high school and community, support airpower in its role in national security, and develop patriotism and good citizenship, do hereby establish this constitution.

**Purpose of the Pledge Program:**

"The purpose of the pledge program is to lay the foundation for the development of those qualities of character and discipline which will be expected of a member of the Kitty Hawk Air Society. These qualities must be so deeply instilled in the individual's personality that no stress or strain will erase them."

**What to Say When You Don't Know:**

"Sir/Ma'am, I hesitate to articulate for fear that I might deviate from the true course of rectitude, in other words, I do not know, Sir/Ma'am.

**Definition of Duty:**

"Duty then is the most sublime word in the English language. You should do your duty in all things. You can never do more. You should never wish to do less." (General Robert E. Lee)

**Scholfield's Quotation:**

"The discipline which makes the soldiers of a free country reliable in battle is not to be gained by harsh or tyrannical treatment. On the contrary, such treatment is far more likely to destroy than to make an army. It is possible to impart instruction and give commands in such a manner and such a tone of voice as to inspire in the soldier no feeling but an intense desire to obey, while the opposite manner and tone of voice cannot fail to excite strong resentment and desire to disobey. The one mode or the other of dealing with subordinates springs from a corresponding spirit in the breast of the commander. He who feels the respect which is due to others cannot fail to inspire in them respect for himself while he who feels, and hence manifests disrespect toward others, especially his subordinates, cannot fail to inspire hatred against himself." (Major General John M. Scholfield's graduation address to the graduating class of 1879 at West Point).

AIR FORCE SONG

Off we go into the wild blue yonder, Climbing high into the sun;  
 Here they come zooming to meet our thunder,  
 At 'em boys, Give 'er the gun! (Give 'er the gun now!) Down we dive, spouting our flame from  
 under,  
 Off with one helluva roar!  
 We live in fame or go down in flame. Hey!  
 Nothing'll stop the U.S. Air Force!

*Additional verses:*

Minds of men fashioned a crate of thunder, Sent it high into the blue;  
 Hands of men blasted the world asunder;  
 How they lived God only knew! (God only knew then!) Souls of men dreaming of skies to  
 conquer  
 Gave us wings, ever to soar!  
 With scouts before And bombers galore. Hey!  
 Nothing'll stop the U.S. Air Force!

*Bridge: "A Toast to the Host"*

Here's a toast to the host  
 Of those who love the vastness of the sky,  
 To a friend we send a message of his brother men who fly.  
 We drink to those who gave their all of old, Then down we roar to score the rainbow's pot of  
 gold.  
 A toast to the host of men we boast, the U.S. Air Force!

Zoom!

Off we go into the wild sky yonder, Keep the wings level and true;  
 If you'd live to be a grey-haired wonder  
 Keep the nose out of the blue! (Out of the blue, boy!)  
 Flying men, guarding the nation's border, We'll be there, followed by more!  
 In echelon we carry on. Hey!  
 Nothing'll stop the U.S. Air Force!

**SAMPLE KITTY HAWK AIR SOCIETY PLEDGE PROGRAM INVITATION TO JOIN**

REPLY TO: (Name of Chapter) Chapter, Kitty Hawk Society (Unit Number) (High School Name)

SUBJ: Invitation to Join the Kitty Hawk Air Society TO:

\_\_\_\_\_  
(Cadet's First and Last Name)

A review of your records indicates that you are qualified for membership in the (Chapter Name) Chapter of Kitty Hawk Air Society and you are cordially invited to join us.

The high ideals of this organization are stated in the Constitution of Kitty Hawk Air Society and the Bylaws of the (Chapter Name) Chapter.

Preamble to the Constitution of Kitty Hawk Air Society:

"We, the members of the Kitty Hawk Air Society, in order to uphold academic standards and promote further interest in academic achievement, create a closer and more efficient relationship with the Junior Reserve Officer Training Corps, serve the high school and community, support airpower in its role in national security, and develop patriotism and good citizenship, do hereby establish this constitution.

(Chapter Name) Chapter Bylaws the Constitution of the Kitty Hawk Air Society:

"Objectives: KHAS shall promote higher academic standards, be of service to the school and community, promote self-confidence and initiative, develop leadership ability, encourage academic excellence, and further educational development in the post high school years."

With the understanding that membership is voluntary, you are cordially invited to join KHAS as a pledge. Active membership status will be awarded to you upon completion of the prescribed pledge program of indoctrination and formal induction. Active membership will entitle you to wear the Kitty Hawk Air Society Badge and to wear the prescribed Kitty Hawk Cord with your uniform, so long as you maintain Kitty Hawk standards.

Please indicate your response below and return this letter to the SASI.

\_\_\_\_\_  
(Commander, Kitty Hawk Air Society)

\_\_\_\_\_  
(Senior Aerospace Science Instructor)

\_\_\_\_\_ Yes, I want to join KHAS.

\_\_\_\_\_ No, I do not want to join KHAS.

\_\_\_\_\_  
(Date of Your Signature)

\_\_\_\_\_  
(Please Sign Your Name on This Line)

**SAMPLE KITTY HAWK AIR SOCIETY PLEDGE PROGRAM CHECKLIST**\_\_\_\_\_  
(First and Last Name of Pledge)\_\_\_\_\_  
(Name of Big Brother/Big Sister)

This checklist is to be completed and turned in to SASI not late than \_\_\_\_\_  
(Deadline Date)

Pledges are responsible for completion of pledge program requirements no later than the close of school on the established deadline date. Pledges are responsible for turning in their completed checklist, to the SASI, no later than the established deadline.

Big Brothers and Big Sisters are responsible for contacting their pledges on a regular basis and monitoring their progress. Big Brothers and Big Sisters are to advise and encourage their pledges and to make themselves available to listen to and evaluate their pledges as they recite their memory work.

Kitty Hawk staff and active members are required to sign the signature forms for all pledges without delay. The purpose of the signing is to give the pledges a chance to meet you. It is not acceptable for KHAS staff or active members to fail to honestly identify themselves to the pledges or to harass pledges in anyway. Staff/Active members and pledges are to demonstrate mutual respect for each other. If time permits, a pledge may be asked to recite one memory passage at the time a signature is requested; but the signature should be provided even if the pledge is unable to recite the requested passage.

KHAS staff/members signatures completed \_\_\_\_\_  
(Big Brother/Sister Certify)

Turn in money from fund raising and/or cash \_\_\_\_\_  
(ASI or AASI Certify)

Preamble to KHAS Constitution recite \_\_\_\_\_  
(Big Brother/Sister Certify)

Purpose of Pledge Program recited \_\_\_\_\_  
(Big Brother/Sister Certify)

What to say when you don't know recited \_\_\_\_\_  
(Big Brother/Sister Certify)

Definition of Duty recited \_\_\_\_\_  
(Big Brother/Sister Certify)

Scholfield's Quotation Recited \_\_\_\_\_  
(Big Brother/Sister Certify)

Air Force Song sung or recited \_\_\_\_\_  
(Big Brother/Sister Certify)

**THREE OF THE FOLLOWING FIVE TASK COMPLETED:**

1. Help with KHAS student council project \_\_\_\_\_  
(Project supervisor Certify)

2. Participate in KHAS service project \_\_\_\_\_  
(Project supervisor Certify)

3. Complete assigned individual task \_\_\_\_\_  
(Task supervisor Certify)

4. Voluntarily work two hours for parent \_\_\_\_\_  
(Parent Certify)

5. Voluntarily work two hours for teacher \_\_\_\_\_  
(Teacher Certify)

I certify that the pledge named above has satisfactorily completed the Kitty Hawk Air Society,  
(Charter name) Chapter, pledge program and I heartily recommend this pledge for active  
membership.

\_\_\_\_\_  
(Big Brother/Sister Certify)



**KHAS SIGNATURES FROM STAFF MEMBERS**

KHAS staff member should sign this sheet at three different times.

POSITION	SIGNATURE
COMMANDER	
DEPUTY COMMANDER	
OPERATIONS	
INFORMATION MANAGEMENT	
PERSONNEL	
PUBLIC AFFAIRS	
FINANCE	

## **SECTION 2: MODEL ROCKETRY PROGRAM**

Model rocketry is the designing, building, and flying of small rockets that are made of paper, plastic, balsa wood, or any other lightweight material. A model rocketry program can provide an exciting introduction for cadets to concepts of aerospace engineering and design and the basic concepts of flight and space. It can motivate cadets to attain a greater knowledge of aerospace studies and arouse interest in aerospace careers. This chapter details model rockets constructed in this manner are approved for use by AFJROTC cadets. Obtain approval of school authorities before establishing a program.

### **OPERATIONAL PERFORMANCE REQUIREMENTS (OPR)**

OPR 1. Construct, launch, and evaluate at least one model suitable for the altitude competition described in the NAR United States Rocketry Sporting Code (NARUSRSC).

OPR 2. Construct, launch, and evaluate at least one model rocket suitable for the scale, plastic scale, or payload competition described in the NARUSRSC.

OPR 3. Construct, launch, and evaluate at least one model rocket suitable for the drag race, parachute duration, boost, or glide competition described in the NARUSRSC.

OPR 4. Construct, launch, and evaluate at least one model rocket suitable for the aerospace systems or research and development competition described in the NARUSRSC (Optional for advanced rocketry program only).

OPR 5. Prepare a diagram of a typical model rocket launch site. This diagram may be as elaborate as desired, but must include: launcher, model rocket, igniter, and land area requirements.

OPR 6. Submit for evaluation a journal of all activities completed in the model rocketry program. The journal must indicate completion of all OPRs.

### **LEADERSHIP PERFORMANCE REQUIREMENTS (LPR)**

LPR 1. Demonstrate knowledge of the AFJROTC model rocketry program and its concepts and techniques by satisfactorily implementing, administering, supervising, and evaluating model rocketry activities.

LPR 2. Demonstrate a knowledge of the organization of AFJROTC model rocketry program

activities, including personnel required, skills necessary, and the job responsibilities of cadets and adult supervisors for rocketry activities.

LPR 3. Demonstrate knowledge of the physical facilities required for all model rocketry operational activities, to include facilities for storage, handling, and building static models, flying and safety precautions, and spectator protection.

LPR 4. Demonstrate the leadership skills necessary to conduct an individual test, group test, and NAR-sanctioned model rocketry competitive meet.

LPR 5. Serve successfully as the safety officer in addition to a minimum of three of the remaining positions listed in para 2.4.2.6.

LPR 6. Pass an oral examination covering the topics of model rocketry techniques, procedures, operations, and safety precautions.

### **PROGRAM GUIDANCE**

1. Model Rocketry. Model rocketry is the designing, building, and flying of small rockets that are made of paper, plastic, balsa wood, or any other lightweight material. Model rockets constructed in this manner are approved for use by AFJROTC cadets. Model rocket engines are solid propellant engines made by commercial manufacturers intended for use in model rockets of the construction indicated. The manufacturer furnishes these "safe" engines ready for use; there is no need for the user to mix potentially dangerous chemical ingredients. Commercially produced engines are the only type approved for use by AFJROTC cadets. Obtain approval of school authorities before establishing a program. Reference WINGS for more details.

1.1. Units will develop a training plan for cadets desiring to qualify for the Model Rocketry badge. The plan will provide for the completion of the Operational Performance Requirements and the Leadership Performance Requirements.

1.2. If your unit participates in the Model Rocketry Program, you must ensure the school's liability policy covers accidents associated with launching rockets. If not, you will need to purchase separate coverage to cover the launchings. For more information, check [www.modelaircraft.org](http://www.modelaircraft.org).

1.3. Contact Holm Center/JROL for students who satisfactorily complete both sets of requirements for issue of the Model Rocketry badge.

2. Particular attention should be given to the selection of instructional personnel. Although desirable, it is not necessary that instructors be experts. Before a program has begun, units should

decide how many instructors are needed and provide enough time for them to become knowledgeable in the specialties they will teach.

3. Units will conduct the model rocketry program according to the provisions of this instruction and the following guidelines:

- National Association of Rocketry(NAR)
- United States Model Rocket Sporting Code
- NAR Model Rocket Safety Code
- Contest rules and safety regulations of the National Aeronautics Association (NAA) and the Federation Aeronautique Internationale (FAI)
- Federal Aviation Regulations, Part 101, Manned Balloons, Kits, and Unmanned Rockets.
- Federal Communications Commission, Part 95, Citizens Radio Service.
- State and local governments.

4. Cadets will keep a record of their rocket launchings to include aircraft flown on an individual, group, or competitive basis. Flight records will include duration of flight, fuel, repairs (if any), type of aircraft, and whether the operation is under supervision of a qualified flight instructor. Cadets should be prepared to provide flight information to the SASI.

5. Conduct individual model rocketry program activities involving launchings or flying under the supervision of the range officer, safety officer, and first aid officer.

### **POSITIONS AND RESPONSIBILITIES**

Minimum positions and responsibilities necessary to supervise an AFJROTC model rocket competitive meet include:

**Range Officer or Contest Officer.** The range or contest officer takes complete charge of the range or flying field, directs all action, gives all orders, makes all decisions, supervises all operations, and is normally positioned at the control center. For AFJROTC launches or meets sponsored by AFJROTC, the range officer will be an AFJROTC instructor.

**Safety Officer.** The safety officer is responsible for checking all critical points of the operation in advance to ensure safety regulations are followed. The safety officer conducts safety briefings prior to launches and instructs all personnel in safety procedures. No launching or flying will take place until the safety officer issues clearance to the range officer.

**First Aid Officer.** The first aid officer administers first aid to participants and spectators as required. The first aid officer will be an individual who qualifies for the job by completing a Red

Cross first aid course or similar training required by school officials.

**Launch Supervisor, Flight Line Officer, or Contest Security Officer.** Ensures established procedures are followed at the launch site/flying field, monitors launches and landings, and certifies a clear launch/flight area to the range officer before activity begins. This officer is responsible for ensuring the security of displayed static models.

**Spectator Control Officer.** The spectator control officer is responsible for clearing launch areas of all personnel not assigned to specific posts and ensuring spectators and personnel are at a safe distance before giving clearance for activity to the range officer.

**Range Guards.** Range guards are responsible for keeping passers-by out of the area, scanning the sky for aircraft, and certifying to the range officer that it is safe to launch rockets.

**Observers and Trackers.** Observers and trackers are responsible for tracking the path of the rocket and taking observations on the azimuth and angle of the elevation at the peak of the trajectory for plotting. They are also responsible for advising the range officer of in-flight emergencies and dead-stick landings, assisting in the safe recovery of downed aircraft, and reporting all pertinent data to the control center.

**Public Affairs Officer.** The public affairs officer arranges for advance publicity and provides for newspaper, radio, television, and magazine coverage of the activities, seeking favorable public relations. The public affairs officer is also responsible for maintaining lines of communication with supporting organizations, parent booster clubs, and school authorities as to the current activities of the program.

Units conducting model rocketry programs are encouraged to establish a NAR section or have interested cadets apply for membership in local NAR sections. AFJROTC units or cadets may then enter into competitive meets with other NAR units on section, area, regional, and national levels. Applications for membership or establishment of an NAR Model Rocketry Section may be obtained from the National Association of Rocketry.

**SUGGESTED 6-WEEK PROGRAM OF INSTRUCTION FOR MODEL ROCKETS**

Week #	Classroom/Period/Activities	Laboratory Period/Activities
1	Introduce basic model rocketry glossary Discuss construction of body tubes, nose cones, and fins Explain construction of commercial model rocket engines and their principles of operation Present the Model Rocketry Safety Code	Demonstrate the tools and materials needed to construct a simple single-stage rocket Demonstrate types of engines available (borrow from model shops) Provide lists of tools and materials needed to construct a single-stage rocket; provide plans for a rocket
2	Explain techniques of constructing recovery devices Explain rocket aerodynamics	Begin construction of single-stage rocket (all cadets use same basic plan)
3	Explain rocket ignition techniques Explain paints and finishes suitable for rockets being constructed Explain launching devices suitable for launching rockets Decide which launching device	Continue construction of rockets Begin construction of a launching device from materials available; procure remainder of needed materials before next meeting
4	Explain basic techniques of altitude determination and the type of tracking device used at unit rocket launching activity Get volunteers to construct or obtain a suitable tracking device	Complete construction of rockets Continue construction of launching device
5	Plan rocket launching activity Make assignments (range officers, special details, etc.) Review safety code	Complete launching and tracking devices Inspect completed model rockets
6.	Unit model rocket launching	

**NATIONAL ASSOCIATION OF ROCKETRY MODEL ROCKET SAFETY CODE**

- 1. Materials.** I will use only lightweight, non-metal parts for the nose, body, and fins of my rocket.
- 2. Motors.** I will use only certified, commercially-made model rocket motors, and will not tamper with these motors or use them for any purposes except those recommended by the manufacturer.
- 3. Ignition System.** I will launch my rockets with an electrical launch system and electrical motor igniters. My launch system will have a safety interlock in series with the launch switch, and will use a launch switch that returns to the "off" position when released.
- 4. Misfires.** If my rocket does not launch when I press the button of my electrical launch system,  
I will remove the launcher's safety interlock or disconnect its battery, and will wait 60 seconds after the last launch attempt before allowing anyone to approach the rocket.
- 5. Launch Safety.** I will use a countdown before launch, and will ensure that everyone is paying attention and is a safe distance of at least 15 feet away when I launch rockets with D motors or smaller, and 30 feet when I launch larger rockets. If I am uncertain about the safety or stability of an untested rocket, I will check the stability before flight and will fly it only after warning spectators and clearing them away to a safe distance.
- 6. Launcher.** I will launch my rocket from a launch rod, tower, or rail that is pointed to within 30 degrees of the vertical to ensure that the rocket flies nearly straight up, and I will use a blast deflector to prevent the motor's exhaust from hitting the ground. To prevent accidental eye injury, I will place launchers so that the end of the launch rod is above eye level or will cap the end of the rod when it is not in use.
- 7. Size.** My model rocket will not weigh more than 1,500 grams (53 ounces) at liftoff and will not contain more than 125 grams (4.4 ounces) of propellant 320 N-sec (71.9 pound- seconds) of total impulse.
- 8. Flight Safety.** I will not launch my rocket at targets, into clouds, or near airplanes, and will not put any flammable or explosive payload in my rocket.
- 9. Launch Site.** I will launch my rocket outdoors, in an open area at least as large as shown in the accompanying table, and in safe weather conditions with wind speeds no greater than 20 miles per hour. I will ensure that there is no dry grass close to the launch pad, and that the launch site does not present risk of grass fires.

**10. Recovery System.** I will use a recovery system such as a streamer or parachute in my rocket so that it returns safely and undamaged and can be flown again, and I will use only flame-resistant or fireproof recovery system wadding in my rocket.

**11. Recovery Safety.** I will not attempt to recover my rocket from power lines, tall trees, or other dangerous places.

<b>LAUNCH SITE DIMENSIONS</b>		
<b>Total Impulse (N- sec)</b>	<b>Valent Motor Type</b>	<b>Site Dimensions (ft.)</b>
0.00--1.25	1/4A, 1/2A	50
1.26--2.50	A	100
2.51--5.00	B	200
5.01--10.00	C	400
10.01--20.00	D	500
20.01--40.00	E	1,000
40.01--80.00	F	1,000
80.01--160.00	G	1,000
160.01--320.00	Two Gs	1,500

Revision of March, 2009

### MODEL ROCKETRY BADGE

The Model Rocketry Badge is awarded to cadets who have fulfilled model rocketry program requirements listed in this handbook. OPR: Holm Center/JROL.



### ADDITIONAL SOURCES OF INFORMATION

1. NASA's Beginner's Guide to Rockets: <http://exploration.grc.nasa.gov/education/rocket/bgmr.html>
2. National Association of Rocketry's "Successful Rocketry for Scouting, 4-H, and Other Youth Groups" <http://www.nar.org/pdf/youthprogs.pdf>
3. NASA's Adventures in Rocket Science Educator Guide  
[http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Adventures\\_in\\_Rocket\\_Science.html](http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Adventures_in_Rocket_Science.html)
4. National Association of Rocketry Certified Motors: <http://www.nar.org/SandT/NARenglist.shtml>
5. National Association of Rocketry United States Model Rocketry Sporting Code:  
<http://www.nar.org/pdf/pinkbook.pdf>
6. Most control of model rocketry is on the state and/or local level. 48 states adhere to a common code of regulation for model rocketry known as [National Fire Protection Association \(NFPA\) Code 1122](#). This code defines the power, weight, and other limits to which a rocket must comply in order to be classified as a (relatively unregulated) "model rocket." <http://www.nfpa.org/index.asp?cookie%5Ftest=1>
7. Forty Years of Model Rocketry A Safety Report Prepared for the National Association of Rocketry by G. Harry Stine: <http://www.nar.org/pdf/40years.pdf>

### **SECTION 3: RADIO AND FLYING MODEL AIRCRAFT PROGRAM**

The purpose of this guide is to provide guidance to HQ AFJROTC, Regional Directors, and AFJROTC units regarding the administration of a Radio Controlled Aircraft or Flying Model Aircraft program. Where appropriate, this guidebook includes discussion of the benefits of establishing an Academy of Model Aeronautics (AMA) Charter Club and the AMA Safety Code. Radio Controlled and Flying Model Aircraft Program: Radio controlled aircraft can provide an exciting introduction for cadets to participate in the design and the basic concepts of flight. It can motivate cadets to attain a greater knowledge of aerospace studies and arouse interest in aerospace careers. Unit must obtain approval of school authorities before establishing a program. This guidebook includes information and supplies needed to start a program, discusses suggested airfield requirements in detail and provides helpful administrative guidelines and practices related to training. In general, this guide includes chapters about facilities and supplies; types of R/C aircraft, engines and radios; training and information on the Academy of Model Aeronautics.

#### **GETTING STARTED**

The facilities in which your unit stores its Radio Controlled (R/C) Aircraft and supplies must be secure and large enough to store airplanes with minimal risk of damage when retrieving them.

Dedicate a supply cabinet to keep all items safe, secure, and organized.

#### **Supplies**

When starting your program, the following supplies are needed:

- Field Box to conveniently carry the following supplies to the field. A locally obtained toolbox will work best
- Screwdrivers (Phillips head and standard)
- Allen Wrenches
- 4-Way Wrench
- Radio Controller
- Spare Props/Spinners
- Spare Tires
- Rubber Bands
- Safety Goggles
- Superglue (epoxies recommended) for repairs
- Monocot (for repairs)
- Balsa Wood (for repairs)

Note that all of the above is a minimal supply list. Your unit will discover what you need to keep on hand with time, including replacement parts for each of your airplanes. These should include tails, props, nosecones/spinners, etc.

You should have some method of organizing small items such as screws, bolts, nuts, etc.

Each month an inventory should be taken of all supplies and aircraft. Your program should have some method of noting when supplies are used to insure that all are being efficiently used and none are lost.

### *The Airfield*

The suggested specification detailed below has been developed by the Academy of Model Aeronautics (AMA) to promote improved field management and provide added margins of safety for the ever-increasing numbers of fliers and spectators. Most clubs should be able, with reasonable effort, to comply with this suggested layout for general field arrangement and conditions for sport flying.

The suggested specifications are not intended as mandatory requirements, and compliance with these suggestions does not guarantee that no accident will occur. Your unit should design their flying sites based not only on the suggested specifications below, but also upon the individual characteristics of the flying site and the type of R/C activity anticipated.

**TAXI AREA:** No landings or takeoffs from this area. This area provides additional open space between pilots and aircraft during times when most out of control accidents happen, and allows taxi room in front of other pilots reducing the chance of other radio frequencies disturbing taxiing aircraft.

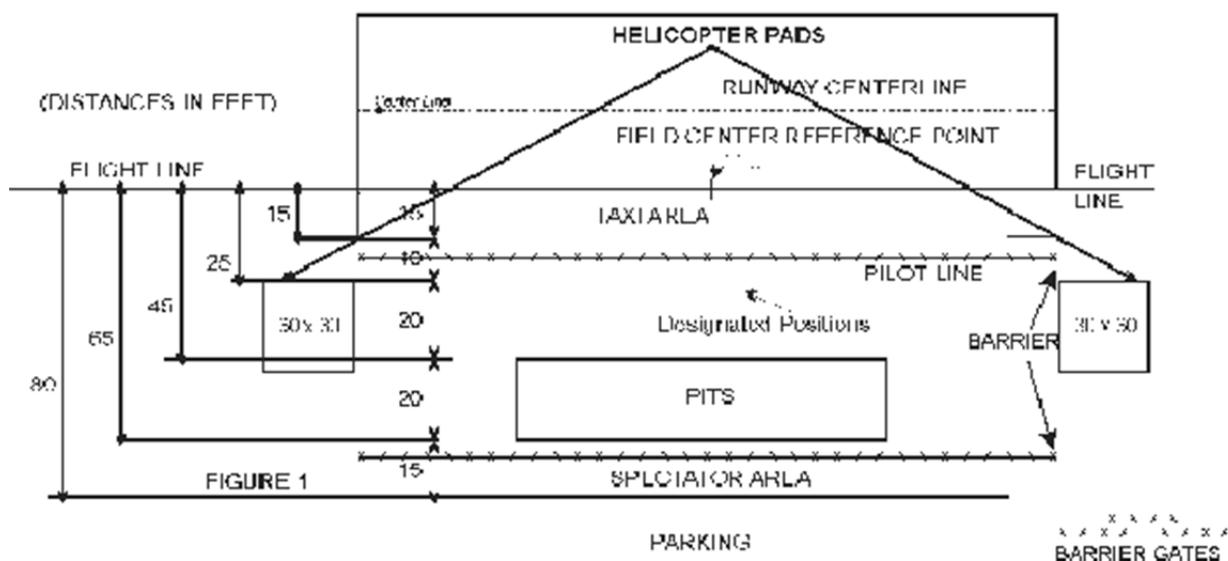
**BARRIER:** Designed to stop taxiing models from veering into pilot's and/or spectator's areas (plastic or chain link fencing, hay bales, shrubbery, etc.).

**PILOT LINE:** Set back from runway edge to keep pilots away from aircraft.

## PERSONNEL SIDE OF FLIGHT AREA:

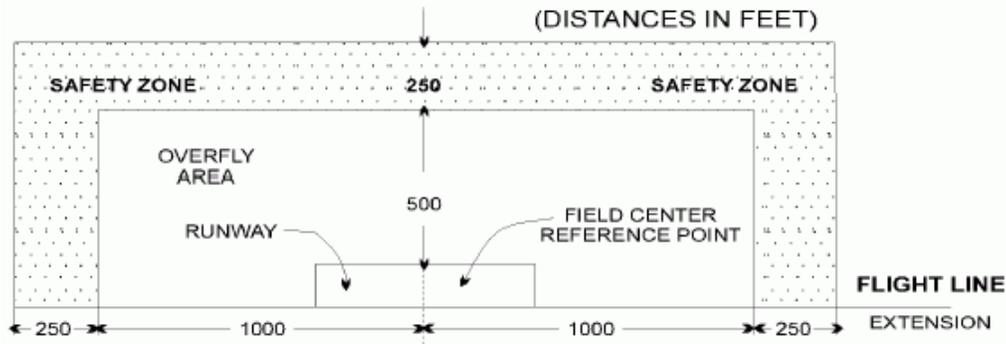
LOCATIONS	DISTANCE FACTOR
Runway edge is the basic line	Reference line or 0
Pilot line a minimum of	25 feet from reference
Pit line a minimum of	45 feet from reference
Spectator line a minimum of	65 feet from reference
Parking lot a minimum of	80 feet from reference

**SAFETY ZONE:** An additional 250 feet safety zone, added to the OVERFLY AREA, is desirable if any major roads, buildings, or personal activities are in the general area.



**Figure 1. Safety Zone**

**FLIGHT SECTOR:** Most flying is contained within 1,000 feet of either end from field center reference point and 500 feet in front of reference point. At least 1,000 feet left and right and 500 feet in front of the pilot must be used to cover the 180 degree sweep of the flying side of the reference line Flight area to clear a potential hazard. Field center reference point is located in Fig. 1, but essentially is the edge of the runway at the center of the field.



**Figure 2. Flight Sector**

SIGNS.

SUGGESTED MINIMUM POSTING REQUIREMENTS FOR PUBLIC NOTICE:

- Flying Site
- Field Rules
- Current AMA Safety Code
- “No spectators beyond this point without escort”
- Park Area (signs at boundaries)
- Warning Sign

### R/C AIRCRAFT

#### **Types**

As your program progresses, you will become knowledgeable on all types of radio controlled model aircraft. All radio controlled aircraft you buy can be divided into generally two categories:

ARF: Almost Ready to Fly -- A kit which is mostly pre-assembled, usually requiring installation of a few parts, engine, and radio gear. ARF kits are generally cheaper than RTF kits.

RTF: Ready to Fly-- A kit which is assembled and “ready to fly “out of the box. You may also divide R/C aircraft into these categories:

Trainer - A model designed to be inherently stable and fly at low speeds, to give first- time modelers time to think and react as they learn to fly. These are the airplanes your program should purchase **FIRST!**

Sport - Generally, this is a model designed to fly acrobatically. Sport may describe an aircraft that is a scale, flying model of an actual airplane or an airplane designed to fly at high-speeds. A good sport airplane can fly "3D," which is a term describing a type of flight pattern, which is characterized by the performance of very specialized aerobatic maneuvers below the model's normal stall speed. Examples include torque rolls, 'walk in the park', harriers, hangers, etc.

Park Flyer -- A park flyer is any electric model airplane that can be flown in a small area such as a football stadium, parking lot, or a park.

Gliders and Sailplanes -- Gliders are slow, elegant planes that do not usually have a power plant (motor). They are launched with a bungee cord catapult, winches, aero tow, towing aloft using a second powered aircraft and even hand launched (like a javelin). The newer "discus" style of wingtip hand-launching has largely supplanted the earlier "javelin" launch. As most gliders are unpowered, flight must be sustained through exploitation of the natural wind in the environment. A hill or slope will often produce updrafts of air which can sustain the flight of a glider. This is called slope soaring. When piloted skillfully, RC gliders can remain airborne for as long as the updraft prevails. Another means of attaining height in a glider is exploitation of thermals, which are bubbles or columns of warm rising air created by hot spots on the ground. Lift is obtained by the forward movement of the wings through the air, but a glider can also gain height by flying through air that is rising faster than the aircraft is sinking. Sailplanes are flown using available thermal lift. As thermals can only be indirectly observed through the reaction of the aircraft to the invisible rising air currents, pilots find sailplane flying challenging yet rewarding. Wind traveling over a sharp peak of a hill or mountain leaves a vortex on the back side. Flying in the vortex is tricky and the pilot needs to use extreme care for safety, speeds of over 200mph are not oncoming.

Undercarriages -- There are two types of undercarriages.

- Nose wheel (or tricycle) gears are the most common types of undercarriages on R/C trainer aircraft. Nose wheel airplanes have a wheel in front of the main landing gear, usually under the nose.
- Tail wheel (or conventional) airplanes have a third wheel under the tail.

Some airplanes have retractable undercarriages, which use a retract servo to pull the landing gear up into the airplane in flight for reduced drag and better performance. Retractable may be tricycle gear, or conventional gear. Most retractable gear aircraft are sport airplanes.

## Engines

Your airplane may be powered by two types of engines; an electric or gas. Electric engines are powered by battery packs that can be recharged.

Brushed motors are the most common and least expensive form of electric motor. Brushes are a part of electric motors that convey current to the rotating element (the armature) and mechanically affect the switching on and off of these magnets, which, in turn, cause the armature to rotate.

Brushless motors are a form of electric motor which does not contain brushes. They are favored because of their greater power-to-weight ratio, longevity, and higher efficiency than electric motors that have brushes.

Gas engines propel your airplane with a special methanol/nitro methane/ lubricant fuel.

Gas engines are separated by the size of their case. The larger the case, the more power produced from the engine. Most trainers you buy will either be a .40 or a .60, but there is a wide range of sizes you can buy.

### Radios

Radios – control R/C airplanes. Beware some airplanes require the radios to be installed separately.

R/C airplane control surfaces are moved with servos. Servo output arms are a removable arm or wheel which bolts to the output shaft of a servo and connects to the pushrod. The pushrod is connected to a control surface and connects it to the servo to move it.

When flying around multiple R/C's, such as at a local flying club, you should be careful to make sure there is not another airplane with the same frequency in range. The frequency your airplane flies with can be changed easily by replacing the chip in the receiver (Rx) and chip in the back of the transmitter (Tx). If you fly in a configuration in which frequency mixing is more likely, then it is a good idea to carry along two or more alternative frequencies.

Each of the control surfaces of an RC airplane is controlled on the same frequency, but on different channels. One channel controls each of the control surfaces.

A two channel airplane is controlled by throttle and rudder.

A three channel airplane is controlled by elevator, rudder and throttle. Airplanes with retractable landing gears may fly like this because the retract servo takes the place of the aileron servo.

Four channel airplanes are the most controllable with elevator, aileron, rudder and throttle. These are the highest quality radio systems.

### *Training*

Training should be taken very seriously. RC airplanes can be dangerous and expensive to repair. A typical training program consists of a five-day academic course followed by simulator time and actual flight training. Training should be conducted by someone with experience. It is recommended that you contact a “local flying club” for assistance.

If developing your own academic syllabus, the AFJROTC Science of Flight Textbook is a good place to start.

**Academic Syllabus** (Suggested 6-Week Program of Instruction for Flying Models)

Week No.	Classroom/Period/Activities	Laboratory Period/Activities
1	<p>Introduce basic modeling glossary</p> <p>Discuss materials used in construction of aerospace models.</p> <p>Explain the availability of commercial (flying and static) kits and scratch building of aerospace models</p> <p>Present the aerospace model Safety Code</p>	<p>Demonstrate the tools and materials needed to construct a simple trainer</p> <p>Demonstrate types of engines and power sources available (electric, glow diesel, gasoline, thermal, rubber)</p> <p>Provide lists of tools and materials needed to construct a trainer-type aerospace model</p>
2	<p>Explain techniques of construction of each major section of an aerospace model (wings, tails, fuselage, covering, and radio installation)</p> <p>Explain model aerodynamics and stability</p> <p>Explain and discuss FAA, FCC, and local regulations pertaining to model flight</p>	<p>Begin construction of aerospace models (all cadets use the same basic plan)</p>
3	<p>Explain motor operation (batteries, glow plugs, etc.)</p> <p>Explain paints, finishes suitable for models being constructed</p> <p>Decide which type of launching device will be used for unit's first activity</p>	<p>Continue construction of models</p>
4	<p>Explain basic techniques of flying</p>	<p>Continue construction of models</p>
5	<p>a. Plan flying activity</p> <p>b. Make assignments (range officers, special details, etc)</p> <p>c. Review Safety Code</p>	<p>a. Complete models</p> <p>b. Inspect completed models</p> <p>c.</p>
6	<p>Unit Model Flight Training</p>	

Your unit should invest in a R/C simulator. Simulators are very good to familiarize yourself with the R/C controls and the notion of flying an airplane from the ground. We recommend hooking the simulator computer up to a projector and viewing the simulator on a larger screen to get the full effect of R/C flying. If nothing else, R/C simulators improve hand-eye coordination.

There is a great selection of simulators on the market. When selecting a simulator make sure that you can at least change wind speed and direction and add fog or change visibility. Take full advantage of the simulator. The Real Flight G3 RC Simulator with Interlink MD2 gives you real world flying experiences from your PC. The program includes over 41 aircraft including 3D aerobat's, sailplanes, electric park flyers and more. There are 10 new flying sites with over 5,000 square miles to explore. The 3D programming realistically recreates the experience of flying an RC model at the flying field.

- Total 480 minutes (8 hours) Simulator Time 60 Minutes in 0 wind environment
- **210 Minutes in 5 knot winds:**
  - *105 minutes good visibility*
    - Up wind takeoffs/landings
    - Downwind takeoffs/landings
    - Crosswind takeoffs/landings
    - Engine-out practice
  - *105 minutes low visibility*
    - Up wind takeoffs/landings
    - Downwind takeoffs/landings
    - Crosswind takeoffs/landings
    - Engine-out practice
- **210 Minutes in 10 knot winds:**
  - *105 minutes good visibility*
    - Up wind takeoffs/landings
    - Downwind takeoffs/landings
    - Crosswind takeoffs/landings
    - Engine-out Practice
  - 105 minutes low visibility
    - Up wind takeoffs/landings
    - Downwind takeoffs/landings
    - Crosswind takeoffs/landings
    - Engine-out practice

### *Flight Training*

This aspect of training is done through actual flying. This training should be conducted by an experienced R/C pilot. This is the final stage to insure that the student is ready to solo.

A solo flight is defined as a flight in which one individual takes off, flies, and lands the aircraft for the entire duration of the flight.

## **SECTION 4: THE ACADEMY OF MODEL AERONAUTICS**

### **The Academy of Model Aeronautics**

The Academy of Model Aeronautics (AMA) is a self-supporting, non-profit organization whose purpose is to promote development of model aviation as a recognized sport and worthwhile recreation activity. Aerospace Static Model Program: Static Modeling is the designing and/or building of small model rockets or planes. A static model program can provide an exciting introduction for cadets in concepts of aerospace engineering and design and can motivate cadets to attain a greater knowledge of aerospace studies and arouse interest in aerospace careers.

AMA is the chartering organization for more than 2,500 model airplane clubs across the country. AMA offers its chartered clubs official contest sanction, insurance, and assistance in getting and keeping flying sites.

AMA is an associate member of the National Aeronautic Association (NAA). Through NAA, AMA is recognized by the Federation Aeronautique Internationale (FAI), the world governing body of all aviation activity, as the only organization which may direct US participation in international aero modeling activities.

### **Benefits of a Charter Club**

Benefits of an AMA charter club include frequency monitoring and sound measuring equipment, national newsletter for clubs, field safety and frequency posters, club officer recognition, introductory pilot program and primary site owner insurance. Most importantly, AMA provides \$2,500,000 per occurrence of general liability coverage to members, clubs and site owners.

### **Starting an AMA Charter Club**

Your first step in starting an AMA charter club is to go to AMA's website (<http://www.modelaircraft.org/>) and download the most recent AMA Club Charter Kit.

Print this packet out and fill out the Club Chartering Remittance Sheet, Club Officers Sheet, and the club officer information sheet.

There must be five club officers; three of them must be over 19 years of age. In addition, all officers **MUST** be current AMA members. You might have to sign your future club officers up for AMA beforehand.

### **AMA Safety Code**

General

A model aircraft shall be defined as a non-human-carrying device capable of sustained flight in the atmosphere. It shall not exceed limitations established in this code and is intended to be used exclusively for recreational or competition activity.

The maximum takeoff weight of a model aircraft, including fuel, is 55 pounds, except for those flown under the AMA Experimental Aircraft Rules.

AMA members will abide by this Safety Code and all rules established for the flying site. Members will not willfully fly their model aircraft in a reckless and/or dangerous manner.

AMA members will not fly their model aircraft in sanctioned events, air shows, or model demonstrations until it has been proven airworthy.

AMA members will not fly their model aircraft higher than approximately 400 feet above ground level, when within three (3) miles of an airport without notifying the airport operator. AMA members will yield the right-of-way and avoid flying in the proximity of full-scale aircraft, utilizing a spotter when appropriate.

AMA members will not fly any model aircraft unless it is identified with their name and address, or AMA number, inside or affixed to the outside of the model aircraft. This does not apply to model aircraft flown indoors.

AMA members will not operate model aircraft with metal-blade propellers or with gaseous boosts (other than air), nor will they operate model aircraft with fuels containing tetra nitro methane or hydrazine.

AMA members will not operate model aircraft carrying pyrotechnic devices which explode, burn, or propel a projectile of any kind. Exceptions include Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight. Rocket motors up to a G-series size may be used, provided they remain firmly attached to the model aircraft during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code; however, they may not be launched from model aircraft. Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Air Show Advisory Committee Document.

AMA members will not operate their model aircraft while under the influence of alcohol or within eight (8) hours of having consumed alcohol.

AMA members will not operate their model aircraft while using any drug which could adversely affect their ability to safely control their model aircraft.

Children under six (6) years old are only allowed on a flight line or in a flight area as a pilot while under flight instruction.

When and where required by rule, helmets must be properly worn and fastened. They must be

OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

#### Radio Control

AMA members will have completed a successful radio equipment ground-range check before the first flight of a new or repaired model aircraft.

AMA members will not fly any model aircraft in the presence of spectators until they become a proficient flier, unless assisted by an experienced pilot.

At all flying sites a straight or curved flight line must be established, in front of which all flying takes place. Only personnel associated with flying the model aircraft are allowed at or in front of the flight line. In the case of air shows, demonstrations, or competitions, straight lines must be established. An area away from the flight line must be maintained for spectators. Intentional flying behind the flight line is prohibited.

AMA members will operate their model aircraft using only radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.

AMA members will not knowingly operate their model aircraft within three (3) miles of any preexisting flying site without a frequency-management agreement. A frequency-management agreement may be an allocation of frequencies for each site, a day-use agreement between sites, or testing which determines that no interference exists. A frequency-management agreement may exist between two or more AMA chartered clubs, AMA clubs and individual AMA members, or individual AMA members. Frequency-management agreements, including an interference test report if the agreement indicates no interference exists, will be signed by all parties and copies provided to AMA Headquarters.

With the exception of events flown under official AMA Competition Regulations rules, after launch, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilots and helpers located at the flight line.

Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual.

Radio-controlled night flying is limited to low-performance model aircraft (less than 100 mph). The model aircraft must be equipped with a lighting system which clearly defines the aircraft's altitude and direction at all times.

The operator of a radio-controlled model aircraft shall control it during the entire flight, maintaining visual contact without enhancement other than by corrective lenses that are prescribed for the pilot. No model aircraft shall be equipped with devices which allow it to be

flown to a selected location which is beyond the visual range of the pilot.

### **Free Flight**

AMA members will not launch their model aircraft unless they are at least 100 feet downwind of spectators and automobile parking.

AMA members will not fly their model aircraft unless the launch area is clear of all individuals except mechanic, officials, and other fliers.

AMA members will use an effective device to extinguish any fuse on the model aircraft after the fuse has completed its function.

### **Control Line**

AMA members will subject their complete control system (including the safety thong where applicable) to an inspection and pull test prior to flying. The pull test will be in accordance with the current Competition Regulations for the applicable model aircraft category. Model aircraft not fitting a specific category shall use those pull-test requirements as indicated for Control Line Precision Aerobatics.

AMA members will ensure that their flying area is clear of all utility wires or poles and they will not fly a model aircraft closer than 50 feet to any above-ground electric utility lines.

AMA members will ensure that their flying area is clear of all nonessential participants and spectators before permitting their engine to be started.

## **FLYING MODEL OPERATIONAL PERFORMANCE REQUIREMENTS (OPR)**

OPR 1. Construct, fly, and evaluate at least one model under the supervision of an AMA-qualified flight instructor.

OPR 2. Make at least three solo flights under the supervision of an AMA-qualified flight instructor.

OPR 3. Demonstrate ability to land and take off from both directions.

OPR 4. Prepare a diagram of a typical aerospace flying model site. (Type of site may depend on unit orientation, i.e., U/C, R/C, or glider.) This diagram may be as elaborate as desired, but must include a minimum of: flight line, runway, spectator area, pits, frequency requirements, and total land area requirements.

OPR 5. Construct, fly, and evaluate at least one model suitable for competition in one of the following categories: pattern, semi-scale (sometimes called stand-off scale), or scale. Consult the AMA Competition Rule Book for complete details.

OPR 6. Submit for evaluation a journal of all activities completed in the aerospace flying model program. The journal must indicate completion of all operational performance requirements for each flight.

## **FLYING MODEL LEADERSHIP PERFORMANCE REQUIREMENTS (LPR)**

LPR 1. Demonstrate knowledge of the AFJROTC aerospace flying model program and its concepts and techniques by satisfactorily implementing, administering, supervising, and evaluating flying model activities.

LPR 2. Demonstrate knowledge of the organization of AFJROTC flying model program activities, including the personnel required, the skills necessary, and the job responsibilities of cadets and adult supervisors in individual, group, and competitive flying activities.

LPR 3. Demonstrate a knowledge of the physical facilities required for all flying model operational activities to include: facilities for storage, handling, flying, and building flying models, flying and safety precautions, and spectators' protection.

LPR 4. Demonstrate the leadership skills necessary to conduct an individual test, group test, and AMA-sanctioned aerospace flying model competitive meet or contest.

LPR 5. Serve successfully as the safety officer and in a minimum of three of the remaining nine positions listed in paragraph 2.4.2.6.1. through 2.4.2.6.7.

LPR 6. Pass an oral examination covering the topics of aerospace flying model techniques, procedures, operations, and safety precautions and procedures.

## Program Guidelines

1. Units will conduct the static and flying model programs according to the provisions of this Guide and the following guidelines:

- Contest rules and safety regulations of the National Aeronautics Association (NAA) and the Federation Aeronautique International (FAI)
- Federal Aviation Regulations, Part 101, Manned Balloons, Kits, and Unmanned Rockets
- Federal Communications Commission, Part 95, Citizens Radio Service
- Official AMA Safety Code
- AMA Safety Recommendations
- State and local governments

2. Cadets will keep a record of their modeling activities to include aircraft flown on an individual, group, or competitive basis. Flight records will include duration of flight, fuel, repairs (if any), type of aircraft, and whether the operation is under supervision of a qualified flight instructor. Cadets should be prepared to provide flight and model- building information to the SASI.

3. Units conducting a model aerospace program are encouraged to establish an AMA- chartered organization or have interested cadets apply for membership in local AMA organizations. AFJROTC cadets may then enter competitive meets with other AMA organizations on local, area, regional, and national levels. Applications for membership or establishment of an AMA organization may be obtained from the Academy of Model Aeronautics.

4. Units desiring to purchase American Modeling Association Wings can contact AMA Wings, 5151 E Memorial Drive, Attn: Supply & SVC (Item #2088), Muncie IN 47302 or phone 1-800-435-9262. The web site is <http://www.modelaircraft.org>.

## **SECTION 5: AFJROTC AIR FORCE WEATHER AGENCY PROGRAM**

**AFJROTC Air Force Weather Agency Program:** This section establishes weather education activities sponsored by the Headquarters USAF Directorate of Weather, as an authorized activity in the Air Force Junior ROTC program. The activities presented in the Air Force Weather Agency Program (AFWA) should supplement and enrich the aerospace education now presented in Aerospace Science courses, and should enhance the cadets' knowledge and increase their appreciation for the important role weather plays in the operational world of aviation and safety.

### **PROGRAM PURPOSE AND GOALS**

#### **Purpose:**

This section establishes weather education activities sponsored by the Headquarters USAF Directorate of Weather, as an authorized activity in the Air Force Junior ROTC program. Cadet activities in weather will supplement and enrich aerospace education now presented in Aerospace Science courses. Cadets who desire to take part in weather activities may do so as an additional supervised project. Cadets who complete this program are eligible for the *Losey Award*.

The AFJROTC-AFWA Program provides a stimulating activity-based program which introduces weather terms, elements, and concepts to AFJROTC cadets. This program enhances the cadets' knowledge and increases their appreciation for the important role weather plays in the operational world of aviation and safety.

#### **Goals:**

The AFJROTC-AFWA Program for AFJROTC cadets is designed to:

- Teach cadets the significance of weather as it impacts the Air Force mission and aerospace in general.
- Create a cadre of knowledgeable cadets and future citizens who have additional training in weather data collection and dissemination to be used as a resource for activities, especially aviation.
- Cultivate an interest in weather to enrich the total development of AFJROTC cadets toward aerospace education.
- Develop interest in aerospace careers that require knowledge of weather or contribute to a better aviation system.

## **ESTABLISHING THE AFJROTC-AFWA PROGRAM**

Each unit desiring a program should:

- Ensure every cadet member who desires to participate in the weather program has the opportunity.
- Know where to find local weather resources to implement the program.
- Maintain a list of qualified people in the local area who have volunteered to participate in this program.
- Establish a program at the unit which provides the appropriate training to fulfill the program requirements.

### **Program Requirements:**

The quality of the weather program depends on the availability of equipment and qualified personnel. Having the available equipment will require cooperation between the unit and your local resources. The quality of the personnel will determine the level of understanding received by the participating cadets. It is imperative that we use the most qualified volunteers available. These volunteers could be members of the Air National Guard Weather Flights, USAF and USAFR observers or forecasters, or any professional weather forecaster or observer from the industry. *(It is important to note Air Force Weather Agency sponsorship cannot guarantee military volunteers for the program).* A college instructor teaching in an accredited department with a program in Atmospheric Science, Meteorology, Climatology, or Physical Geography can be a valuable resource. A high school instructor who has participated in the American Meteorological Society's education efforts can also be used. The ideal situation would be a mentor or counselor who would be available on a recurring basis.

### **Prerequisites for Cadet Participation:**

All cadets participating in the AFJROTC-AFWA Program must have completed or be enrolled in *Aerospace Science: The Science of Flight*.

Enrolled cadets should have completed the atmosphere and weather portion of *The Science of Flight* (Unit 1) before beginning the AFJROTC-AFWA Program.

### **Procedures:**

Follow the procedures outlined in this instruction for successful completion of this program. The following objectives must be accomplished to meet the program requirements:

- a. Define and be able to use numerous weather vocabulary words.
- b. Demonstrate the ability to gather weather information from common aviation and weather chart data.
- c. Demonstrate the ability to gather weather information from common aviation and weather coded data.
- d. Know how the atmosphere changes with altitude.
- e. Know how the atmosphere changes with horizontal distance.
- f. Be familiar with the information and the limitations of observing and describing the atmosphere to aviators.
- g. Know where to get weather information for aviation operations.
- h. Be familiar with new technologies for obtaining weather information.
- i. Know the types of weather information important to aviation operations.
- j. Know where to get operational weather during all phases of aviation missions.

### **RESOURCES**

The following material may assist cadets and supervising seniors in planning and learning more information about weather and the weather activities mentioned above.

- *Surface Weather Observations*, AFMAN 15-111.
- *Upper Air Observations*, AFMAN 15-112.
- *Weather Radar Observations*, AFMAN 15-113.
- *Weather Station Operations*, AFM 15-125.

### **THE LOSEY AWARD**

The *Losey Award* is given to those cadets who successfully meet the requirements of this weather program. The award is a certificate from the Pentagon, HQ USAF Director of Weather. Cadets should submit an application package to their Senior Aerospace Science instructor with a cover letter (sample attached). The application package should include copies of the products produced in accomplishing objectives d, e, and f.

Applying for the *Losey Award*. Cadets who complete all requirements for the *Losey Award* should submit an application package certified by their project counselor to their SASI with the cover letter (attachment). The application package should include copies of the products produced accomplishing objectives d, e, and f. The SASI will then mail the completed application to:

HQ AFROTC/JROS  
60 West Maxwell Blvd  
Maxwell AFB AL 36112-6106

### REQUIREMENTS FOR LOSEY AWARD

Cadets can earn the Air Weather Service sponsored *Losey Award* for accomplishing the following objectives under the instruction and observation of a trained weather professional.

1. Be able to define and use the following words. This objective can be accomplished by an oral quiz or a written exercise.

- Advection
- Air mass (tropic, polar, continental, maritime)
- AIRMET
- Anticyclone
- Barometer
- “Broken” skycover
- Ceiling
- Circulation
- Clear Air Turbulence (CAT)
- Climate
- Cloud (strato-, alto, cirro-, cumulus, stratus)
- Condensation
- Contour
- Convection
- Convergence
- Density altitude
- Dew point
- Divergence
- Evaporation
- “Few” clouds
- Fog (know different causes)
- Front (warm, cold, stationary, occluded)
- Frost
- Funnel cloud
- Gust front
- Haze
- High pressure cell
- Humidity Hurricane/typhoon/cyclone
- Hygrometer Icing (rime, mixed, clear)
- Indefinite ceiling
- Inversion
- Isobar
- Isolated thunderstorms
- Jet stream
- Knot (NM/hour)
- Lapse rate
- Lightning

- Low pressure cell
- Microburst
- Millibar
- Obscured sky
- “Overcast” skycover
- Precipitation (rain, snow drizzle, sleet hail, freezing rain)
- Pressure Saturation
- “Scattered” (clouds and thunderstorms)
- Sea- level pressure
- Shower
- SIGMET
- Squall line Stability
- Static discharge
- Stratosphere Sublimation
- Temperature (convert scales from memory) Thunderstorm (know the life cycle)
- Tornado
- Tropopause
- Troposphere
- Trough
- Turbulence
- Virga
- Visibility (prevailing, runway)
- Wake vortex turbulence
- Weather warming
- Weather watch
- Wind (geostrophic and local winds) Wind shear

2. Show your ability to gather data from weather sources in your area to include:

DUAT

Flight Service Stations TWEB

Ensure that the weather information includes terminal observations, terminal forecasts, area forecasts, pilot reports, SIGMETS, AIRMETS, upper-air soundings, and sources of graphical weather information for your location.

3. Demonstrate the ability to read the following charts through an oral or written quiz developed by the counselor:

- Surface Analysis Chart
- Constant Pressure Charts
- Radar Summary Charts
- Weather Depiction Chart
- Weather Prognostic Charts
- Winds Aloft Charts

4. Plot and label three (3) Skew-T Log P diagrams using data gathered from three different days. Annotate the following information on each diagram.

- Wet line
- Dry line
- Wind data
- Altitudes of clouds
- Altitudes of potential icing

5. Gather surface observations for your state and plot them using any charting plot available to you. Annotate and mark the following items.

Station plots

High and low pressure centers

Weather fronts (warm, cold, stationary, occluded) IMC and VMC locations

6. Make three (3) supervised observations and compose the coded observation. Cadets should be familiar with the operation of instruments necessary to observe temperature, dew point, wind speed and direction, pressure, ceiling, visibility, cloud cover, precipitation type and amount, and weather types.

7. Be familiar with the following weather information sources:

- Runway Visual Range (RVR)
- ASOS
- AWOS
- Wind profile network
- Terminal Doppler Weather Radar (TDWR) and ASR-9

8. Gather the data for and deliver a pilot-oriented weather briefing for a simulated or actual flight for a low-altitude mission in your area.

9. Know the sources to update weather information while in flight in your state.

EXAMPLE OF AWARD APPLICATION COVER LETTER

Date

MEMORANDUM FOR {**AFJROTC AWARD**}

FROM: Cadet (name)  
 (telephone number)  
 (street address)  
 (city, state, zip code)

SUBJECT: Completion of the {**AFJROTC AWARD**}

1. I have completed all the requirements of the {**AFJROTC AWARD**} Program as outlined in this guide. I am now applying for the Award.
2. I am a current member of (unit number) at (school name).
3. All required endorsements are attached as well as the work required by the AFJROTC Instruction.

\_\_\_\_\_ (You signature)

(NAME, Rank, AFJROTC)

3 Attachments:

1. Skew-T/Log P diagrams
2. Weather observations
3. Plotted weather

Date 1<sup>st</sup> Ind, {**AFJROTC AWARD**}/ (name and organization of counselor)

MEMORANDUM FOR (Unit Number), Senior Aerospace Science Instructor

I certify that I supervised the work of Cadet (name) during the {**AFJROTC AWARD**} Program and consider his (her) effort complete.

(Counselor's signature) \_\_\_\_\_  
 (Counselor's printed name) \_\_\_\_\_  
 (Counselor's printed title) \_\_\_\_\_

2<sup>nd</sup> Ind, (unit number), Senior Aerospace Science Instructor/ (name) MEMORANDUM FOR

AFROTC/DOJO

Date

I certify that Cadet (name) completed all requirements of the {*AFJROTC AWARD*} Program.

---

(SASI's signature)

(Printed name, rank), USAF Ret.)

Senior Aerospace Science Instructor

Sent to:

DIRECTOR OF WEATHER

DEPARTMENT OF THE AIR FORCE DEPARTMENT OF THE AIR FORCE 1480 AIR  
FORCE PENTAGON

WASHINGTON DC 203301480

703-614-8175

## **SECTION 6: CADET ORIENTATION FLIGHT PROGRAM**

The Cadet Orientation Flight Program is designed to introduce our cadets to general aviation through hands-on familiarization flights in single-engine aircraft. The program is open to active AFJROTC cadets. Senior Aerospace Science Instructors (SASI) or the Aerospace Science Instructor (ASI) should try to arrange an orientation flight as soon as possible after the cadet joins the program. (Cadets who have graduated from the AFJROTC program (3 or 4 year cadet) may fly during the summer after graduation if the prospect of an orientation flight was used as an incentive to keep the cadet in AFJROTC during the cadet's junior or senior year.) The program is voluntary and primarily motivational and it should stimulate an interest in general aviation and aerospace activities. At no time will cadets sustain any cost associated with this program.

Cadet orientation flights are considered school-sponsored activities similar to any other AFJROTC activity and must be approved by the principal according to local guidelines. *\*Units cannot use appropriated funds to purchase flight insurance for cadets participating in this program. If a unit chooses to procure flight insurance for cadets, funds must come out of non appropriated funds and are not reimbursable.* Cadets must have signed parental and principal permission. Orientation flights are flown in the local flying area and may consist of a single sortie for one cadet or an out-and-back flight to a nearby airport with two cadets who swap front and rear seats for the return flight.

There are two Orientation Flight Programs recognized by headquarters AFJROTC. The first is a familiarization flight arranged for by the SASI or ASI during the academic year or summer break. The second is a familiarization flight conducted as part of a Lead Labs. Both programs will follow the guidance and requirements contained in this syllabus.

### **Flight**

A successful orientation flight will include at least 80% of the syllabus objectives. The duration of each flight depends upon the local conditions and the ability of both the pilot and aircraft. The actual flight time for each flight will vary. However, all syllabus objectives can be safely accomplished in .75 to 1.0 flight hours. Headquarters may limit or curtail unit funding if the flights are over 1.2 hours. Every flight will be IAW Federal Aviation Regulation (FAR) Part 91, General Operating and Flight Rules, and conform to the syllabus and be consistent with safety, aircraft/aircrew capabilities, and available resources. Cadet orientation flights will only be conducted in daylight and in visual meteorological conditions (VMC). Cadets may occupy either a front right or rear seat.

Pilots will not perform aerobatic maneuvers as defined in FAR 91.303, formation flying, spins or

emergency procedures (unless, of course, there's an emergency). Cadets are encouraged to handle the flight controls except during the critical phases of the flight (like takeoff and landing or in an emergency). Cadets may handle the flight controls when flying with an FAA Certificated Flight Instructor (CFI) or with a retired military pilot with experience as an instructor pilot while serving in the military. SASI/ASI pilots with no military instructor experience or CFI rating are encouraged to earn a CFI rating before allowing cadets to handle the flight controls.

When trying to arrange orientation flights, the SASI or ASI may consider a number of options. Possible sources for flights include the Civil Air Patrol, Experimental Aircraft Association of Young Eagles, Fixed-Base Operators, base aero clubs, and privately owned aircraft. Units are authorized to use unit Operation and Maintenance (O&M) funds to procure flights for cadets.

- Cadets may participate in orientation flights only under the following conditions:
- Cadets (parents/guardian if cadet is a minor) must sign a release absolving the AFJROTC unit, school, school district, and the Air Force from liability in case of mental or physical injury or death.
- Flights must be in a Federal Aviation Administration certified aircraft (includes experimental aircraft with an FAA air worthiness certification).
- Aircraft must be registered, have appropriate airworthiness certificate, and contain all instruments and equipment specified for the particular type of operation (i.e., VFR or IFR) per FAR 91.
- If privately-owned aircrafts are used, only fuel and oil expenses maybe reimbursed.
- All flights must be conducted in accordance with (IAW) FAR 91.

### Pilot

It is the responsibility of the pilot to carefully brief all cadets on the proper ways to operate around aircraft. The pilot is also responsible for following the flight syllabus. At all times, SAFETY is the overriding concern.

The Pilot in Command (PIC) must meet the following criteria:

- Appropriate category, class, and type rating for the aircraft to be flown. (FAR 61.31, Certification: Pilots and Certificated Flight Instructors; Current Class I, II or III FAA Medical

Certificate (FAR 61.23))

- Current flight review (FAR 61.56)
- Recent flight experience. (FAR 61.57)
- An AFJROTC instructor who meets these requirements may serve as PIC; however, they may not accept payment for their time even if they hold a commercial rating.

### Safety

AFJROTC offers cadets a well-organized, wholesome and safe environment to experience the fun of flying. The overarching objective with the highest priority is the safety of our members. During all of AFJROTC's cadet activities, parents worldwide trust our organization with the care and protection of the most cherished treasure of their life – their child. This responsibility cannot be taken lightly. With just a little planning, preparation and vigilance, cadets can experience a safe, rewarding activity.

Everything we do involves risk. While risk cannot always be eliminated, it can be managed through a process known as Operational Risk Management or ORM. ORM is a logic-based common sense approach to detect, assess, and control risk. It is a decision-making tool that can be used in a split-second, or employed by a group in advance of an activity. Your mother was doing, Time-Critical ORM, when she told you not to run with scissors in your hand. A better process to use in preparation for a cadet activity would be a Deliberate ORM. This process usually consists of a small group of people examining the proposed facilities and activities well ahead of the start date to identify hazards, assess the risks and decide on risk controls. These risk controls can then be included in the operational plan and become transparent to the activity participants.

Supervision is the key to protecting our cadets. Most cadet injuries occur when they are unsupervised or during “horseplay.” It is vitally important to ensure sufficient numbers of senior members are available to guide and assist cadets during all facets of an activity. Our responsibility to the cadets and their parents is a commitment we cannot compromise. **The only way to keep cadets having fun is to keep them safe.**

### Reporting

The SASI or ASI is responsible for consolidating all information concerning orientation flight activity and forwarding it to headquarters AFJROTC, Director of Operations. Be prepared to provide the following information when making a mishap notification IAW AIM Chapter 6-2 and FAR 830:

- Name and location of flight provider
- Number of Cadets flown
- Total number of flight hours
- Amount of O&M funds expended

In the event of a mishap, the SASI or ASI senior will notify Headquarters AFJROTC as soon as possible following the event. During duty hours, units will contact either the Director or Deputy Director of AFJROTC at 1-866- 235-7682, Ext. 3-7593 or 3-4645, or Commercial: (334) 953-7513, or 4645, or DSN: 493-7513 or 4645. After Duty hours contact the Maxwell AFB Command Post at Commercial (334) 953-7333 or DSN: 493-7333 and request patch to the Director or Deputy Director AFJROTC.

Be prepared to provide the following information when making a mishap notification:

- Nature of the mishap or accident – date and time
- Number and names of instructors or cadets involved
- If injuries were sustained, nature and severity
- Local authority response
- Current status update

See Attachment II for Mishap Report Checklist

### **ORIENTATION FLIGHTS**

*Each year, over 1,000 AFJROTC cadets experience the joy of flight*

Familiarization flights have been a part of AFJROTC since the program's early inception. Because of the program's success, headquarters will attempt to provide O&M funds to support cadet Orientation Flights. The amount of support available each year may vary depending upon program funding. Each spring, headquarters will ask units to report their intentions to participate in the Flight Orientation Program. If funds are available, headquarters will distribute funds on a fair-share basis to those units requesting support.

## Orientation Flights – Preflight

The fundamental nature of flight, ground handling, and preflight inspection, before takeoff checklist, takeoff and landing.

### Syllabus #1

Estimated time: 0.5 hour

1. Fundamental Nature of Flight: Cadets should receive classroom instruction covering the fundamentals of flight prior to participating in an Orientation Flight. This can be covered as part of the AS 100, Introduction to Flight, and curriculum. As a minimum, cadets should receive instruction on the fundamentals of thrust, drag, lift, wing dynamics, and flight controls.

2. Ground handling: Demonstrate the proper way to ground handle the airplane. Emphasize surface areas of the airplane that should not be touched during ground handling.

3. Preflight inspection:

- Using the appropriate checklist, demonstrate a routine preflight inspection of the airplane.
- Discuss the required documents that must be on board the airplane.
- During the airplane preflight inspection, point out specific parts of the airplane and identify its function.

4. Before takeoff:

- Using the checklist, show cadets the routine cockpit checks prior to takeoff.
- Explain the sequence of events prior to takeoff.

### **ORIENTATION FLIGHTS – Takeoff, Normal Flight Maneuvers, Landing**

Fundamental aircraft control and flight maneuvers

### Syllabus #2

Estimated time: 1.0 hour

1. Takeoff:

- Discuss airplane position during takeoff roll and initial climb and demonstrate rudder controls.

- Describe emergency actions to be taken at different altitudes as discussed during while reviewing the before takeoff checklist.

2. In-flight. The orientation pilot will perform the following maneuvers at a minimum altitude of 2,500 feet AGL:

- Discuss the use of flight controls in-flight.
- Point out the attitude of the airplane in relation to the horizon and at different airspeeds.
- Point out familiar landmarks, prominent ground features, and the position of the airport with respect to airplane's altitude and position.
- Demonstrate use of trim controls and straight flying to a checkpoint using visual references.
- After trimming for level flight, point out the stability of the airplane in hands-off flight.
- Discuss the effects of lift, drag, and gravity on the airplane.
- Discuss the relationship of lift, angle of attack, and relative wind.
- Demonstrate a shallow banked turn and point out how the airplane will maintain the turn with controls neutral.
- Explain load factor during turns.

3. Approach to landing:

- Explain the approach to the traffic pattern. Explain the reasons for a standardized entry procedure and perform the before landing check.
- Point out the correct procedure for landing rollout.

4. Post flight. Answer questions pertaining to the flight and stress safety.

### *ORIENTATION FLIGHTS– Advanced Flight Maneuvers*

**Advanced aircraft control and flight maneuvers for cadets with previous flight experience**

Syllabus #3

Estimated time: 1.0 hour

1. Preflight. Discuss previously completed syllabus flights as appropriate.
2. In-flight. The orientation pilot will perform the following maneuvers at a minimum altitude of 2,500 feet AGL.
  - Perform climbing turns emphasizing collision avoidance.
  - Demonstrate slow flight (minimum controllable airspeed (MCA)).
  - Demonstrate straight ahead and turning approach to stalls as appropriate emphasizing stall recognition and recovery. Demonstrate imminent stalls (first aerodynamic indication of an oncoming stall, which is usually the stall warning alarm). Back seat passengers are not allowed during stall demonstrations.
  - Demonstrate medium and steep bank turns as appropriate and discuss proper rudder coordination and control stick requirements to keep the nose up.
  - Explain load factor during turns.
  - Discuss steep spirals and spins. Emphasize the differences and the dangers of excessive load factors in steep spirals. Actual spirals are not authorized.
3. Post flight. Answer questions pertaining to the flight and stress safety.

## **ATTACHMENTS**

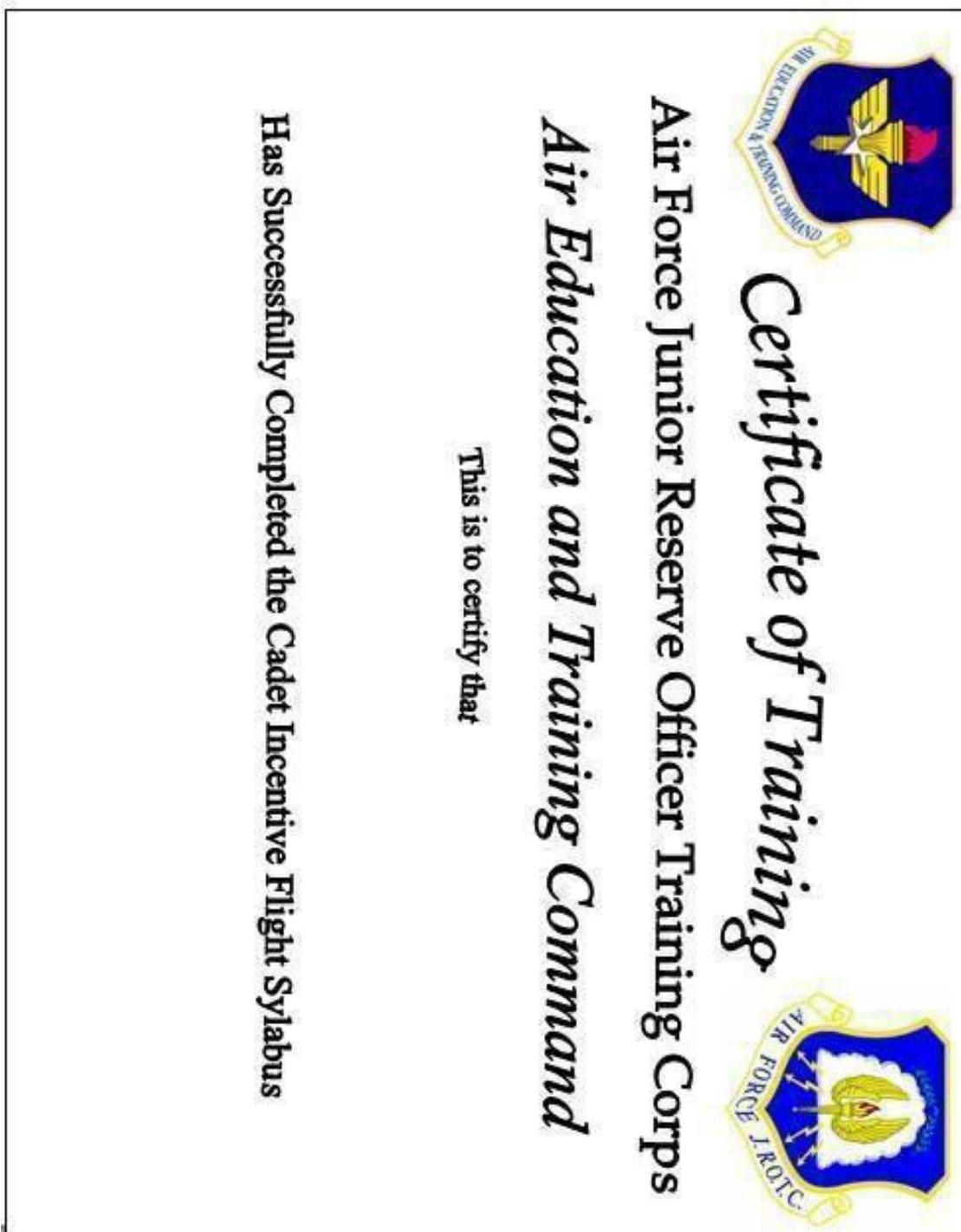
**Attachment 1: FIRST FLIGHT CERTIFICATE**

**Attachment 2: MISHAP CHECKLIST**

**Attachment 3: SAMPLE HOLD HARMLESS AGREEMENT**

## ATTACHMENT 1 – FIRST FLIGHT CERTIFICATE

First Flight Certificates are available in WINGS Certificates



## ATTACHMENT 2 – MISHAP CHECKLIST

AFJROTC Orientation Flight Mishap Report Checklist
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## ATTACHMENT 3 – SAMPLE HOLDS HARMLESS AGREEMENT

### CADET ORIENTATION FLIGHT

*Release, Indemnity, and Assumption of Risk*

Air Force Junior Reserve Officer Training Corps and \_\_\_\_\_ (Flight Provider) will arrange standard rate turns, basic aerial navigation procedures, and traffic patterns. The academic (ground) phase of instruction will include basic flight planning procedures, aerodynamics, aircraft structures, and aviation safety procedures.

Name of Child: \_\_\_\_\_ Unit / School \_\_\_\_\_

By signing below, I grant permission for my child to participate in the activities described above. This release, Indemnity and Assumption of Risk Statement covers all events associated with the Activities. If I have any concerns about my child's ability to participate, I agree to discuss my concerns with my child's instructor or, if appropriate, with my child's physician before signing this form.

I agree to assume the risk that unexpected events may occur and result in harm, injury or illness to my child or damage to my property or my child's property while my child is participating in or observing the Activities, or traveling to or from the Activities. I agree, on my behalf and on behalf of my child, to indemnify Air Force Junior Reserve Officer Training Corps, and \_\_\_\_\_ (Flight Provider) and each of their employees, agents, affiliates, successors and assigns (collectively, the "Indemnified Parties") and not to sue the Indemnified Parties for any harm or damage associated with my child's participation, observation, or travel if the harm or damage is not due to the negligence or fault of any of the Indemnified Parties. I understand that my child's participation in these Activities is voluntary.

If my child requires emergency medical treatment, please contact:

Name of Emergency Contact Person: \_\_\_\_\_

Home Phone: \_\_\_\_\_

Work Phone: \_\_\_\_\_

If the Emergency Contact Person I have listed is not available, please contact:

Doctor: \_\_\_\_\_ Phone: \_\_\_\_\_

I consent to the provision of emergency medical treatment for my child to the extent that the treatment is necessary in the medical opinion of the doctor rendering the treatment.

In this agreement, Air Force Junior Reserve Officer Training Corps, and \_\_\_\_\_ (Flight Provider) \_\_\_\_\_ and their employees are agents.

Signature of Parent or Legal Guardian: \_\_\_\_\_ Date: \_\_\_\_\_

## **SECTION 7: DRILL TEAMS, COLOR GUARDS, HONOR GUARDS, SABER TEAMS**

**Drill Teams, Color Guards, and Honor Guards.** These activities are authorized and encouraged as they support the school and community while instilling esprit de corps.

Membership criteria are determined by the AFJROTC instructors and must be posted in the unit's cadet guide.

### **Saber Teams**

Saber Teams are authorized with approval of the principal. Approval must be in writing and on file at the unit. Safety of cadets is of paramount concern. Sabers cannot be purchased with AF funds.

Membership criteria are determined by the AFJROTC instructors and must be posted in the unit's cadet guide.

## **SECTION 8: AFJROTC MARKSMANSHIP PROGRAM**

AFJROTC units are authorized to conduct training in marksmanship and the safe handling of an air rifle. Participation in this program is optional at the discretion of the school authorities. Only .177 caliber air rifles are authorized for marksmanship training and competition in the AFJROTC program. Details regarding allowance, procurement, inventory, security, and repair of air rifles are contained in the AFJROTC Operating Instruction.

### **Range Safety**

All individuals using firing range facilities will receive training on rules, safety precautions, and commands for the firing range. This training is to be documented in the cadet's training record and maintained for the period the cadet is enrolled.

The SASI or ASI will be designated as the Range Officer, regardless of rank or employment position, and is the senior authority in control of the range during live firing operations.

The down range perimeter of the range shall contain any pellet that misses a trap or a backstop. Doors shall be locked and marked with a warning to prevent down range entry to the range. Pellet traps/backstops shall be designed to stop all pellets and prevent their return to the firing

line.

HQ AFJROTC strongly recommends using non-lead pellets. The safe and proper handling of all used pellets is to be done in accordance with local school district procedures for the storage and disposal of hazardous waste. SASI's are to maintain documentation of the methods used.

### **Shooter Safety Rules**

Competitive shooting has one of the best safety records of any organized sport. This is because each shooter is expected to know and practice the safety rules and because range safety is strictly enforced. The following safety rules are strictly enforced on all properly managed ranges:

- Treat every air rifle as if it were loaded.
- Follow all commands given by the range safety officer.
- Be aware of where the muzzle is pointed at all times. Keep the muzzle of the air rifle pointed in a safe direction; this is usually up toward the ceiling or downrange toward the target. Have muzzle awareness at all times. Only point the air rifle at targets at which you intend to fire.
- Load/Unload the air rifle only when on the firing line and only when authorized by the Range Officer.
- Be sure that the bolt is closed when actually firing a shot.
- Keep your finger off the trigger until you're ready to fire in your firing position.
- Never handle a rifle at the firing line when someone is down range.
- When given the command "cease fire," or "stop," immediately open the bolt of your rifle and place the rifle on your shooting mat so that the open bolt is visible. Inform the Range Officer in the event a rifle is loaded after the command "cease fire," or "stop".
- No one may go down range until authorized by the Range Officer. Prior to going down range, all rifles must be unloaded and the bolts open.
- Insert a clear barrel indicator (CBI) when the air rifle is not in use and when directed by the Range Officer.

- Eye protection is required. Hearing protection is recommended.
- Think about what you're doing and be careful. Think and practice safety at all times.
- Wash hands after handling pellets.
- Never horseplay in or near the range. Treat the air rifles as weapons that are capable of causing serious bodily harm.

### **AFJROTC Air Rifle Postal Competition**

The AFJROTC Air Rifle Postal Competition is held to promote training, good sportsmanship, and a high standard of performance in the safe use of an air rifle. Competition will be conducted in the Sporter Air Rifle and Precision Air Rifle divisions, as governed by the current National Standard Three-Position Air Rifle Rules. All rules referenced herein may be found in the applicable rulebook. It is the responsibility of each participating unit to have a current copy of the rules and to comply with all applicable provisions. Copies of the Civilian Marksmanship Program (CMP) rulebook are posted on WINGS.

*Note: The ten (10) highest scoring Sporter teams/individuals and the five (5) highest scoring Precision teams/individuals will qualify to participate in the AFJROTC Air Rifle Competition.*

**Eligibility.** All AFJROTC cadets are eligible to participate in the postal competition. This is a team match, each team consisting of four shooting members. No competitor may be a member of more than one team.

**Equipment.** Sporter air rifles include the following: Daisy Model M853/953/753 (pneumatic), Daisy M887/M888 (CO2), Daisy XSV 40 Valiant (compressed air), Crosman M2000 (CO2) or equivalent rifle that conforms to the specifications/restrictions of the National Standard Three-Position Rules may be used. Precision air rifles include any type of .177 caliber (4.5mm) pneumatic, spring air, compressed air, or CO2 rifle that conforms to the specifications/restrictions of the National Standard Three-Position Rules may be used. Any modifications to a Sporter or Precision air rifle must be in accordance with the current edition of the National Standard Three-Position Air Rifle Rules.

**Targets.** The targets used for the AFJROTC Air Rifle Postal Competition will be the 12- bull, National Three-Position Air Rifle Council 10 Meter Air Rifle target. The targets will be provided by the Area Manager for the competition.

Range Specifications. In addition to ensuring that a safe marksmanship environment is established and maintained, SASI's must establish the following minimum standards:

- The distance from the firing line is 10 meters (33 feet.)
- Target heights (measured from the center of the sighting targets); prone 19.7in.  $\pm 4$  in., standing 55 in.  $\pm 2$  in., kneeling 31.5 in.  $\pm 4$  in.
- Course of Fire and Time Limits. The course of fire will be according to the National Standard Three-Position rules shown below.
- National Standard Three-Position, Individual Event (3x10)
- 10 shots in each position: prone, standing, and kneeling (in that order)
- Air rifle targets for 10 meters
- Preparation period of 10 minutes

Shooting time, including sight shots, is 15 minutes prone, 20 minutes standing, and 15 minutes kneeling with a 5-minute change-over period between positions. Dry firing is allowed during the preparation period and during the competition.

Competition Regulations and Range Operation. Once firing has started, the match must be completed following the National Standard Three-Position Rules and Time Schedule. There are no provisions for re-firing the match. An incomplete match will be considered a non-entry in the competition.

Range Controls and Commands. All National Three-Position Rules for range control and commands apply.

Team Officer's Duties and Positions. Designation of team captains and coaches by the SASI is encouraged. If so designated, they will perform their duties following the National Three-Position Air Rifle Rules.

Statistical Office Operation, Scoring, and Decision of Ties. Targets shall not be scored or plugged by anyone other than the scoring agent. Targets that have been plugged prior to receipt by the designated scoring agent will be disqualified.

Competitor's Duties and Responsibilities. All rules apply except those regarding age eligibility and scoring.

**AFJROTC Air Rifle Competition**

Units qualifying for AFJROTC Air Rifle Competition (shoulder-to-shoulder) will be notified immediately with information to participate in the shoulder-to-shoulder championship.

Note: The three (3) highest Sporter teams/individuals and three (3) highest Precision teams/individuals will qualify to represent AFJROTC in the Civilian Marksmanship Program JROTC National Competition.

**Awards**

The first, second, and third place teams in the Sporter and Precision divisions will be awarded a plaque, and each team member will be awarded a medal. Individual medals of gold, silver, and bronze will be awarded to the top three shooters (total score) in both divisions.

**OFFICIAL AFJROTC POSTAL SCORE SHEET REPORT**

Name of School \_\_\_\_\_ UIC \_\_\_\_\_ Area \_\_\_\_\_

Team Name \_\_\_\_\_ Na \_\_\_\_\_

me of Postal: **AFJROTC NATIONAL AIR RIFLE POSTAL COMPETITION**

Sporter: ( )

Precision: ( )

Team: ( )

Individual: ( )

Date Match Fired: \_\_\_\_\_

Range Officer Name: \_\_\_\_\_

NAME OF SHOOTER	AGE	TARGET#	PRONE	STANDING	KNEE LING	TOTAL
TEAM TOTAL						

CHECK RIFLES USED:

**Sporter Division**

Daisy 753 pneumatic)

**Precision Division**

Daisy \_\_\_\_\_ 853 \_\_\_\_\_ (pneumatic) \_\_\_\_\_  
 \_\_\_\_\_ Daisy pneumatic) \_\_\_\_\_ Daisy M888 CO2): \_\_\_\_\_  
 953 \_\_\_\_\_  
 Daisy \_\_\_\_\_ XS 40 (comp air) \_\_\_\_\_  
 \_\_\_\_\_ Crosman M2000 \_\_\_\_\_ (CO2): \_\_\_\_\_  
 \_\_\_\_\_  
 Other: \_\_\_\_\_

(list make & model) INSTRUCTIONS:

1. Please print name and age of competitor and their assigned target number.
2. Do not put any scores on this sheet.
3. Keep a copy of the report sheet for your records and send the original with the targets to the Area Manager by traceable means to arrive no later than 18 December.
4. Witness certification that targets were fired within the guidelines of the match program.

\_\_\_\_\_  
 Witness signature

\_\_\_\_\_  
 Witness phone #

MEMORANDUM OF UNDERSTANDING BETWEEN  
 AF JROTC UNIT (AA-####) AND  
 XXXXXXXX HIGH SCHOOL

SUBJECT: Memorandum of Understanding between Air Force Junior ROTC (AFJROTC) unit AA-#### and XXXXXXX High School

1. The purpose of this memorandum is to document an understanding between the parties involved. Parties include AFJROTC Unit AA-#### and XXXXX High School.
2. A partnership between the parties mutually supports the mission and goals of each organization and will provide additional resources to accomplish training events without additional liability concerns. Participation in any Civilian Marksmanship Program (CMP) sanctioned event by an AFJROTC cadet requires **signed** parental release of liability forms. Additionally, parental consent forms are required for **ALL** participants. Both signed parental consent forms and parental release forms **must** be completed and submitted prior to participation in the event. It is understood that HQ AFJROTC will initially supply funds to purchase air rifles, goggles, shooting mats, backstops, and pellet traps; sustainment costs will be the responsibility of Unit AA-####.
3. XXXX High School will create opportunities for cadets to participate in marksmanship activities in conjunction with the AFJROTC curriculum.
4. AFJROTC Instructors will support marksmanship activities to include classroom instruction and participation in marksmanship training involving firing on ranges.

5. The following controls will be established with regards to the rifle range:
  - a. Use (defined locally)
  - b. Access Control (defined locally, but must, at a minimum, comply with SOP discussing two lock minimum)
  - c. Maintenance of the Range (defined locally)
  - d. Hours the range maybe used (defined locally)
  - e. Caliber of ammunition: .177 pellet
  - f. Types of rifles to be used: Daisy Model M853CM
  - g. Maintenance responsibilities: (defined locally)

## **SECTION 9: AFJROTC AEROSPACE STATIC MODEL PROGRAM**

Static Modeling is the designing and/or building of small model rockets or planes. This chapter provides a brief introduction to the AFJROTC Aerospace Static Model Program. It provides a suggested program of instruction as well as the OPRs and LPRs for a static model program. A static model program can provide an exciting introduction for cadets to concepts of aerospace engineering and design and can motivate cadets to attain a greater knowledge of aerospace studies and arouse interest in aerospace careers.

### **OPERATIONAL PERFORMANCE REQUIREMENTS (OPR)**

OPR 1. Construct, provide appropriate documentation, evaluate, and enter into competition at least one aerospace static model.

OPR 2. Document the ability to procure appropriate documentation relating to one aerospace vehicle, which may include photographs, three-view drawings, and color sources.

OPR 3. Prepare a diagram of a typical aerospace static model meet, including judging criteria and spectator viewing areas.

OPR 4. Submit for evaluation a journal of all activities completed in the aerospace static model program. The journal must indicate completion of all operational performance requirements.

### **LEADERSHIP PERFORMANCE REQUIREMENTS (LPR)**

LPR 1. Demonstrate knowledge of the AFJROTC aerospace static model program and its concepts and techniques by satisfactorily implementing, administering, supervising, and evaluating static model activities.

LPR 2. Demonstrate knowledge of the organization of AFJROTC static model program activities, including the personnel required, the skills necessary, and the job responsibilities of cadets and adult supervisors in individual, group, and competitive activities.

LPR 3. Demonstrate the leadership skills necessary to conduct an individual test, group test, and International Plastic Modelers' Society (IPMS)-sanctioned aerospace static model competitive meet or contest. Address for IPMS is 5151 E Memorial Drive, Muncie IN 47302 or phone 317-289-2436.

LPR 4. Pass an oral examination covering the topics of aerospace static model techniques, procedures, operations, and safety precautions.

### **SUGGESTED 6-WEEK PROGRAM OF INSTRUCTION FOR STATIC MODELS**

Week	Classroom/Period/Activities	Laboratory Period/Activities
1	Introduce basic modeling glossary Discuss materials used in construction of aerospace models Explain the availability of commercial kits and scratch building of aerospace model	Demonstrate the tools and materials needed to construct a simple model Provide lists of tools and materials needed to construct a basic model
2	Explain techniques of construction of each major section of an aerospace model (wings, tails, fuselage)	Begin construction of aerospace models (all cadets use the same basic plan)
3	Explain paints, finishes, and coverings suitable for models being constructed Explain display devices suitable for models being constructed. Decide which type of display device will be used for unit's first activity	Continue construction of models
4	Explain basic techniques of weathering	Continue construction of models
5	Plan static competition activity Review competitive rules	Complete models Inspect completed models
6	Construct model flight training	

### **ADDITIONAL SOURCES OF INFORMATION**

The International Plastic Modelers' Society (IPMS) provides a wealth of information on scale static modeling on their website: <http://www.ipmsusa.org/>