



**United States  
Department of  
Agriculture**

Marketing and  
Regulatory  
Programs

Animal and  
Plant Health  
Inspection  
Service

Plant Protection  
and Quarantine

APHIS Plant Health  
Programs

INTERIM EDITION

# Aerial Application Manual





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# Introduction

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## Introduction

The *Aerial Application Manual* (AAM) is a reference to be used by USDA-APHIS-PPQ Program Managers and Air Operations to plan and conduct aerial applications that support domestic, emergency, and biological control programs. Frequently, these individuals will be delegated as the Contracting Officer's Representative (COR). Users will follow information contained in this guide or tailor the information (where permitted) to their individual program's needs.

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## Scope

The *Aerial Application Manual* (AAM) is the basic framework that describes general activities for conducting aerial treatment programs. The manual is divided into three chapters which reflect the three phases involved with an aerial application program: *Program Planning*, *Program Start-up*, and *Program Supervision*. Many activities within each phase may take place simultaneously and **not** necessarily in the order presented within the chapter section listed in this manual. Specific pest programs have unique circumstances that **must** be planned for that may **not** be addressed in this manual.

### What the AAM Covers

The content of the *Aerial Application Manual* (AAM) provides general approaches that apply to most all domestic, emergency, and biological control programs. Topics that may vary from program-to-program are the type of aircraft; pesticides approved for use and how to handle those pesticides; monitoring; and setup.

The guidelines contained in this manual should be compatible with new pesticide products that may become available to program managers, unless the new product is **not** applied using current industry standards. Professional judgement should supplement the general guidelines and models contained in the AAM.

The manual is divided into tabbed sections:

- ◆ Introduction
- ◆ Program Planning
- ◆ Program Start-up
- ◆ Program Supervision
- ◆ Appendixes
- ◆ Glossary
- ◆ Index

The *Introduction* provides basic information about the manual, a list of related documents which provide the authority for the content of the manual, and to use the manual.

The *Program Planning* section provides general guidelines for determining the size and scope of the problem to developing work plans, program maps, and arranging for personnel and equipment.

The *Program Start-up* section provides general guidelines for on-sight tasks such as logs, maps, aircraft calibration, and aircraft guidance.

The *Program Supervision* section provides general guidelines on operational plans, contractor actions, and program shutdown.

The appendixes contain equipment lists, forms, technical information, and descriptions.

The *Glossary* contains a list of terms, acronyms, and definitions.

### **What the AAM Does Not Cover**

**Not** covered in the AAM is program-specific information such as survey, pest biology, or procedures that are already adequately covered in related documents. More specific methods and procedures are detailed in the specific pest program manual, new pest response guidelines, or biological control project manual.

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## Users

PPQ Contracting Officers Representatives (COR), PPQ Program Managers (PM), State Plant Health Directors (SPHD), and others who are responsible for preparing, conducting, or supervising the anticipated program use this manual. Individuals designated as the Contracting Officer's Representative (COR) are responsible for administering the terms of contracts established to conduct application programs, and for planning, supervising, and monitoring the associated control activities also use this manual.

The experience level will vary, but users of this manual should have a working knowledge of the following:

- ◆ APHIS regulatory philosophy
- ◆ Regulatory decision making

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## Related Documents

Enabling legislation provides the authority to carry out the mission of protecting American agriculture from plant pests. Legislative Acts are the fundamental authority granted by Congress to the Secretary of Agriculture to promulgate regulations to protect American agriculture. The regulating authority for the actions listed in this manual is contained in the following legislative Acts and regulations:

- ◆ Code of Federal Regulations
- ◆ Endangered Species Act
- ◆ National Environmental Policy Act (NEPA)

Some of the documents listed below provide direction, policy, and procedures to assess and analyze all potential impacts for anticipated programs; others provide additional reference to support individual programs:

- ◆ *APHIS Environmental Manual*
- ◆ *APHIS Aerial Application Prospectus (Statement of Work)*
- ◆ *APHIS Manual 203, Safety and Health*
- ◆ *Boll Weevil Eradication Program Guidelines*
- ◆ Environmental monitoring guidelines
- ◆ Environmental monitoring plans (see the specific program for which samples are collected)
- ◆ *Grasshopper Program Manual*

- ◆ *Guidelines for Treatment of Rangeland for the Suppression of Grasshoppers and Mormon Crickets*
- ◆ *Gypsy Moth Management in the U.S.-Final Environmental Impact Statement-1995*
- ◆ *Gypsy Moth Program Manual*
- ◆ *Material Safety Data Sheets (MSDS)*
- ◆ Pesticide certification training materials
- ◆ Pesticide labels
- ◆ *The Standard Pesticide User's Guide, USDA Custom Edition, 1997, by Bert L. Bohmont*
- ◆ Pink Bollworm Program Guidelines
- ◆ *Rangeland Grasshopper Cooperative Management Program-Final Environmental Impact Statement, 2000*

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## Application

The AAM contains policies and guidelines for the tasks associated with planning and operating domestic aerial application programs to treat plant pests.

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## Reporting Problems With the AAM

Use **Table 1-1-1** to determine where to report suggestions, problems, situations, or disagreements which directly affect the content of the AAM.

**TABLE 1-1-1 Procedures to Report a Problem With or Make a Suggestion for the AAM**

<b>If you:</b>	<b>Then:</b>
Have a situation that requires an immediate response regarding a procedure or regulatory action for the aerial application program.	CALL Timothy Roland at 956-580-7270 or the appropriate Regional Program Manager.
Have comments, suggestions, or complaints about the content of the AAM, or you disagree with a policy, procedure, or regulatory action identified in the manual.	CONTACT Timothy Roland <timothy.roland@aphis.usda.gov>
Have a suggestion for improving the formatting (design, layout, composition), grammar, spelling, of the AAM.	CONTACT Josie Cooley in the Manuals Unit <josie.cooley@aphis.usda.gov> or 240-529-0358.



## Conventions

The conventions used in this manual are established by custom and are widely recognized and accepted.

### Advisories

Advisories are used throughout the manual to bring important information to your attention. Please carefully review each advisory. These definitions coincide with ANSI and appear in the format shown below throughout the manual.



DANGER indicates that people could **easily** be hurt or killed.



WARNING indicates that people could **possibly** be hurt or killed.



CAUTION indicates that people could possibly be endangered and slightly hurt.



NOTICE indicates a possibly dangerous situation where goods might be damaged.



IMPORTANT indicates helpful information.

### EXAMPLE

EXAMPLES appear in a graphically placed box within the text as a means of visually separating an example from other information contained on the page.

### Boldfacing

Boldfaced type is used to highlight important or negative words throughout the manual. These words are: **cannot**, **did not**, **do not**, **does not**, **must**, **never**, **no**, **not**, **only**, **other than**,

### Bullets

Bulleted lists indicate there is **no** order to the information being listed.

### Chapters

The chapters are: *Introduction*, *Program Planning*, *Program Start-up*, and *Program Supervision*.

## Control Data

Information placed at the top and bottom of each page helps users keep track of the location within the manual and the transmittal number. Listed at the top of the page are the chapter or appendix number and title, section, and first-level heading. Listed at the bottom of the page are the transmittal number (month, year, and update number), manual name, page number, and unit responsible for the content.

## Heading Levels

Each section may contain up to three heading levels. The first heading is indicated by a horizontal line, followed by a heading that crosses both the margin and column. The second heading is subordinate to the first heading and begins in the main section of the page. The third heading is subordinate to the second heading and is located in the left-hand margin **only**.

## Referenced Figures, Headings, Page Numbers, and Tables

Figures, headings, page numbers, and tables that are cross-referenced or linked appear as bold-faced, highlighted blue hypertext.

## Indentions

Entry requirements summarized from CFRs, permits, or policies, and other quoted text are indented on the page.

## Numbering Scheme

A three-level numbering scheme is used in this manual for figure numbers, page numbers, and table numbers.

### EXAMPLE

1-1-1 (page number)

**FIGURE 1-1-1**

**TABLE 1-1-1**

In each of the numbers above, the first number represents the chapter; the second number represents the section; and the third number represents the sequence of the figure, page, or table.

## Section

Large chapters in the manual are further divided into sections. Each section begins on a new, right-hand page. Sections are identified by the second number in the numbering scheme. In the AAM, the Program Planning, Program Start-up, and Program Supervision chapters are divided into sections.

## Table of Contents

At the beginning of each chapter and chapter section there is a mini table of contents that lists the headings and page numbers to help you locate information within that section.

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## Manual Updates

The PPQ Manuals Unit issues and maintains manuals electronically on the Manuals Unit Web site. The [on-line manuals](#) contain the most up-to-date information.

Immediate update revisions to the manual are issued through the APHIS PPQ Stakeholder Registry. If you wish to receive updates to this manual, please visit the [APHIS PPQ Stakeholder Registry Home Page](#) and subscribe to that service.

Each immediate update contains the following information:

- ◆ Link to access and download the on-line manual
- ◆ List of the revised page numbers
- ◆ Purpose of the revision(s)
- ◆ Transmittal number

## Ordering Additional Manuals and Revisions

Using the on-line version of this manual is recommended. However, if you are a PPQ employee, you may, **with your supervisor's approval**, order a hard copy of the manual from the APHIS Printing, Distribution, Mail and Copier Solutions (PDMCS) branch in Riverdale, Maryland. Visit the [Riverdale Print Shop Web site](#) for detailed information and printing costs. The Manuals Unit is not responsible for printing costs.



# 2

Aerial Application  
Manual

## Program Planning

### *Project Expectations, Size, Scope, and Meetings*

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#### Introduction

The **Project Expectations, Size, Scope, and Meetings** section of **Program Planning** provides guidelines for determining the project's purpose and expectations (suppression or eradication), size and scope, and preprogram planning meetings.

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#### Initiate Pre-project Planning

The pre-project planning for a voluntary suppression program is initiated when:

- ◆ xx What happens first? (Before the first public meeting)
- ◆ xx How the preprogram planning starts
- ◆ xx Who is involved first? Program Manager xx, project manager, contracting officer's representative
- ◆ xx Then what?
- ◆ xx Who determines the size & scope of infestation & if the landowners want treatment?
- ◆ xx Who conducts these preprogram meetings?
- ◆ xx Is a Daily Log started at this point to document these events?

1. Determine the size and scope of the area to be treated.
2. Determine if there is need for eradication or suppression. If a suppression program, has a formal request for assistance been received? In an eradication program, has legal authority been identified?
3. Determine if the target area is environmentally and logistically treatable by air.
4. Conduct preprogram meetings.

**FIGURE 2-1-3 Summary of Program Planning**

State and Federal cooperators, the Extension Service, and other interested parties such as ranchers and land managers can be excellent sources of information. For suppression programs, historical databases on population density trends are useful for determining trends and patterns.

- ◆ Determine the size and scope of the infestation for control planning by gathering information from pest survey results and, if available, forecasting models, and conducting a delimiting survey
- ◆ Determine whether there is landowner or land manager interest in treating the area, and if the area is treatable from an environmental and logistical standpoint

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## Determine the Project Size and Scope

When determining the size and impact of the pest infestation, consider the following topics:

- ◆ Legal authority for conducting the program
- ◆ Purpose of the program (eradication or suppression)
- ◆ Authority for participation in the program
- ◆ Logistics of the block to be treated by air (or treated by ground)
- ◆ Available chemical alternatives
- ◆ Cost-benefit ratios of conducting programs as compared to taking **no** action against the pest
- ◆ Economic thresholds
- ◆ Environmental concerns (for updating documentation and drafting buffer zones)
- ◆ Environmental restrictions
- ◆ Landownership (for determining program costs and cooperative involvement)
- ◆ Pest density (when considering a program)
- ◆ Pest species identification (when considering a program)

- ◆ Pest life stage or age structure
- ◆ Potential aerial hazards
- ◆ Predominant pest growth stage at present (if applicable, for determining the timing of an appropriate control)
- ◆ Proximity to sensitive sites or crops for which pesticide use is **not** registered
- ◆ Size and location of the infested area (for preparing State and national infestation maps, and drafting maps of projected treatment areas)
- ◆ Type of vegetative cover for determining the appropriate coverage (application rate), available standing forage and timing of an appropriate control
- ◆ Weather conditions (for determining potential natural controls; prediction of dry or wet spring weather; or timing of an appropriate control)

### **Conduct Delimiting Surveys**

Delimiting surveys should be conducted in the area to fine-tune treatment block boundaries and supplement existing survey data.

---

## **Determine Whether Program is Mandatory or Voluntary**

### **Mandatory Eradication Programs**

When participation in the eradication program is mandatory, then xx.

### **Voluntary, Cooperative Suppression Programs**

When participation in the cooperative suppression program is voluntary, then determine if the landowners and land managers have an interest in treating the area for the pest, and if the area is treatable from an environmental and logistical standpoint.

To assist in this determination, do the following:

- ◆ Assemble program information
- ◆ Conduct preprogram meetings
- ◆ Conduct public involvement meetings
- ◆ Conduct delimiting surveys in the area

---

## Assemble Program Information

Consider gathering and placing reference material in local libraries. Making information accessible may alleviate problems or concerns various groups and individuals may have about the program and treatment.

Make the following materials accessible to the public:

- ◆ Environmental assessments (EA)
- ◆ Environmental impact statements
- ◆ Finding of no significant impact (FONSI)
- ◆ Pesticide labels
- ◆ Pesticide Material Safety Data Sheets (MSDS)
- ◆ Program background information
- ◆ Program objectives

---

## Prepare and Conduct Pre-program and Public Meetings

### Pre-program Meetings

Pre-program meetings are an important part of planning, decision making, and implementing control activities on private and public administered land.

Conduct preprogram meetings with private, State, and Federal cooperators to exchange information on the following topics:

- ◆ Determine availability of manpower and/or resources
- ◆ Gain information needed to implement formal protection measures or informally develop site specific protection measures
- ◆ Identify topics of concern to the project
- ◆ Identify other topics of local concern
- ◆ Locate sensitive environmental areas and issues
- ◆ Set management objectives

### Public Involvement Meetings

Local agricultural leaders should be involved in organizing public-involvement meetings and identifying any problems and contributing to solutions. These local leaders know the people of the area, political sensitivities, and past issues and solutions.



Public involvement meetings provide the opportunity for public input on issues and concerns the public may have regarding the proposed action. Public meetings also provide a forum where individuals can gain information regarding proposed actions and alternatives.

Public involvement meetings may be mandated by individual pest program guidelines in order to comply with the National Environmental Policy Act (NEPA). Activities to complete in regards to meeting with effected and interested groups should be coordinated with environmental documentation activities. See [Complete Environmental Documentation on page 2-2-2](#).

See [Information Program on page 4-6-1](#) for detailed information about the APHIS policy for conducting public meetings and working with the media.

### **Notify Beekeepers**

Notify beekeepers about the meetings. Program operational guidelines, environmental impact statements, environmental assessments (EA), State laws, and/or pesticide labels may also require that beekeepers in the area be notified of control programs.



Many of the pesticides used in aerial treatments are highly toxic to bees.

### **Notify Organic Producers**

Program operational guidelines, environmental impact statements, environmental assessments (EA), State laws, and/or pesticide labels may also require that organic producers in the area be notified of control programs.

### **Notify Public Meeting Attendees**

Contact should be made with the following groups and individuals to notify them of upcoming public meetings:

- ◆ Beekeepers
- ◆ County and city government
- ◆ Environmental organizations
- ◆ Federal land managers or land managing agency (for Federal land managers involved in the area)
- ◆ Federal land user or recreation associations (trail riders, mountain bikers, hikers, 4x4 clubs, etc.)
- ◆ Landowner and industry groups (grower associations, grazing associations)

- ◆ Organic producers
- ◆ School superintendents and principals (if schools are located or involved in the project area)
- ◆ State and Federal representatives of appropriate regulatory agencies (Federal Aviation Administration (FAA) Flight Standards District Office (FSDO), pesticide regulatory, etc.)
- ◆ State land managers
- ◆ State and Federal wildlife management agencies (State game and fish departments; U.S. Fish and Wildlife Service (USFWS))

Other agencies, groups and persons that may be appropriate to contact about the meetings are as follows:

- ◆ Airport manager
- ◆ County Extension Agent
- ◆ Fire department (responsible for covering the airport and treatment blocks)
- ◆ Grazing associations
- ◆ Hospital
- ◆ Law enforcement (highway patrol, sheriff)
- ◆ Native American Tribal Group or representative (if any Native American or Tribal land is involved or if any other areas are used by Native Americans)
- ◆ Public
- ◆ Representative for private landowners (for private land involved)

# 2

Aerial Application  
Manual

# Program Planning

## Preparation

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### Introduction

The **Preparation** section of **Program Planning** provides preparatory procedures that **must** be completed before the treatment program begins. These include determining legal authority, complying with environmental policies, drafting boundaries of the areas to be treated, obtaining cooperative agreements from persons and groups, and Memorandums of Understanding (MOUs) from Agencies that are part of the program, deciding on the control option, and preparing **PPQ Form 136, Detailed Work Plan** and the **Work Checklist (accompanies PPQ Form 136, Detailed Work Plan)**.

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### Procedures

After the initial preprogram planning meetings, the Contracting Officer's Representative (COR), and should ensure the following activities are completed:

- ◆ Complete the environmental documentation
- ◆ Draft treatment boundaries
- ◆ Obtain cooperative agreements from non-Federal cooperators if applicable
- ◆ Obtain a Memorandum of Understanding (MOU) from Federal Agency cooperators involved with the program

- ◆ Obtain a copy of the *APHIS Aerial Application Prospectus (Statement of Work)* and chemical contracts information (from Minneapolis Business Site (MBS))
- ◆ Select a control option (sterile release, liquid pesticide, bait, etc.)

### Voluntary Cooperative Suppression Program

When PPQ assistance is required for a voluntary aerial program, the following tasks should be completed by each cooperator prior to implementation of the program:

1. Initiate a request in writing for treatment (possibly accomplished through cooperative agreement). (See [Cooperative Agreement on page A-1-8](#) for an example.)
2. Obtain documentation showing the cooperator's cost share is on deposit via written request (bank letter, or could be handled when the cooperative agreement is submitted).
3. Indicate the cooperator's landownership on the master program maps.

### Mandatory Control Program

When xx.

### Complete Environmental Documentation

Environmental documentation may be required in order to comply with the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA). NEPA and ESA ensure that any selected control method used will **not** significantly affect the quality of the human environment or jeopardize the survival of threatened or endangered species.

In compliance with ESA and NEPA, the following documents may be developed in order to meet the requirements of these two Acts, as well as to provide direction and policy for anticipated programs:

- ◆ Biological assessments (BA)
- ◆ Biological opinions (may be developed by FWS or NMFS)
- ◆ Final Environmental Impact Statement (FEIS) and Record of Decision
- ◆ Programmatic Environmental Assessments (EA)
- ◆ Site-specific Environmental Assessments (EA)
- ◆ Finding of **No** Significant Impact (FONSI)

Documentation and processes are different depending on the program. The appropriate APHIS program manuals contain definitions, checklists, time lines, templates, suggested references, and other guidance material that will help in the preparation of the required environmental documents.

If you are unable to find guidelines for your particular needs in this manual, then specific information may be found in the appropriate program manual (such as the *Grasshopper Program Manual*), that may serve as a framework, adapt to your specific needs, and satisfy NEPA requirements.

Further information and guidance regarding environmental documentation can be obtained from:

USDA-APHIS-PPD  
Environmental Services  
4700 River Road, Unit 149  
Riverdale, MD 20737-1237  
Phone: 301-851-3136  
FAX: 301-734-3640

## Public Environmental Information

Making environmental information accessible to the public may help alleviate any problems or concerns various groups or individuals may have. Be sure to coordinate the information you plan to make accessible with the information provided in [Information Program on page 4-6-1](#).

Consider having the following materials accessible in local libraries and at meetings:

- ◆ Environmental assessments (EA)
- ◆ Environmental impact statements (EIS)
- ◆ Material Safety Data Sheets (MSDS)
- ◆ Pesticide labels
- ◆ Program background information
- ◆ Program objectives

### **Draft Treatment Boundaries**

Draft treatment boundaries on master program maps.

### **Obtain Cooperative Agreements from States and Non-Federal Cooperators**

For voluntary cooperative programs, APHIS is responsible for cooperating with States, ranchers, land managers, grower groups, or other landowners in planning and implementing control activities. A cooperative agreement is a written agreement used to establish

arrangements with non-federal entities for APHIS to provide technical assistance, goods or services; and may be on a full cost-recovery or cost-share basis. (See [Cooperative Agreement on page A-1-8](#) for an example.)

A cooperative agreement for an aerial application for pest control may be established between APHIS and ranchers, States, and Native American Tribal Councils upon request from the cooperator and dependent on availability of funds.

Some pest management programs are initiated by the voluntary activities of States, ranchers, land managers, grower groups, and other private landowners who **must** request assistance from APHIS and/or the State and commit to share program costs before a control program is planned or initiated.

Individual pest program or regional office administrative procedures **must** also be followed when developing cooperative agreements. When preparing a cooperative agreement with a State or other cooperator, the language may be changed or language may be added to the agreement to meet special needs and circumstances. Changes are subject to regional approval. Work with your Regional Cooperative Agreements section staff to properly accomplish this process.



Important

Adding wording to an agreement so that the agreement can also serve as a letter of request is subject to regional approval.

### Obtain Memorandum of Understanding (MOU) from Federal Agencies

Federal land managers are required to request in writing that their land be treated (such as for grasshopper control). Although a letter of request may originate as a telephone call, a written letter of request is required for the expenditure of program funds.

When cooperative pest management programs (such as grasshopper control) are administered by APHIS, a Memorandum of Understanding (MOU) is established with each Federal agency that manages the land. MOUs are put in place and signed at the Headquarters level. MOUs or cooperative agreements (that detail responsibilities) may also be developed at the local level.

The Program Manager or Contracting Officer's Representative (COR) should identify which Federally-managed lands are present in each State, and then review the related MOUs to better understand the agreed responsibilities to conduct a pest management program.

## Native American Trust Land

A national Memorandum of Understanding (MOU) with the BIA currently exists. Obtain a written request from the BIA and the Tribal Council, and approval from the Tribal Council. See each program manual for specific examples of MOUs, cooperative agreements, and interagency agreements.

Many States have land that is held in trust for Native American tribes. Communications with both tribal authorities and the BIA are a **must**. This trust land is considered federally-administered and may be directly administered by the Bureau of Indian Affairs (BIA). Equally important is land allotted to individuals within a tribe. In some cases, a single allotment may be divided throughout generations among a large number of tribal members. Each tribe or Nation is independent and relations with PPQ are on a Nation-to-Nation basis.

### Obtain *APHIS Aerial Application Prospectus* and Chemical Contracts Information

Contact the Minneapolis Business Site to obtain the most recent *APHIS Aerial Application Prospectus* and chemical contracts information as listed below:

Contracts Specialist  
USDA-APHIS-MRPBS-ASD  
PO Box xx  
Minneapolis, MN 55436

### Select a Control Option

To select a control option, refer to the specific program manual.

### Gather Documents and Information

The following documents and information are needed to complete ***PPQ Form 136, Detailed Work Plan***, and ***Work Checklist (accompanies PPQ Form 136, Detailed Work Plan)***:

- ◆ *APHIS Aerial Application Prospectus*
- ◆ Control option
- ◆ Cooperative agreements
- ◆ Environmental documentation (completed)
- ◆ Letters of Request
- ◆ Memorandums of Understanding
- ◆ Map showing landownership
- ◆ Proof of cooperator cost on deposit (escrow account)

After all the above information has been collected (figures from past programs are also helpful), then prepare **PPQ Form 136, Detailed Work Plan** and a **Work Checklist (accompanies PPQ Form 136, Detailed Work Plan)**.

### **Prepare a Detailed Work Plan and Work Checklist**

As part of the planning process and as far in advance of the scheduled treatment as possible, prepare **PPQ Form 136, Detailed Work Plan**, (DWP), and **Work Checklist (accompanies PPQ Form 136, Detailed Work Plan)** for pretreatment planning. PPQ Form 136 **must** be prepared quickly and accurately.

The completed Detailed Work Plan contains a broad estimate of various costs and is sent to the Region Office for approval, pending funding. See **PPQ Form 136, Detailed Work Plan on page A-1-32**. The accompanying Work Checklist contains a broad estimate of various costs, and is a good aid to help ensure that all necessary activities are completed. See **Work Checklist (accompanies PPQ Form 136, Detailed Work Plan) on page A-1-37**.



# 2

Aerial Application  
Manual

# Program Planning

## *Program Maps*

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### Introduction

The ***Program Maps*** section of ***Program Planning*** provides information about the use of maps in planning for the program and how different maps will apply in day-to-day operations of the aerial application program,

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### Criteria for Selecting Program Maps

Maps are an essential tool for conducting an aerial application program, and are essential to the success of each program. Maps are frequently referred to and updated during each project. Accurate and up-to-date information must be recorded on each map used to help prevent potential problems that Program Managers (PM) and Contracting Officers Representatives (CORs) and routinely face.

In general, the size of the project will determine the scale of the map to use. Topographic maps, surface management maps, and other maps with similar detail are excellent maps to use for smaller block

treatment. Large area treatments require appropriate map scales to make each map easier to handle, depending on the location of where the map will be used.

Several types and scales of maps may be useful for the same project. Seven and one-half (7.5) minute maps provide excellent detail and information necessary for master program maps. Smaller scale maps are more appropriate for the pilot to use in an aircraft cockpit.

### **Map Scale**

Map scales are listed from smaller size blocks to larger size blocks. Program managers and CORs should select a map scale that is a compromise between the amount of detail required and convenience of use.

Commonly used map scales follow:

- ◆ 2-5/8 inch to the mile (1:24,000)
- ◆ 1 inch to the mile (1:62,500)
- ◆ 5/8 inch to the mile (1:100,000)
- ◆ 1/2 inch to the mile (1:125,000)
- ◆ 1/4 inch or less (State highway maps)

In addition, the following minute series maps are commonly used:

- ◆ 30 minute
- ◆ 15 minute
- ◆ 7.5 minute

### **Geographical Information Systems (GIS) Maps**

Programs with Geographical Information Systems (GIS) mapping capability have an advantage over those using traditional methods. With GPS, Program Managers can produce maps at any desired scale or zoom in on a particular section of the treatment area. Various data layers can also be added or omitted from the program map. Depending on availability for a particular area, data layers include county boundaries, section lines, ownership, land use, roads, and waterways.

GIS technology has been interfaced with Global Positioning System (GPS) aircraft guidance. Together, these systems can provide accurate records of aircraft flights, treated or nontreated areas, and other necessary program documentation. See [Aircraft Guidance on page 3-11-1](#).

## **Information to Record on the Master Program Map**

Determine the information to record on a each map by working with cooperators and experienced surveyors. Some standard information to identify in the treatment area is listed below.

### **Map Legend**

Record the following items on the treatment map:

- ◆ Contract number
- ◆ Contractor name
- ◆ Date started and finished
- ◆ Hazard areas
- ◆ Sensitive sites and exclusion areas
- ◆ Total acres treated (at completion)
- ◆ Total gallons sprayed

### **Hazard Areas**

When near or within the treatment area, the areas listed below are hazardous for aerial application:

- ◆ Airports (nearby)
- ◆ Bridges
- ◆ Bluffs
- ◆ Canyons
- ◆ Cliffs
- ◆ Mountains
- ◆ Other aircraft (potential for inside the treatment area)
- ◆ Power lines
- ◆ Tall buildings
- ◆ Telephone poles
- ◆ Towers (communications, electric, microwave, radio, water, etc.)
- ◆ Windmills

### **Landownership**

Within the treatment block, determine the following land and landownership and identify these areas on the map:

- ◆ Federal land
- ◆ Native American or Tribal land

- ◆ Private (rangeland, cropland, associated idle land)
- ◆ State land
- ◆ Trust lands

### **Sensitive Areas**

Request information about existing sensitive and restricted areas from cooperators, private, State, and Federal land managers, and Fish and Wildlife Services (FWS).

### **Buffer Zones**

Include appropriate mitigating buffer zones on the map around the following sites, as applicable:

- ◆ Areas identified by informal, field-level consultation
- ◆ Beehive locations and appropriate bee buffers
- ◆ Biological control release sites, insectary sites, experimental sites
- ◆ Bodies of water (e.g., lakes, ponds, small streams, rivers)
- ◆ Endangered and sensitive species buffers (as negotiated with Federal and State Fish and Wildlife Agencies, and land managers)
- ◆ Military areas
- ◆ Military training routes and areas
- ◆ Organically grown crops and livestock
- ◆ Populated areas (such as towns, villages, housing developments, colonies)
- ◆ Poultry farms
- ◆ Prearranged emergency jettison sites
- ◆ Private property that is **not** involved in the control program
- ◆ Prohibited areas
- ◆ Sacred Tribal areas
- ◆ Restricted areas
- ◆ Schools, parks, hospitals, and recreational areas
- ◆ Unregistered crops or animals
- ◆ Warning areas
- ◆ Wetlands

### Special Use Airspace Areas

Special use airspace confines certain flight activities and restricts entry, or cautions other aircraft about operating within specific boundaries. These areas are depicted on visual aeronautical charts and include prohibited areas, restricted areas, military operating areas, and military training routes. Be sure to record any special use airspace areas on the master program maps.

For information and assistance during program planning, contact Aircraft and Equipment Operations (AEO) listed below:

USDA-APHIS-PPQ  
Aircraft and Equipment Operations  
22675 N. Moorefield Road, Bldg. #6415  
Edinburg, TX 78541-9398

Phone: 956-580-7270  
FAX: 956-580-7276

### Treatment Boundaries

In the absence of, or in addition to global positioning system (GPS) coordinates and guidance equipment in the aircraft, use landmarks to mark boundaries of the treatment area (especially for aerial applications). If there are **no** landmarks at the boundaries of the treatment area, then indicate on the program map the flagged corners of the area.

Typical landmarks to indicate on maps are as follows:

- ◆ Brush patches
- ◆ Buildings (barns, sheds, windmills)
- ◆ Events (such as accidents, drift, etc.)
- ◆ Fence lines
- ◆ Fixed objects (fire breaks, pipelines)
- ◆ Highways
- ◆ Railroads
- ◆ Ridges, mountains, mesas, hills, and buttes
- ◆ Rivers
- ◆ Roads
- ◆ Standpipes
- ◆ Telephone and power lines
- ◆ Trees

---

## Distribution of the Master Program Map

Provide a master program map draft to each of the following cooperators:

- ◆ Airport manager
- ◆ Chairperson of rancher committee
- ◆ Federal cooperator
- ◆ Fire Department
- ◆ Private cooperator
- ◆ State cooperator
- ◆ Law Enforcement (Police Department, Sheriff's Department, etc.)

### Cooperator Review

Have all the cooperators review the master program map draft for accuracy of the drafted treatment boundaries. If corrections are received from the cooperators, then make the necessary adjustments and inform each cooperator. This should ensure that each cooperator has an accurate copy of the master program map.

### Program Manager and Contracting Officer's Representative

The Program Manager and Contracting Officer's Representative (COR) can adjust the treatment boundaries to provide a more flyable block. Immediately inform all cooperators when such an adjustment is made, so that the correct update can be made to each cooperator's copy of the master program map. Some program guidelines may require that all adjustments to treatment block boundaries be made before the environmental assessments can be finalized. Each cooperator may have to sign the final map, attesting to the map's accuracy.

Be sure to document in the Daily Log, the treatment block boundaries, and any changes made to master program maps and treatment boundaries. See [Program Logs on page 3-3-1](#).

### Pretreatment Reconnaissance Flight for Map Confirmation

Prior to distribution of the master program map and final program maps, take a pretreatment reconnaissance flight with the pilot(s) and confirm that everything is recorded on the master program maps. Each pilot **must** have a clear understanding of where the buffer zones, sensitive areas, and spray block boundaries of the treatment area are located. After the pretreatment reconnaissance flight is successfully completed, jointly sign and date the master program map.



Verify the spray block, sensitive areas, and buffer zones with the pilot(s).

### **Pilots**

Maps given to pilots can be at a scale of 1/4-inch or less to the mile, since larger maps are difficult to work with in the cockpit.

### **Aerial Contractor**

If the control program is being conducted by aerial application under APHIS contract, then provide copies of the master program map to the aerial contractor.

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## **Updates to Other Program Maps**

In addition to the master program maps, the Program Manager (PM) and Contracting Officer's Representative (COR) should advise all other persons who have draft maps of any changes. These changes should immediately be noted on the program maps to ensure program map accuracy. See [Program Updates on page 4-2-19](#).





# 2

Aerial Application  
Manual

## Program Planning

### *Aircraft Selection and Aircraft Facilities*

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#### Introduction

The **Aircraft Selection and Aircraft Facilities** section of **Program Planning** provides information about aircraft categories, assigned swath spacing for pesticides, aircraft performance by categories, and aircraft, airport, and airstrip sizes to help in the selection of aircraft and facilities for a particular aerial application program.

## Aircraft Selection

To facilitate the planning of PPQ programs, aircraft have been divided into categories based on size, speed, capacity, and expected performance.

When selecting aircraft for a specific aerial application program, consider the following:

- ◆ Aircraft size
  - ❖ Small aircraft may be more appropriate on blocks that are less than 2 or 3 miles (3 to 5 kilometers); operating fast aircraft on blocks that are less than 2 or 3 miles is impractical
  - ❖ Large, high-capacity aircraft may be more appropriate for long ferry distances or larger treatment blocks; using small aircraft when the number of aircraft required for treatment or long ferry distances would congest the airstrip is impractical
- ◆ Available airstrips
- ◆ Ferry distances
- ◆ Individual block size
- ◆ Number of personnel available to properly manage the operation
- ◆ Terrain type
- ◆ Time allotted for completion
- ◆ Total area to be treated

### Aircraft Categories and Assigned Swath Spacing

Aircraft categories have been established to facilitate program planning for desired aircraft based on the pest's or insect's life cycle, timing of application, support personnel, adequate airport space, required aircraft performance, length and strength of runways, taxiways and ramps, and the elevation and type of terrain to be treated.

#### EXAMPLE

The Douglas DC-3 has an assigned swath of 300 feet for water mixtures (such as Bt formulations for gypsy moth eradication). Program managers using this aircraft and formulation for gypsy moth eradication have reduced the swath to 225 feet, and 200 feet is now recommended by many State agencies. The wider swath width shown in [Table 2-4-1](#) would still be appropriate for other pest programs such as grasshopper.

The chart in [Figure 2-4-1](#) lists aircraft by category with the assigned swath spacing for Malathion, oil and water mixtures, and the spray tip size required for the pesticide being used.

The swath spacings were determined from past experience or past performance and should be the maximum allowed. If there is reason to believe the swath is **not** as wide as shown, or may **not** provide uniform coverage, or may **not** be acceptable for other reasons, then provision is made for swath checking to redefine the operational swath width.

Before changing specifications outlined in **Figure 2-4-1**, consult Aircraft and Equipment Operations (AEO) as listed below:

USDA-APHIS-PPQ  
Aircraft and Equipment Operations  
22675 N. Moorefield Road, Bldg. 6415  
Edinburg, TX 78541-9398  
Phone: 956-580-7270  
FAX: 956-580-7276

## Aircraft Performance Category, Assigned Swath Spacing, and Spray Tip Size

AIRCRAFT Category	Malathion	Sevin XLR Plus	Dimilin 2L	Malathion	Sevin XLR Plus	Dimilin 2L
	Feet	Feet	Feet	Tip Size	Tip Size	Tip Size
<b>Category C–Fixed Wing</b>						
Ag-Cat (800 hp)	150	120	120	8003	8004	8004
Ag-Cat (1200 hp)	150	120	120	8004	8006	8006
Dromader M-18	150	120	120	8004	8006	8006
Piper Aztec PA-23 (500 hp)	150	120	120	8004	8006	8006
Thrush (800 hp)	150	120	120	8003	8004	8004
Thrush (1200 hp)	150	120	120	8004	8006	8006
Turbine Ag-Cat	150	120	120	8004	8006	8006
Turbine Air Tractor	150	120	120	8004	8006	8006
Turbine Thrush	150	120	120	8004	8006	8006
Twin Beech C-45	150	120	120	8004	8006	8006
<b>Category D–Fixed Wing</b>						
Ag-Cat (A & B Models, 450 hp)	100	75	75	8002	8003	8003
Ag-Cat (B & C Models, 600 hp)	125	100	100	8002	8003	8003
Bellanca Eagle	100	75	75	8002	8003	8003
Cessna (all 188 Models)	100	75	75	8002	8003	8003
Piper Brave	100	75	75	8002	8003	8003
Piper Pawnee (235-260 hp)	100	75	75	8002	8003	8003
Stearman (450-600 hp)	100	75	75	8002	8003	8003
Thrush/Snow/Air Tractor	125	100	100	8002	8003	8003
Weatherly	100	75	75	8002	8003	8003
<b>Category A–Helicopters</b>						
Bell 204/205/212/214	150	120	120			
Sikorsky S-58-T	150	120	120			
<b>Category B–Helicopters</b>						
Aloutte III	120	100	100			
<b>Category C–Helicopters</b>						
Aloutette II	100	75	75			
Bell 206	100	75	75			
Bell Selyo	100	75	75			
Hiller Selyo	100	75	75			
Hughes 500	100	75	75			
<b>Category D–Helicopters</b>						
Bell 47	100	75	75			
Hiller 12E	100	75	75			

**FIGURE 2-4-1 List of Aircraft by Category and Assigned Swath Spacing and Spray Tip Size**

## Number of Aircraft Required

Use the information in this section as a guide for program planning purposes **only**, since the data presented are averages and may vary due to rounding. These figures assume that the blocks can be treated solid, are of a size best suited to the category of aircraft selected, and the aircraft can treat in both directions. Pesticide volume and area figures range from the least productive to the most productive of the most commonly-used aircraft within each category.

The [Worksheet to Determine the Number of Aircraft Needed for a Program](#) on **page A-1-12** is useful to determine the number of aircraft needed to complete a project, based on the size of the treatment block and the number of days available to finish the treatment.

To determine the number of hours per trip, see the formula in **Figure 2-4-2** below. See the **Hrs per trip** and **Avg acres per hour** columns in **Figure 2-4-3**, **Figure 2-4-4**, **Figure 2-4-5**, and **Figure 2-4-6** and use these figures in the worksheet calculations.

1. Determine the minutes required one way.  
 $\text{Average load/Gallons per minute} = \text{Minutes required one way}$
2. Determine the number of minutes per trip.  
 $\text{Minutes required one way} \times \text{Number of ferrying/turn arounds} = \text{No. minutes per trip}$
3. Determine the number of hours per trip.  
 $\text{No. minutes per trip}/60 \text{ minutes} = \text{No. hours per trip}$

**FIGURE 2-4-2 Formula to Calculate Hours Per Trip**

**EXAMPLE** The turbine Thrush aircraft will hold an average load of 250 gallons. Two-hundred fifty (250) gallons divided by 2.56 gallons per minute = 98 minutes. 98 minutes times 2 allows for ferrying and turn arounds) = 196 minutes per trip. 196 minutes per trip divided by 60 = 3.26 hrs. per trip.



The following tables have been developed for an 8.0 fluid ounce per acre application rate of an oil base pesticide. You will need to make adjustments to the table for different application rates and water formulations.

The information in the **Hrs per trip** and the **Avg acres per hour** columns have been adjusted in **Figure 2-4-3**, **Figure 2-4-4**, **Figure 2-4-5**, and **Figure 2-4-6**. Numbers listed in these columns include the time required for ferrying to and from the airport and aircraft

## Aircraft Performance by Category

Aircraft Category A	Speed MPH	Swath feet	Acres per minute	Gal per minute	Avg load gallons	Acres per load	Hrs per trip	Avg acres per Hour
Douglas DC-4	180	550	200.00	12.50	1,200	19,200	3.20	6,000
Douglas DC-6	220	550	244.44	15.28	1,500	24,000	3.27	7,333
Douglas DC-7B	230	650	302.02	18.88	2,000	32,000	3.53	9,061
Douglas DC-7C	230	650	302.02	18.88	2,000	32,000	3.53	9,061
Fairchild C-119	180	500	181.82	11.36	1,200	19,700	3.52	5,455
L100-30 Hercules (w/Adds Pack Spraying System)	161	800	260.20	16.26	2,000	32,000	4.10	7,806
AVERAGES	194	610	237.70	14.86	1,580	25,280	3.52	7,131

**FIGURE 2-4-3 Aircraft Performance for Category A Aircraft**

Aircraft Category B	Speed MPH	Swath feet	Acres per minute	Gal per minute	Avg load gallons	Acres per load	Hrs per trip	Avg acres per Hour
Curtiss C-46	170	500	171.72	10.73	1,000	16,000	3.11	5,152
Douglas B-26	210	400	169.70	10.61	1,000	16,000	3.14	5,091
Douglas DC-3	160	400	129.29	8.06	700	11,200	2.89	3,879
Douglas DC-C47	160	400	129.29	8.06	700	11,200	2.89	3,879
Lockheed PV-2	190	400	153.54	9.60	850	13,600	2.95	4,606
Martin 404	210	500	212.12	13.26	1,000	16,000	2.51	6,364
AVERAGES	188	440	167.27	10.45	910	14,560	2.92	5,018

**FIGURE 2-4-4 Aircraft Performance for Category B Aircraft**

Aircraft Category C	Speed MPH	Swath feet	Acres per minute	Gal per Minute	Avg load Gallons	Acres per Load	Hrs per Trip	Avg Acres per Hour
Ag-Cat (800 hp)	120	150	36.36	2.27	150	2,400	2.20	1,091
Ag-Cat (1200 hp)	130	150	39.39	2.46	200	3,200	2.71	1,182
Dromader M-18	130	150	39.39	2.46	150	2,400	2.03	1,182
Piper Aztec PA-23 (500 hp)	140	150	42.42	2.65	200	3,200	2.51	1,273
Thrush (800 hp)	150	150	45.45	2.84	250	4,000	2.93	1,364
Thrush (1200 hp)	125	150	37.88	2.37	250	4,000	3.52	1,227
Turbine Ag-Cat	150	150	45.45	2.84	100	1,600	1.17	1,455
Turbine Air Tractor	135	150	40.91	2.56	250	4,000	3.26	1,227
Turbine Thrush	160	150	48.48	3.03	300	4,800	3.30	1,455
AVERAGES	138	150	41.75	2.61	206	3,289	2.63	1,253

**FIGURE 2-4-5 Aircraft Performance for Category C Aircraft**

Aircraft Category D	Speed MPH	Swath Feet	Acres per minute	Gal per Minute	Avg load Gallons	Acres per Load	Hrs per Trip	Avg Acres per Hour
Ag-Cat A Model - 450 hp	90	100	18.18	1.14	50	800	1.47	545
Ag-Cat - 600 hp Model B & C	115	125	29.04	1.82	130	2080	2.39	871
Air Tractor - 60 hp	130	125	32.83	2.05	175	2800	2.84	985
Bellanca Eagle - 300 hp	100	100	20.20	1.26	100	1600	2.64	606
Cessna - all 188 models	120	100	24.24	1.52	110	1760	2.42	727
Piper Brave - 300 hp	110	100	22.22	1.39	110	1760	2.64	667
Piper Pawnee - 230-260 hp	100	100	20.20	1.26	90	1440	2.38	606
Stearman - 450 hp	100	100	20.20	1.26	40	640	1.06	606
Thrush - Snow - 600 hp	120	125	30.30	1.89	150	2400	2.64	909
Weatherly Model 620 - 450 hp	105	100	21.21	1.33	110	1760	2.77	636
Weatherly - 620A & 620B	120	100	24.24	1.52	110	1760	2.42	727
AVERAGES	110	105	23.90	1.49	107	1709	2.33	717

FIGURE 2-4-6 Aircraft Performance for Category D Aircraft

### Number of Aircraft Alternate Calculation

Another way of calculating the number of aircraft required for 16 ounces per acre or 8 ounces per acres applications is to use a rule of thumb. See Figure 2-4-7 below.

- ◆ One load per day for Categories A and B
- ◆ Two loads per day for Categories C and D

FIGURE 2-4-7 Rule of Thumb Formula for Number of Aircraft Required

### Adjustments for Special Conditions

Aircraft will **not** treat as much per week under the following conditions and adjustments should be made accordingly:

- ◆ Application rates and ferry distances are greater than those shown
- ◆ Block contains sizable areas that are **not** to be treated (exclusion areas)
- ◆ Loads **must** be lifted to higher elevations
- ◆ Rain or wind (weather conditions) may be encountered during the program (a rainy and windy season may reduce the flyable hours considerably)
- ◆ Rugged terrain (requires additional maneuvering or one-way application flights)

Aircraft may treat more per week under the following condition and adjustments should be made accordingly:

- ◆ Mid-summer weather (may provide somewhat longer flyable hours than those shown)

---

## Requests for Aircraft

Prior to submitting a request to the Minneapolis Business Site (MBS) for application or observation aircraft, individuals should consult with and submit their proposal for review to the Director, Aircraft and Equipment Operations (AEO), at the following address:

Director, Aircraft and Equipment Operations  
USDA-APHIS-PPQ  
22675 N. Moorefield Road, Bldg. #6415  
Edinburg, TX 78541-9398  
Phone: 956-580-7270  
FAX: 956-580-7276

MRPBS Contracting requires that potential aerial applicators wishing to bid on a contract be pre-approved and on the list. Contact MRPBS to identify this process and obtain the proper application form. MRPBS has a site-specific information sheet that must be completed with information specific to the requested contract.

USDA-APHS-MRBS-MBS  
xx  
Minneapolis, MN xx

### Application Aircraft

Requests for aircraft should be made by specifying the minimum number of aircraft required in a given category. If necessary to limit the total number of aircraft that can be used due to a lack of personnel, a crowded airstrip, or other reasons, then the request for aircraft may be stated as a minimum of X and a maximum of X category XX aircraft. If more than one category of aircraft is acceptable, then the request may be stated as a minimum of X and a maximum of X category XX or XXX aircraft.

**EXAMPLE** A minimum of 4 and a maximum of 5 Category A aircraft.

A minimum of 3 and a maximum of 2 Category A or B aircraft.

If due to limited guidance or monitoring capability, operating two or more aircraft of the same category in formation is necessary, then request matched aircraft. The request should be specific, (i.e., matched pairs, matched triplets, all matched within a given Category, etc.). If there is **no** need for formation flying, then **do not** request matched aircraft, since this could unnecessarily increase the contractor's expenses.



When the area to be treated contains rough and rugged terrain, and is at high elevations, then include a statement in the bid solicitation with the approximate percentage of such terrain.

### Observation Aircraft

If use of four-place observation aircraft is required, then include four-place observation aircraft in the bid contract. Such aircraft is valuable for showing contract pilots the boundaries of the blocks assigned, and for transportation of a PPQ employee for aerial observation of the operation. A portable PPQ radio should be installed in the observation aircraft for communication with ground personnel.

Observation aircraft with a minimum speed of 160 mph (139 knots) should be specified for use with Category A and Category B aircraft; 150 mph for Category C aircraft; and 130 mph for Category D aircraft and helicopters.

A record of the number of hours the observation aircraft is flown at the request of the Government representative **must** be maintained on *PPQ Form 802, Daily Aircraft Record*. (See [PPQ Form 802, Daily Aircraft Record](#) on **page A-1-45** for detailed instructions.) The Government pays an hourly rate for each hour flown for official business. Most aircraft have recording tachometers or flight recorders that show operation time in hours and tenths. If the observation aircraft is **not** so equipped, then record the time of takeoff and the time of landing on PPQ Form 802.

---

## Aircraft Facilities

### Airports and Airstrips

Airports or airstrips **must** be of adequate size to handle the aircraft that may be used for the program. Hard-surfaced runways are desirable when large multi-engine aircraft are used. The contractor **must** complete all arrangements necessary to use any airport.

Although the contractor **must** arrange for the use of any airport, the Program Manager (PM) or Contracting Officer's Representative (COR) may obtain the following information to assist in your planning:

- ◆ Is the airport or airstrip available for use by a commercial aerial applicator?
- ◆ Will there be a charge for use of the airport or airstrip? If so, how much?
- ◆ Are there load limitations? (especially important on hard-surfaced airport runways)

- ◆ Is there a traffic control tower at the airport? If so, are radios required in agricultural aircraft?
- ◆ Can aircraft be loaded near the takeoff runway to avoid excessive taxiing?
- ◆ Is there adequate space and security for pesticide storage?
- ◆ Is the storage area readily accessible to delivery trucks?
- ◆ Is other airport traffic such that there may be delays in landings and takeoffs at the time aerial applications are normally performed?
- ◆ Is aviation fuel available?
- ◆ Is there other pertinent information?

### Minimum Airstrip Sizes

The airstrip lengths shown in **Figure 2-4-8** are for runways with clear approaches and average sod conditions at an elevation of approximately 4,000 feet above sea level. At higher elevations or when fields are soft, longer airstrips will be required. Hard-surfaced runways at lower elevations may be somewhat shorter.

Aircraft Category	Minimum Airstrip Length	Minimum Airstrip Width
Category A	7,000 feet	125 feet
Category B	5,000 feet	100 feet
Category C	3,000 feet	75 feet
Category D	3,000 feet	75 feet
All Others	3,000 feet	75 feet

**FIGURE 2-4-8 Suggested Minimum Airstrip Sizes for Aircraft Categories**

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## Program Planning

### *Contract Preparation*

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#### Introduction

The *Contract Preparation* section of **Program Planning** provides procedures for completing a data sheet and requesting an aerial application contract, and an overview of the aerial application solicitation and contract approval process.

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#### Aerial Program Description Data Sheet

An important component of the aerial application solicitation and contract award process is the *Aerial Program Description Data Sheet*. The *Description Data Sheet* is primarily used to request aerial contracts. Some contracts may be full-service with the contractor supplying the pesticide and providing storage facilities, application aircraft, and, if necessary, observation aircraft.

The *Description Data Sheet* contains site-specific information that is collected by the Program Manager and Contracting Officer's Representative (COR). See [Aerial Program Description Data Sheet on page A-1-3](#) for an example and instructions.

## APHIS Aerial Application Prospectus

The *APHIS Aerial Application Prospectus* is used to complete the *Description Data Sheet*. The prospectus pre-establishes terms and conditions for aerial application of pesticides in support of the aerial spray program (usually grasshoppers and Mormon crickets).

---

## Essential Contract Information

Consider and determine whether the following essential items (details follow) should be included in the solicitation and contract:

- ◆ Guidance type
- ◆ Pesticide container type
- ◆ PPQ Pilot's authority (if any)
- ◆ Rough or rugged terrain, sensitive areas, water, and buffer zones
- ◆ State certification
- ◆ Tribal certification
- ◆ Weight factor
- ◆ Additional information

List any essential items under the appropriate statement on the *Description Data Sheet* (see **Table A-1-12 on page A-1-52**).

## Aircraft Category

To determine the number of aircraft that will be required to support the treatment program, consider following:

- ◆ Airport restrictions
- ◆ Altitude requirement
- ◆ Ferry distance
- ◆ Number of acres the aircraft can treat per minute or hour
- ◆ Number of operational hours allowed to complete the contract (some aircraft operate faster than others)
- ◆ Speed of aircraft
- ◆ Swath width of aircraft
- ◆ If treating or flying over rugged terrain, consider turbine-powered aircraft
- ◆ If treating or flying over flat terrain, turbine-powered and other types are acceptable

On the Description Data Sheet, enter in *Block 6a*, the aircraft category and quantity of aircraft required.

If requesting more than one aircraft for the project and you want the aircraft to fly together at the same speed and at the same swath width following straight flight lines, then check the *Matched YES* block. If you **do not** want matched aircraft, then check the *Matched NO* block.

## Observation Aircraft

To determine if an observation aircraft is required, see [Observation Aircraft on page 2-4-9](#). If use of four-place observation aircraft is required, then check *Block 6b, Observation YES* on the *Description Data Sheet*, and list the minimum speed.

To determine the number of four-place observation aircraft needed with a designated minimum speed, see [Table 2-5-1](#).

Application Aircraft	Observation Aircraft Minimum Speed
Category A	160 miles per hour
Category B	160 miles per hour
Category C	150 miles per hour
Category D	130 miles per hour
Helicopter	130 miles per hour

**FIGURE 2-5-1 Designated Speed for Four-place Observation Aircraft**

If use of four-place observation aircraft is **not** required, then check the *6b, Observation NO* block, and include a statement in *Block 22, Additional Observation*, that observation aircraft are **not** required.

## Guidance Type

Review the completed [PPQ Form 136, Detailed Work Plan](#), to determine the type guidance system that will be used (electronic DGPS, flagging (flags, lights, mirrors), or Kytoon). Determine who will furnish each system required. On the *Description Data Sheet*, enter the type in *Block 14, Guidance*.

If the equipment is to be furnished by the contractor, then check *Block 14, Furnished by contractor, YES*.

If the equipment is **not** to be furnished by the contractor, then check *Block 14, Furnished by contractor, NO*.

Determine who (contractor, Federal, or State personnel) will be responsible for providing the guidance to navigate pilot(s) during application if pilot(s) are **not** prepared. Include a statement under *Block 14* or *Block 22, Additional Remarks* of the *Description Data Sheet*.

### Pesticide Container Type

Based on the quantity of pesticides needed for the program, determine the type of container or unit in which the pesticide will be delivered. If the total area to be treated is huge and requires a huge quantity of pesticide, then order the pesticide or insecticide in bulk. If the total area to be treated is small, then order by barrel, box, or bag (select one). See [Pesticides and Pesticide Storage on page 2-8-1](#). Enter in *Block 5, Pesticide Will Be Delivered In*, the type container (bags, barrels, boxes, or bulk) in which the pesticide will be delivered. If the contract is for full-service, then the contractor generally is responsible for the type of container.

### PPQ Pilots' Authority

If the PPQ pilots are to have specific authority for any of the following, then enter the applicable statement in *Block 22*:

- ◆ Establish or verify the working swath for each aircraft
- ◆ Determine RAATs interval
- ◆ Ground any aircraft or pilot for cause
- ◆ Reject any pilot who **does not** meet contract requirements
- ◆ Withhold any aircraft from operation until the aircraft complies with contract specifications

### Rugged Terrain, Sensitive Areas, Water, and Buffer Zones



If the area to be treated contains rough and rugged terrain (particularly at high elevations), then be sure to include a statement on the Data Description Sheet and include the approximate percentage of such terrain in *Block 21*.

Review the program map, consult with land managers, and estimate the percentages of rough terrain, sensitive areas, water, and buffer zones in the treatment area. Enter in *Block 21*, the percentage for each.



If the terrain is rough or rugged, the area is remote, or the treatment block(s) elevation is high, then specify the need for an experienced mountain pilot.

Include any unique or site-specific information in *Block 22, Additional information*.

### State Certification and Tribal Certification

Consult State pesticide regulatory cooperators and the respective Tribal representative to determine the number of days required to obtain State or Tribal certification, if applicable. This information is required for potential out-of-State bidders. Enter in *Block 13*, the number of days required.

### Weight Factor

The technical qualifications (including performance history) of the contractor should be considered along with the price bid (i.e., low bid) to effectively award a contract. According to the annual *APHIS Aerial Application Prospectus*, the weight factor may range from 20:80 (20 percent technical proposal and 80 percent price proposal) for standard jobs, up to 60:40 (60 percent technical proposal and 40 percent price proposal) for very sensitive jobs.

#### EXAMPLE

A standard job has no environmental concerns (such as **no** sensitive areas within the treatment area and/or **no** extensive flagging around buffer zones).

A very sensitive area would have environmental concerns (sensitive areas in the treatment area and/or extensive flagging around buffer zones).

Based on the environmental sensitivity of the treatment program, place a percentage of importance for technical qualifications and a percentage of importance for price to be used as weight factors in evaluating bids for the contract. Enter in *Block 20, Weight factor for evaluation*, the weight percentage to be considered for the technical proposal, and the weight percentage to be considered for the for price proposal.

### Additional Information

List in *Block 22*, any additional, site-specific, or unique information to be considered for the solicitation. If PPQ Pilot(s) are to have any specific authority, then be sure to include this in *Block 22*. Be sure to include the RAAT's percent skip; reminders from the prospectus; and the complete formulation of chemical, including water and/or oil.

#### EXAMPLE

PPQ pilot(s) are to have specific authority for the following:

- ◆ Establish or verify the working swath for each aircraft
- ◆ Ground any aircraft or pilot for cause
- ◆ Reject any pilot who **does not** meet contract requirements
- ◆ Withhold any aircraft from operation until the aircraft complies with contract specifications

**EXAMPLE**

Use of alternate landing strip is available and use of nurse tanks is acceptable.

PPQ will supply and require the use of a boom timer.

---

## Contract Preparation and Approval Process

The contract approval process is as follows:

1. Obtain a copy of the current *APHIS Aerial Application Prospectus*. Make sure you have the most recent edition, as this changes annually.
2. Complete the *Aerial Program Description Data Sheet* (contract preparation). See the annual *APHIS Aerial Application Prospectus* for the information to record on the *Aerial Program Description Data Sheet (DDS)*. See [Aerial Program Description Data Sheet on page A-1-3](#) for instructions on completing the sheet.
3. Complete the **PPQ Form 136, Detailed Work Plan** (DWP), and FAX the DWP to the Regional Program Coordinator for approval.

**EXAMPLE**

If the treatment is for grasshopper control, then FAX the sheet to the Regional Grasshopper Program Coordinator.

4. The Regional Office will have Aircraft and Equipment Operations either complete these items as the primary contact or simply act in an advisory role to ensure the field is completing the forms accurately.
5. The Regional Office will notify Aircraft and Equipment Operations and a MBS-Mpls after the information on the *Aerial Program Description Data Sheet* is approved by the Regional Program Coordinator. The **Aerial Program Description Data Sheet** is sent **only** to MRPBS for initiation of the contract.
6. The Regional Office will complete an *AD-700, Procurement Request*, and **must** include the accounting classification and the amount of funding available for the contract, and be signed by a regional employee with the authority to authorize funding.
7. The Regional Office will mail under separate cover, the original **Aerial Program Description Data Sheet** and the original AD-700.
8. The Regional Office will FAX the **Aerial Program Description Data Sheet**, and an *AD-700, Procurement Request*, to the MBS-Mpls Contracting Team.



- 9.** The Contracting Team will assemble the following information:
  - ❖ List of pre-approved aerial contractors for the State in which the service is required
  - ❖ Number and type of aircraft required
  - ❖ Liquid or bait applications
- 10.** The MBS Contracting Team will incorporate the information from the *Aerial Program Description Data Sheet* into a solicitation and upload to Web site [www.FedBizOpps.gov](http://www.FedBizOpps.gov) within 24 hours from the time the AD700 is received by MBS-Mpls.
- 11.** The MBS Contracting Officer (CO) will discuss award recommendations with the program personnel prior to awarding the contract.



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## Program Planning

### *Congested Area Approval*

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#### Introduction

The ***Congested Area Approval*** section of ***Program Planning*** provides the procedures for requesting and obtaining permission for aerial application treatment over congested areas.

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#### Aerial Application Over Congested Areas

Determine if the treatment area includes congested areas (see xx). If the aerial application will be conducted over any congested area, such as a city, housing development, town, village, etc. then notice of intended operation **must** be given to the public through all news media.

#### **Request Approval for Treatment Over Congested Areas**

A request for the treatment and a congested area plan of action **must** be submitted to the appropriate authorities (local officials and the Federal Aviation Administration, Flight Standards District Office (FAA-FSDO)). A congested area waiver is required to be obtained prior to the start of the application program.

Follow the procedures listed below to request and obtain approval:

1. Request written approval for aerial application of the treatment area from local authorities of the city, town, village, etc. Approval **must** be obtained from the appropriate officials in the area for which the operations are to be conducted prior to submitting the request to the FAA, FSDO. See **Figure 2-6-2, City Letter of Approval for Congested Area Plan of Operation**, on page 2-6-4.

2. After written approval from local authorities for the congested area aerial treatment has been received, then prepare a plan of operation for each complete operation. Submit the plan of operation along with a written request for approval, and send to the appropriate personnel at the Federal Aviation Administration District Office (FAA-DO) that has jurisdiction over the area where the operation is to be conducted. See **Figure 2-6-3, Letter of Request to FAA-FSDO for Approval of Congested Area Plan of Operation**, on page 2-6-5; **Figure 2-6-1, Example of Congested Area Plan of Operation**, on page 2-6-3.
3. Once the appropriate FAA-FSDO office approves the plan, you will receive a letter confirming the approval and a stamped approved copy of the plan of operation. See **Figure 2-6-4, FAA Letter of Approval for Congested Area Plan of Operation**, on page 2-6-6; and **Figure 2-6-5, Example of FAA FSDO Approved Congested Area Plan of Operation**, on page 2-6-7.
4. Maintain copies of the letters and approved plan of operation; they will be needed during the pilot and aircraft inspection, and to complete PPQ Form 816.  
See [Pilot and Aircraft Inspection on page 3-12-1](#); and [PPQ Form 816, Contract Pilot and Aircraft Acceptance on page A-1-50](#).

## Congested Area Plan of Operation

### CONGESTED AREA PLAN OF OPERATION

In the interest of the public health, welfare and safety, the United States Department of Agriculture (USDA) , in cooperation with the Iowa Department of Agriculture has plans to aerially apply a formulation consisting of Hercon Environmental Gypsy Moth Mating Disruption Flakes ( Disrupt II) and Loveland Industries LI - 108 carrier to a 224 acre tract located in McGregor Heights within Clayton County Iowa to control the Gypsy Moth population within the area as depicted in Attachment #1. The Disrupt II formulation will be applied at the rate of 30.4 grams per acre flakes in a total formulation of 4 oz per acre.

The USDA Animal and Plant Health Inspection Service (APHIS) , Plant Protection and Quarantine (PPQ) , Aircraft and Equipment Operations (AEO) , will make the application of the Disrupt II formulation using an agency owned Cessna U206 (N72306) aircraft certificated in the restricted category . The exact date of the application is dependent on the life cycle development of the insect, however the projected dates of application are June 28 - June 29, 1999.

Both the pilots and aircraft are in compliance with FAR 137.53 for operations over congested areas.

The base of operation will be the Prairie Du Chien , Wisconsin airport or the Monona, Iowa airport.

The USDA APHIS PPQ AEO has determined that the operation can be conducted in accordance with FAR 137.

Written approval has been obtained from the appropriate official/officials of the governing bodies of the political subdivisions over which the operations will be conducted. As required by the City of McGregor, a temporary NOTAM will be issued through the Fort Dodge FSS.(Attachment #2)

Notice of the intended operation was given to the public by means of publication in local and statewide newspapers and local radio stations and mailings to local residents. A public meeting was held on June 3, 1999 with the result that there was no opposition to the treatment. As stated in the press release, a 24 hour notice will be given if changes are made in the treatment date.(Attachment #3)

There does not appear to be any hazardous obstructions however, a reconnaissance flight of the operational area will be conducted prior to the actual application to determine if there are any obscured obstructions and a safe ingress and egress during actual application. Application height will be between 25' and 40' above the canopy.

In the event of an inflight engine failure, the pilot will steer the aircraft away from any persons, vehicles and structures.

**FIGURE 2-6-1 Example of Congested Area Plan of Operation**

## City Letter of Approval for Aerial Application Treatment

# City Of Marquette

88 North Street, P.O. Box 7, Marquette, Iowa 52158  
Telephone: 319-873-3735 Fax 319-873-2122

June 3, 1999

Mr. Tom Hyde  
USDA - APHIS - PPQ  
Aircraft and Equipment Operations  
Moore Air Base - Bldg. #6415  
Mission, TX 78572

RE: Gypsy Moths Treatment in McGregor & Marquette, Iowa

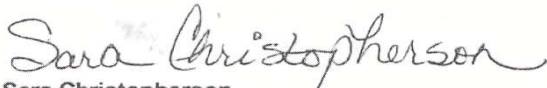
Dear Mr. Hyde:

I am writing you concerning the treatment for gypsy moths which is proposed for the McGregor Heights area of the cities of McGregor and Marquette, Iowa. The Iowa Department of Agriculture and Land Stewardship in conjunction with the US Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine Service propose to conduct a treatment using pheromone flakes in the area north of the City of McGregor and south of the City of Marquette known as McGregor Heights. There is a portion of the treatment area in each of the cities. The treatment will be done either the week of June 13 or June 21, 1999. The treatment is necessary, because a population of the gypsy moth has been detected in the McGregor Heights area. The treatment will eradicate the insect before population levels of the insect become high enough such that larval defoliation of trees leads to tree mortality in the McGregor Heights area. I understand that the treatment area is to be approximately 244 acres.

I further understand that the airplane which will do the treatment for gypsy moths will be flying over the McGregor Heights area and over adjacent areas of the cities of Marquette and McGregor.

The City of Marquette hereby gives its approval and permission for the aircraft owned by the USDA and piloted by a USDA pilot to fly over the City of Marquette during the conductance of the planned gypsy moth treatment.

Sincerely,



Sara Christopherson  
City Clerk/Treasurer

cc: Marquette Council  
John Haanstad, Ph.D.

FIGURE 2-6-2 City Letter of Approval for Congested Area Plan of Operation

## Letter of Request to FAA-FSDO for Congested Area Plan of Operation Approval



United States  
Department of  
Agriculture

Animal and  
Plant Health  
Inspection  
Service

Plant Protection  
and Quarantine

Aircraft and Equipment Operations  
Route 3, Box 1001  
Edinburg, TX 78539

Subject: Congested Area Plan of Operation

Date: June 11, 1999

To: Mr. Terry Warren  
Des Moines Flight Standards District Office  
3021 Army Post Road  
Des Moines, Iowa 50321

The United States Department of Agriculture, Animal Plant Health Inspection Service, Plant Protection and Quarantine, Aircraft and Equipment Operations, request the approval of the enclosed "Plan of Operation" to aerially apply a Gypsy Moth Mating Disruption formulation (Disrupt II) to a 224-acre tract of land located in Clayton County, McGregor Heights, Iowa.

Your early consideration and approval is requested so that the projected treatment date of June 28-29, 1999, can be met.

If any additional information is needed, please contact this office at Area Code (956) 580-7270.

A handwritten signature in black ink, appearing to read "Timothy J. Roland".

Timothy J. Roland, Director  
Aircraft and Equipment Operations  
Invasive Species and Pest Management  
Plant Protection and Quarantine

- Enclosures:
1. Congested Area Plan of Operation
  2. Maps of Treatment Area
  3. Written Approvals from Political Subdivisions
  4. Printed Public Notice of the Operation
  5. Agricultural Operating Certificate

cc:

Thomas C. Hyde, PPQ, AEO, Mission, TX w/o Enclosures  
Winfred McLane, PPQ, OPPC, Otis ANGB, MA w/o Enclosures  
Robert Meinders, SPHD, Des Moines, IA w/o Enclosures  
John Haanstad, Statesman, Des Moines, IA w/o Enclosures

**FIGURE 2-6-3 Letter of Request to FAA-FSDO for Approval of Congested Area Plan of Operation**



## FAA Letter of Approval for Congested Area Plan of Operation



U.S. Department  
of Transportation

**Federal Aviation  
Administration**

Flight Standards District Office  
3021 Army Post Rd.  
Des Moines, Iowa 50321

June 14, 1999

Mr. Timothy J. Roland  
USDA PPQ  
Aircraft and Equipment Operation  
Route 3, Box 1001  
Edinburg, TX 78539

Dear Mr. Roland:

The congested area plan for agricultural aircraft operations, which you submitted on June 11, 1999, is approved with the following provisions:

Plan is valid: June 26-30, 1999

Boundaries of the congested area as follows: 224 acre tract of land in McGregor Heights, Iowa.

Plan is valid until signed agreement with appropriate officials of the political subdivision expires.

Approved category and class of aircraft to be used: Airplane-Single Engine

Plan is limited to following weather conditions: VFR

Expiration date for this approval: June 30, 1999

Sincerely,

A handwritten signature in cursive script that reads "Larry D. Young".

Larry D. Young  
Supervisory Aviation Safety Inspector  
(Operations)

**FIGURE 2-6-4 FAA Letter of Approval for Congested Area Plan of Operation**



## FAA-FSDO Stamped Approved Congested Area Plan of Operation

### CONGESTED AREA PLAN OF OPERATION

In the interest of the public health, welfare and safety, the United States Department of Agriculture (USDA) , in cooperation with the Iowa Department of Agriculture has plans to aerially apply a formulation consisting of Hercon Environmental Gypsy Moth Mating Disruption Flakes ( Disrupt II) and Loveland Industries LI - 108 carrier to a 224 acre tract located in McGregor Heights within Clayton County Iowa to control the Gypsy Moth population within the area as depicted in Attachment #1. The Disrupt II formulation will be applied at the rate of 30.4 grams per acre flakes in a total formulation of 4 oz per acre.

The USDA Animal and Plant Health Inspection Service (APHIS) , Plant Protection and Quarantine (PPQ) , Aircraft and Equipment Operations (AEO) , will make the application of the Disrupt II formulation using an agency owned Cessna U206 (N72306) aircraft certificated in the restricted category . The exact date of the application is dependent on the life cycle development of the insect, however the projected dates of application are June 28 - June 29, 1999.

Both the pilots and aircraft are in compliance with FAR 137.53 for operations over congested areas.

The base of operation will be the Prairie Du Chien , Wisconsin airport or the Monona, Iowa airport.

The USDA APHIS PPQ AEO has determined that the operation can be conducted in accordance with FAR 137.

Written approval has been obtained from the appropriate official/officials of the governing bodies of the political subdivisions over which the operations will be conducted. As required by the City of McGregor, a temporary NOTAM will be issued through the Fort Dodge FSS.(Attachment #2)

Notice of the intended operation was given to the public by means of publication in local and statewide newspapers and local radio stations and mailings to local residents. A public meeting was held on June 3, 1999 with the result that there was no opposition to the treatment. As stated in the press release, a 24 hour notice will be given if changes are made in the treatment date.(Attachment #3)

There does not appear to be any hazardous obstructions however, a reconnaissance flight of the operational area will be conducted prior to the actual application to determine if there are any obscured obstructions and a safe ingress and egress during actual application. Application height will be between 25' and 40' above the canopy.

In the event of an inflight engine failure, the pilot will steer the aircraft away from any persons, vehicles and structures.

APPROVED *[Signature]* , DSM-FSDO  
BY *[Signature]* 6-14-99

FIGURE 2-6-5 Example of FAA FSDO Approved Congested Area Plan of Operation



# 2

Aerial Application  
Manual

## Program Planning

### *Personnel, Materials, and Equipment*

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#### Introduction

The ***Personnel, Materials, and Equipment*** section of ***Program Planning*** provides a detailed list of personnel, supplies, equipment, and boundary flagging instructions required to conduct the application program.

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#### Personnel

The size of an aerial application program and the type of terrain dictate the number of people needed to satisfactorily complete the program. Staffing requirements depend on the number of programs, acres, buffer zones, treatment blocks, aircraft, type of terrain, and extent of environmental monitoring. The program manager should request the necessary personnel from the regional office.

When aircraft guidance is provided by the contractor, then see **Figure 2-7-1**, which lists the ideal number of persons needed to run a program covering 100,000 acres.

Personnel	Quantity Required per Program
Clerk (if available)	1
Contracting Officer's Representative (COR)	1
Non-PPQ cooperator (COR counterpart; i.e., State or Federal cooperating agency)	1
Environmental Monitoring Coordinator (person for environmental monitoring)	1
PPQ pilot (if available)	1
Scouts/ground observers (for flagging boundaries, placing dyecards, and noting aerial hazards and sensitive areas)	4 (2 minimum)
Timekeeper/airport recorder (can also serve as a clerk)	1

**FIGURE 2-7-1 List of Personnel Requirements to Run a Typical 100,000 Acre Aerial Application Program**

### Requesting a PPQ Pilot

Arranging for PPQ pilots should be done early in the planning process in order to give the pilots as much lead time as possible. When a PPQ pilot is on site, the probability of conducting a successful project is greatly increased.

PPQ pilot duties and authorities are described under [PPQ Pilot on page 2-7-8](#). PPQ pilots have the technical knowledge and expertise to perform important tasks in support of the project.

Requests for PPQ pilots should be made by contacting the director of Aircraft and Equipment Operations as follows:

Timothy J. Roland, Director  
USDA-APHIS-PPQ  
Aircraft and Equipment Operations  
22675 N. Moorefield Road, Bldg. #6415  
Edinburg, TX 78541-9398

Phone: 956-580-7270  
FAX: 956-580-7276

## Program Personnel Duties

### Mandatory Requirements for Personnel

All USDA-APHIS-PPQ personnel who use or supervise the use of pesticide treatments **must** be certified under the APHIS pesticide certification plan. In addition to APHIS certification, they are required to know and meet any additional qualifications or requirements of the States where they perform duties involving pesticide use.

Temporary personnel who **do not** possess pesticide certification may be assigned to work with pesticides while under the supervision of a certified applicator. Those personnel who are scouts and flaggers or are assigned to a certified applicator **do not** need to be certified under the APHIS certification plan.

### Contracting Officer's Representative (COR)

The Contracting Officer (CO) for APHIS at the Minneapolis Business Site (MBS) will designate in writing, an individual who will act as the authorized Contracting Officer's Representative (COR) to administer the contract for the program. The individual **must** complete Web-based training to obtain COR certification.

The COR acts as the on-site representative for the MBS Contracting Officer (CO), administering the terms of contracts established to conduct control programs. The COR **does not** have the authority to change the content of the contract. The COR has the single authority for supervising the control program, allowing all other interested parties to serve as consultants, advisors, and cooperators. All contacts with the Minneapolis Contracting Officer that are relative to the contract or the contractor's performance should be made directly by the program supervisor (COR).

The COR is responsible for safe, environmentally sound, cost-effective, and efficacious ways to suppress target pest populations which meet the cooperator's needs.

On larger programs, the COR monitors **only** the aerial application contract. There may be other personnel in the Air Operations section that determine field personnel needs, etc.

Depending on the size of the program, the COR's activities may include the following:

- ◆ Determine the number of personnel required for the program
- ◆ Designate in writing, an alternate certified COR to act in his/her behalf during any absence
- ◆ Assign personnel to specific duties

- ◆ Maintain communications with program managers, cooperators, and other necessary individuals
- ◆ Coordinate the public relations programs and act as public information officer
- ◆ Coordinate the work of the field crew and ground observer and delimit the areas to be treated
- ◆ Divide the unit into blocks
- ◆ Coordinate electronic guidance (as required)
- ◆ Determine the quantity of equipment and supplies required (such as vehicles, maps, radios, flagging materials, forms, etc.)
- ◆ Maintain an adequate supply of pesticide
- ◆ Collect and mail samples of pesticide for analysis when required
- ◆ Determine the amount of storage required for the pesticide
- ◆ Assign, in cooperation with the PPQ pilot, aircraft to various blocks
- ◆ Brief pilots on blocks assigned to them for treatment, including flight direction, topographic hazards, and sensitive or restricted areas to avoid
- ◆ Determine, in cooperation with the PPQ pilot, the daily starting and stopping times for aerial applications
- ◆ Limit the number of flight hours that pilots can fly each day due to safety concerns (such as pilot fatigue)
- ◆ Keep the all program maps, including master program maps, up-to-date
- ◆ Ensure environmental monitoring is accomplished
- ◆ Keep records as required
- ◆ Submit a report on contractor performance (see [Contractor Performance on page 4-4-1](#) and [PPQ Form 817, Aerial Contractor Performance Evaluation Report on page A-1-60](#))

### **Airstrip Supervisor**

When multiple aircraft are scheduled to operate simultaneously from more than one airstrip, then the PPQ Officer/airstrip supervisor should be designated by the COR to act for the COR at each airstrip. During the absence of the COR, the airstrip supervisor will be in charge of operations at the assigned airstrip.

The airstrip supervisor **must** maintain accurate base logs to document the daily operations. Duties of the airstrip supervisor are sometimes carried out by the airport recorder/timekeeper as availability of personnel permits.

### Airport Recorder/Timekeeper

An airport recorder/timekeeper should be assigned to each airstrip to maintain complete and accurate records of all occurrences.

The airport recorder **must** accurately complete and maintain the following:

- ◆ *PPQ Form 802, Daily Aircraft Record*, a legal, written record of spray operations for each work day (see **PPQ Form 802, Daily Aircraft Record on page A-1-45**)
- ◆ Pesticide records **must** be maintained as follows:
  - ❖ Keep an accurate inventory of the pesticide supplies in storage and the quantity of pesticide that has been used
  - ❖ Keep an accurate record of the following:
    - Amount of pesticide applied to each block
    - Daily amount of pesticide applied
    - Daily amount of pesticide received
    - Amount of pesticide on hand at end of each day

### Pesticide Loading Operation Monitoring

At all times aircraft loading operations are in progress, an agency representative should remain in the loading area and determine the exact amount of pesticide that is loaded into each aircraft for each trip. This may be the duty of the airport recorder or other individual(s) assigned to this job. This individual **does not** assist with loading pesticide onto the aircraft.

### Other Assigned Duties

Other duties may be assigned to the airport recorder depending on the availability of an airstrip supervisor or during the absence of the COR.

The COR administers the contract, but often relies on a number of other persons to observe certain aspects, such as the following:

- ◆ Check aircraft spray systems to include the following (PPQ pilots from Aircraft and Equipment Operations (AEO) can complete or assist with this task when available):
  - ❖ Check nozzles, hoses, booms, and hopper for leaks
  - ❖ Check systems for compliance with contract specifications (such as nozzle number, size, and type; shutoff valves; by-pass lines, etc.
- ◆ If boom timers are used, then ensure boom timers are installed, are operating, and if necessary are reset

- ◆ Supervise loading of the aircraft to include the following:
  - ❖ Check the aircraft hopper prior to loading to determine the amount of pesticide being used
  - ❖ Determine the amount of chemical to load
  - ❖ Observe actual loading and metering of pesticide
  - ❖ Inform the COR when reserves get low enough to warrant additional delivery
  - ❖ **Do not** physically assist in handling or loading fuel or pesticide into the aircraft
- ◆ Observe and record actual pesticide unloading and draining of aircraft at the end of operations
- ◆ Document complaints and record visits and telephone calls from the public regarding program activities (see [Complaints on page 4-7-1](#))
- ◆ Monitor weather conditions
- ◆ Track spray progress as follows:
  - ❖ Advise ground observers (scouts) when aircraft leaves and returns to the airstrip
  - ❖ Keep up with progress of aircraft
  - ❖ If need arises, make changes in flight schedules (i.e., avoid a field with people)
  - ❖ Record fields missed entirely or sprayed inadequately and reschedule needed treatments
- ◆ Document problems and unusual events that occur during spray operations, and include the following:
  - ❖ Accidents involving aircraft, vehicles, or personnel
  - ❖ Leaks in the aircraft systems or the pesticide storage or loading systems
  - ❖ Pesticide spills or jettisons
  - ❖ Safety violations or unsafe practices by contractor or program personnel

### **Environmental Monitoring Coordinator**

Environmental monitoring protocols may need to be implemented at the control block due to program guidelines, Environmental Monitoring Plans (EMPs), National Environmental Policy Act (NEPA) requirements, sensitive areas, site-specific conditions, or other mitigating circumstances. To determine if an environmental monitoring coordinator is required, see [Environmental Monitoring on page 2-9-1](#).



## Ground Observer

Ground observers are important for a successful treatment operation. The primary function of the ground observer is to monitor the overall job performance of both the pilot and the pilot's aircraft, and the treatment area during spray operations.

Duties and responsibilities of the ground observer include the following:

- ◆ Survey and delimit areas to be treated
- ◆ Flag block boundaries (when necessary)
- ◆ Locate and mark on program maps, the areas that are **not** to be treated
- ◆ Indicate on program maps, the location of hazards to aircraft
- ◆ Determine latitude and longitude coordinates for DGPS guidance as necessary
- ◆ When practical, assist in tracking the aircraft at all times
- ◆ Observe pilot performance by checking the number of swaths applied to a field to determine effectiveness and efficiency of spraying
- ◆ Monitor flight path (such as turns over ponds, houses, or other sensitive areas)
- ◆ Monitor application aircraft height of flight
- ◆ Watch for cutoff of formulation on turns, sensitive areas, and traveling between treatment areas
- ◆ Observe trimming of fields and skips
- ◆ Report and record the location of trim work that needs to be completed by ground equipment due to obstacles such as power lines and trees
- ◆ Monitor and record weather conditions
  - ❖ Air temperature
  - ❖ Ground temperature
  - ❖ Fog
  - ❖ Wind speed and direction
- ◆ Maintain radio contact with and report conditions and information to the COR, the aerial observer, and the airport recorder
- ◆ Place and collect dye cards to track chemical dispersal (see [Spray Deposition Monitoring on page 4-2-15](#))
- ◆ Observe dispersion, drift, and inversions of applied formulation

- ◆ Check for clogged or leaking nozzles
- ◆ Establish the boundaries of the areas treated each day and shade the area on the master map
- ◆ Report any skipped or missed areas so the COR/Air Ops can plan for treatment of those areas (give consideration to wind direction and velocity during original treatment and re-flights)
- ◆ Discuss work plans for the following day; include a review of flight hazards and sensitive areas that may be located within or adjacent to the work areas
- ◆ Perform other duties as may be required to get a program into operation
- ◆ Contact the PPQ pilot in advance of all aerial operations

### **PPQ Pilot**

When available, a PPQ pilot will be assigned to the program to assist the COR. In the event a PPQ pilot is **not** available, then the responsibilities listed below rest with the COR.

PPQ pilot duties include the following:

- ◆ Act as radio liaison when required
- ◆ Assist with the layout of block boundaries
- ◆ Calibrate the dispersal apparatus
- ◆ Check swath widths and deposit distribution and when required recommend modifications to the dispersal equipment
- ◆ Cooperate with the COR to determine daily starting and stopping times for aerial applications
- ◆ Determine whether contract pilots are qualified
- ◆ Inspect each aircraft and dispersal apparatus to determine compliance with contract specifications and FAA requirements
- ◆ Monitor the electronic guidance system (EGS) as required
  - ❖ Check EGS for accuracy and reliability
  - ❖ Check to determine whether contract pilots are using the system properly
- ◆ Observe aerial applications from the air and align guidance when required
- ◆ Review all documents relating to contract aircraft and pilots
- ◆ Train contractor pilots and PPQ personnel in the use of electronic guidance equipment (EGS) **only** when the Federal Government furnishes the equipment

- ◆ If the contractor furnishes the equipment, then the contractor is responsible for training his/her personnel and PPQ Personnel in the use of the equipment where applicable
- ◆ If the contract specifies the contractor furnishes the equipment, then the contractor is responsible for training contractor personnel and PPQ personnel in the use of the system where applicable
- ◆ Train personnel in the procedures and techniques of aerial observers

### PPQ Pilots Specific Authority

When included in the contract, PPQ pilots have the following specific authority:

- ◆ Establish or verify the working swath widths for each aircraft
- ◆ Ground any aircraft or pilot for cause
- ◆ Reject any pilot who **does not** meet contract requirements
- ◆ Withhold any aircraft from operation until the aircraft complies with contract specifications



Important

The PPQ pilot will **not** contact the MBS Contracting Officer (CO) directly; the exception to direct contact is **only** when requested to do so by the Contracting Officer's Representative (COR).

### Aerial Application Observer

The aerial observer is either the Contracting Officer's Representative (COR) or another designated person within Air Ops. Aerially observing the control activities provides the Air Ops/COR with a unique view of the application and movement of the ground personnel. In many cases, the aerial observer is the practical center of communication with the COR, the contractor, the pilot, and the ground crew.

If a contract observation aircraft is to be used, then a trained PPQ Officer or a cooperator will be required to act as aerial application observer.

Prior to making any flight, the aerial application observer should meet with the pilot of the observation aircraft and mutually agree to the following:

- ◆ Contractor's pilot will, in the interest of safety, be fully responsible for the aircraft and its operation and therefore may deviate from the observer's instructions when safety is involved
- ◆ **Only** those flights authorized by the aerial observer or Air Ops/COR will be considered for payment within the terms of the contract

- ◆ During such flights, **only** PPQ personnel, cooperators, or contractor personnel will be carried aboard
- ◆ Aerial observer will have full authority, within the limits of safe flight operations, to determine when, where, and how the aircraft shall be flown for the purpose of making observations
- ◆ Installation of a PPQ radio in the observation aircraft; a portable hand-held unit is a suitable substitute (arrange with the pilot)



If the external power source cable of the radio is used, then the cable should be connected to the aircraft's electrical system by the contractor's personnel **only**. This also includes installation of an external antenna, modifications, or other equipment.

Keep an accurate record of flight time on *PPQ Form 802, Daily Aircraft Record*. Flight time will be the actual time shown on the flight recorder. If the aircraft **does not** have a flight recorder, then use and record clock hours and minutes from takeoff to landing. Each PPQ Form 802 shall be signed by the contractor's representative and the airport record/timekeeper. See [PPQ Form 136, Detailed Work Plan on page A-1-32](#).

Proficiency in aerial observation and supervision requires the ability to do the following:

- ◆ Communicate instructions effectively using radios
- ◆ Judge ground distances from the air, by reference to the size of known objects and distances (such as road width, distance between telephone poles, etc.)
- ◆ Judge swath spacing accuracy based on the application aircraft wingspan and landmarks flown over on the previous swath

**EXAMPLE**

If the sun is out, then using the application aircraft's shadow on the ground is a good method to judge spacing.

- ◆ Provide information to Air Ops and/or the COR for deciding when to shutdown daily activities
- ◆ Time the application aircraft with a stopwatch to compute the dispersal rate for calibration
- ◆ View the treatment block, surrounding area, and ferry routes from the air



The most critical daily decision in aerial application is the cooperative decision to shutdown the daily activities because of developing conditions that adversely impact spray deposition. The aerial observer is responsible for communicating information to the COR for deciding when to shutdown daily activities.

Duties and responsibilities of the aerial observer include monitoring the following:

- ◆ Air speed
- ◆ Application aircraft
- ◆ Clogged/plugged nozzles (watch for)
- ◆ Coordination and communication of activities of ground observers and environmental monitors
- ◆ Drift
- ◆ Emergency jettisons
- ◆ Flight line formation
- ◆ Guidance aircraft (if used)
- ◆ Movement of ground personnel and flagging
- ◆ Drift
- ◆ Proper shutoff and turn on at boundaries and buffer zones
- ◆ Skips
- ◆ Spray pattern uniformity
- ◆ Swath displacement
- ◆ Swath spacing
- ◆ Turnarounds

### Guidance Flaggers

The flaggers' primary duty is to operate markers that will enable the pilot to fly straight, equal-spaced swaths. Flaggers are needed when any of the following occur:

- ◆ Precise applications are required over areas too small for electronic guidance
- ◆ Other guidance is **not** available
- ◆ Pilots may have difficulty with uniformly spacing their swaths

Other duties may include many of the items listed for ground observers. See [Ground Observer on page 2-7-7](#).

In most cases, flaggers will be provided by the contractor, depending on how the bid description is completed. Flaggers may or may **not** be part of the required PPQ personnel. See the Description Data Sheet, *Block 14*, under [Aerial Program Description Data Sheet on page A-1-3](#).

Before going on the flag line, certain preparations should be made. A flagger **must** receive adequate briefing and/or training to know the following:

- ◆ Area to be flagged
- ◆ Direction of flight
- ◆ Direction and distance to move while flagging
- ◆ Height at which the aircraft should fly
- ◆ Proper use and care of Kyttoon® aerial helium balloons (if used)
- ◆ Proper use of radio (if assigned)
- ◆ Side of the area where application will begin
- ◆ Spacing for more than one aircraft
- ◆ Swath spacing of the aircraft being guided
- ◆ Type and proper use of personal safety equipment
- ◆ Type and proper use of marker or flag
- ◆ Wind direction and pesticide drift

Flaggers **must** each have a map of the area(s) to be treated. If the flagger can visit the area(s) in advance to check on roads, open fields, or other routes to follow while flagging, then operational time can be saved.

To protect from spray during application, flaggers should start on the downwind side and work upwind. Since pilots prefer to spray crosswind, the aircraft will **not** fly through the spray from previous swaths.

## Flagging Equipment, Supplies, and Methods

Various equipment is used for flagging aircraft. Local project circumstances determine the best method or combination of methods to use.

The following techniques are used by ground flaggers. Training on the proper use of flagging equipment is important prior to use. All flaggers in the block should be coordinated and able to communicate by two-way radio.

### Ground Flagging

The most effective ground flagging techniques are as follows:

- ◆ Flags on poles
- ◆ Halogen spotlights
- ◆ Kytoon® aerial helium balloons
- ◆ Measuring wheel
- ◆ Mirrors
- ◆ Rotating beacons

See electronic aircraft guidance under [Aircraft Guidance on page 3-11-1](#).

### Boundary Flagging

On the program map, be sure to indicate the location of all boundary flagging used in the block.

Global information systems technology may be available for the project that may replace the need for boundary flagging.

### Boundary Flagging Material

The size of each boundary flag **must** be a minimum of 15 feet long x 3 feet wide.

Boundary flagging material types used in the program include the following:

- ◆ Orange plastic
- ◆ White or yellow cheesecloth
- ◆ White or yellow muslin
- ◆ White plastic

White flags are used for block boundaries. Orange flags are used to mark sensitive sites and buffer zones and other **no** spray or **no** treatment areas.

## **Boundary Flag Placement**

Boundary flags should be placed as follows, and record the location on the program maps:

- ◆ Place flags 25 to 30 feet down each side from the corner of the spray block
- ◆ Place flags so they are easily visible from the air for at least one mile
- ◆ Tie flags to fence lines
- ◆ If fence line is **not** available, then either weight the flags down to the ground or attach flag to lath (strip of wood or metal) and then stake in the ground
- ◆ Place flags on high places (even when the end of the block may be just over the hill)
- ◆ Place flags along the perimeter of the spray block; place approximately every one-half mile; more flagging can be used as site-specific circumstances demand
- ◆ Place orange flags around sensitive area perimeters with (use as many flags as needed to be able to recognize the outline of the sensitive area from the air)



## Equipment, Instruments, Supplies and Vehicles

In addition to airplanes and application equipment, other equipment, supplies, vehicles, and weather instruments are required to operate a successful application program. **Figure 2-7-2** lists the items, type, and quantity that APHIS should provide per 100,000 acre project.

Item	Type	Quantity
<b>Dyecard Samplers</b>	Black 3-1/2 inch by 5 inch (Carbaryl)	1,000
	Information on dyecards for Dimilin	10
	Sticky cards for bran applicators	1,000
	White oil sensitive (Malathion)	1,000
	White water sensitive (Dimilin, Carbaryl)	1,000
<b>Flagging Material and Markers</b>	Muslin	200 yards
	Orange plastic rolls	100 yards
	Plastic ribbons	100 yards
	Wire flags	500 each
<b>Forms</b>	Environmental Monitoring Forms (xx need names of forms)	xx (need qty of each form)
	<i>PPQ Form 802, Daily Aircraft Record (Mar 92)</i>	15 pads
	<i>PPQ Form 816, xx</i>	12 each
	<i>PPQ Form 817, Aerial Contractor Performance Evaluation Report</i>	3 each
	Time and Attendance sheets (T&As)	24 each
	AD Form 616, Travel Voucher	12 each
	Vehicle Accident Report Forms (need number name of form)	1 per vehicle
<b>Maps and Pens/Pencils</b>	Control area maps	20 each
	Colored pens/pencils	1 box
	Colored highlighters	1 box
	Local State road maps	1 per vehicle
<b>Miscellaneous Items</b>	Bung wrench	2 each
	Compass	As needed
	Funnel with strainer screen	1 set
	Garbage barrel (1 for base location and 1 for airstrip)	2 each
	DGPS unit	1 per vehicle
	Signaling mirrors	2 per vehicle
	Stopwatch	1 each

**FIGURE 2-7-2 List of Equipment, Instruments, Supplies, and Vehicles Needed Per 100,000 Acres**

Item	Type	Quantity
<b>Pesticides</b>	Consult pest program manuals or guidelines on available alternatives and application rate. See <a href="#">Pesticides and Pesticide Storage on page 2-8-1</a>	
<b>Radios</b>	Hand-held radio	1 per person
	Radio installed in vehicle	1 per vehicle
<b>Safety Kit</b>	Eyewash kit	1 per vehicle
	Fire extinguisher	1 per vehicle
	First Aid kit	1 per vehicle
	Hearing protection	1 per person
	Jumper cables	1 set per vehicle
	Poisonous bite and sting kit	1 kit per vehicle
	Roadside reflectors	1 pair per vehicle
	Shovel	1 per field vehicle
	Tool kit	1 kit per vehicle
	Water can, 5 gallon	1 can per vehicle
<b>Spill Kit (for Pesticide Storage and Loading Areas)</b>	Approved respirator with approved canisters	2 sets
	Bar soap	2 bars
	Broom and dustpan	1 each
	Emergency eyewash kit	2 per kit
	Fire extinguisher	1 each
	Goggles/safety glasses	2 pair
	Heavy duty plastic garbage bags	50 each
	Kitty litter	100 pounds
	Lime	50 pounds
	Lime and Lye Material Safety Data Sheets (MSDS)	1 each
	Liquid detergent	1 quart
	Lye (sodium hydroxide - NaOH)	50 pounds
	Pesticide label and MSDS	1 each
	Plastic tarp (25 ft. x 25 ft.)	1 each
	Potable water	5 gallons per kit
	Rain suits, unlined or disposable coveralls	2 pair
	Rubber boots, unlined	4 pair
	Rubber gloves, unlined	2 pair
	Scrub brushes	2 each
	Shovel, spade tip	1 each
	Shovel, square tip	1 each

**FIGURE 2-7-2 List of Equipment, Instruments, Supplies, and Vehicles Needed Per 100,000 Acres (continued)**

<b>Item</b>	<b>Type</b>	<b>Quantity</b>
	50 gallon plastic garbage can with wheels (to hold spill kit contents)	2 each
<b>Vehicles and related supplies</b>	2-wheel drive (WD) vehicle	2 each
	4-wheel drive (WD) vehicle	2 each
	Barrel truck	As needed
	Heavy-duty cargo truck	3 each
	Rental vehicles	As needed
	Halogen spotlight	1 per vehicle
	Tow chain	1 per vehicle
	5-gallon gas can	1 per vehicle
<b>Weather Instruments</b>	Thermometer	12 each
	Weather station	1 each
	Wind gauge	12 each

**FIGURE 2-7-2 List of Equipment, Instruments, Supplies, and Vehicles Needed Per 100,000 Acres  
(continued)**



# 2

Aerial Application  
Manual

## Program Planning

### *Pesticides and Pesticide Storage*

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#### Introduction

The **Pesticides and Pesticide Storage** section of *Program Planning* provides procedures for pesticide procurement, pesticide sampling pesticide storage, and reduced area agent treatments (RAATs). For additional information, see **Worksite Organization and Inspection on page 3-13-1**.

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#### Procedures

Pesticides for cooperative control may be provided by APHIS or a cooperator. Aerial application of the pesticide may be contracted by APHIS or a cooperator, depending upon the decision of all cooperators in the program.

## Procure the Pesticide

The specific needs of a program will influence the way to procure products.

Consider the following factors:

- ◆ Application method (aerial application or ground application)
- ◆ Estimated costs of application
  - ❖ Consider the size of the treatment area
  - ❖ Use historical figures for aerial application
  - ❖ Include the cost of pesticide application and storage, and if applicable, disposal and diking
- ◆ Timeliness
  - ❖ Match the amount of time to procure the pesticide with the optimum application dates or pest development
  - ❖ Allow up to 2 weeks to process a full-service contract through Minneapolis Business Site (MBS)

## Pesticide Supply Sources

Pesticides may be procured based on the size of the project and as specified in regional or program guidelines, as follows:

- ◆ Excess stocks held by other States
- ◆ Part of a full-service contract
- ◆ Part of a standby contract (such as the Grasshopper Crop Protection Program)
- ◆ Open market by cooperators
- ◆ Regional purchase order (*AD 700, Procurement Request*) via a national pesticide contract

## Order the Appropriate Quantity of Pesticide

Determining the amount of pesticide to order for the project is an important step in program planning. Ordering the correct amount of pesticide and determining whether to receive the pesticide in bulk barrels, jugs, or other packaging is important. To determine the initial amount of pesticide to order, obtain an accurate estimate of total acres within the treatment block. Consult program maps, landowners, and cooperators.



If the terrain of the treatment block is rough, then extra pesticide may be needed.

**EXAMPLE**

If the treatment area has rugged topography, then the acres determined from maps may be less than actual acres. An estimate is necessary to accurately determine supply, or shortages may occur.

**Consequences  
of Ordering Too  
Much**

To ensure ordering an adequate supply of pesticides, see [Formulas to Determine the Quantity of Pesticide to Order on page 2-8-4](#).

Avoid ordering more pesticide than needed. If you order too much, the following may occur:

- ◆ Added safety risks with long-term storage
- ◆ Additional shipping charges upon receipt of pesticide order
- ◆ Additional shipping charges to transfer extra material
- ◆ Disposal of extra material as hazardous waste
- ◆ Program funds tied up (chemicals are expensive)
- ◆ Storage costs continue after completion of project

**Consequences  
of Ordering Too  
Little**

Avoid **not** ordering enough pesticide. If you order too little pesticide, the following may occur:

- ◆ Program completion delays
- ◆ Efficacy may be reduced (**not** enough pesticide may cause changes in aircraft calibration or swath patterns to stretch supplies)
- ◆ Treatment area may **not** be completed

**Use Proper Pesticide Containers**

Consult program guidelines and local and State pesticide regulations to help determine which type of containers to use for pesticides. The type of container in which the pesticide is received is important since pesticide containers require special handling after they are empty, and container disposal may be expensive, time consuming, or impractical (depending on the type and number of containers specified).

Consider the size of the project and whether you should receive pesticide in bulk shipments or smaller containers such as barrels, bags, or plastic jugs. You may also want to specify in the pesticide order that you require returnable tanks or barrels to alleviate the problem of disposal.

## Formulas to Determine the Quantity of Pesticide to Order

To determine the number of gallons of pesticide required for a treatment area, see the formula below.

1. Determine the number of acres a gallon of pesticide will treat.

$\frac{128.0 \text{ fluid ounces per gallon}}{\text{Application rate per acre in fluid ounces (of pesticide)}} = \text{Number of acres one gallon of pesticide will treat (at given application rate)}$
---

**FIGURE 2-8-1 Formula for Number of Acres Treated per Gallon of Pesticide**

**EXAMPLE**

$\frac{128.0 \text{ fluid oz.}}{16.0 \text{ (ounces per acre of Sevin XLR Plus)}} = 8 \text{ acres that one gallon of pesticide will treat at this rate}$
---

2. Determine the amount of pesticide to order.

$\begin{aligned} &1. \text{ Number of acres within boundary} &&= \text{Total acres to be treated} \\ &\quad - \text{ Acres of no treatment (no spray) area} \end{aligned}$
$\begin{aligned} &2. \text{ Total acres to be treated} &&= \text{Gallons of pesticide required for treatment area} \\ &\quad \text{Number of acres one gallon of pesticide will treat} \end{aligned}$

**FIGURE 2-8-2 Formula to Determine Gallons of Pesticide to Order**

**EXAMPLE**

$\begin{aligned} &1. \text{ Determine the number of acres a gallon of pesticide will treat.} \\ &67,525 \text{ acres within boundary} \\ &- \quad 1,250 \text{ acres of no-treatment (no spray) area} \\ &\hline &66,275 \text{ total acres to be treated} \end{aligned}$
$\begin{aligned} &2. \frac{66,275 \text{ acres to be treated}}{8.0 \text{ acres (1 gallon will treat)}} = 8,284 \text{ gallons of pesticide required for treatment area} \end{aligned}$
<p>In this example, 8, 284 gallons of pesticide are needed to treat the block.</p>

If using Reduced Area Agent Treatments (RAATs), then see **Figure 2-8-3, Formula to Determine Correction Factor for RAATs Swath, on page 2-8-5** to determine the correct amount of pesticide to order.



## Reduced Area Agent Treatments (RAATs)

Reduced Area Agent Treatments (RAATs) are used by program managers in some situations as a way to reduce costs while maintaining effective management during treatment application. Intentional skips or intervals are left between swaths. (Flow rates may also be reduced. Pests with a migratory nature (such as grasshoppers or Mormon crickets) may eventually enter the treated area, and add to the percent control in the process. Savings to the project are gained by reduced pesticide and application costs.

Treatment projects utilizing RAATs require one additional step to arrive at the correct amount of pesticide to order. The untreated interval **must** be accounted for in order to avoid obtaining too much pesticide.

Continue below to determine the correction factor. For other aircraft and formulations see [Aircraft Categories and Assigned Swath Spacing on page 2-4-2](#).

### Reduced Order Technique Pesticide Correction Formulas

After arriving at the gallons required for the treatment area (determined using the formula in [Figure 2-8-2](#)), then reduce the pesticide order by the same percentage as you increase the swath width. See the correction factor formula in [Figure 2-8-3](#), then continue to [Figure 2-8-4](#).

The assigned swath is the swath width designated for the type of aircraft being used.

The RAATs swath is the swath width the aircraft actually flies (track).

$\frac{\text{Assigned swath}}{\text{RAATs swath}} = \text{Correction factor}$

**FIGURE 2-8-3 Formula to Determine Correction Factor for RAATs Swath**

$\text{Gallons required for treatment area} \times \text{Correction factor} = \text{Gallons of pesticide to order when using RAATs}$

**FIGURE 2-8-4 Formula to Determine Gallons of Pesticide to Order When Using RAATs**

**EXAMPLE**

You are using a turbine thrush aircraft and Sevin XLR Plus. The assigned swath when using this aircraft and chemical is 150 feet. You have decided on an interval swath assignment of 200 feet (100 foot untreated area (RAATs) between treated areas).

1. Determine the correction factor to use (see [Figure 2-8-3](#)).

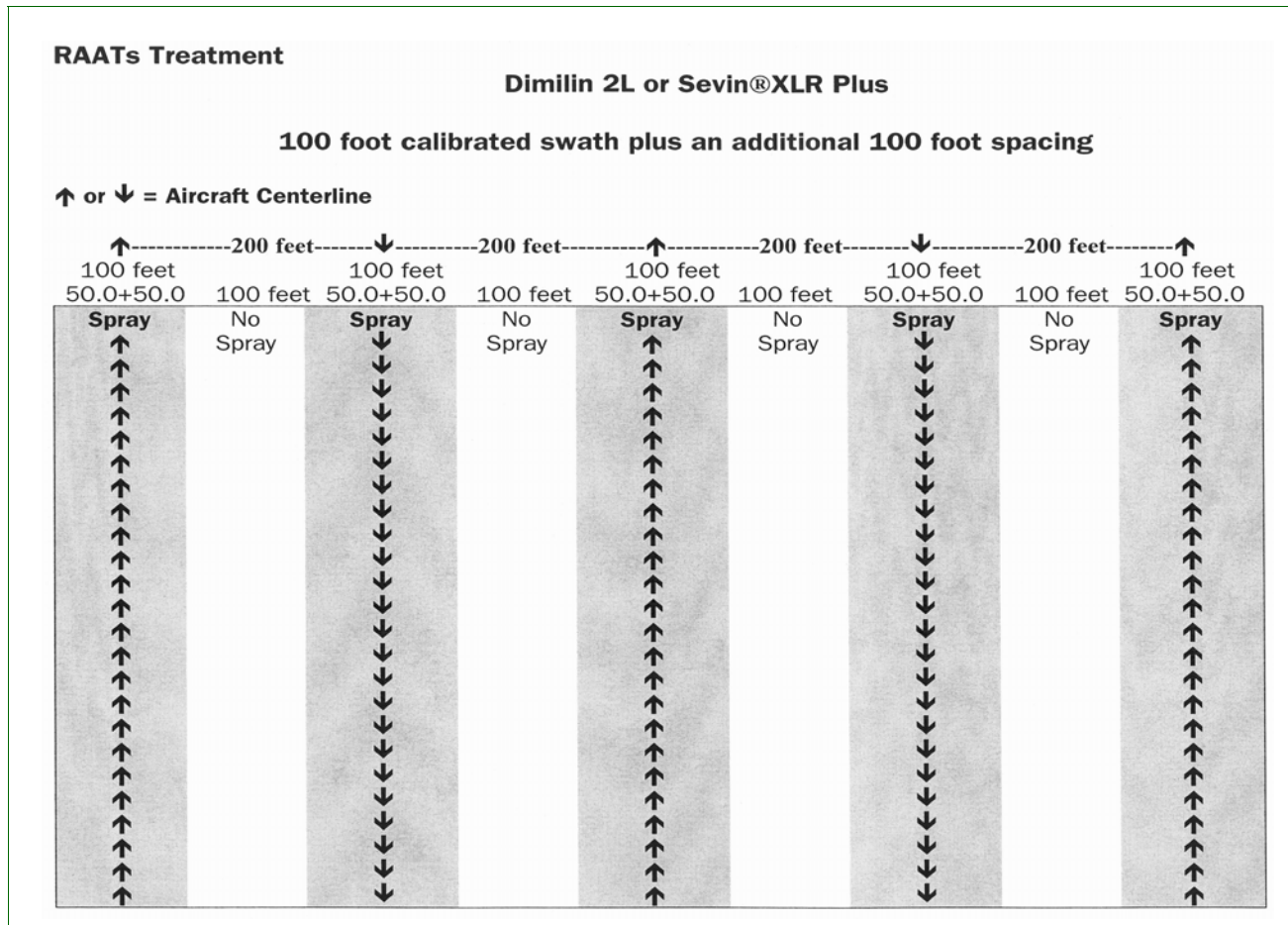
$$\frac{150 \text{ feet}}{200 \text{ feet}} = 0.75 \text{ correction factor}$$

2. Determine the gallons to order using the RAATs (see [Figure 2-8-4](#)).

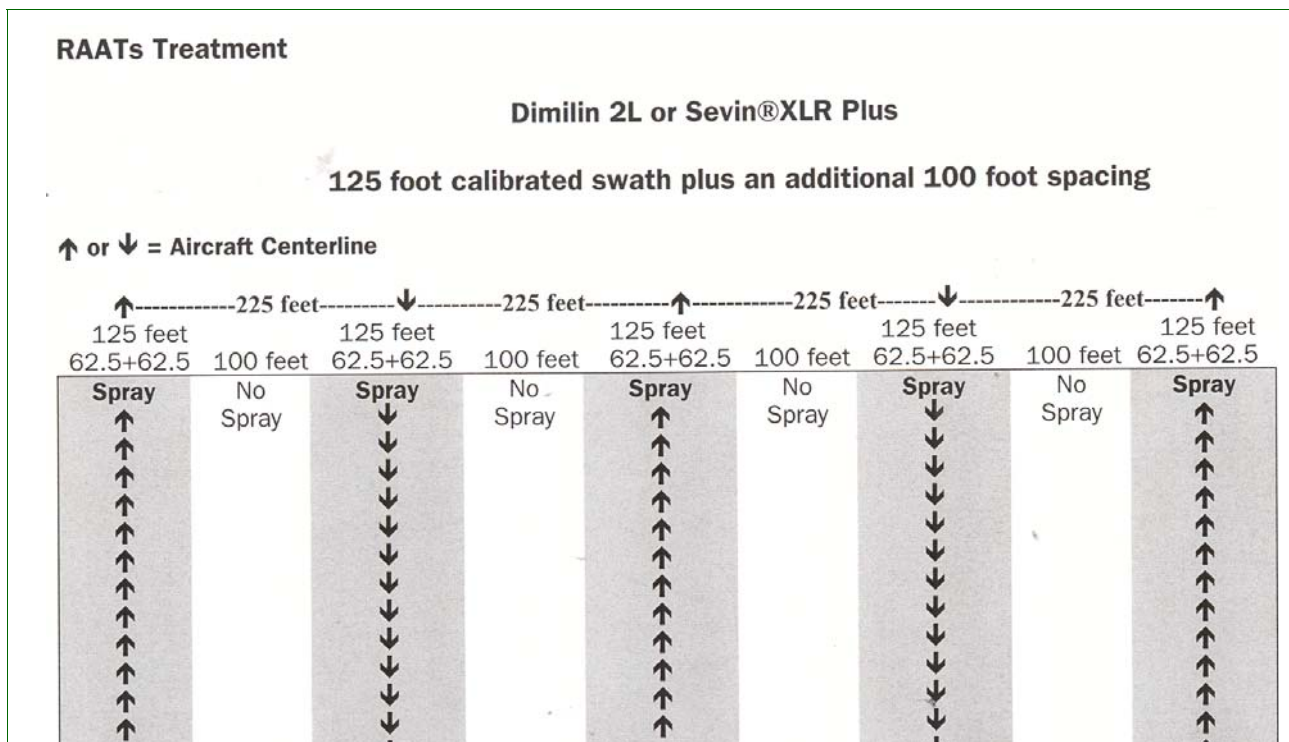
$$8.284 \text{ gallons} \times 0.75 \text{ correction factor} = 6,213 \text{ gallons to order using the RAATs}$$

**Examples of RAATs Treatments**

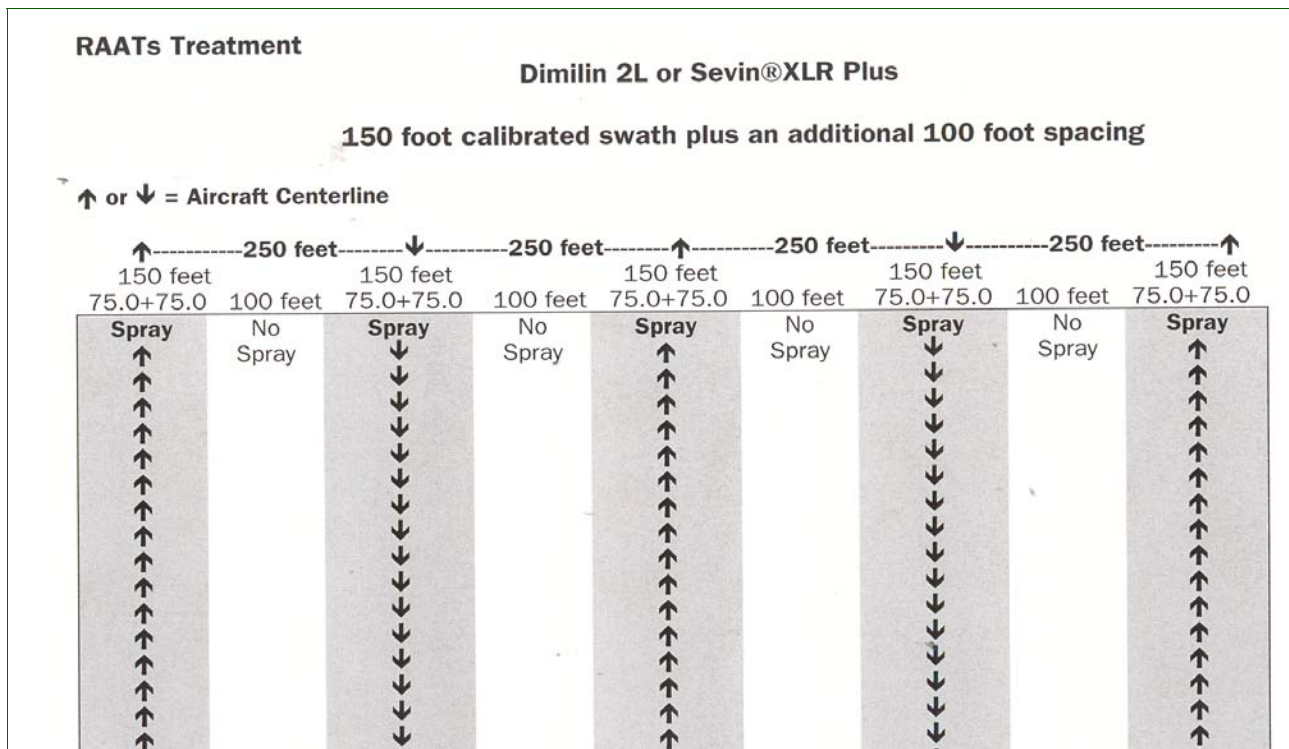
The following examples are of Reduced Area Agent Treatment (RAATs) using an aircraft with 100 foot swath.



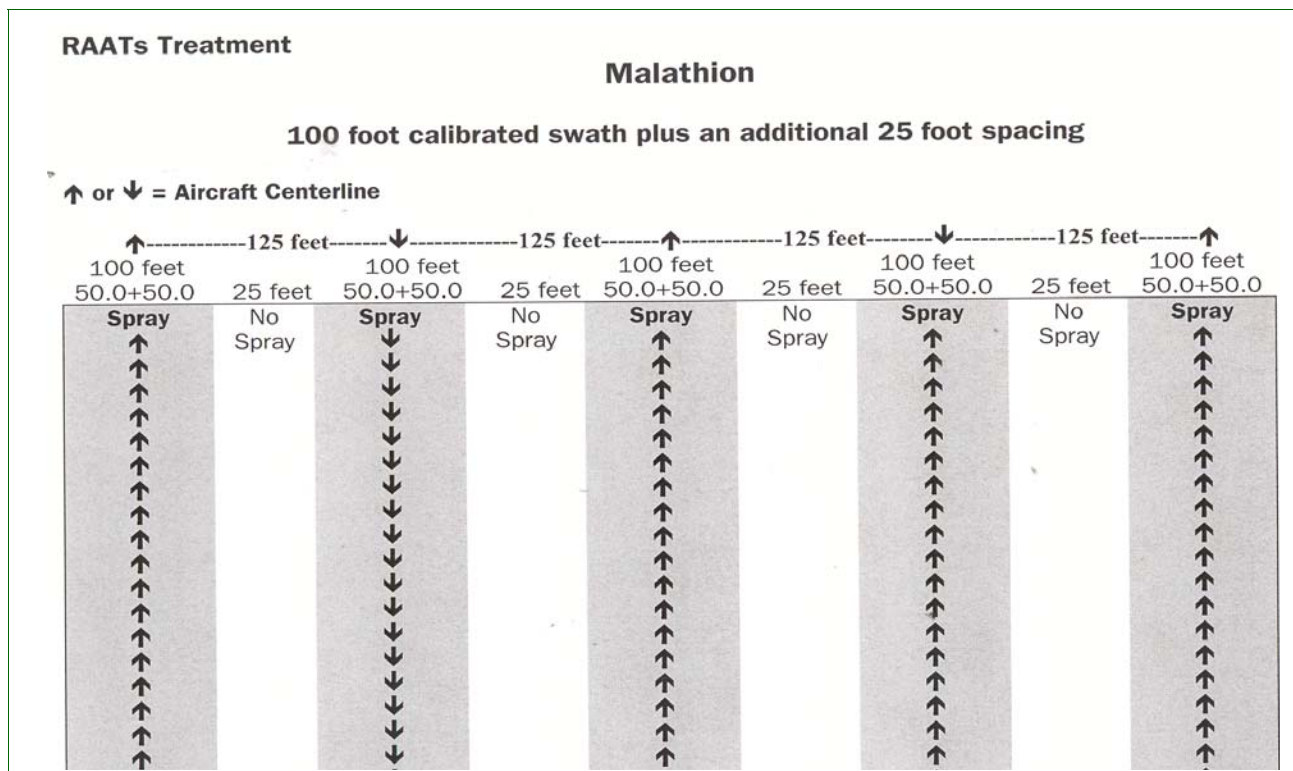
**FIGURE 2-8-5 RAATs Treatment With Dimilin 2L or Sevin XLR Plus at 100 Foot Calibrated Swath Plus an Additional 100 Foot Spacing**



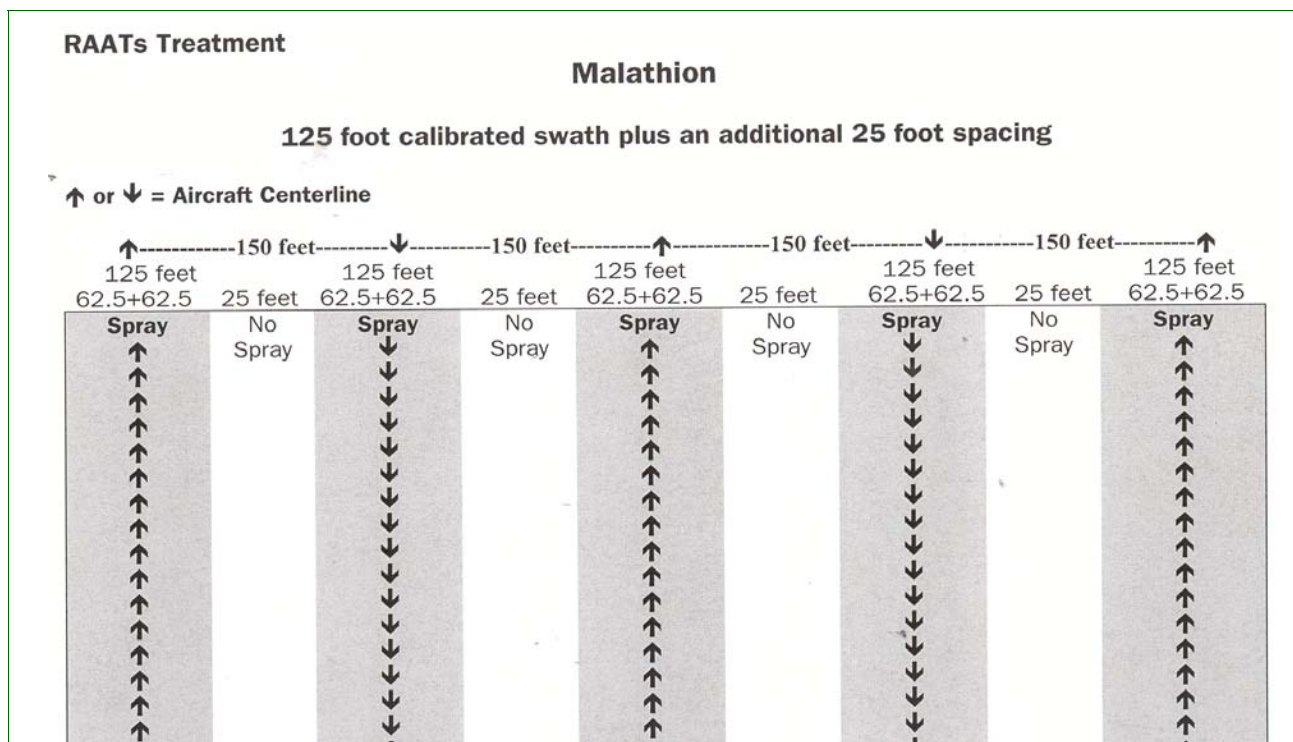
**FIGURE 2-8-6 RAATs Treatment With Dimilin 2L or Sevin XLR Plus at 125 Foot Calibrated Swath Plus an Additional 100 Foot Spacing**



**FIGURE 2-8-7 RAATs Treatment With Dimilin 2L or Sevin XLR Plus at 150 Foot Calibrated Swath Plus an Additional 100 Foot Spacing**

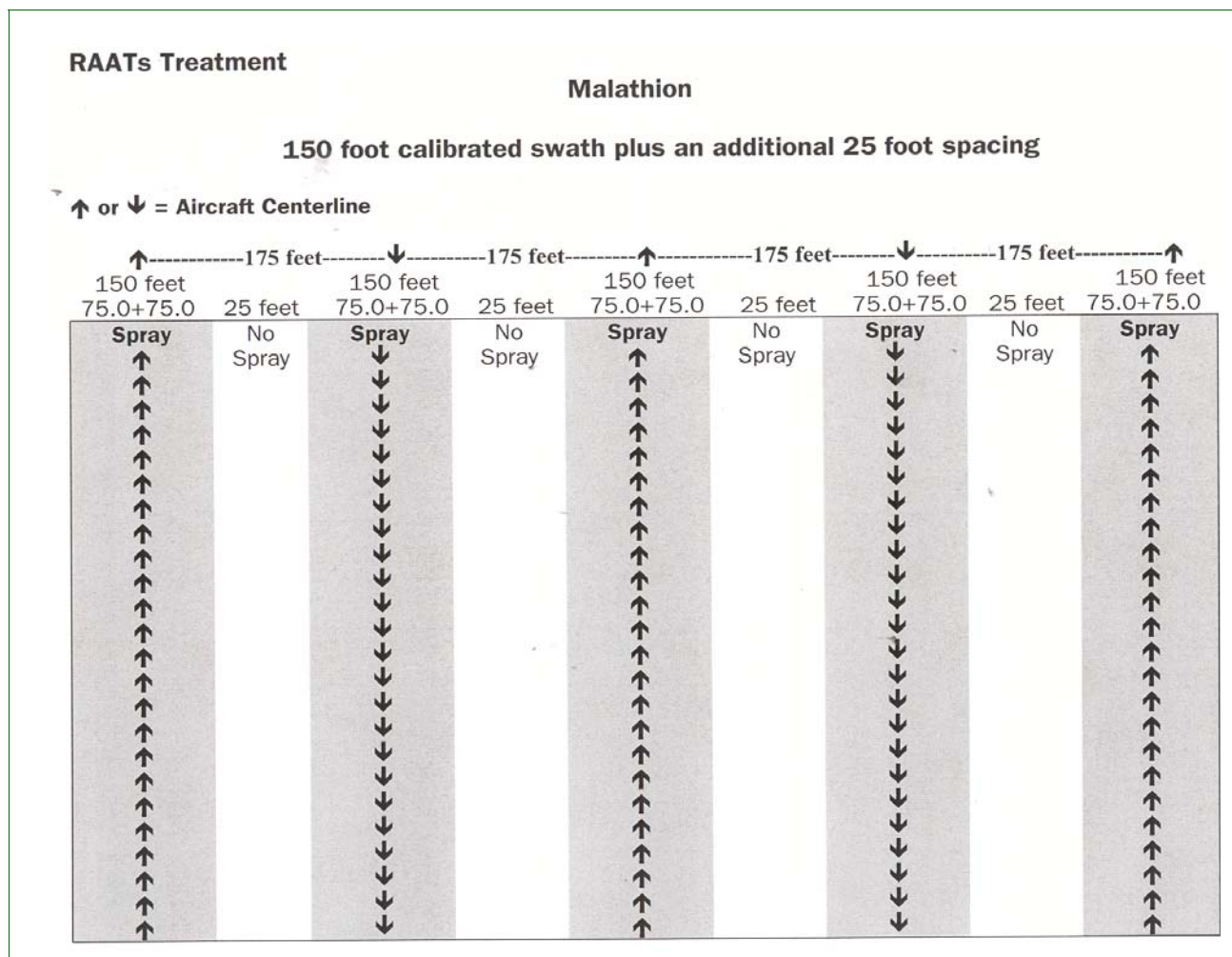


**FIGURE 2-8-8 RAATs Treatment With Malathion at 100 Foot Calibrated Swath Plus an Additional 25 Foot Spacing**



**FIGURE 2-8-9 RAATs Treatment With Malathion 125 Foot Calibrated Swath Plus an Additional 25 Foot Spacing**





**FIGURE 2-8-10 RAATs Treatment With Malathion 150 Foot Calibrated Swath Plus an Additional 25 Foot Spacing**

## Pesticide Storage

Proper storage of pesticides<sup>1</sup> will help protect the health and well-being of people, to ensure the chemical shelf life and prevent environmental contamination. A number of fairly rigid conditions are required for the storage of pesticides intended for agricultural and industrial use.

Use these procedures and references to develop a safety program given special circumstances encountered in each work unit. Contingency plans for emergency response should be developed for aerial application programs. The safety procedures presented in this section are **not** intended to limit program activities.

Important information regarding the safe handling and storage of pesticides can be found on the pesticide label and the Material Safety Data Sheet (MSDS). See [Labels and Material Safety Data Sheets on page C-1-1](#) for examples of each. Check the labels and the MSDS you are using to confirm they are current.

### Pesticide Storage Methods

All personnel involved with pesticides should become completely familiar with the following storage methods:

- ◆ Store pesticides in a separate building or area (preferable)
- ◆ Store all pesticides in their original, labeled containers
- ◆ Check all containers or tanks for leaks periodically
- ◆ Display the pesticide end-use label clearly on bulk tanks
- ◆ Keep an inventory of all pesticides
  - ❖ Mark pesticide containers with date of purchase
  - ❖ Keep copies of pesticide inventory records in program files
- ◆ Use check valves to avoid back siphoning
- ◆ When **not** in use, keep lids of containers tight and tops of bags closed
- ◆ Store containers of liquid and dry material on pallets to prevent damage from water
- ◆ Post WARNING signs that are readable from 50 feet; and if appropriate, use dual language signs
- ◆ Check required lock capability for valves and lids
- ◆ Fill tanks to 95 percent capacity to allow for product expansion

---

<sup>1</sup> Pesticide storage information is referenced in part from the *Pesticide User's Guide*, 1990, by Bert L. Bohmont. The book contains glossaries, illustrations, and general factors to consider when using any pesticide, and should be part of your work unit's reference materials.

- ◆ Maintain emergency wash kits (include an eyewash kit)
- ◆ Keep spill kits nearby
- ◆ Keep areas secure from unauthorized personnel
- ◆ Notify local fire personnel of storage contents and provide a Material Safety Data Sheet (MSDS)
- ◆ Develop a fire pre-plan
- ◆ **Avoid** storing unnecessarily large quantities of pesticides
  - ❖ Keep proper records of previous requirements (and refer to these when estimating future needs)
  - ❖ Make proper estimates of future needs

Pesticides should **never** be stored in any improper methods or containers. Be certain of the following:

- ◆ **Never** store pesticides in food, feed, or beverage containers
- ◆ **Do not** let rain water collect on top of barrels/tanks
- ◆ **Do not** use underground storage for pesticides
- ◆ **Do not** store clothes, lunches, respirators, or drinks with or near pesticides

### Pesticide Sampling

Sampling of pesticides in bulk storage containers and small containers should be done to determine and document the pesticide being used has the correct amount of the active ingredient.

1. Draw a neat sample from the original material before the pesticide is applied.
2. Complete *PPQ Form 391, Specimen for Determination* (see xx).
3. Send the sample and the completed form to the laboratory for testing to the following address:

xx

### Bulk Storage Containers

There are many advantages to the use of bulk pesticide storage; significant savings in pesticide costs and container disposal are dominant.

Prepare for pesticide delivery as follows:

1. Make sure the storage tanks are clean and moisture-free.

2. If using more than one tank for liquid storage of the same chemical, then interconnect the tanks with valved lines so that the pesticide can be drawn from any one tank or a combination of tanks **without** moving pump connections from one tank to another.
3. Locate pumping equipment for unloading supply trucks and mixing or recirculating the pesticide so that equipment and parking for trucks are out of the way of aircraft being loaded.
4. Locate tanks and loading equipment facilities far enough away from the runway to permit aircraft loading **without** interfering with other aircraft using the runway.
5. **Do not** use aircraft loading equipment for unloading supply trucks unless this can be done when aircraft are **not** operating.

### Object Free Areas (OFAs) and Pesticide Storage

Be aware that the Federal Aviation Administration, Flight Standards District Office (FAA-FSDO) has established regulations to prevent obstructing airport runways. There are safety zones around all airport runways called object free areas (OFAs). Check with the FAA-FSDO for the required size of the OFA at the airport, and ask if *FAA Form 7460-1, Notice of Proposed Construction or Alteration*, should be submitted for approval. The FAA has a formula to use as a guide, which includes the distance from the center line of the runway and the height of the storage tank.

If the pesticide storage area is at an airport, then **do not** place the dike and tank too close to a runway, for safety reasons and to maintain the required the object free area. Consider where aircraft can be safely loaded that will **not** obstruct other aircraft using the airport.

### Diking Tanks

Containment dikes (berms) may be required by local or State pesticide regulators or program guidelines. Be aware that many times the diking **must** be made of a certain material or grade.



North Dakota pesticide laws require diking that will hold the volume of the chemical plus 10 percent extra. Materials **must** be non-absorptive.

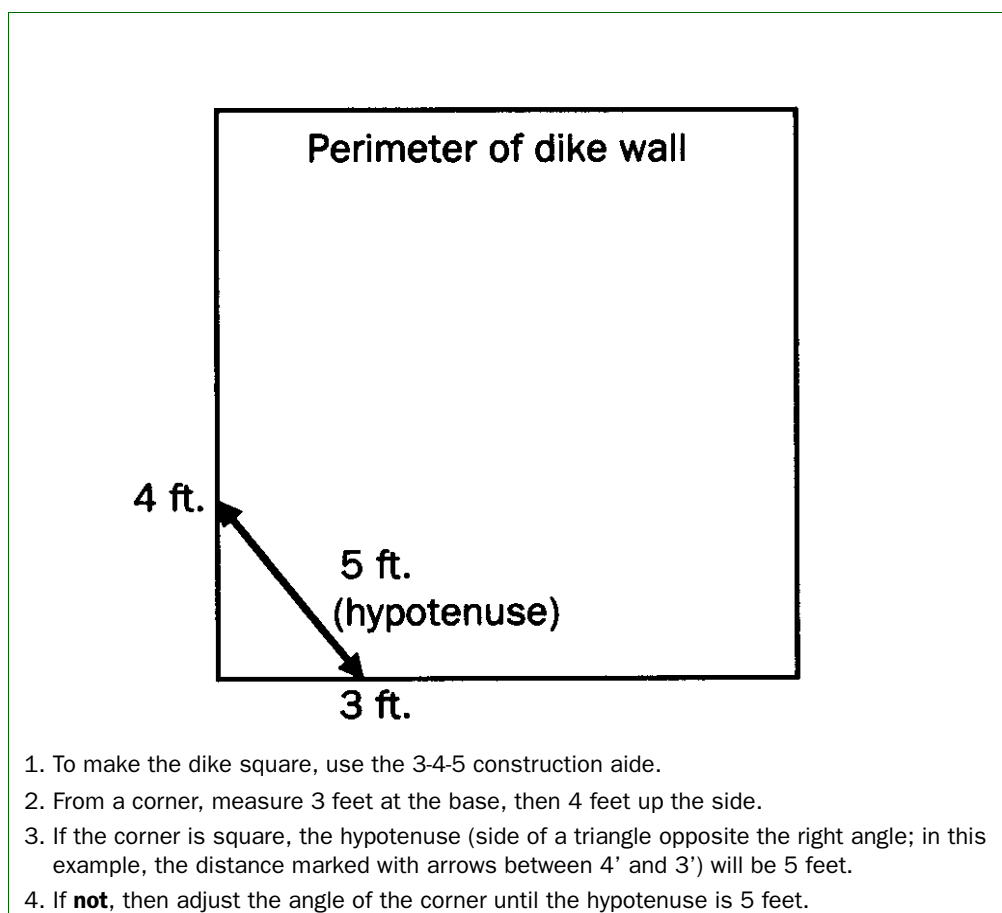
1. Obtain the quantity of chemical ordered.
2. Chemical quantity + 10 percent = gallons containment required.
3. 1.0 cubic foot holds 7.5 gallons.
4. Gallons containment required/7.5 gallons = cubic feet capacity needed.
5. Dike height (ft.) x width (ft.) x length (ft.) = Diking tank capacity in cubic feet.

**FIGURE 2-8-11 Formula to Determine Diking Tank Capacity in Cubic Feet and Cubic Feet Capacity Needed for Chemical**



**EXAMPLE**

1. Quantity of chemical ordered is 8,000 gallons
2. 1.0 cubic foot holds 7.5 gallons
3.  $8,000 \div 7.5 = 1,067$  cubic feet capacity needed
4.  $1,067 \times 1.5 = 1,600$  cubic feet capacity needed
5. 1.5 ft. height x 28 ft. width x 28 ft. length = 1,176 cubic feet



**FIGURE 2-8-12 3-4-5 Construction Aid to Make a Dike Square**

### Dry Pesticide Formulations

Keep dry pesticide formulations dry; **do not** let them get damp or wet. A hangar, warehouse, or other suitable building at the airport, or enclosed van, truck, or trailer should be used for storage.

If suitable enclosed storage facilities are **not** available at or near the loading site, then pesticide material stored outside of buildings should be stacked on pallets and protected with waterproof covers.

## Pesticide Spill Kit

Every pesticide storage and loading area site should have an accessible spill kit to contain and clean up accidental leaks or spills. To create a spill kit, collect and/or order and assemble the items listed in **Figure 2-8-13**. Use the 50-gallon garbage cans to hold the spill kit contents.

Item	Quantity
50-gallon plastic garbage can with wheels	2 each
Approved respirator with approved canisters	2 sets
Bar soap	2 bars
Broom and dustpan	1 each
Emergency eyewash system	1 system
Fire extinguisher, 5 lb.	1 each
Goggles or safety glasses	2 pairs
Heavy duty plastic garbage bags	50
Kitty litter	100 pounds
Lime	50 pounds
Lime and Lye Material Safety Data Sheets (MSDS)	1 each
Liquid detergent	1 quart
Lye (sodium hydroxide - NaOH)	50 pounds
Pesticide label and MSDS	1 each
Plastic tarp (25 ft by 25 ft)	1 each
Potable water	5 gallons
Rain suits (unlined or disposable coveralls)	2 suits
Rubber boots (unlined)	2 pairs
Rubber gloves (unlined)	4 pairs
Scrub brushes	2
Shovel (spade tip)	1 each
Shovel (square tip)	1 each
Other safety gear, as appropriate	

**FIGURE 2-8-13** List of Spill Kit Contents

## Pesticide Spills

Contingency plans and procedures for managing spills **must** be in place in advance of storing pesticides. The contingency plan **must** also include training on equipment and protocols. See **Program Supervision**, **Pesticide Spill Management and Emergency Procedures on page 4-5-1** for additional information.

# 2

Aerial Application  
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## Program Planning

### *Environmental Monitoring*

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- Environmental Monitoring and Sampling [page 2-9-1](#)
- Environmental Monitoring Training [page 2-9-2](#)
- Environmental Monitoring Plan [page 2-9-2](#)

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#### Introduction

The ***Environmental Monitoring*** section of ***Program Planning*** provides information about the suppression program's sampling components; contact information to determine whether a trained PPQ or PPD environmental coordinator is required for the specific aerial application treatment program; and instructions to follow when a monitoring plan is **not** available.

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#### Environmental Monitoring and Sampling

Environmental monitoring may need to be set up at the control block because of program guidelines, National Environmental Policy Act (NEPA) requirements, Environmental Monitoring Plan (EMP), sensitive areas, site-specific conditions, and mitigating circumstances. An EMP may also be required for the project based on the program or site-specific circumstances.

Frequently monitored environmental components are: water, sediment, soil, vegetation, target insects, chemicals, and dyecards.

Taking samples from soil, water, and vegetation to monitor the fate of the program chemicals can show the following:

- ◆ Assessment of program risks was accurate
- ◆ Non-target organisms were **not** adversely affected
- ◆ Off-site pesticide residues were **not** excessive
- ◆ Sufficient pesticide has reached the target site

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## Environmental Monitoring Training

Program personnel will be trained by the APHIS Environmental Monitoring Team to implement the program's *Environmental Monitoring Plan* (EMP), and collect and submit samples to the Analytical and Natural Products Chemistry Lab in Gulfport, Mississippi for analysis. Some pest management programs have existing cadres of personnel that are trained in the implementation of the EMP and collection of appropriate samples.

Contact the APHIS Environmental Monitoring Team to determine if environmental monitoring is required for the specific aerial application treatment program. Additional instructions regarding the need and availability of monitoring personnel, and preparation of an EMP can be obtained by contacting the following:

Environmental Monitoring Team  
USDA-APHIS-PPQ-ISPM  
4700 River Road, Unit 150  
Riverdale, Maryland 20737-1237  
Phone: 301-851-2308  
FAX: 301-734-8584

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## Environmental Monitoring Plan

This manual is subordinate to the *Environmental Monitoring Plan* (EMP) for the program for which the samples are being collected. Any instructions in the specific program's EMP supersedes instructions contained herein. The EMP will explain what the monitoring is meant to accomplish and how monitoring is to be implemented.

Instructions in the EMP will include the following:

- ◆ When, where, and how many samples are to be collected
- ◆ Procedures for collecting the samples
- ◆ Documentation for sampling
- ◆ Protection measures for endangered and threatened species

Before any environmental monitoring samples are collected, the EMP **must** be carefully reviewed.

If an *Environmental Monitoring Plan* is **not** available, then consult the Environmental Monitoring Team at 301-851-2308 before collecting any samples.

# 2

Aerial Application  
Manual

## Program Planning

### *Pest Mortality Assessment*

---

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Step 4: Perform Post-treatment Sampling [page 2-10-3](#)

Step 5: Interpret Results [page 2-10-4](#)

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#### Introduction

The ***Pest Mortality Assessment*** section of ***Program Planning*** provides information about setting up official sample sites, determining the effectiveness of the treatment, documenting the results of the treatment, and informing cooperators of those results.

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#### Procedures

Establish official mortality assessment sites in the treatment block and visit those sites before and after treatment operations. Mortality assessment may also be accomplished along with normal survey activities.

##### **Step 1: Determine the Number of Sites**

Based on the delimiting survey, select a number of survey sites to serve as the official sample sites for assessing mortality of the control program. Depending on the target pest, refer to the program requirements to determine survey methodology.

The recommended number of sample sites is dependent on the following:

- ◆ Access to the area
- ◆ Available personnel
- ◆ Environmental or political sensitivity to the block
- ◆ Size of the treatment block
- ◆ Type of pest being sampled

As much as practical, randomly select the sample sites, which should represent a variety of terrains or habitats within the treatment area, and provide a more realistic estimate of efficacy. Mark the mortality sample sites using stakes or flags. Record the location of these sites on the program map that will be part of the program file.

Some program manuals or work unit locations may have established guides for mortality assessment. If **no** existing guidelines exist, then see **Table 2-10-1** to determine if the number of sites to use for mortality assessment are useful for the program.

Number of acres in a treatment block	Minimum number of sites for assessment
1,000 to 4,999	5
5,000 to 19,999	10
20,000 to 49,999	15
50,000 to 99,999	20
100,000 and over	20, plus 1 site for every additional 25,000 acres

**FIGURE 2-10-1 Minimum Number of Sites to Use for Mortality Assessment**

### Step 2: Perform Pre-treatment Sampling

Sampling the sites in relation to treatment dates is important. Pretreatment samples should be taken as close as practical to, but before the treatment begins.

### Step 3: Establish Control Group Sites

For some suppression projects, establishing sample mortality sites outside the treatment block (control group site) is recommended. Outside treatment area sample sites can provide an estimate of the natural increase or decrease of pest populations in nearby, untreated areas.

If populations outside the treatment block remain static or show an increase, then this information can demonstrate to cooperators the success of the control program. The results of the outside treatment area sample sites (control group site) can be used in a formula to adjust the mortality assessment.

xx

**FIGURE 2-10-2 Formula to Adjust Mortality Assessment Efficacy Estimate**

See [Step 5: Interpret Results on page 2-10-4](#).

The following example uses both inside and outside sample sites to adjust the efficacy estimate inside a grasshopper treatment block.

**EXAMPLE**

Grasshopper densities (square yard) on sites inside the spray block (Treated)		Grasshopper densities (square yard) on sites outside the spray block (Untreated)	
Pre-treatment	Post-treatment	Pre-untreated	Post-untreated
93	4	6	6
52	1	36	28
38	1	19	16
22	3	43	32
42	6	9	10
Total 247	15	113	92
Mean 49.4	3.0	22.6	18.4

**Step 4: Perform Post-treatment Sampling**

Accuracy is important to determine the success of the treatment. Weather conditions significantly affect accuracy of pest counts. The Program Manager (PM) and Contracting Officer's Representative (COR) **must** balance treatment timing and available personnel to optimum weather.

Allow adequate time for the chemical to be effective before taking post-treatment counts to increase the accuracy of mortality assessment and provide a better estimate of program success for cooperators.

When selecting the sampling dates for post-treatment counts, consider the type of pesticide that is being used.

- ◆ Chemicals such as Malathion have a fast mode of action, and post-treatment counts can possibly be taken within a few days after treatment
- ◆ Chemicals such as Carbaryl or bait type formulations have a slower mode of action and will require additional time before maximum efficacy is achieved
- ◆ Chemicals such as Diflufenzuron (Dimilin) may require a full month to reach full efficacy due to the mode of action

If the rate of mortality is unknown, then several post-treatment counts may be needed to ensure accurate data.

### **Step 5: Interpret Results**

If the untreated pest population shows a small natural decline during treatment operations, then the percent control that can be attributed to the pest control treatment also will be reduced or corrected by the formula.

Conversely, if the untreated pest population increases after the pretreatment samples are taken, then the formula will show a higher percent control attributed to the treatment.



# 2

Aerial Application  
Manual

## Program Planning

### *Occupational Medical Monitoring*

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Signs and Symptoms of Cholinesterase Inhibition	page 2-11-4

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#### Introduction

The ***Occupational Medical Monitoring*** section of ***Program Planning*** provides information about the procedures to follow for medical surveillance of occupational exposures in the workplace.

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#### Procedures

The occupational medical monitoring request process starts and stops with your supervisor. The supervisor is required to know all the potential or actual occupational exposures that you will face in the workplace and convey this information to you and the other employees.

Based on this knowledge the supervisor can assist you, if necessary, in listing all the potential and/or actual occupational exposures on *APHIS Form 29, Occupational Medical Monitoring Occupation Exposures*. APHIS Form 29 is used to request medical surveillance for occupational exposures through the APHIS Occupational Medical Monitoring Program. See **Table A-1-3 on page A-1-20** for instructions on completing APHIS Form 29.

After APHIS Form 29 is completed, the supervisor will review, verify, and sign the form. Be sure that both the supervisor's and employee's phone numbers are listed, so the medical advisor can call if there are any specific questions or concerns with the information provided. Listing all potential and/or actual exposures is imperative.

All medical decisions, as far as tests and/or immunizations recommended/required, are the responsibility of the board certified occupational medical physician with Federal Occupational Health (FOH) who serves as the APHIS Medical Advisor. The completed APHIS Form 29 is faxed to FOH at 1-415-437-8008 and will be reviewed by the APHIS Medical Advisor.

The APHIS Medical Advisor will list the appropriate tests and/or immunizations based on the information provided on the APHIS Form 29 and will provide a Medical Surveillance Program (MSP) test list to the account manager, Ms. Judy Ma, of FOH. The account manager will locate a clinic as close to the requestor as possible and transmit this information back to the requestor. The requestor then calls the clinic and makes an appointment with the account manager at (415)437-8007.

**EXAMPLE**

Such exposures may include the following: if you work at a Port or Airport where there is potential/actual occupational exposure to noise hazards; if you are required to wear a respirator based at your workplace or specific function within that workplace; if you are required to perform BSE specimen collections; if you apply or mix organophosphate and/or carbamate based pesticides; if you work with radioactive material, radiation producing devices, lasers; if you work with hazardous chemicals or hazardous waste; etc.

If there is **no** Federal Occupational Health Center within 60 miles from your work location, then please indicate this on the cover sheet when you FAX the APHIS Form 29 to FOH.

The account manager will send the recommended/required MSP Test List to the employee and a work order to the FOH office in Kansas City (FOHNet) who then sends the work order to the selected private clinic and indicate which tests the employee needs according to the medical advisor's recommendation. The employee will be informed of the selected clinic by FOHNet. The employee should call the clinic and make an appointment as soon as possible. The employee should bring **only** the MSP Test List to the clinic. **Do not** take the APHIS Form 29 to the clinic.

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## Cholinesterase

Cholinesterase is one of the many important enzymes needed for the proper functioning of the nervous systems of humans, other vertebrates, and insects. Certain chemical classes of pesticides, such as organophosphates and carbamates work against undesirable insects by interfering with or inhibiting cholinesterase. While the effects of cholinesterase inhibiting products are intended for insect pests, these chemicals can also be poisonous or toxic to humans in some situations.

Human exposure to cholinesterase-inhibiting chemicals can result from inhalation ingestion, or eye or skin contact during the manufacture, mixing, or application of these pesticides. To understand why these compounds can be poisonous or toxic to humans, a basic understanding of some human physiology **must** be considered. Electrically switching centers, called synapses, are found throughout the nervous systems of humans, other vertebrates, and

insects. Muscles, glands, and nerve fibers, called neurons, are stimulated or inhibited by the constant firing of signals across these synapses. Stimulating signals are usually carried by a chemical called acetylcholine. Stimulating signals are discontinued by a specific type of cholinesterase enzyme, acetylcholinesterase, which breaks down the acetylcholine. These important chemical reactions are usually going on all the time at a very fast rate, with acetylcholine causing stimulation and acetylcholinesterase ending the signal. If cholinesterase-affecting pesticides are present in the synapses, this situation is out of balance. The presence of cholinesterase inhibiting chemicals prevents the breakdown of acetylcholine. Acetylcholine can then build up, causing a jam in the nervous system. Thus when a person receives too great an exposure to cholinesterase inhibiting compounds, the body is unable to break down the acetylcholine. Electrical impulses can fire away continuously unless the number of messages being sent through the synapse is limited by the action of cholinesterase. Repeated and unchecked firing of electrical signals can cause uncontrolled, rapid twitching of some muscles, paralyzed breathing, convulsions, and extreme cases, death.

### Cholinesterase Monitoring Program

In an effort to provide a safe and healthy work environment, APHIS has an established cholinesterase monitoring program to protect employees from pesticide poisoning. The program is currently administered by Federal Occupational Health (FOH), an agency within the Department of Health and Human Services. APHIS will monitor blood cholinesterase levels in employees exposed to organophosphate and carbamate program pesticides and/or other cholinesterase inhibitors. This includes supervisors and/or observers of pesticide applications who may be exposed to pesticide drift and may be unaware of their contamination.

All APHIS employees whose responsibilities include exposure to organophosphate or carbamate pesticides are required to have their baseline cholinesterase levels determined before assuming their duties. This requirement includes both new employees and employees transferred from other duties which excluded pesticide exposure. To initiate entrance into the cholinesterase monitoring program, the employee and the supervisor **must** complete *APHIS Form 29, Occupational Monitoring Program, Occupational Exposures*. Once completed, the form is forwarded to the FOH medical adviser. The medical adviser will determine which test(s) will be done and how often the test(s) will be repeated. This is based on the pesticide exposure, amount of exposure, and frequency of exposure.

After inadvertent exposure to organophosphate or carbamate insecticides, depression of cholinesterase activity can last from hours to days to at most a few weeks. The purpose of follow-up testing is to

make sure that there is **no** inadvertent exposure to these pesticides while APHIS employees are performing their routine work duties. Performing blood testing when there has **not** been activity around these pesticides or substances which may have been treated with these agents will give a false sense of security, since **no** potential for exposure has occurred. Timing of any follow-up testing is critical, and should **only** occur when there has been significant activity around these pesticides or their residue.

Overexposure to organophosphate and carbamate pesticides can result in cholinesterase inhibition. The more cholinesterase levels decrease, the more likely symptoms of poisoning from cholinesterase-inhibiting pesticides are to appear.

### Signs and Symptoms of Cholinesterase Inhibition

Signs and symptoms of cholinesterase inhibition include the following:

- ◆ Mild poisoning
  - ❖ Headache, fatigue, dizziness, weakness, nausea, sweating, tearing, and runny nose
- ◆ Moderate poisoning (in addition to signs and symptoms above)
  - ❖ Headache, fatigue, dizziness, weakness, nausea, sweating, tearing, and runny nose
  - ❖ Tremor, muscular incoordination, drooling, blurring of vision, difficulty breathing, abdominal cramps, vomiting, diarrhea, twitching of muscles, mental confusion, profound weakness, and rapid pulse rate
- ◆ Severe poisoning (in addition to signs and symptoms above)
  - ❖ Loss of reflexes, inability to breathe, slow pulse rate, uncontrollable muscular twitching, and incontinence
  - ❖ Constriction of pupils, convulsions, unconsciousness, and severe secretion from the respiratory tract



If someone experiences any of these symptoms, especially a combination of four or more symptoms during pesticide handling or through other sources of exposure, the person should **immediately** remove himself or herself from possible further exposure. The victim of the poisoning should be transported to the nearest hospital at the first signs of poisoning.

After the person experiencing the symptoms is removed and the work area is decontaminated, then work practices, possible sources of exposure, and protective precautions should also be carefully examined.

# 3

Aerial Application  
Manual

## Program Start-up

### *COR Orientation*

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#### Introduction

The **COR Orientation** section of **Program Start-up** provides information about the orientation meeting between the Program Manager (PM) and the Contracting Officer's Representative (COR). The PM will share information about the current program, bring the COR up-to-date on the status of tasks, and the two will negotiate responsibility for specific program tasks.

---

#### Orientation

Once the Contracting Officer's Representative (COR) arrives at the designated location, the Program Manager (PM) is responsible for orienting the COR to program-specific operations.

##### **Orientation Meeting Time and Place**

The Program Manager (PM) will schedule an orientation meeting with the COR to review program operations. During the orientation meeting, negotiation **must** take place between the PM and the COR to define and decide each person's responsibilities and/or shared responsibilities (who does what). The PM will brief the COR on the initial program activities that have already been completed, program plans, and remaining tasks.

Occasionally time may **not** allow for the Program Manager's one-on-one meeting with the COR. If so, then the PM should use the **Program Checklists** to gather and document all the information the COR will need to continue with the program and then give that information and a copy of the checklist to the COR.

##### **Program Checklists**

The program checklists contain items the Program Manager (PM) **must** cover when orienting a COR to control activities. The checklists are needed for the PM and the COR preparing for starting up,

supervising, and following up on control activities. The program manager and COR should add additional items to address local or site-specific situations.

1. The Program Manager will gather the documents listed in **Figure 3-1-1** and have them available for the COR.

<b>Orientation Documents Checklist</b>
<input type="checkbox"/> <i>Aerial Application Manual</i>
<input type="checkbox"/> <i>APHIS Aerial Application Prospectus</i>
<input type="checkbox"/> Bank letter (statement from bank showing status of funds in rancher's escrow account)
<input type="checkbox"/> Bid invitation (aerial contract, site-specific information)
<input type="checkbox"/> Contract
<input type="checkbox"/> <i>PPQ Form 136, Detailed Work Plan (DWP)</i>
<input type="checkbox"/> Environmental Assessment (EA)
<input type="checkbox"/> Environmental Monitoring Plan
<input type="checkbox"/> Final Environmental Impact Statement (FEIS)
<input type="checkbox"/> <i>Fruit Fly Systems Guidelines</i> (if applicable)
<input type="checkbox"/> <i>Grasshopper Program Manual</i> (if applicable)
<input type="checkbox"/> <i>Guidelines for Treatment of Rangeland and the Suppression of Grasshoppers and Mormon Crickets</i> (if applicable)
<input type="checkbox"/> <i>Gypsy Moth Manual</i> (if applicable)
<input type="checkbox"/> Insecticide labels
<input type="checkbox"/> Material Safety Data Sheets (MSDS) for chemicals used on the project
<input type="checkbox"/> <i>Medfly Action Plan</i> (if applicable)
<input type="checkbox"/> Relevant policy memos
<input type="checkbox"/> Results of medical testing
<input type="checkbox"/> Supply of documents and maps (both CORs and program managers need to keep)
<input type="checkbox"/> Spill guidelines, procedures; Federal, State, and local contacts, etc.
<input type="checkbox"/> Work Checklist (accompanies the Detailed Work Plan)

**FIGURE 3-1-1 Program Manager to COR Orientation Documents Checklist**

2. The Program Manager will provide information with the Contracting Officer's Representative (COR) about the topics listed in **Figure 3-1-2** and **Figure 3-1-3**.

<b>Orientation Topics Checklist</b>	
<input type="checkbox"/>	Airports available and ferry distance
<input type="checkbox"/>	Bank letter (statement from bank showing status of funds in cooperator's escrow account)
<input type="checkbox"/>	Bee status
<input type="checkbox"/>	Contacts (names of persons, agencies, and phone numbers)
<input type="checkbox"/>	Airport authority
<input type="checkbox"/>	Fire Department
<input type="checkbox"/>	Hospital/ambulance
<input type="checkbox"/>	Landowners or representatives
<input type="checkbox"/>	Other Federal agencies
<input type="checkbox"/>	Police/Airport Security
<input type="checkbox"/>	Poison Control Center
<input type="checkbox"/>	State and local cooperators
<input type="checkbox"/>	State and local emergency offices
<input type="checkbox"/>	Contact information
<input type="checkbox"/>	How the Program Manager will contact the COR
<input type="checkbox"/>	How to contact the Program Manager (frequency, information to supply for daily report, etc.)
<input type="checkbox"/>	How to contact the Contracting Officer (CO) for issues that would affect the contract beyond the authority of the COR
<input type="checkbox"/>	Contractor information
<input type="checkbox"/>	Boom timers
<input type="checkbox"/>	Guidance type and equipment
<input type="checkbox"/>	Nozzle type and number
<input type="checkbox"/>	Number and speed of observation aircraft
<input type="checkbox"/>	Number and type of application aircraft
<input type="checkbox"/>	Operational hours allowed
<input type="checkbox"/>	Pumps, meters, and equipment
<input type="checkbox"/>	Reporting date/starting date
<input type="checkbox"/>	Cooperative agreements (State Department of Agriculture, Rancher Committee, etc.)
<input type="checkbox"/>	Letter/statement from bank regarding status of funds in rancher escrow account)
<input type="checkbox"/>	Cooperator involvement, prior commitments or arrangements with other agencies' personnel, State cooperators, land managers, and private landowners
<input type="checkbox"/>	Delegation of authority to the COR
<input type="checkbox"/>	Detailed Work Plan review

**FIGURE 3-1-2 COR-Program Manager Orientation Topics Checklist (page 1 of 2)**


**Orientation Topics Checklist (continued)**

- Environmental concerns
  - Buffer zones
  - Sensitive areas
- Environmental Monitoring Coordinator
- Environmental Monitoring Plan
- Equipment available (in storage)
- Letters of request (congested area approval, treatment, etc.)
- Map review
- Motels or lodging facilities available for field surveyors or other personnel who need to stay near the airport or the treatment block
- Names and phone numbers of people supervised by the COR
- Presence or absence of biological control sites
- Presence or absence of organically grown crops in the block and vicinity
- Pretreatment reconnaissance flight (need for)
- Pretreatment samples
- Procurement
  - Accounting classification
  - Blanket purchase order number(s)
  - Over-the-counter purchases (VISA, cash)
  - Tax exempt number
- Program location, size, ownership of land, number of spray blocks
- Public notice
  - Who to contact
  - How to contact
- Safety concerns (particular)
- Shared responsibilities between Program Manager and COR (who does what)
- Special considerations (such as change in treatment areas, politics of the area, special interests)
- Status of equipment and supplies
- Status of pesticide, storage, and delivery schedule
- Vehicles/motorcycles/4-wheel AT's
  - Assigned to the COR
  - Available for the program (on and off road)

**FIGURE 3-1-3 Program Manager to COR Orientation Documents Checklist  
(page 2 of 2)**



3. The Program Manager will discuss activities to be conducted during the aerial application program as listed in **Figure 3-1-4** and **Figure 3-1-5**. Negotiate with the COR for each person's responsibilities or shared responsibilities (who does what).

<b>Aerial Application Program Manager and COR Activities Checklist</b>	
<input type="checkbox"/>	Aerially observe control activities
<input type="checkbox"/>	Arrange and document mortality assessment sites
<input type="checkbox"/>	Become familiar with the treatment areas and inspect the areas for hazards and sensitive areas
<input type="checkbox"/>	Brief contractor personnel
<input type="checkbox"/>	Brief program personnel and train personnel for specific assignments
<input type="checkbox"/>	Brief program personnel on measures to extend courtesy to local townsfolk (such as what to say or <b>not</b> say at the local cafe; noise at the motel at 0400, etc.)
<input type="checkbox"/>	Conduct daily briefing
<input type="checkbox"/>	Conduct reconnaissance flight
<input type="checkbox"/>	<input type="checkbox"/> Check for bees
<input type="checkbox"/>	<input type="checkbox"/> Check boundary flagging
<input type="checkbox"/>	<input type="checkbox"/> Check buffers
<input type="checkbox"/>	Determine daily start-up
<input type="checkbox"/>	Determine shutdown of daily activities
<input type="checkbox"/>	Develop and maintain daily logs and record all actions and events during the program
<input type="checkbox"/>	Ensure adequacy of radio communications within the block and to the airstrip (reiterate radio protocols)
<input type="checkbox"/>	Ensure regional environmental monitoring contacts have been notified of the program and are ready to conduct the necessary environmental monitoring
<input type="checkbox"/>	Ensure timekeeper properly completes <i>PPQ Form 802, Daily Aircraft Record</i>
<input type="checkbox"/>	Finalize and distribute program maps to the appropriate people
<input type="checkbox"/>	Have all equipment and supplies in place and ready for use
<input type="checkbox"/>	Implement an Environmental Monitoring Plan (EMP)
<input type="checkbox"/>	Inspect each pilot's documents, each aircraft, and the aircraft's dispersal apparatus to determine compliance with contract specifications
	<b>Important</b>
	If the pilot or aircraft <b>does not</b> comply with the specifications of the contract, then stop the contractor from taking further action and contact the Contracting Officer (CO) in Minneapolis (MBS) to ask for additional instructions.
<input type="checkbox"/>	Inspect the work site with the contractor or the contractor's representative
<input type="checkbox"/>	Jointly (PM and COR) sign and date the master program map to verify spray block, sensitive areas, and buffer zones
<input type="checkbox"/>	Maintain the current master program map illustrating daily progress in application
<input type="checkbox"/>	Manage and contain pesticide spills

**FIGURE 3-1-4 Aerial Application PM and COR Activities Checklist (page 1 of 2)**

**Aerial Application Program PM and COR Activities Checklist** (continued)

- Monitor contractor's personnel and ensure they comply with contract provisions
  - Aircraft
  - Aircraft equipment
  - Airport/airstrip activities (ensure permission for use of airport, and that fees paid)
  - Personnel
  - Spray activities
- Monitor dye cards
- Monitor safety concerns
- Monitor weather conditions
- Notify involved agencies, groups, and persons
- Obtain a reference sample of the pesticide
- Participate (COR and Program Manager) in an orientation to control activities
- Prepare daily progress reports for the program manager
- If requested, provide feedback to local representatives of interested State and Federal wildlife agencies
- Provide program updates
- Respond to complaints
- Send a final notification to beekeepers

**FIGURE 3-1-5 Aerial Application Program PM and COR Activities Checklist  
(page 2 of 2)**

4. Review the list of activities that must be finished after completion of the program. See the activities listed in **Figure 3-1-6**.

<b>Program Completion Activities Checklist</b>	
<input type="checkbox"/>	Account for all equipment and chemicals
<input type="checkbox"/>	Complete <i>PPQ Form 817, Aerial Contractor Performance Evaluation Report</i> , and send the <b>original</b> to the program office
<input type="checkbox"/>	Critique the program
<input type="checkbox"/>	Dispose of empty containers
<input type="checkbox"/>	Document and record program costs (such as per diem, fuel, purchases, rentals, repairs, and salary)
<input type="checkbox"/>	File records of the program
<input type="checkbox"/>	Follow-up on all unresolved complaints
<input type="checkbox"/>	Inform involved agencies, groups, and persons that treatment is complete
<input type="checkbox"/>	Interview private cooperators to determine quality of project
<input type="checkbox"/>	Make financial settlement with cooperators and prepare a financial summary
<input type="checkbox"/>	Prepare <i>PPQ Form 136, Work Achievement Report</i> , and any other required reports documenting results of the program
<input type="checkbox"/>	Remove boundary markers

**FIGURE 3-1-6 Program Completion Activities Checklist**



# 3

Aerial Application  
Manual

## Program Start-up

### *Program Maps*

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---

#### Introduction

The ***Program Maps*** section of **Program Start-up** provides details about maps to use for aerial application program, where to obtain the maps, and information to record on the master program map.

---

#### Program Maps

Accurate maps are essential aids to use for planning field work, orienting scouts and pilots to the locations of treatment areas and boundaries, locating electronic guidance tower sites, and graphically recording the acreage treated each day. For more information about the maps used during **Program Planning**, see **Program Maps on page 2-3-1**.

##### Topographic Maps

The best type of map to use for aerial application programs is the topographic map. Advantages of using a topographic map include the following:

- ◆ Areas can be calculated with a planimeter or GIS systems
- ◆ Contour lines and other pertinent information shown provide good references for pilots
- ◆ Many are shaded to indicate woodlands
- ◆ Program personnel can record exact locations where swaths or a day's work ended
- ◆ Treated areas can be checked accurately against the amount of the pesticide applied

### **Map Sources**

Copies of State indexes and information concerning availability of maps can be obtained from the U.S. Geological Survey. Topographic maps are identified by indexes issued for each State. These and other maps may also be available from State geological surveys or State water commissions.

---

## **Information to Record on Program Maps**

Record information on the appropriate maps as listed below.

### **Master Program Maps**

The Contracting Officer's Representative (COR) and Program Manager (PM) should each have identically-marked master program maps, and keep the maps current.

Each master program map used should have an appropriate scale, and show the following:

- ◆ Acres in each block
- ◆ Amount of pesticide needed for each block
- ◆ Areas **not** to be treated
- ◆ Endangered species areas (highlighted) and buffer zones (highlighted)
- ◆ Hazards to pilots
- ◆ How the area is divided and numbered
- ◆ Location of the airstrip
- ◆ Perimeter of areas to be treated
- ◆ Treatment blocks

### **Updates to Other Program Maps**

In addition to the master program maps, the Contracting Officer's Representative (COR) and Program Manager should advise all other persons who have maps of any changes to be made on the maps. See [Program Updates on page 4-2-19](#). Those persons should immediately note the updated information on their own program maps to ensure program map accuracy.

### **Maps for Airstrip Supervisor and Ground Observer**

Provide each airstrip supervisor and each ground observer with a suitable map. All the information listed on the master program map must be shown on the maps for the airstrip supervisor and ground observers. If a unit is too large to be shown on one map, then join several maps together with tape.

## Maps for Pilots

Provide a map with information of the same scale for each pilot, but show **only** the block assigned to the pilot for treatment plus a surrounding border a few miles wide. Maps given to pilots can be at a scale of 1/4-inch or less to the mile, since larger maps may be too cumbersome to work with in the cockpit.



When drawing block boundary lines on a map, draw the lines adjacent to roads, pipelines, power lines, etc., so as **not** to hide the boundary reference on the map. Number corners and name features that can be used to aid in communicating with program personnel.





# 3

Aerial Application  
Manual

## Program Start-up

### Program Logs

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---

#### Introduction

The **Program Logs** section of **Program Start-up** provides instructions about the information to record in the journals (Daily Log and Base Log) kept by the Program Manager, Contracting Officer's Representative (COR), and Air Operations (airport supervisor, and airport recorder/timekeeper).

---

#### Program Logs

Program logs **must** be kept and maintained as part of the file for each program, for the following purposes:

- ◆ Provide the information source for set up and supervision of programs by the Program Manager, the Contracting Officer's Representative (COR), and Airport Operations
- ◆ Provide the information source for State or local pesticide regulatory officials
- ◆ Make settlements or adjustments with the contractor
- ◆ Provide a historical record
- ◆ Provide a record of action taken
- ◆ Provide reference material for future program managers (planning)
- ◆ Review procedures
- ◆ Settle disputes (formal and informal)

Two types of logs are necessary to maintain and become part of the project file: the Daily Log and the Base Log. The Daily Log and Base Log are used to record all pertinent information related to program administration, supervision, and operations. These logs **must** be a clearly and accurately written account of events and details in chronological order.

You may use a notebook (such as a spiral) to create your Daily Log and a separate notebook to create a Base Log. See the **Daily Log** list of entries and the **Base Log** list of entries to record for the treatment program.

In the event circumstances dictate **only** one log can be kept, then items from both the Daily Log and Base Log lists need to be combined. To avoid duplication of effort or redundancy, the Program Manager or COR could also decide **only** to summarize activities in the Daily Log that are **not** specifically substantiated by other reports such as the Base Log. If the Program Manager or COR ensures that the airport recorder keeps certain information in the Base Log, then the Daily Log entries may be more specific to actions taken or decisions made. Persons recording information in the Daily Log and Base Log should coordinate to avoid duplication and to avoid missing the entry of important information into either log.

If the person keeping the log is in charge of more than one airstrip, then compiling the total end-of-day activities from the Base Log is acceptable.

---

## Daily Log

The Program Manager (PM) and Contracting Officer's Representative (COR) will each keep a Daily Log. The Daily Log is created during the planning phase and maintained through the close of the project. Use a spiral notebook or binder for your Daily Log. Be sure that all entries are written and pages maintained in a neat and orderly manner since they will become part of the program file.

### Items to Record in the Daily Log Before Spraying Begins

Before spraying begins, record the following in the Daily Log:

1. Date and time of Program Manager's and COR's arrival on site.
2. Details the COR and Program Manager discussed during the orientation; the items checked as discussed on the orientation checklist could fulfill this requirement. Include the following:
  - ❖ Notes on extra items added to the list
  - ❖ Other notes made by the COR or Program Manager

3. Inventory of equipment on site.
4. Names of all groups and persons contacted and the information exchanged between the Program Manager, CO, and groups or persons listed, which may include the following:
  - ❖ Airport authority
  - ❖ Company supplying the pesticide
  - ❖ Contractor
  - ❖ County extension agent
  - ❖ Federal land managers
  - ❖ Fire Department
  - ❖ Hospitals
  - ❖ Landowner committee chairman
  - ❖ Landowners
  - ❖ Police
  - ❖ PPQ, State, and other program personnel
  - ❖ Program manager
  - ❖ State cooperators
5. Purchases of equipment and supplies and dates of purchase.
6. Names, dates, and arrival times of all support personnel.
7. Dates, places, times, and subjects of meetings with the following persons or groups:
  - ❖ Contractor
  - ❖ Federal land managers
  - ❖ Private landowners
  - ❖ Public
  - ❖ State cooperators
  - ❖ Others
8. Date and time of arrival of aircraft and aircraft numbers.
9. Date and time of acceptance of pilots and aircraft.

10. All complaints and comments received from the following, and response or action taken:
  - ❖ Contractor
  - ❖ Federal land managers
  - ❖ Private landowners
  - ❖ Public
  - ❖ Others
  - ❖ State cooperator
11. Problems encountered including the following:
  - ❖ Aircraft **did not** report
  - ❖ Contractor lacks documents and a list of the missing documents
  - ❖ Equipment is **not** adequate
  - ❖ Equipment shortages
  - ❖ Pilot(s) **did not** report on time on spray days

### Items to Record on the Daily Log During the Spray Program

During the spray program, record the following items on the Daily Log:

1. Date.
2. Time.
3. Weather conditions.
4. Cloud cover.
5. Temperature (air and ground).
6. Wind.
7. Time aircraft are airborne.
8. Time and reason for non-operational aircraft.
9. Time and reason for aircraft returning to base.
10. Contractor actions.
11. Phone calls and subject of calls.
12. Visitor's name and purpose of visit.
13. Complaints and action taken.
14. Conversations and meetings.
15. Pesticide spills at base.
16. Time and reason for stopping spray operations.

17. Number of gallons of pesticide used (see *PPQ Form 802, Daily Aircraft Record*).
18. Number of acres sprayed (calculated from master program map).
19. Number of gallons of pesticide used (calculate from boom timers).
20. Mortality assessment information from treated areas.
21. Time the base closed.

### **Items to Record in the Daily Log as they Occur**

The following events may occasionally occur; record these in the Daily Log:

1. Pesticide jettison from the aircraft:
  - A. Date
  - B. Time
  - C. Aircraft number
  - D. Reason for jettison
  - E. Amount of pesticide jettisoned
  - F. Exact location of jettison
  - G. Persons notified
  - H. Action taken
2. Aircraft accident
  - A. Date of accident
  - B. Time of accident
  - C. Aircraft number
  - D. Reason (if known)
  - E. Amount of pesticide aboard the aircraft
  - F. Exact location of accident
  - G. Action taken
3. Vehicle accidents
  - A. Date
  - B. Time
  - C. License plate number
  - D. Reason (if known)
  - E. Name(s) of person(s) involved and extent of injuries
  - F. Statement made by witnesses
  - G. Action taken

4. Personal injuries
  - A. Date of injury
  - B. Time of injury
  - C. Names of injured persons and extent of injuries
  - D. Cause of injuries (if known)
  - E. Statements or comments from witnesses
  - F. Action taken

---

## Base Log

The Base Log is kept by the airport recorder/timekeeper and the airport supervisor during each project. The Air Operations/ Contracting Officer's Representative (COR) will record information in the Base Log until the airstrip supervisor or airport recorder/ timekeeper is assigned to maintain the log. Use a spiral notebook or binder for your Base Log. Be sure that all entries are clearly written and pages maintained in a neat and orderly manner since they will become part of the program file.

### Items to Record in a Base Log Before Spraying Begins

Before spraying begins, record the following items in the Base Log:

1. Date the airstrip was selected.
2. Location (city and county).
3. Date the base was established.
4. Pesticide information
  - A. Arrival date of pesticide delivery.
  - B. Method of pesticide shipment (bags, barrels, bulk, etc.).
  - C. Total amount of pesticide delivered.
5. Pesticide storage
  - A. Locks on pesticide storage tanks.
  - B. Status of security in the area.
  - C. Warning signs posted on drums or tanks.
6. Inventory of safety equipment and spill kit on site
  - A. Safety equipment list
  - B. Spill kit contents list
  - C. Date and time of safety training and names of attendees
7. Contractor information

- A. Arrival date of contractor
  - B. Arrival time of contractor
  - C. Aircraft (identification numbers and make and model)
  - D. Equipment (pumps, hoses, meters)
  - E. Support personnel (loaders, mechanics)
  - F. Vehicles
8. Inspections of aircraft and documents (see [Pilot and Aircraft Inspection on page 3-12-1](#))
    - A. Date of each inspection.
    - B. Time of each inspection.
    - C. Contractor is licensed to work in your State (verify).
    - D. Contractor is licensed to apply pesticides in your State (verify).
  9. Review pilot's certificates, insurance, and documents (date and time).
  10. Meetings (date and time).
  11. Agreed upon daily starting time.

### **Items to Record in Base Log During the Spray Program**

Beginning on the first spray date, record the following information in the Base Log:

1. Date of spray.
2. Time of spray.
3. Weather conditions.
  - A. Cloud cover
  - B. Temperature (air and ground)
  - C. Wind
4. Time aircraft go airborne.
5. Time and reason for aircraft returning to base.
6. Time and reason for non-operational aircraft.
7. Phone calls.
8. Visitors name and purpose of visit.
9. Complaints
  - A. Name of person(s) making complaint
  - B. Phone number of contact person (complainant)

- C.** Nature of complaint
  - D.** Action taken
- 10.** Conversations and meetings.
- 11.** Pesticide spills at base and action taken.
- 12.** Supplies used or reordered.
- 13.** Time and reason for stopping spray operations.
- 14.** Number of gallons of pesticide used (see *PPQ form 802, Daily Aircraft Record*).
- 15.** Number of acres sprayed (calculated from master program map)
- 16.** Time base closed

### **Items to Record in the Base Log as They Occur**

The following events may occasionally occur; record these in the Base Log:

- 1.** Pesticide jettisoned from aircraft
  - A.** Date of jettison
  - B.** Time of jettison
  - C.** Aircraft number
  - D.** Reason for jettison
  - E.** Amount of pesticide jettison
  - F.** Exact location
  - G.** Names of persons notified
  - H.** Action taken
- 2.** Aircraft accident
  - A.** Date of aircraft accident
  - B.** Time of aircraft accident
  - C.** Aircraft number
  - D.** Reason (if known) for accident
  - E.** Amount of pesticide aboard the aircraft
  - F.** Exact location of accident
  - G.** Name of person(s) notified
  - H.** Action taken
- 3.** Vehicle accidents: all information reported to Air Operations.
- 4.** Personal injuries: all information reported to Air Operations.



# Program Start-up

## Procurement

### Contents

Introduction [page 3-4-1](#)  
 Equipment and Supplies [page 3-4-1](#)  
 Purchase Card Management System [page 3-4-2](#)

### Introduction

The **Procurement** section of **Program Start-up** provides information to determine the quantity of supplies to maintain and order, and the Government Purchase Card Program. Larger programs will have a budget/Finance Section to accomplish procurement. Smaller programs may rely on local staff with procurement authority to procure needed items. All items **must** have advance approval from Air Operations or the Contracting Officer's Representative (COR) before purchase.

### Equipment and Supplies

Predicting shortages of equipment and supplies in advance is important for smooth operation of the program.

To determine the amount of supplies to order or keep on hand, use the formula in **Figure 3-4-1** below.

1. Initial amount (i) minus total amount used (t) equals actual amount on hand (a).  
 $i - t = a$   
 List amount on hand..... a)\_\_\_\_\_
2. Determine the average rate of use of the item per day (b).  
 (xx need formula)  
 List the average rate of use of the item per day..... b)\_\_\_\_\_
3. The amount on hand (a) divided by the average rate of use per day (b) equals the number of days the supply will last (c).  
 $a \div b = c$   
 List the number of days the supply will last..... c)\_\_\_\_\_
4. List the number of days left to complete the program (d)..... d)\_\_\_\_\_

**FIGURE 3-4-1 Formula to Estimate Supply on Hand or Supply Shortage**

**EXAMPLE** xx need example

After completing the formula above, if the number of days the supply will last (c) is less than the number of days left to complete the spray program (d), then Air Operations will inform the logistics section or Program Manager of the potential shortage.

If the number of days the supply will last is greater than the number of days left to complete the spray program, then supplies are inadequate, and should be ordered. Continue to monitor the rate of use and determine the reason for any significant change.

---

## **Purchase Card Management System**

Small purchases for personal property, personal and non-personal services, and supplies are made by the Federal Government **without** formal advertising. Minor construction, repairs and changes to buildings, and rental of aircraft and equipment and vehicles are included in small purchases.

The Purchase Card Management System is a state-of-the-art credit card system for tracking, reconciling, controlling, and paying for Government credit card purchases. This system is extremely helpful to program personnel when conducting and supervising aerial programs. Holders of the credit card will be able to obtain needed supplies or services from vendors in a cost effective manner.

For current information on the Federal Government VISA purchase card and regulations and guides, go to the following Web site:

[<http://www.usda.gov/procurement/card/index.html>.](http://www.usda.gov/procurement/card/index.html)

# 3

Aerial Application  
Manual

## Program Start-up

### *Radio Communications*

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#### Introduction

The **Radio Communications** section of **Program Start-up** provides basic information that Aerial Operations may use to set up an effective two-way radio communications system.

Communication between program personnel is critical for the successful execution of aerial application projects. Effective communication will increase efficiency, avoid mistakes, and reduce final costs. This section contains procedures to establish and use two-way Land Mobile Radio (LMR) in APHIS.

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#### Authorization

The National Telecommunications and Information Administration (NTIA) establishes policy and guidance for Federal radio frequency management. APHIS Programs using radio spectrum **must** have a valid two-way radio frequency authorization (RFA) before conducting radio operations on any frequency or before procuring radio equipment. All radio frequency requirements or equipment procurement **must** be coordinated with the APHIS Radio Manager. (APHIS Directive 3330.1, Radio Communications Management, dated 10 August 1998.)

Frequency is subject to power limitations in the aircraft and on the ground units. Frequency is **not** assigned as air-to-ground. The National Telecommunications Manager, Bob Strickland, will assign the frequency to be used by area.

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## Radio Operator's License

A radio operator's license is **not** required to operate a Federal Government radio. The **only** authorized users of Federal Government radios are program personnel or cooperators. A Memorandum of Understanding (MOU) is mandatory and **must** be in place where cooperators use APHIS frequencies. The operation of Land Mobile Radio (LMR) equipment places responsibility on each user. FCC regulations prohibit the use of profane or indecent language on radio transmissions and limit communication to business related and official Government operations.

---

## Distress and Emergency Signals

A good radio communications system is an important part of a work unit's safety program. Surveyors, ground observers, and other program personnel often work in remote areas and in harsh conditions. The communications system is critical in the event of an injury, vehicle breakdown, aircraft crash, or other accident.

### Distress Procedures

The distress signal MAYDAY indicates a ship, aircraft, or other vehicle is threatened by grave and imminent danger and requests immediate assistance.

1. The distress call has absolute priority over all other transmissions and shall **not** be addressed to a particular station.
2. All stations hearing a distress call shall immediately cease transmissions capable of interfering with the distress call and shall continue to listen on the frequency on which the call was heard.

## Radio Equipment Communication

Land Mobile Radio (LMR) is generally limited to line of sight (LOS). Obstructions such as terrain or buildings and equipment power are major factors in determining radio range. The antenna should be placed as high as practicable above the ground or the radio should be operated from the highest point in the immediate area. In some instances, ground-to-ground communication may be greatly improved by moving the radio location **only** a short distance.

Radio communications can be extended in hilly or mountainous terrain by using ground repeater stations located at a higher elevation, or in some instances, an airborne radio in an observation aircraft. Aircraft power is limited to 10 watts.

### Base Station

Use of a base station radio at a fixed operating location is advisable to enhance line of sight communication. The base station normally has higher power authorized for use over a portable radio, thus extending radio coverage. Coordinate with the APHIS Radio Manager for guidance.

### Base Station Antenna

All antenna installation at an airport **must** be coordinated with the airport management or governing body. Installation should be performed by a knowledgeable technician. Proper installation and grounding for lightning protection is based on the National Electrical Code 2005 Edition, Article 250, and includes lightning safety and marking support lines.

A good antenna that is mounted as high as siting restrictions or frequency assignment parameters allow and is located where the antennas will **not** create a hazard to the aircraft will improve communication and increase the area of coverage. Gutter mount antennas are **not** recommended for use.

### Mobile Radios and Antennas

Installation of mobile radios and antennas should be performed by a knowledgeable technician. Gutter mount antennas are **not** recommended for use. Magnetic mount antennas are useful for temporary installation, such as in a rented vehicle. These types of antennas may fall off or slide on the roof at highway speeds.

### Portable Radios (Hand-held)

Portable (hand-held) radios are complete and compact for two-way communications, and have a built-in microphone, a speaker, an antenna, and a carrying case. Hand-held radios operate with rechargeable batteries or power cords that may be plugged into the

vehicle's cigarette lighter. Hand-held radios are extremely portable and useful, but have a shorter transmitting range. Depending on terrain obstruction, portable radios generally have a range of 1.5 to 4 miles under optimum conditions.

In some cases, a portable radio can be used in a vehicle as a mobile unit. Combine the portable (hand-held) radio with an external magnetic mount, gain-type antenna. A special connector is required to mate the radio and antenna. Site the external antenna in the center of the vehicle's roof to provide a full, non-directional (360°) transmission pattern. This type configuration increase the power of the radio from 5 watts to 8 or 10 watts.

## Radio Equipment Needs

The actual two-way system established will depend on local conditions and special needs. Use the information in **Figure 3-5-1** as a guide to determine the number and types of radios needed for conducting an aerial application program.



Caution **must** be used in an aircraft environment as most aircraft are 24 volt systems. The chargers currently used with most portable radios are **not** designed for this voltage.

Each	Radio Equipment Needed
Aerial observer	1 hand-held radio with extra batteries Alternative–1 mobile radio per observation aircraft
Airport	1 base or mobile radio with mast and antenna
Flagman	1 mobile radio 1 hand-held radio
Ground observer	1 mobile radio 1 hand-held radio
Supervisor	1 mobile radio 1 hand-held radio
Treatment block	1 (minimum) mobile radio (during operations)

**FIGURE 3-5-1 List of Radio Equipment Needed for Aerial Application Program**



When a radio is connected to the aircraft electrical system for power, the connection **must** be made **only** by the contractor or the contractor's representative, **never** by anyone else. Installation of a temporary outside antenna on the aircraft must be made only by the contractor or contractor's representative.

Each observer should also have a special headset and a remote noise-canceling microphone connected to the portable radio for better hearing and voice transmission from the noisy aircraft cabin.

All portable units should include a charger. If the radio is used frequently or over a longer period of time, then extra batteries may be needed.

Large programs where an operations office may be set up at a location **other than** an airport require another base radio with antenna.

### Portable Radio Batteries

Consult the operator's manual for proper recharging procedures. Check batteries before you take them to the field. Always charge batteries at the end of the work-day to ensure they are fully-charged and ready for the next day's operation. Some batteries should be drained completely before recharging. If left in the charger too long may damage some types of batteries.

Extra batteries may be needed when using a portable radio frequently or over an extended work day.



Check batteries to be sure they are charged before taking them to the field.

All Thales radios (generally used by PPQ) require lithium batteries. High-cost lithium replacement batteries (approximately \$199 each), may take several weeks to obtain, as they are manufactured by one company. When **not** being used daily, lithium batteries **must** be charged at least every 12 weeks year-round to be serviceable and to provide a long battery life.

### Daily Radio Operation

General use of each individual radio model and its features are described in the operators manual. Installation should be made by a qualified technician. Before daily operations, check cable connections, fuses, and bolted connections for proper installation and tightness. A radio communications check should be made between all program personnel including the aerial observer prior to beginning daily operations.

## Messages

**Only** one person at a time can speak on a frequency. You **must** wait your turn when sending messages. **Do not** depress a microphone button when somebody else is using the channel. This could cause the message to be blocked.

All radio messages, conversations, or communications will be in plain English; brief, clear, concise, to-the-point. Personal messages or messages **not** related to the project operations are **not** authorized.

When communication is completed, hang the microphone in the bracket, so there is **no** chance of the push-to-talk button being accidentally depressed and blocking the channel.

When attempting to send a message, state the person's name or code number first; then state your name or code number last. This will gain person's attention to listen for the name or call sign of the person calling. Use of procedural words (prowords) are encouraged for proper radio procedures. See the examples below.

**EXAMPLE**

Copy, over?  
Medfly One. This is Medfly Base. Signal Check. Over.  
Medfly Base. This is Medfly One. Roger, I hear you good and readable. Over.  
This is Medfly Base. Roger, Out.

Develop a plan for program personnel that details what information will be communicated to whom. Establish an alternative way to communicate if a radio fails.

**EXAMPLE**

A ground observer needs to stop an aircraft from treating an area that should **not** be treated. If the radio has failed, then a backup signal (such as waving a red flag) would signal the pilot to stop spraying.

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## Cellular Phones and Cellular Phone Service

Cellular (cell) phones are an extremely useful tool that may help program operations. Temporary or permanent cellular service should be considered to increase communication capabilities outside the range of mobile radios or on site personnel. Cellular phones also are an important safety tool especially for emergencies in remote areas. In an operation where communications are heavy, separate communications (air-to-ground spraying coordination or ground-to-ground coordination) from administrative communications (such requests for supplies, etc.) Use the radio for operational



communications and alternative means (land line or cellular phones) to handle administrative needs. This approach keeps the radio channel(s) clear of nuisance communications.

As with mobile radios, the use of cellular phones is **restricted** to official Government business. See the *Internal Communications Manual*.



# 3

Aerial Application  
Manual

## Program Start-up

### *Safety Procedures*

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#### Contents

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#### Introduction

The *Safety Procedures* section of **Program Start-up** provides procedures to use to develop a safety program, given the special circumstances encountered in each work unit. These include safety procedures to follow when working around pesticides and insecticides; proper laundering of contaminated clothing; safety procedures for exiting and entering fixed wing aircraft and helicopters; contingency plan development for pesticide spills or accidents; and an emergency contact list.

## Safe Handling of Pesticides and Insecticides

Safe handling of pesticides pertains to any pesticide or insecticide; however, the exact procedures to follow are determined by the type and amount of pesticide used, and the Federal, State, and local regulations that apply. Knowing where to find the appropriate information or who to contact is crucial to safely handling pesticides.

### Labels

Always read the pesticide or insecticide label before handling or using. Make sure the label being used is current. The label includes specific instructions for applying the pesticide, describes the type of protective equipment that **must** be worn, and states the environmental hazards that **must** be **avoided**. Directions for storage and disposal are included on the label. Instructions for transporting the pesticide may or may **not** be present. Many manufacturers include phone numbers for emergency first aid and general product information on the label.

### Material Safety Data Sheets (MSDS)

The Material Safety Data Sheet (MSDS) for each chemical in use **must** be on file and made available to employees upon request. The MSDS provides information about the particular pesticide or insecticide and describes the chemical and physical properties. The requirements for protective equipment are explained in detail. Complete information relating to fire hazards and fire fighting procedures are given. Storage, disposal, decontamination, and spill procedures are included. The MSDS usually contains information about transporting the pesticide. See [Labels and Material Safety Data Sheets on page C-1-1](#) for examples of each. Be sure to review the current MSDS on file.

### Memorandums and Directives

PPQ and APHIS issue and distribute memorandums and directives informing personnel of changes in pesticide regulations and for establishing or clarifying policies and procedures. The information contained in these documents will usually be incorporated into the appropriate operational manual or supplements.

### PPQ Manuals

An excellent review of safety and spill information can be found in the *Emergency Aid and Safety* chapter of the *Treatment Manual*, available at the following Web site: [http://www.aphis.usda.gov/ppq/manuals/port/Treatment\\_Chapters.htm](http://www.aphis.usda.gov/ppq/manuals/port/Treatment_Chapters.htm),

The Environmental Services Team (Riverdale) developed the environmental monitoring guidelines.

### **Pesticide Manufacturers**

Pesticide manufacturers often provide their own phone numbers for emergencies or general product information. The phone numbers are located on the labels, on the Material Safety Data Sheets (MSDS), or in product reference materials.

### ***The Standard Pesticide User's Guide***

*The Standard Pesticide User's Guide*; USDA Custom Edition, 1997; by Bert L. Bohmont. contains glossaries, illustrations, and general factors to consider when using any pesticide. This user's guide should be part of every work unit's reference materials.

### **State and Local Agencies**

The procedures described on the pesticide labels and on the Material Safety Data Sheets (MSDS) are often followed by statements such as, "... or in a manner approved by State and local authorities." This is a reminder that State, local, and Tribal laws **must** be considered when handling pesticides.

A list of State pesticide control offices is found in *The Standard Pesticide User's Guide*; Appendix D, *United States and Canadian Pesticide Control Offices*.

---

## **Emergency and Information Services**

### **CHEMTREC Center**

The CHEMTREC Emergency Call Center is a source of emergency assistance for incidents involving chemicals and hazardous materials. The center operates 24 hours a day. The toll-free phone number is 1-800-262-8200.

### **National Pesticide Information Center (NPIC)**

The National Pesticide Information Center (NPIC) is a 24-hour service that provides accurate and prompt information to anyone, whether or **not** an emergency exists. Pesticide information includes product information, toxicology reviews, safety and health information, environmental effects, and cleanup procedures. The toll-free phone number is 1-800-858-7378.

## Personal Protection

### Sources of Personal Protection Information

Information on personal protection can be found in the same references that provide pesticide handling procedures. These sources include labels, the *Standard Pesticide User's Guide*, emergency and information services, and Agency memorandums, directives, and manuals including the *APHIS Safety and Health Manual*.

*The APHIS Safety and Health Manual is available at the following address:*

[http://www.aphis.usda.gov/mrpbs/safety\\_security\\_manual.html](http://www.aphis.usda.gov/mrpbs/safety_security_manual.html)

and contains several sections that are related directly to pesticide safety, as listed below:

- ◆ *Chapter 11* covers personal protection
- ◆ *Section 1* deals with personal protective equipment
- ◆ *Section 3* explains the APHIS respirator program guidelines
- ◆ *Section 4* explains the APHIS contact lens policy



If exposure to pesticides is possible, then **do not** wear contact lenses.

Other excellent sources of information can be obtained from the PPQ *Treatment Manual*, the APHIS Safety and Health Environmental Staff (film library), the American Red Cross, and Poison Control centers located throughout the United States.

### General Rules to Follow for Personal Protection

For your personal protection, follow these rules:

- ◆ Wear protective clothing, gloves, boots
  - ❖ Wear a long-sleeved work shirt
  - ❖ Wear a head covering during aerial application
  - ❖ Wear pants legs outside of your boots
  - ❖ Wear clean work clothing daily
  - ❖ **Do not** wear leather watch bands, boots, and gloves (they **cannot** be decontaminated)

- ◆ Keep pesticide-contaminated clothing separate from all other laundry from removal through wash cycle
  - ❖ Place in a separate hamper specifically for pesticide contaminated clothing
  - ❖ Wash contaminated separately from other clothing as soon as possible
  - ❖ Wash with hot water before wearing the clothing again
  - ❖ Add starch when laundering clothing to wear for pesticide application to help trap pesticides during work application (contaminated starch will wash away the next wash)
  - ❖ Use the longest wash cycle
- ◆ Use proper goggles and respirators during pesticide use
  - ❖ Avoid breathing a spray mist or fine airborne particles
  - ❖ Avoid pesticide contact with eyes, skin, or clothing
  - ❖ Test-fit respirators
  - ❖ Use eye goggles with chemical vents (**do not** use goggles with slots)
  - ❖ Use a non-absorptive headband
  - ❖ **Do not** eat, drink, or use tobacco while working with a pesticide
  - ❖ **Do not** take pesticides internally
  - ❖ Wash hands and face before eating, drinking, or using tobacco

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## Vehicle Safety

The following rules should be observed to avoid accident or injury when operating vehicles:

- ◆ Check the condition of the vehicle before starting daily activities.
- ◆ Check for clear passage before backing up the vehicle.
- ◆ Drive slowly on unfamiliar, winding, unpaved, wet, or icy roads
- ◆ If the vehicle you are driving is involved in an accident, tell your supervisor immediately

- ◆ Be sure you have the following items in the vehicles:
  - ❖ Proper equipment (as conditions warrant or as required by the work unit)
  - ❖ Safety equipment (fire safety, First Aid Manual and First Aid Kit, reflector warning device)
  - ❖ Sufficient repair tools (jack and lug wrench)
  - ❖ Wooden blocks to block the tires when parking on a steep slope or incline
- ◆ Keep the vehicle free of debris and unsecured items
- ◆ Obey the posted speed limits (**do not** speed)
- ◆ Park the vehicle on a flat surface
- ◆ Select a safe parking place for the vehicle while surveying or when leaving the vehicle
- ◆ Wear seat belt always
- ◆ When changing a flat tire:
  - ❖ Park on a flat surface
  - ❖ Block the wheels
  - ❖ If the vehicle is up on the jack, then keep your arms and legs clear and **do not** get under the vehicle (the vehicle could fall off the jack)



## Guidelines for Working Safely Around Aircraft



Failure to follow these guidelines could result in severe injury or death.

Follow these guidelines to help prevent accident or injury when working around aircraft:

- ◆ If the aircraft's engines are running, then stay at least 100 feet away
- ◆ If any obstacles exist, then tell the pilot about the obstacles
- ◆ Keep all unauthorized personnel away from the aircraft at all times
- ◆ Keep all unauthorized personnel away from the area where pesticides will be loaded or stored
- ◆ **Never** fuel the aircraft
- ◆ **Never** load the aircraft
- ◆ **Never** smoke within 50 feet of the aircraft
- ◆ **Never** work on the aircraft
- ◆ Stay away from aircraft propellers and helicopter blades
- ◆ Wear personal protective equipment

Follow the additional safety procedures for [Personal Safety Around Fixed Wing Aircraft on page 3-6-8](#) and [Personal Safety Around Helicopters on page 3-6-9](#).

## Personal Safety Around Fixed Wing Aircraft



Failure to follow these guidelines could result in severe injury or death,

Follow the guidelines below when working around fixed-wing aircraft:

1. **Always** maintain a safe distance from the aircraft's engine, even when the engine is **not** running.
2. **Never** walk in front of the aircraft when the aircraft's engine is running.
3. **Never** put your hand on the propeller. The slightest movement of the propeller could cause the engine to start.
4. If you need to approach an aircraft while the engine is running, then approach **only** from the side or rear.
5. If you need to get the pilot's attention:
  - A. Move the aileron up and down.
  - B. Once you have the pilot's attention, approach the aircraft cautiously from the back side of the wing **only**.
  - C. Avoid the wind blast from the spinning propeller.
6. If you need to talk to the pilot who is seated in the aircraft and is **not** looking at you, then approach the aircraft from the side or rear **only** as shown in **Figure 3-6-1**.

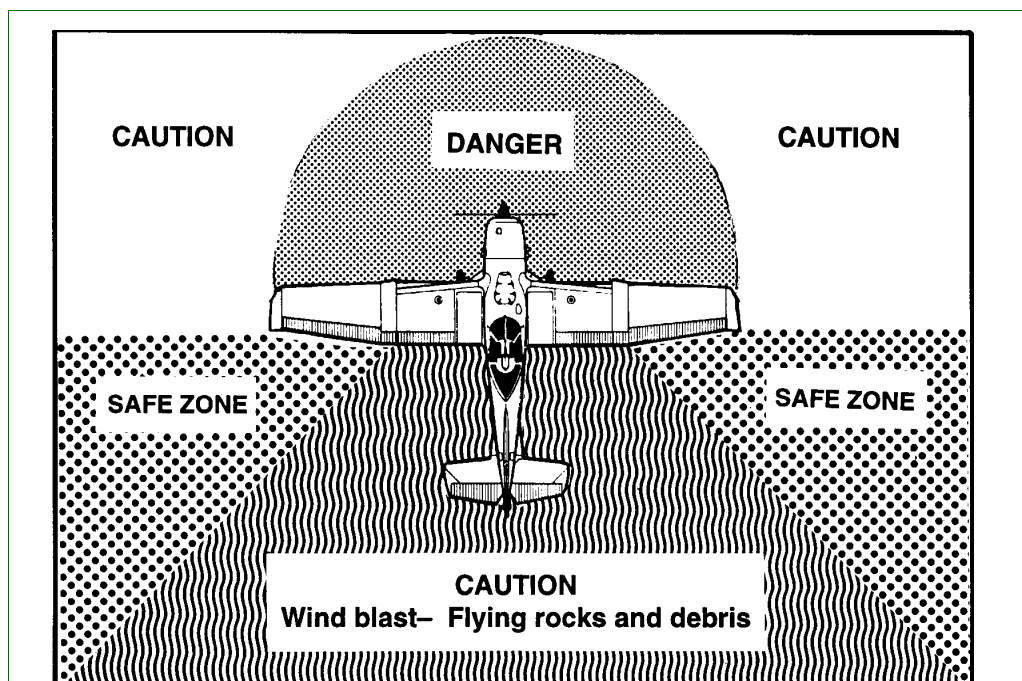


FIGURE 3-6-1 Caution, Danger, and Safe Zones Around Fixed Wing Aircraft

## Personal Safety Around Helicopters



Failure to follow these guidelines could result in severe injury or death.

Follow these safety guidelines when working around helicopters:

- ◆ When the helicopter's engine is running, **never** walk behind the helicopter
- ◆ Approach the helicopter **only** from the front, and then **only** if the pilot sees you and motions you to proceed
- ◆ Exit (leave) the helicopter **only** from the front or side as shown in **Figure 3-6-2**

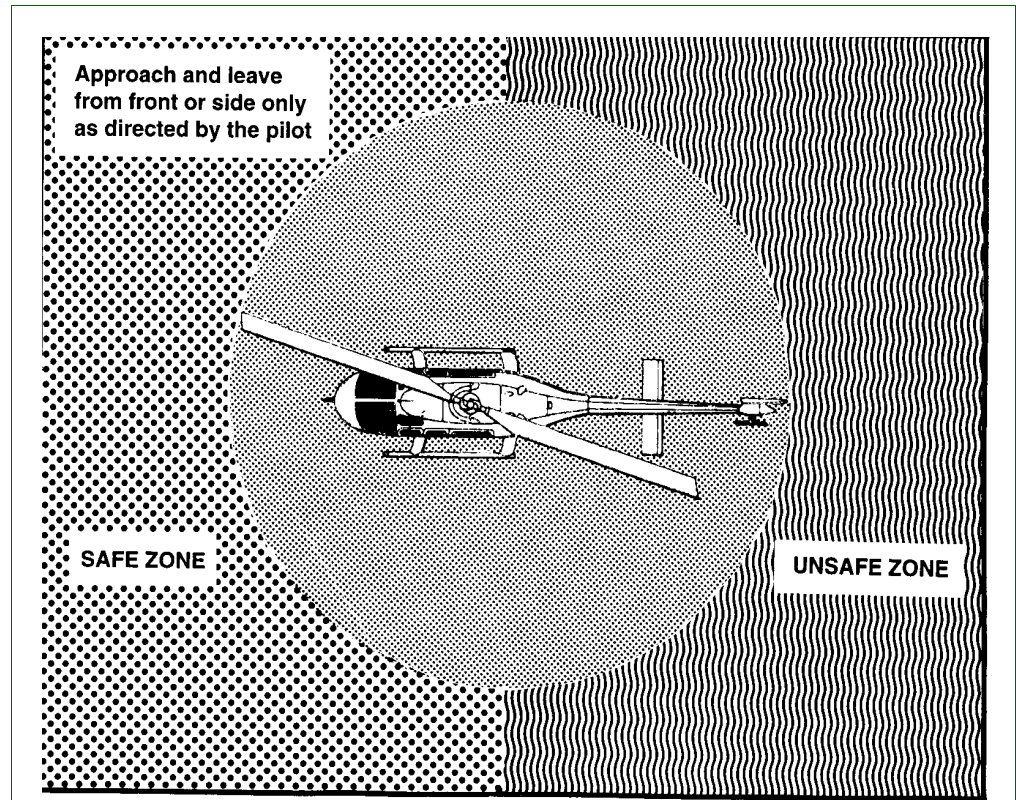


FIGURE 3-6-2 Safety Around Helicopters

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## **Contingency Plan and Emergency Contacts for Pesticide Spills or Accidents**

Each work unit should develop a contingency to use in the event of a pesticide spill or accident. Develop an information sheet that can be distributed to the COR and other personnel as they arrive on site.

### **Pesticide Spill or Accident Information Sheet**

The pesticide spill and accident information sheet should contain a list of procedures to follow for local and site-specific needs, along with names, phone numbers, fax numbers, and addresses. Information will vary from State-to-State.

In addition to local and site-specific needs, the following contacts should be listed on the information sheet:

- ◆ Appropriate Tribal Agency
- ◆ CHEMTREC Center (emergency assistance—if spill occurs during transportation, then use)
- ◆ Local ambulance
- ◆ Local fire department
- ◆ Local hospital
- ◆ Local poison control center
- ◆ Local police department
- ◆ Pesticide monitoring lab
- ◆ Regional Office of the Environmental Protection Agency (EPA)
- ◆ Riverdale Pest Detection and Management Programs (PDMP) staff
- ◆ State pesticide enforcement official
- ◆ State Plant Health Director (SPHD) (include home phone)
- ◆ Regional office (include home phone numbers)

## Work Unit Hazard Information

Permanent and temporary employees in the work unit should receive safety training as necessary to perform their required tasks in a manner that **does not** cause risk of injury to themselves or others. People who are on a temporary assignment to your work unit should also receive appropriate safety information or training.

## Work Unit Safety Training Checklist

Each work unit should develop a checklist of topics to cover during the safety training session. Each work unit will need to tailor the training to suit specific tasks or unique issues. Consider making the safety training checklist a form that can be signed by the participants. This will provide a record of training that can be used to plan refresher or future training schedules for employees.

Topics to cover during the safety training can include:

- ◆ Airport, spray block, and pesticide storage area safety
- ◆ All terrain vehicle (ATV) rider safety
- ◆ CPR training
- ◆ Defensive driving videos and exam
- ◆ Fire extinguisher use
- ◆ First Aid kits
- ◆ Instructions for changing a flat tire
- ◆ List of equipment and tools to keep in vehicles
- ◆ Local accommodations and per diem rates
- ◆ Local and public transportation
- ◆ Occupational Medical Monitoring Program
- ◆ Poisonous bite procedures
- ◆ Police, fire department, hospitals, ambulances
- ◆ Procedures to follow if a bomb threat is received
- ◆ Proper lifting techniques
- ◆ Specialized equipment use training (for equipment used by your work unit or projects)
- ◆ Two-way radio communications
- ◆ Vehicle maintenance and repair procedures

- ◆ Weather
  - ❖ Protection from the sun
  - ❖ Severe weather information (radio stations and precautions)
  - ❖ Special equipment or clothing required
  - ❖ Weather patterns

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## Program Start-up

### *Program Personnel Briefings*

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#### Introduction

The ***Program Personnel Briefings*** section of ***Program Start-up*** provides information for the Contracting Officer's Representative (COR) and the Program Manager to use for conducting briefings with program personnel; and a checklist of information to be shared during the briefings.

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#### General Briefing Sessions

The Contracting Officer's Representative (COR) and/or Program Manager will hold a general briefing session for all personnel (including the contract personnel), before work starts and as often as necessary during the course of the program.

Hold the general briefing meeting at a location that will allow for convenient interaction between program personnel, and for viewing program maps, documents, overheads, or flip charts.

During the general briefing session, describe the following:

- ◆ Program and purpose
- ◆ Policy on flight over farms or residences, air traffic patterns, minimum ferry altitudes (500 ft. above ground level (AGL))
- ◆ Precautions for handling the pesticide
- ◆ Procedures to be followed
- ◆ Safety measures
- ◆ Sensitive areas, obstructions or hazards within the area and en route

## Briefing Program Personnel

Use the following checklist as a model for developing information to brief program personnel, and add or delete information as necessary to fit specific needs of your programs:

1. Prepare the briefing.
  - Make sure that all program personnel are informed of the time and location of the meeting (preferably notified in advance)
  - Gather the following supplies and equipment and have ready for distribution or review at the briefing:
    - Copies of completed maps or road maps (sufficient number for distribution to each participant)
    - Equipment and supplies (to be signed out or distributed)
    - APHIS Aerial Application Prospectus* (current)
    - Master program maps
    - PPQ Form 802, Daily Aircraft Record* (supply)
    - Time and attendance (T&A) sheets
    - Travel vouchers
2. Conduct the briefing and discuss the following:
  - Overview of the pest program
  - Goals of the project. (i.e., reducing damage, supporting exports, etc.)
  - Description and importance of a properly-executed project
  - Pesticide to be used and the effect on the target pest
3. Distribute the completed program maps and discuss and describe the following:
  - Map legend
  - Map scale
4. Use the Master Program Map to indicate the following:
  - Access roads to treatment area
  - Acres to be treated and property ownership
  - Ferry routes
  - Hazards
  - Prominent landmarks
  - Restricted military areas and low-fly corridors for military aircraft



- Sensitive area(s) in the treatment area
- Topography
- Treatment area boundaries
- Other site-specific information
- 5. Discuss treatment operations.**
  - Airport/landing strip procedures
    - Airport airstrip restrictions (if any)
    - Airport and airstrip cleanup policy
    - Base location
    - Location of aircraft parking
    - Location for operation of loading and mixing equipment
    - Safety around aircraft
    - Type and number of application aircraft
  - Order and direction blocks will be sprayed
  - Pesticide handling, safety, and spill procedures
    - Emergency phone numbers
    - First aid kit location, contents, use, and first aid procedures
    - Fire extinguishers location
    - Safety equipment and supplies location
    - Proper use of protective equipment (i.e., coveralls, gloves, goggles, boots, eyewash stations, etc.)
    - Spill kit contents and use of spill kits at the airstrip and treatment area
  - Time frame for treatment programs
    - Start and finish dates (for public notification protocol and schedules)
    - Scheduled hours of operation (including overtime)
    - Total operational hours allowed to complete treatment programs
  - Weather effects on daily operations
- 6. Discuss the use and care of 4-wheel drive vehicles.**
- 7. Discuss radio communications**
  - Appropriate and inappropriate messages
  - Frequencies and channels

- 8.** Discuss how to handle calls and contacts from the news media and the public (see [Information Program on page 4-6-1](#)).
- 9.** Discuss personnel matters.
  - Expense policy
  - Time and attendance (T&A) policy
    - Annual leave and sick leave
    - Rules for overtime charges
- 10.** Discuss aircraft operations.
  - Emergency jettisons
  - Ferry height
  - Height of flight
  - Plugged nozzle policy
  - Proper shutoff/turn on
  - Safety around aircraft
  - Turnarounds
- 11.** Discuss weather conditions and the effect on operations.
  - Air and ground temperatures and inversions affect on operations
  - Cloud formations, fog, dew, and effect on operations
  - Wind speed and direction and effect on operations
- 12.** Discuss environmental monitoring and the duties of the environmental monitoring coordinator or designated person. (See [Environmental Monitoring on page 2-9-1](#).)
- 13.** Describe and identify the location of sensitive areas.
- 14.** Discuss dye card use.

## Program Pilot Briefings

Hold separate briefings with the program pilots to discuss items and topics that the contractor should know prior to beginning the spray project. Prior to the program pilot briefings, locate the policy for the topics (see checklist below) in environmental impact statements, environmental assessments, program manuals, guidelines, agency memorandums or check with the program manager for any policy information.

Discuss the following items with the contractor to avoid confusion and/or liquidated damages:

- Adjust height of flight by use of hand signals
- Boom timer usage
- Calibration (number and type of nozzles)
- Contractor use of Government radios
- Sensitive site locations
  - Beehives
  - Bodies of water
  - Organic crops
  - Schools
- Cutoff for non-target areas
- Dye card use
- Guidance type and operation
- Height of application flight

**EXAMPLE**

The height of application flight is typically 1-1/2 times the wingspan of the aircraft. A Cessna 188 AG-TRUC wing span is 41'3"; therefore, the normal application height would be about 60'.

- In and out of field (wings parallel to edge of field)
- Load and clean spray system under supervision
- Negligent spillage
- No** cutting in and out of flight line
- No** regular lunch break
- Paint
- Program policy for the following:
  - Billing procedures
  - Liquidated damages

- Respray
- Use of *PPQ Form 802, Daily Aircraft Record*
- Review of current *APHIS Aerial Application Prospectus*
- Role of ground observers
- Role of observation aircraft
- Role of Government pilot
- Safety
- Skips in spray pattern
- Spray pressure
- Do not** spray unauthorized areas (water, vehicles, etc.)
- Stopped nozzles - clean all nozzles
- Swath width
- Tardiness
- Temperature - ground and air
- Use of red flag
- Wind
- Wind meters

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## Program Start-up

### *Treatment Area*

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Step 6: Load the Shape Files	page 3-8-4

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#### Introduction

The ***Treatment Area*** section of ***Program Start-up*** provides detailed information about the areas to be treated to provide a clear understanding of the area for the ground crew and contractor personnel,

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#### Treatment Area

The Contracting Officer's Representative (COR) will coordinate the ground crew and the contractor personnel during the program. Prior to application, the ground crew and contractor personnel should become familiar with the treatment area to greatly increase efficiency and accuracy of the treatment activities.

##### **Step 1: Become Familiar With the Treatment Area**

Analyze the boundaries, buffer zones, and sensitive areas identified on the program map. Identify available personnel who know the area to help find boundaries and sensitive areas, so that the block is flagged effectively.

Before treatment begins, take reconnaissance flights or make ground observations to accomplish the following:

- ◆ Assess environmental concerns by looking for unknown sensitive areas and hazards
- ◆ Ensure that apiaries have been moved from the treatment area

- ◆ Familiarize pilot(s) with the treatment area:
  - ❖ Areas that are **not** to be treated
  - ❖ Boundaries, terrain, hazards, buffer zones
  - ❖ Safety concerns (such as high power lines and emergency landing areas)
- ◆ Look for boundary markers that are out of place
- ◆ Verify direction of application and treatment boundaries

Find out the extent of freedom to adjust treatment boundaries after control activities begin, and allow for missed or shifted infestations. Once adjustments are made, check with cooperators to ensure that all lands included in the program have been approved for treatment by the landowners.

### **Step 2: Assist in Boundary Flagging**

Encourage cooperating landowners and land managers to assist in marking the proposed treatment boundaries. The most satisfactory markers are white muslin.

Indicate the location of all markers on the program map. For detailed information on markers, see [Program Planning, Flagging Equipment, Supplies, and Methods on page 2-7-13](#); and [Ground Observer on page 2-7-7](#).

### **Step 3: Identify Hazards and Sensitive Areas**

Advise the ground crew to be on the lookout for hazards and sensitive areas. Ask cooperators, landowners, and land managers to advise you of any hazards and sensitive areas.

## **Hazards**

Types of hazards to low-flying aircraft that can also be used as reference points for pilots are as follows:

- ◆ Barns
- ◆ Electric, high-tension wires
- ◆ Elevation relief (changes in elevation)
- ◆ Grain elevators
- ◆ Houses and other buildings
- ◆ Low altitude military flight patterns
- ◆ Mountains, hills, mesas, and buttes
- ◆ Other aircraft
- ◆ Smokestacks
- ◆ Silos

- ◆ Towers (radio, microwave, water, etc.)

### Sensitive Areas

If sensitive areas are identified during pretreatment reconnaissance flights or are reported by cooperators, then treatment boundaries can be adjusted.

Types of sensitive areas that may require buffer zones are as follows:

- ◆ Areas with parking lots (such as car dealerships, factories, malls, etc.)
- ◆ Beehives and negotiated bee buffers
- ◆ Bodies of water (such as lakes, ponds, rivers, small streams, and wetlands)
- ◆ Crops or animals that are **not** registered (listed) on the pesticide or insecticide label
- ◆ Endangered species and sensitive species buffers as negotiated with Federal and State fish and wildlife agencies, and Federal and State environmental protection agencies
- ◆ Hospitals and nursing homes
- ◆ If allowed under State and Federal law, the land of residents who **object** to having their property treated
- ◆ Land **not** included in the treatment block
- ◆ Parks (such as recreation areas and campgrounds)
- ◆ Populated areas (such as towns, villages, housing developments)
- ◆ Poultry farms
- ◆ Schools and school yards

### Bees

Double check the identified location and types of bees (honeybees or leafcutters). Review program guidelines regarding bee protection. Identify hive locations and bee foraging areas and develop protection measures.

### Endangered or Threatened Species

Identify buffer zones established for specific endangered or threatened species. Follow other protective measures agreed upon and documented through consultation processes for proposed or listed species. Refer to the biological opinions. Protection measures developed through informal field-level consultation **must** also be enforced.

## Congested Areas

For all flights over populated areas (such as towns, cities, villages, and housing developments), contact the FAA Flight Standards District Office (FSDO) for a definition of the congested area, FAA requirements, and FAA clearance. Where possible, plan ferrying and turnaround routes to avoid flights over congested areas, bodies of water, and other sensitive areas that are **not** to be treated.



Except when treatment is mandatory under State law, avoid the property of owners who object to the treatment.

### Step 4: Identify Buffer Zones When Using Liquid Chemical and Bait Alternatives

When using liquid chemical and bait alternatives, identify buffer zones and any other standard operational procedures for each control alternative available to the Program Manager and Contracting Officer's Representative (COR). Consult program manuals, guidelines, environmental impact statements, and environmental assessments to familiarize yourself with program operational procedures.

### Step 5: Verify the Location of Spray Blocks, Sensitive Areas, and Buffer Zones

Pilots **must** have a clear understanding of the location of buffer zones, sensitive areas, and spray block boundaries are in the treatment area.

To verify the pilots have a clear understanding, do as follows:

1. Take a pretreatment reconnaissance flight with each pilot.
2. Confirm that spray blocks, sensitive areas, buffer zones, etc., are recorded on a master program map.
3. Jointly sign and date the map.

### Step 6: Load the Shape Files

Information about the treatment area can be stored in a shapefile. A shapefile consists of at least three file types: .dbf, .shp, .shx. These file types work together to produce georeference information. In this process, the treatment area boundary is created using Arc GIS software and is saved as a shapefile. The shapefile can then be used in conjunction with the GPS navigation system on aircraft equipped with navigational systems which permit the reading of such files. Typically, the shapefile **must** be in the latitude and longitude projection. Most systems will **not** be able to use files that are in a UTM projection.

After the user has properly defined the projection for the shapefile, then the file can be loaded onto a secure digital or a compact flash card for transfer to the aircraft's GPS navigational system. All three file tiles (.dbf, .shp., and .shx) **must** be transferred to the card. A variety of



different GPS navigation systems utilize shapefiles, and each manufacturer and model can have different file directories and processes to use the supplied information. For information on a specific GPS system, contact the manufacturer's representative.



# 3

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## Program Start-up

### *Support Agencies and Groups*

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Procedures [page 3-9-1](#)

List of Agencies and Groups to Contact [page 3-9-2](#)

---

#### Introduction

The *Support Agencies and Groups* section of **Program Start-up** provides a list of the agencies, groups, persons involved in the treatment program, and the protocol for contacting those listed.

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#### Procedures

The Program Manager may provide the Contracting Officer's Representative (COR) with either a complete list of contacts or the name and phone number of a county agent or local cooperator. The COR is responsible for ensuring that all affected parties are contacted, regardless of who actually makes the contact with the supporting parties.

##### **Contacting All Affected Parties**

Airport managers, beekeepers, county agents, fire departments, hospitals, police, public, land managing agency representing Federal land managers or Native American land, Native American Tribal Groups or representatives, representative for private landowners, FAA Flight Standards District Office (FSDO), State game and fish departments, State representative for State land, and the U.S. Fish and Wildlife Service are typically contacted and the needed information is exchanged, preferably before spraying beings in the treatment area.

Review [Table 3-9-1](#) before contacting the affected parties.

## List of Agencies and Groups to Contact

Review the guidelines shown in **Table 3-9-1** before contacting supporting agencies, groups, or persons. Follow these guidelines when confirming, sharing or relaying information about the program.

**TABLE 3-9-1 List of Agencies and Groups to Contact Before Spraying Begins**

If the agency, group, or person involved in the control program is:	Then provide the following information:
Airport manager	<ul style="list-style-type: none"> <li>◆ Contractor's responsibilities</li> <li>◆ Insecticide storage area</li> </ul>
Beekeeper	<p>Use program guidelines and procedures to notify beekeepers of the following:</p> <ul style="list-style-type: none"> <li>◆ Insecticide to be used</li> <li>◆ Spray dates and times of application</li> <li>◆ Treatment area and distance away to move bees</li> </ul>
Representative for private landowners involved	<ul style="list-style-type: none"> <li>◆ Complaints</li> <li>◆ Important aspects of the program</li> </ul>
County agent	<ul style="list-style-type: none"> <li>◆ Contacts to be handled by the county agent</li> <li>◆ Details of the program</li> <li>◆ Public meeting organization</li> </ul>
FAA Flight Standards District Office	<ul style="list-style-type: none"> <li>◆ If at airport, the planned location of the insecticide storage area</li> <li>◆ Request for FAA requirements regarding clearance for congested areas</li> <li>◆ When and where spray and observation aircraft will be flying</li> </ul>
Fire department covering the airport and treatment blocks	<ul style="list-style-type: none"> <li>◆ Material Safety Data Sheet (MSDS)</li> <li>◆ Pesticide label</li> <li>◆ Pesticide storage areas</li> <li>◆ Treatment area boundaries</li> </ul>
Hospital	<ul style="list-style-type: none"> <li>◆ Formulation of pesticide</li> <li>◆ Material Safety Data Sheet (MSDS) and label</li> </ul>
Land managing agency representing Federal land managers or Native American land involved	<ul style="list-style-type: none"> <li>◆ Sensitive areas</li> <li>◆ Support personnel</li> <li>◆ Other groups or person to contact</li> <li>◆ Treatment area boundaries</li> </ul>
Native American Tribal Group or representative	<ul style="list-style-type: none"> <li>◆ Precautions regarding sensitive areas and cultural sites</li> <li>◆ Program support</li> </ul>

**TABLE 3-9-1 List of Agencies and Groups to Contact Before Spraying Begins (continued)**

<b>If the agency, group, or person involved in the control program is:</b>	<b>Then provide the following information:</b>
Police (highway patrol, sheriff)	<ul style="list-style-type: none"> <li>◆ Insecticide storage area</li> <li>◆ Special precautions on major highways during treatment; divert or hold traffic during treatments that could affect vehicles or travelers</li> <li>◆ Treatment area</li> </ul>
Public	Use program guidelines to notify residents living within the treatment area of the program treatment schedule
State Game and Fish Departments	<ul style="list-style-type: none"> <li>◆ Protection</li> <li>◆ Sensitive areas, threatened and endangered species</li> </ul>
State representative for State land involved	<ul style="list-style-type: none"> <li>◆ Program personnel</li> <li>◆ Responsibilities of each cooperator</li> </ul>
U.S. Fish and Wildlife Service	<ul style="list-style-type: none"> <li>◆ Protection and mitigation measures</li> <li>◆ Sensitive areas, threatened and endangered species</li> </ul>



# 3

Aerial Application  
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## Program Start-up

### *Dispersal Systems Calibration*

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#### Introduction

The **Dispersal Systems Calibration** section of *Program Start-up* provides information about calibration, the process of measuring and adjusting the amount of pesticide the liquid spray dispersal equipment or dry spray dispersal equipment will apply to the target area.

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#### Procedures

Pesticide label requirements, laws, and technology require the aerial applicator to be conscious of calibration. Manufacturers of various nozzles, atomizers, spray tips, and dry spreaders provide calibration formulas and/or procedures to calibrate their equipment properly. The formulas used by USDA-APHIS-PPQ to calibrate aerial liquid spray systems and dry application systems are simple and accurate.

The aircraft's dispersal system **must** be properly calibrated prior to treatment of the target area. This will free the pilot from constantly having to monitor the quantity of chemical remaining in the hopper and adjust the boom pressure (to assure proper chemical distribution). The correct amount of pesticide **must** be used. Too little pesticide can result in inadequate control. Too much pesticide can result in excess runoff or movement from the target, illegal residues, injury to people, plants, or animals, and lawsuits and fines.

## Liquid Spray System

Figure 3-10-1 shows a diagram of a complete liquid spray system used to disperse pesticide from treatment aircraft.

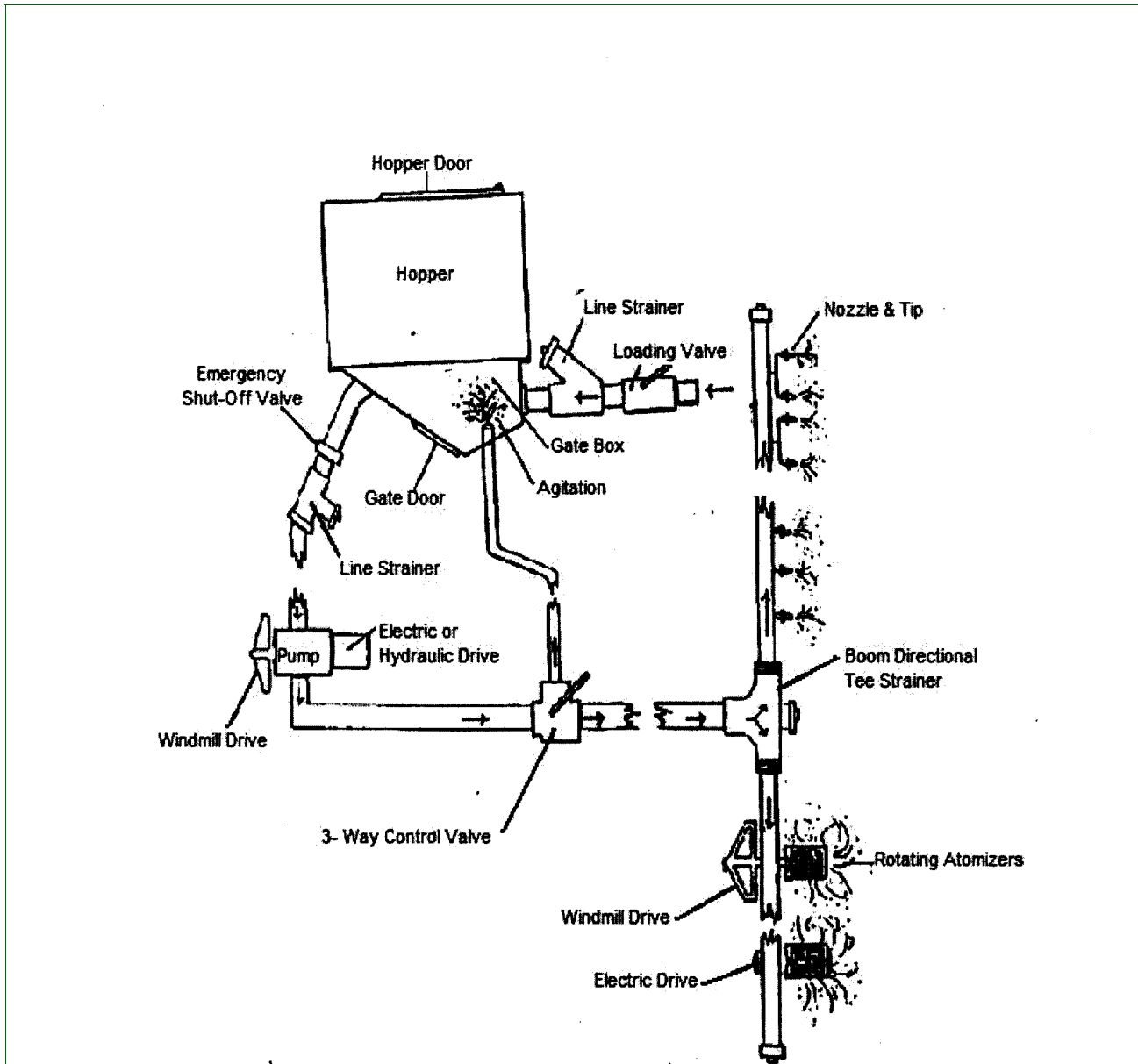


FIGURE 3-10-1 Complete Liquid Spray System

### Step 1: Determine Factors Before Calibration

Before calibration procedures begin, you **must** know the following factors:

- ◆ Airspeed
- ◆ Application rate per acre



- ◆ Correction factor for the chemical being used
- ◆ Spray tip size (output per minute per nozzle)
- ◆ Swath width

With these known factors, you can correctly use the formulas to calibrate a liquid spray system. Continue to **Step 2: Calibrate the System**.

### Step 2: Calibrate the System

#### Liquid Calibration Formula

The calibration formula used by the USDA-APHIS-PPQ to calibrate aerial liquid systems is simple and accurate. See **Figure 3-10-2**, and continue below.

Item	Formula
Acres per minute (APM)	$\frac{\text{Miles per hour (mph)} \times \text{Swath width in feet}}{495}$
Gallons per minute	$\frac{\text{Acres per minute} \times \text{Rate per acre in ounces}}{128 \text{ ounces (one gallon)}}$
Chemical correction factor (CF) for the chemical being used	<ol style="list-style-type: none"> <li>1. Use when density or flow characteristic of the chemical being used is different than water (1.0)</li> <li>2. Determine the specific gravity (SG) SG = <math>\frac{\text{Weight of pesticide formulation (pounds per gallon)}}{8.34 \text{ (pounds per gallon for water)}}</math></li> <li>3. Determine the correction factor (CF) CF = Square root of the specific gravity (SG)</li> </ol>
Number of nozzles needed when using water at 40 psi (boom pressure)	$\frac{\text{Gallons per minute}}{\text{Tip size (.2,.6)}}$
Number of nozzles to install on aircraft for the chemical used	Number of nozzles for water x Chemical correction factor
.5 or less	Round down to the nearest whole number
.6 or above	Round up to the nearest whole number

**FIGURE 3-10-2 Formula to Calibrate a Liquid Aerial Spray System**

1. Calculate the acres per minute that the aircraft will cover.

**EXAMPLE**  $\frac{120 \text{ (mph)} \times 100 \text{ (foot swath)}}{495} = \mathbf{24.24 \text{ acres per minute}}$

2. Calculate the number of gallons per minute (gpm) that the aircraft will put out at the desired rate per acre.

**EXAMPLE**  $\frac{24.24 \text{ (acres per minute)} \times 8 \text{ (ounces per acre)}}{128 \text{ (ounces in one gallon)}} = \mathbf{1.52 \text{ gallons per minute}}$

3. Calculate the number of nozzles required to apply water at 8 ounces per acre with the pressure set at 40 psi.

**EXAMPLE**  $\frac{1.52 \text{ (gallons per minute)}}{0.2 \text{ (output per minute per nozzle)}} = 7.58 \text{ nozzles for water}$

- A. If the pesticide being used has a density or flow characteristic different than water (1.0), then a **correction factor** will need to be applied.
- B. If the correction factor is unknown, then determine from the specific gravity of the pesticide being used. The specific gravity and other physical and chemical properties can usually be found on the Material Safety Data Sheet (MSDS).
- C. Determine the correction factor to apply to the nozzles for water.

**EXAMPLE** Determine the correction factor to apply the 7.58 nozzles for water.  
Correction factor (CF) = Square Root of the Specific Gravity (SG)  
Specific gravity (SG) =  $\frac{\text{Weight of pesticide formulation (pounds per gallon)}}{8.34 \text{ (pounds per gallon for water)}}$

4. Calculate the number of nozzles to install, correcting for viscosity (flow factor) of the chemical being used.

**EXAMPLE**  $7.58 \text{ (nozzles for water)} \times 1.1 \text{ (correction factor)} = 8.34 \text{ nozzles}$

5. Round to the nearest whole number. (If .5 or less, round down to the nearest whole number. If .6 or more, round up to the nearest whole number.)



When the number of nozzles is **not** an even number, then install the odd nozzle, evenly spaced on the right boom.

**EXAMPLE**  $8.34 \text{ nozzles rounded down} = 8 \text{ nozzles to install on the aircraft.}$

6. Conduct a calibration run using either **one** of the following methods:
- ❖ If using a wind-driven pump, then fill the spray tank to a known reference mark and fly the aircraft for one minute or 10 passes, then refill the tank to the known reference mark and determine the amount used
  - ❖ If using an engine-driven pump, then run the system on the ground and collect the discharge from each nozzle into separate containers to determine the actual output per minute

If the output was either light or heavy, then make small adjustments to the pressure setting to achieve the correct output per minute. The final calibration check should be accomplished during actual application with a small load.



**Important**

Calibration should be monitored throughout the entire program.

Calibration is **not** a one-time event. **Do not** just set and forget.

Some factors that could influence calibration and result in too light or too heavy application are listed in **Figure 3-10-3**.

Problem	Potential Sources
Light application	<ul style="list-style-type: none"> <li>Incorrect airspeed</li> <li>Load meter is <b>not</b> properly calibrated</li> <li>Pilot is <b>not</b> observing block boundary flight</li> <li>Spacing is too wide or too narrow</li> <li>Spray tips are plugged</li> <li>Wrong amount loaded</li> </ul>
Heavy application	<ul style="list-style-type: none"> <li>Incorrect airspeed</li> <li>Leaks in spray system (especially under pressure)</li> <li>Load meter is <b>not</b> properly calibrated</li> <li>Pilot is <b>not</b> observing block boundary flight</li> <li>Spacing is too wide or too narrow</li> <li>Spray tips are <b>not</b> tightened</li> <li>Spray tips are lost during the load</li> <li>Wrong amount loaded</li> </ul>
Terrain and elevation	<b>Not</b> enough nozzles (could require an additional nozzle)

**FIGURE 3-10-3 Factors that Can Influence Calibration**

## Liquid Calibration Adjustments

If the initial calibration procedures are followed and the aircraft is flying at the correct airspeed, then this procedure should not be needed.

Follow this procedure to determine how many nozzles to add or remove.

1. Determine the **actual rate applied** per acre.

$$\frac{\text{Number of gallons applied} \times 128}{\text{Number of acres treated}} = \text{Actual rate applied}$$

**FIGURE 3-10-4 Formula for Actual Rate Applied per Acre**

2. Determine the **number of nozzles** required to achieve the desired application rate.

$$\frac{\text{Number of nozzles installed} \times \text{desired application rate}}{\text{Actual application rate}} = \text{Number of nozzles}$$

**FIGURE 3-10-5 Formula for Number of Nozzles Required to Achieve Desired Application Rate**

3. Round the **number of nozzles** to the nearest whole number.

.5 or less = round down to nearest whole number  
.6 or above = round up to the nearest whole number

**FIGURE 3-10-6 Formula to Round Number of Nozzles**

4. Compare the calculated **number of nozzles** with the number of nozzles installed and add required nozzles or remove excess nozzles.

**TABLE 3-10-1 Compare the Calculated Number of Nozzles and Add or Remove Nozzles**

If the number of nozzles (3.) is:	Then:
Greater than the number of nozzles installed	ADD the necessary nozzles
Less than the number of nozzles installed	REMOVE the excess nozzles

5. Check calibration after the first load. Keep in mind that calibration can be off by as much as 50 percent depending on the amount of pesticide lost in priming the spray system, the initial amount of pesticide loaded, and the aircraft hopper capacity.

- A. In most cases waiting until after the second load before making calibration adjustments is advisable.
- B. If the calculated number of nozzles to add or remove is less than one, then adjust calibration by fine-tuning the pressure up or down to achieve the desired flow.

**EXAMPLE**

Aircraft = Turbine Air Tractor  
Airspeed = 135 mph  
Swath width = 150 feet  
Pesticide = Malathion  
Correction factor = 1.1  
Application rate = 8 oz. per acre  
Nozzle tip size = Stainless Steel (SS) Flat Fan (FF) 8004

**Initial calibration**

$(135 \text{ mph} \times 150 \text{ feet}) \div 495 = 40.91 \text{ acres per minute}$   
 $(40.91 \times 8 \text{ ounces per acre}) \div 128 \text{ ounces} = 2.56 \text{ gallons per minute}$   
 $2.56 \text{ gallons per minute} \div .4 = 6.4 \text{ nozzles}$   
 $6.4 \times 1.1 = 7.04$   
 $7.04 \text{ rounded down} = 7 \text{ nozzles}$

First Load

The aircraft is loaded with 200 gallons to treat 3,200 acres. All of the systems are dry (loading hoses/pump and spray system). The aircraft returns after treating 2,800 acres (about 12.5 percent heavy). You decide that some pesticide was lost in priming the system and make **no** adjustments.

Second Load

The aircraft is loaded with 250 gallons to treat 4,000 acres. The aircraft returns after treating 3,400 acres (about 15 percent heavy).

**How many nozzles should you remove, if any?**

Before you decide to remove the nozzle, check the entire spray system visually for evidence of leaking that may account for excess.

1.  $250 \text{ (number of gallons)} \times 128 \text{ (oz./gal)} \div 3,400 \text{ (number of acres treated)} = 9.41 \text{ ounces per acre (Actual rate applied)}$
2.  $7 \text{ (number of nozzles installed)} \times 8 \text{ (desired ounces per acre)} \div 9.41 \text{ (actual ounces per acre)} = 5.95 \text{ (number of nozzles required)}$
3.  $5.95 \text{ nozzles rounded up to the nearest whole number} = \mathbf{6 \text{ nozzles}}$
4.  $7 \text{ (number of nozzles installed)} - 6 \text{ (number of nozzles needed)} = \mathbf{1 \text{ nozzle to remove}}$

### Step 3: Monitor Calibration

Calibration is **not** a one-time event. Changes in terrain and elevation could require the addition or removal of a nozzle. Calibration should be monitored throughout the entire program. Review potential factors that may influence calibration in **Figure 3-10-3 on page 3-10-5**.

## Pump Calibration

### Check and Correct for Pump Error

In addition to calibrating the aircraft spray system, also check the calibration of the pump that will be used to pump the chemical into the aircraft, and then correct for any pump error. This check for pump error and adjustment (if needed) is done prior to actually pumping the chemical into the aircraft for spray system calibration.

**EXAMPLE** To pump 125 gallons of chemical into the aircraft for spray system calibration:

1. Pump a minimum of 10 gallons into calibrated and marked buckets, then read the pump meter.
2. If the meter reads above 10 gallons or below 10 gallons, then correct for this error.
3. If the meter read 9.75 gallons, then use the following formula to determine what the meter should read in order to dispense 125 gallons.

$$\frac{125 \text{ gallons} \times 9.75 \text{ gallons on meter}}{10 \text{ gallons dispensed}} = 121.875 \text{ gallons on meter}$$

4. To pump 125 gallons into the aircraft, the meter will read 121.875.

---

## Conversion Formulas

### Acres per Gallon

#### Formula to Determine Acres Per Gallon

$$128 \text{ ounces per gallon} \div \text{rate per acre} = \text{acres per gallon}$$

$$128 \text{ oz.} \div 8 = 16 \text{ acres per gallon}$$

$$128 \text{ oz.} \div 12 = 10.67 \text{ acres per gallon}$$

$$128 \text{ oz.} \div 16 = 8 \text{ acres per gallon}$$

$$128 \text{ oz.} \div 20 = 6.4 \text{ acres per gallon}$$

$$128 \text{ oz.} \div 32 = 4 \text{ acres per gallon}$$

$$128 \text{ oz.} \div 40 = 3.2 \text{ acres per gallon}$$

$$128 \text{ oz.} \div 96 = 1.33 \text{ acres per gallon}$$

**FIGURE 3-10-7 Formula to Determine Acres Per Gallon**

## Calibration Adjustments

Measure/Rate	Formula
Acres per minute	Airspeed (mph) x swath width in feet ÷ 495
Acres per mile	Swath width in feet ÷ 8.25
Dispersal time per load	Gallons per load ÷ gallons per minute
Gallon rate per acre in ounces	Gallons dispersed ÷ acres covered x 128
Gallons per mile	Acres per mile ÷ acres per gallon
Gallons per minute	Acres per minute ÷ acres per gallon
Gallons per swath	Gallons per mile x swath length in miles
Knots	Miles per hour x .868976
Number of swaths per load	Aircraft load in gallons ÷ gallons/swath
Pounds per acre	Kilograms per hectare x 0.82
Kilograms per hectare	Pounds per acre x 1.12
Miles per hour (MPH)	Knots x 1.15
Milliliters per hectare	Fluid ounces per acre x 73.14
Total gallons required	Total program acres per gallon ÷ acres per gallon

**FIGURE 3-10-8 Formulas for Application Measures**

### Conversion of Knots to Miles and Miles to Knots

Formula	Conversion
Knots x 1.15	Miles per hour (MPH)
160 knots x 1.15	185 mph
MPH x 0.868976	Knots

**FIGURE 3-10-9 Conversion of Knots to Miles and Miles to Knots**

### U.S. Customary and Standard Metric Units

Unit	Conversion
135 mph x .868976	117 knots
One square mile	640 acres
One mile	5,280 feet = 1610 meters = 1.61 kilometers
One acre	43,560 square feet = 0.405 hectares
One hectare	2.471 acres
One gallon per acre	9.35 liters per hectare
One gallon	128 fluid ounces = 8 pints = 4 quarts = 128 fluid ounces
One liter	33.814 fluid ounces
One kilogram	2.205 pounds
One square yard	0.836 square meters
One fluid ounce	29.57 milliliters
Degrees Fahrenheit to degrees Centigrade (°F to °C)	$^{\circ}\text{F} (-32) \times (.556) = ^{\circ}\text{C}$
Degrees Centigrade to degrees Fahrenheit (°C to °F)	$^{\circ}\text{C} \div (.556) + 32 = ^{\circ}\text{F}$

**FIGURE 3-10-10 List of Standard Metric and U.S. Customary Units**

**EXAMPLE**

Convert knots to miles per hour (mph)

$$160 \text{ knots} \times 1.15 = 185 \text{ mph}$$

Convert miles per hour to knots

$$135 \times .868976 = 117 \text{ knots}$$



### Density or Flow Characteristic Correction Factors

If the pesticide being used has a density or flow characteristic different than water, a correction factor will need to be applied. If the correction factor is unknown, then determine from the specific gravity of the pesticide being used.

$$\text{Specific gravity (SG)} = \frac{\text{Weight of pesticide (lbs/gal)}}{8.34 \text{ (lbs/gallon water)}}$$

**FIGURE 3-10-11 Formula to Determine an Unknown Correction Factor**

**EXAMPLE** If Malathion weighs 10.25 lbs. per gallon, then:

$$\frac{10.25 \text{ lbs}}{8.34 \text{ lbs}} = 1.23 \text{ (SG)}$$

The square root of 1.23 = 1.10905 = 1.1 for the Correction Factor.

### Water Volume per Cubic Foot

One cubic foot will hold 7.5 gallons of water

**FIGURE 3-10-12 Water Volume per Cubic Foot**

## Dry Material Application System

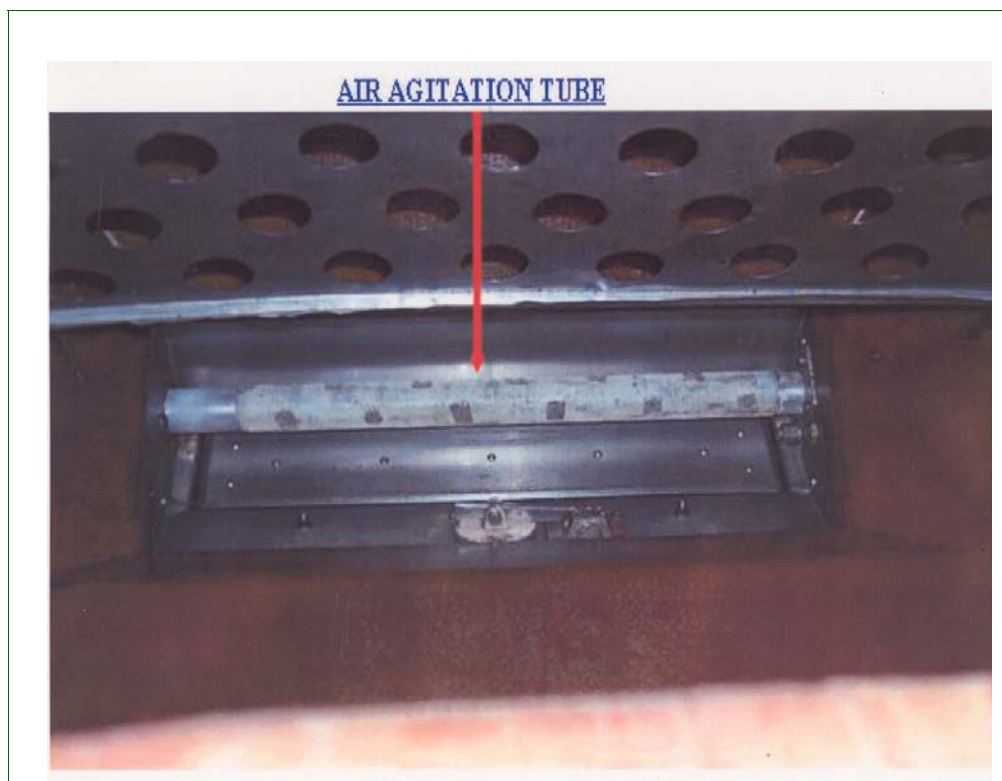
The dry material application system is used to disperse dry pesticide from aerial application aircraft.

The RAM air intake tube, located outside the aircraft, brings outside air through the tube and into the air agitation tube (see [Figure 3-10-14](#)).



**FIGURE 3-10-13** Dry Material Application System - RAM Air Intake

The air agitation tube is located inside the bottom of the hopper. The air from this tube agitates below the dry material.



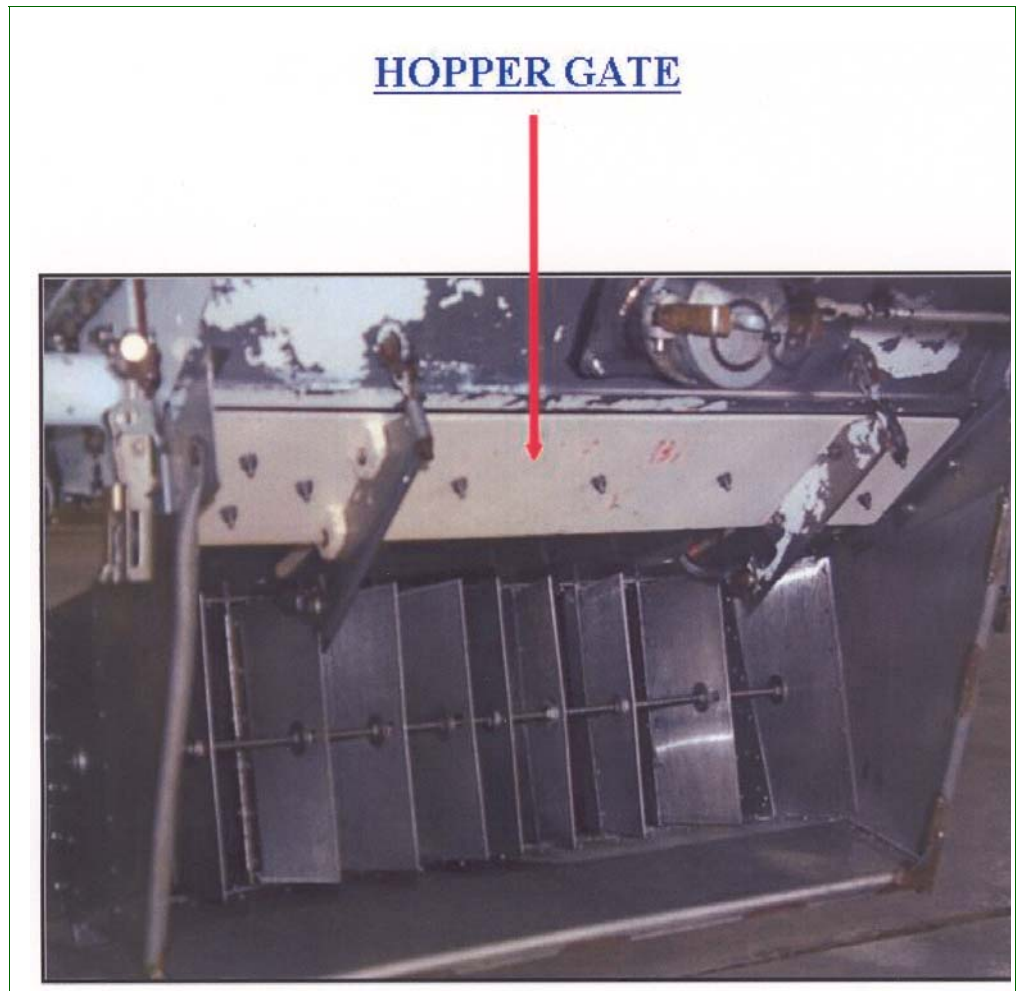
**FIGURE 3-10-14 Dry Material Application System - Air Agitation Tube**

Air also comes in through the vent tube flow regulator to the top of the hopper.



**FIGURE 3-10-15 Dry Material Application System - Vent Tube Flow Regulator**

The combination of the pressure of air above the hopper and the air below the hopper keeps the dry material in between from sticking together and clogging the application system.



**FIGURE 3-10-16 Hopper**

### **Step 1: Determine the Factors Before Calibration**

Before calibration of a dry application system begins, the following three parameters **must** be known:

- ◆ Application rate per acre
- ◆ Ground speed
- ◆ Swath width

We can determine when the aircraft is calibrated with these specifications. In dry calibration, the rate of application is expressed in terms of pounds per acre.

## Step 2: Calibrate the System

To calibrate the system, follow the information below.

Dry Material System	Formula
Acres per minute	$\frac{\text{Groundspeed} \times \text{Swath}}{495}$
Pounds applied in one minute	Acres per minute x Rate per acre

**FIGURE 3-10-17 Formula to Determine Amount of Dry Material that Should Be Applied in One Minute**

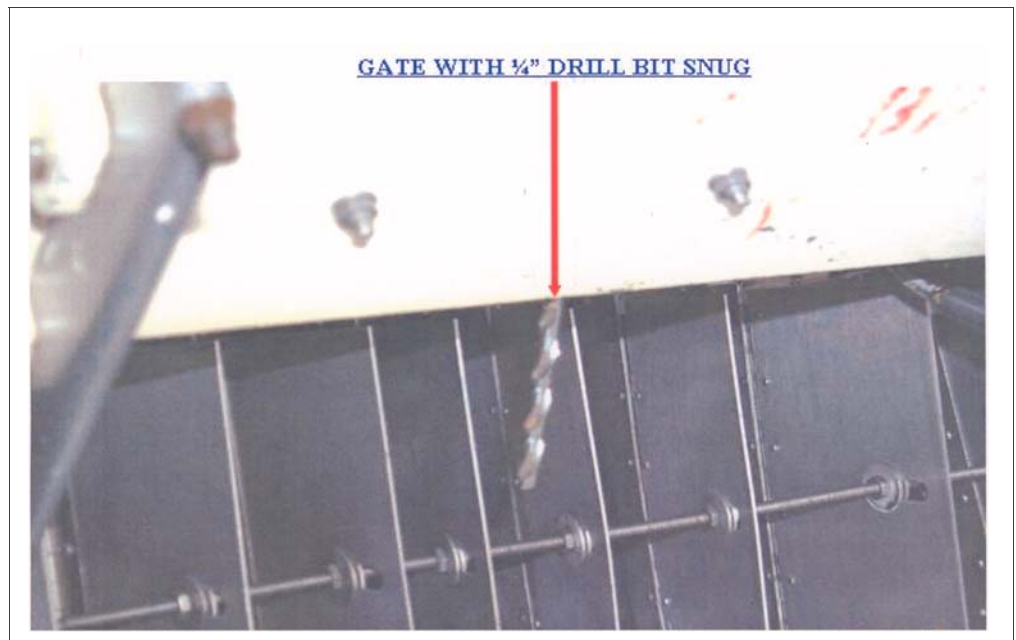
1. Determine the acres per minute that the aircraft will treat.

**EXAMPLE**  $\frac{120 \text{ mph} \times 50 \text{ ft.}}{495} = 12.12 \text{ acres per minute}$

2. Multiply the acres per minute by the desired application rate in pounds to yield the amount of dry material that should be applied in one minute (target rate).

**EXAMPLE**  $12.12 \text{ (acres per minute)} \times 1.25 \text{ (pounds per acre)} = 15.15 \text{ pounds per minute}$   
(15 lbs. 2 oz.)

3. Preset the gate opening and hopper air vent shroud (vent tube flow regulator).
  - A. Have the pilot set the initial gate opening to 1/4" and the hopper air vent shroud (vent tube flow regulator) at 1/4" above the vent opening. Measure the gate opening using the shank of a 1/4" drill bit (see **Figure 3-10-18**).
    - i. Insert the bit into the gate opening and ask the pilot to slowly close the gate using the adjustment in the cockpit. When you feel the edges of the gate start touching the drill bit, tell the pilot to stop. Remove the bit and ask the pilot to slowly close the gate and then reopen the gate.
    - ii. Insert the drill bit again to see if the measurement is satisfactory. The drill bit should fit snug enough so as not to fall out, but not so tight that inserting or removing the bit is difficult.
    - iii. Once you have a consistent and satisfactory measurement, then slowly move the drill bit the entire length of the gate opening to check for a consistent 1/4". If the drill bit gets tighter or looser from one end to the other, then ask the pilot to adjust the gate to achieve a consistent 1/4". This measurement is done to ensure an even flow across the entire gate width.



**FIGURE 3-10-18 Proper Gate Opening Size With Drill Bit**

- B.** When you are satisfied that both measurements are consistent for repeated gate openings and closings, you are ready to begin preparing the material to load the aircraft.



4. Gather or confirm you have the following dry calibration equipment:
  - ❖ Container to recover unused material (pesticide or insecticide) from the aircraft
  - ❖ Device to cover the spreader vanes (facilitates unloading of material into the container and prevents material from entering the spreader vanes); should be furnished by contractor as an accessory to installed spreader
  - ❖ Non-metallic paddle, such as 4 foot canoe paddle (if mixing two different dry materials and loading bags directly into hopper)
  - ❖ Paint brush, large, 4" with regular handle
  - ❖ Paint brush, large, 4" with long extension handle attached
  - ❖ Scales that measure in pounds and ounces and have a minimum capacity of 300 pounds



**FIGURE 3-10-19 Dry Calibration Equipment**



5. Make sure the scales are set to zero, then place the container on the scales, record the weight of the container as the tare weight, and with the container on the scales reset the scales to zero (0).
  - A. Weigh the bait to be loaded into the aircraft.
  - B. Make sure the container is large enough to hold all the material left in the hopper when unloaded. Otherwise, you will need an additional container to handle any excess.
6. Load the aircraft with dry material, plus the amount to be applied in one minute.
7. Make the calibration flight; the pilot **must** fly crosswind (90° to the prevailing wind) for one minute (or 10 passes). When the aircraft returns, record the dispensing time from the timer.
8. Unload the dry material and use the paint brushes to sweep as much dry material from inside the hopper as possible. Gather any material that may have spilled on the ground or in the spreader. Measure and record the amount dispensed. If under-application occurred, ask the pilot to adjust the hopper air vent another 1/4" up. **Do not** adjust the gate opening at this time.

**EXAMPLE**

1. Load 50 lb. dry material, plus an additional 16 lb. (amount to be applied in one minute).
2. Make the calibration flight crosswind for one minute and record the dispensing time from the timer.
3. Unload dry material and determine the amount dispensed.  
66 lb.(amount loaded) - 54 lb. 10 oz.(amount remaining) = 11 lb. 6 oz. (amount dispensed/used).
4. Under application occurred. Ask the pilot to adjust the hopper air vent another 1/4" up.
5. Load the remaining 54 lb. 10 oz. dry material back into the aircraft.
6. **Do not** add any additional material for the next calibration trial, because **only** 11 lb. 6 oz. was used and the air vent tube was opened an additional 1/4".

9. Continue the application trials until you are satisfied that the aircraft is within 10 percent of the desired rate. Then do 5 additional trials at the same settings. If all trials are within 10 percent of the desired rate, then you are ready to fully load the aircraft for the first application.

- 10.** When loading the aircraft for the application flight, add an additional 50 pounds of dry material to the load. The extra material is for the following reasons:
  - ❖ Ensure the entire area will be treated (if the calibration is off, or the pilot is long on some swaths, or is averaging slower than the required groundspeed)
  - ❖ Ensure there is enough material aboard (if over-application occurs) to check the calibration after each application
  - ❖ Make slight adjustments in settings (if necessary)
- 11.** Maintain the additional 50 pounds of dry material for every loading.

### **Sterile Insect Operations**

Contact Aircraft and Equipment Operations for calibration and equipment support before starting any treatment using sterile insect operations.

# 3

Aerial Application  
Manual

## Program Start-up

### *Aircraft Guidance*

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#### Introduction

The ***Aircraft Guidance*** section of ***Program Start-up*** provides information about the types of electronic guidance systems used for aircraft flight path recording equipment, and procedures for conducting the equipment accuracy check.

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#### Aircraft Electronic Guidance

Aircraft electronic guidance will be furnished by the application contractor when required in the contract. The system must be capable of guiding the aircraft along parallel flight lines equal to the assigned swath width. Some contracts will require that the system be capable of identifying no-treatment zones (sensitive areas) within the treatment areas and the block boundaries.

##### **Global Positioning System (GPS)**

The Global Positioning System (GPS) consists of a constellation of 24 satellites orbiting the earth at an altitude of 10,900 nautical miles. The current position and altitude of each satellite is transmitted and received by a GPS receiver. The amount of time for the radio signal from several satellites to reach the receiver is converted to distance. These distances are used to determine the receiver's position by triangulation.

GPS provides precision aircraft guidance and **must** maintain "line of sight" contact with the satellites being used. A position error of 33-to-66 feet can be expected under normal conditions, and can be reduced to 3-to-6 feet with differential correction. Differential correction is obtained from a ground based receiver which receives the direct satellite signal, and then applies a correction to that signal, and then re-transmits the corrected signal which is received by the aircraft Differential Global Positioning Receiver (DGPS).

### Flight Path Recording

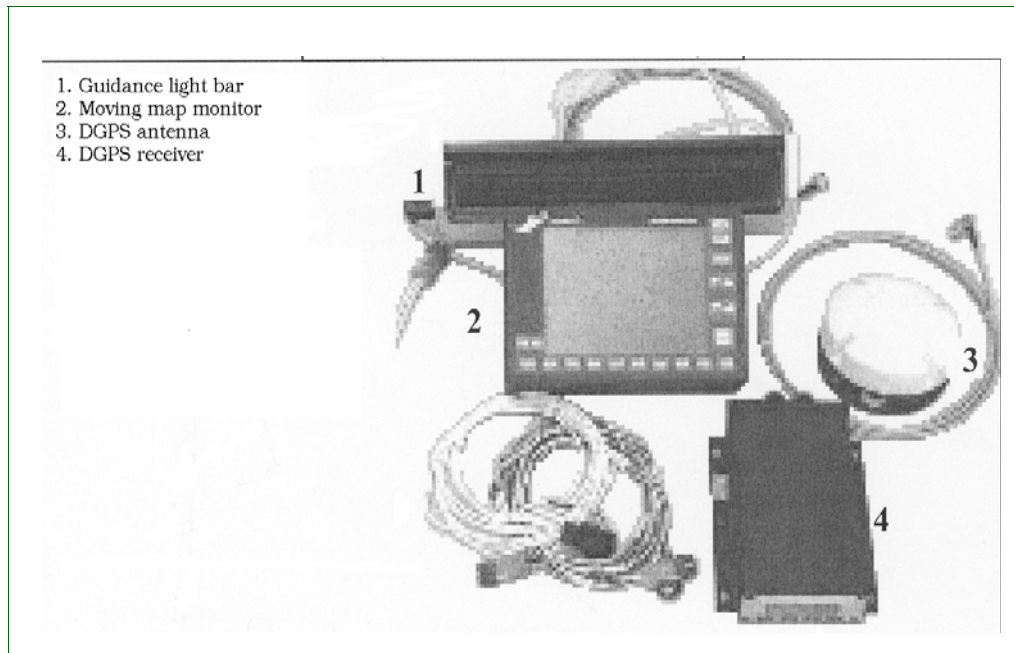
When flight path recording equipment is required, the recording equipment shall be compatible with the guidance system being used, and have software that will allow the flight to be recorded and downloaded into a computer for review. The flight log **must** show the entire flight of the aircraft from takeoff to landing, and differentiate between spray on and spray off when viewed on the computer monitor. The software **must** have the capability to zoom to any portion of the flight for viewing in greater detail, and a method to determine distance between each flight lane.

---

### Differential Global Positioning System (DGPS) Accuracy Check

When a contractor is requested to furnish electronic guidance and flight path recording, the type of system and specifications will be stipulated in the aerial application contract.

Different makes and models of Differential Global Positioning System (DGPS) guidance systems with flight data logging capability may qualify for acceptance and use on PPQ programs. The accuracy of each unit and the flight data logging capability **must** be verified before acceptance in the program. Depending on the system, different procedures may be required to verify the accuracy of the system.



**FIGURE 3-11-1 Typical DGPS Guidance System**

## Accept or Reject DGPS Systems

The following procedures may be used to accept or reject various systems:

1. Verify the accuracy of the differential correction signal and that a functional pressure switch is installed.
  - A. Load 20 to 30 gallons of water into the hopper, and have the pilot fly three passes along the center line of the runway at 5 feet above the runway.
  - B. Stress to the pilot the importance of keeping the aircraft directly over the center line
  - C. During each pass, preferably at the runway identification numbers, open the spray valve with the boom pressure set at 40 psi.
2. Verify the pilot's knowledge and skill using the guidance system.
  - A. Select a field (nearby if possible) that contains 10 or 12 passes of the assigned swath width of the aircraft.
  - B. Have the pilot spray this field, using water, at the altitude and swath width as specified in the contract.
  - C. Require trim passes to show boundaries of the field and verify that the data logging system **does not** have an unacceptable amount of spray on/off delay.
  - D. If practicable, observe the pilot's performance while spraying the demonstration field.
  - E. Ask the pilot to return to the airport and make one additional pass along the runway center line, for a total of four passes over the center line.
3. Download the flight data into the computer and bring up the flight.
  - A. Zoom in to the portion of the flight along the runway and examine the flight track for deviations.
    - Deviations of 3 feet may be acceptable
    - Deviations of 6 to 8 feet or more are **not** acceptable
  - B. Observe for sharp jumps or instant deviations.
    - This may be an indication that differential correction was **not** being applied or was lost
    - Pay close attention to the track of the fourth pass
  - C. If the constellation of satellites changed during the spraying of the field and differential correction was **not** operational, then the pass could be offset from 3 to 120 feet.

4. Zoom to the portion of the flight where the field was sprayed.
  - A. Measure the distance between each pass and compare to the assigned swath width.
  - B. Look to see if the pilot made straight passes or if the pilot zig-zagged down each pass (an indication that the pilot was chasing the needle and may **not** be experienced using the system).
  - C. Observe that the system is indicating when the spray was on and off, and that the ending and beginning of swaths match the edge of the field. The delay between on and off should be **no** greater than 10-to-12 feet for back-and-forth passes and none (0) for same direction race-track pattern.
5. An alternative method to verify the accuracy and function of the guidance system and logging capability is to flag the pilot for 10-to-12 measured swaths.
  - A. Pre-measure and flag swaths from both ends to insure accuracy and avoid delays. If practical, the length of the swaths should be 800-to-1,500 feet.
  - B. Use the same procedures as above for viewing the flight.
  - C. Look for straight lines between the flaggers.
  - D. If there are sharp jumps or spikes in the flight path, then this may indicate that differential correction was **not** being received or was **not** available.

# 3

Aerial Application  
Manual

## Program Start-up

### *Pilot and Aircraft Inspection*

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## Introduction

The **Pilot and Aircraft Inspection** section of *Program Start-up* provides detailed instructions for performing the actual inspection of the pilot, aircraft, and documents. Document the inspection on **PPQ Form 816, Contract Pilot and Aircraft Acceptance**.

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## General Procedures

Before you begin the inspection, make sure you have a copy of the aerial application contract (issued by Minneapolis) and *PPQ Form 816, Contract Pilot and Aircraft Acceptance*. Review the aerial application contract prior to the inspection. As you complete the inspection, record the results in the appropriate blocks on the form.

See [PPQ Form 816, Contract Pilot and Aircraft Acceptance on page A-1-50](#) for an example and instructions for completing the form.

### Contract Information

Before the actual inspection begins, record the preliminary information in *Block 1* through *Block 5*.

### Program Name

Enter the acronym for the current aerial application program in *Block 1, Program*. If you **do not** know the acronym for the program, then check the aerial application contract.

<b>EXAMPLE</b>	SEBWEP is the acronym to list for the Southeastern Boll Weevil Eradication Program.
----------------	---

### Region Where Program Is Conducted

Enter in *Block 2, Region*, the acronym for the name of the region in which the aerial application program is being conducted.

<b>EXAMPLE</b>	WR is the acronym to list for the Western Region.
----------------	---



### Check-in/Inspection Site

List in *Block 3, Check-in Site*, the name of the site where the inspection (check-in) takes place.

<b>EXAMPLE</b>	Morris Airstrip
----------------	-----------------

### Contract Number

Locate the contract number in the aerial application contract, and list the number in *Block 4, Contract No.*

### Date of Inspection

List in *Block 5, Date*, the date you conduct the inspection (check-in).


Continue with the **Contractor Inspection** procedures below.

## Contractor Inspection

### Contractor's Name, Mailing Address, and Phone

Obtain the contractor's name, mailing address, including Zip Code, and telephone number. Enter the information in *Block 6, Contractor's Name and Mailing Address*, and *Telephone No.*

### Registered Aircraft Owner's Name, Mailing Address, and Phone

REGISTRATION NOT TRANSFERABLE	
UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION CERTIFICATE OF AIRCRAFT REGISTRATION	
NATIONALITY AND REGISTRATION MARKS <b>N</b> 731EQ	AIRCRAFT SERIAL NO. 18802843T
MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT CESSNA A188B ICAO Aircraft Address Code: 52347465	
ISSUED TO	UNITED STATES DEPARTMENT OF AGRICULTURE APHIS-PPQ RT 3 BOX 1001 EDINBURG TX 78539
	GOVERNMENT
It is certified that the above described aircraft has been entered on the register of the Federal Aviation Administration, United States of America, in accordance with the Convention on International Civil Aviation dated December 7, 1944, and with the Federal Aviation Act of 1958, and regulations issued thereunder.	
DATE OF ISSUE SEPT. 07, 1985	 ADMINISTRATOR
AC Form 8050-3(7/89) Supersedes previous editions	

This certificate must be in the aircraft when operated.

This certificate is issued for registration purposes only and is not a certificate of title. The Federal Aviation Administration does not determine rights of ownership as between private persons.

U.S. Department of Transportation  
Federal Aviation Administration

FIGURE 3-12-1 Example of Certificate of Aircraft Registration



Important

Agricultural aircraft: The certificate of aircraft registration is **not** required to be carried in the agricultural aircraft, but **must** be available for inspection at the site from which flight operations are being conducted.

Commercial nonagricultural aircraft: The certificate of aircraft registration is required to be carried on board the aircraft at all times on commercial nonagricultural observation aircraft.

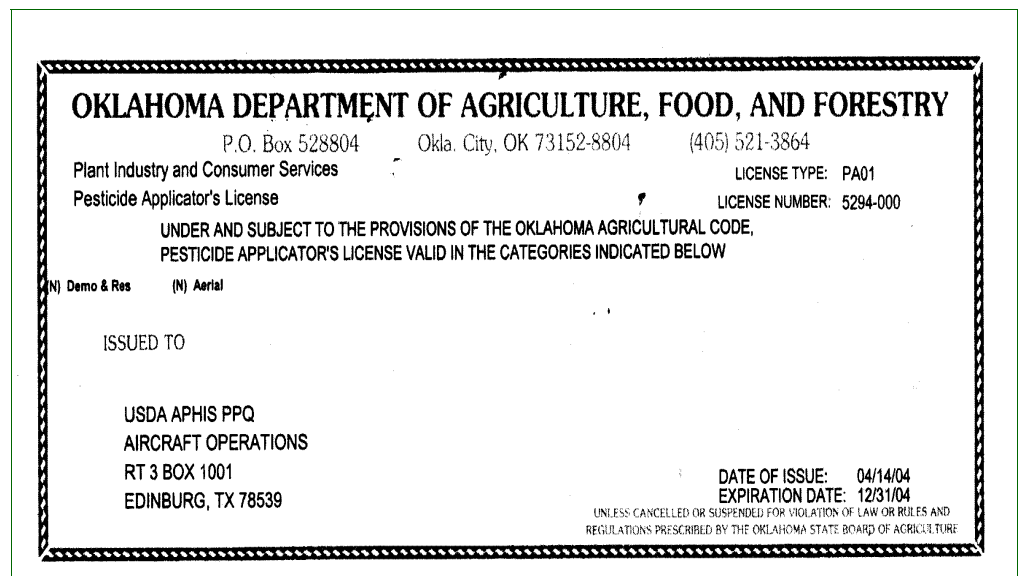
Check the Certificate of Aircraft Registration for the information listed below:

1. Check the nationality and registration marks listed on the aircraft registration certificate and verify they are the same as the registration marks (tail number) on the aircraft.

2. If the contractor is listed on the aircraft registration as the registered owner, then enter SAME in *Block 7, Registered Aircraft Owner's Name and Mailing Address, and Telephone Number.*
3. If the registered owner listed on the aircraft registration certificate is **not** the contractor, then list the registered owner's name, address, and telephone number in *Block 7.*

See [FAA Certificate of Aircraft Registration](#) on **page B-1-5.**

### Applicator's Business License



**FIGURE 3-12-2 Example of Pesticide Applicator's Business License**



**Do not** confuse the State Applicator's **Business** License with the State Pesticide Applicator's License.

Inspect the State applicator's business license as follows:

1. Check the name of the person to whom the license is issued.
2. Review the registration number and expiration date shown on the license, and record the information in *Block 8, State Applicator Business License & Expiration Date.*

## Agricultural Operating Certificate



The image shows a sample of an Agricultural Operating Certificate. At the top left is the logo of the U.S. Department of Transportation Federal Aviation Administration. The title "Operating Certificate" is centered in a large, bold font. Below the title, the text reads: "This certifies that U. S. DEPARTMENT OF AGRICULTURE ROUTE 3, BOX 1001 EDINBURG, TEXAS 78539". The certificate states that the holder has met the requirements of the Federal Aviation Act of 1958 and is authorized to operate as an Air Operator and conduct Commercial Agricultural Aircraft Operations. It also specifies that dispensing of economic poisons is permitted in accordance with the Act. The certificate is not transferable and remains in effect indefinitely unless canceled, suspended, superseded, or revoked. The bottom section contains the certificate number (U6SG138Y), the effective date (APRIL 6, 1994), and the location (SAN ANTONIO, TEXAS). On the right side, there is a signature of Charles B. Taylor, Manager, SAT-FSDO, with his title and the text "By Direction of the Administrator" above it.

U.S. Department of Transportation  
Federal Aviation Administration

# Operating Certificate

This certifies that

U. S. DEPARTMENT OF AGRICULTURE  
ROUTE 3, BOX 1001  
EDINBURG, TEXAS 78539

has met the requirements of the Federal Aviation Act of 1958, as amended, and the rules, regulations, and standards prescribed therein, for the issuance of this certificate and is authorized to operate as an Air Operator and conduct Commercial Agricultural Aircraft Operations.

in accordance with said Act and its rules, regulations, and standards: dispensing of economic poisons is permitted.

This certificate is not transferable and, unless canceled, suspended, superseded, surrendered or revoked, shall continue in effect indefinitely.

Certificate number: U6SG138Y

Effective date: APRIL 6, 1994

Issued at: SAN ANTONIO, TEXAS

By Direction of the Administrator

*Charles B. Taylor*  
CHARLES B. TAYLOR  
(Signature)  
MANAGER, SAT-FSDO  
(Title)

FIGURE 3-12-3 Example of Agricultural Operating Certificate

The contractor is required to have the FAA Agricultural Operating Certificate (a facsimile) available at the inspection site. This certificate includes a low-altitude waiver to allow application flight below 500 feet **without** creating a hazard to persons or property on the surface.



**No** person may operate an aircraft dispensing economic poisons unless a copy of the FAA Agricultural Operating Certificate is carried in that aircraft.

Pilots operating under this certificate are also required to have a Letter of Competency (see [Letter of Competency for Agricultural Pilot on page 3-12-18](#)) from the holder of the FAA agricultural certificate. Review the operator's FAA Agricultural Operating Certificate. List the certificate number in *Block 9, FAA AG Certificate No.*

## Congested Area Waiver and Plan



U.S. Department  
of Transportation

**Federal Aviation  
Administration**

Flight Standards District Office  
3021 Army Post Rd.  
Des Moines, Iowa 50321

June 14, 1999

Mr. Timothy J. Roland  
USDA PPQ  
Aircraft and Equipment Operation  
Route 3, Box 1001  
Edinburg, TX 78539

Dear Mr. Roland:

The congested area plan for agricultural aircraft operations, which you submitted on June 11, 1999, is approved with the following provisions:

Plan is valid: June 26-30, 1999

Boundaries of the congested area as follows: 224 acre tract of land in McGregor Heights, Iowa.

Plan is valid until signed agreement with appropriate officials of the political subdivision expires.

Approved category and class of aircraft to be used: Airplane-Single Engine

Plan is limited to following weather conditions: VFR

Expiration date for this approval: June 30, 1999

Sincerely,

Handwritten signature of Larry D. Young in cursive script.

Larry D. Young  
Supervisory Aviation Safety Inspector  
(Operations)

**FIGURE 3-12-4 Example of FAA Letter of Approval for Congested Area Plan (Congested Area Waiver)**

CONGESTED AREA PLAN OF OPERATION

In the interest of the public health, welfare and safety, the United States Department of Agriculture (USDA) , in cooperation with the Iowa Department of Agriculture has plans to aerially apply a formulation consisting of Hercon Environmental Gypsy Moth Mating Disruption Flakes ( Disrupt II) and Loveland Industries LI - 108 carrier to a 224 acre tract located in McGregor Heights within Clayton County Iowa to control the Gypsy Moth population within the area as depicted in Attachment #1. The Disrupt II formulation will be applied at the rate of 30.4 grams per acre flakes in a total formulation of 4 oz per acre.

The USDA Animal and Plant Health Inspection Service (APHIS) , Plant Protection and Quarantine (PPQ) , Aircraft and Equipment Operations (AEO) , will make the application of the Disrupt II formulation using an agency owned Cessna U206 (N72306) aircraft certificated in the restricted category . The exact date of the application is dependent on the life cycle development of the insect, however the projected dates of application are June 28 - June 29, 1999.

Both the pilots and aircraft are in compliance with FAR 137.53 for operations over congested areas.

The base of operation will be the Prairie Du Chien , Wisconsin airport or the Monona, Iowa airport.

The USDA APHIS PPQ AEO has determined that the operation can be conducted in accordance with FAR 137.

Written approval has been obtained from the appropriate official/officials of the governing bodies of the political subdivisions over which the operations will be conducted. As required by the City of McGregor, a temporary NOTAM will be issued through the Fort Dodge FSS.(Attachment #2)

Notice of the intended operation was given to the public by means of publication in local and statewide newspapers and local radio stations and mailings to local residents. A public meeting was held on June 3, 1999 with the result that there was no opposition to the treatment. As stated in the press release, a 24 hour notice will be given if changes are made in the treatment date.(Attachment #3)

There does not appear to be any hazardous obstructions however, a reconnaissance flight of the operational area will be conducted prior to the actual application to-determine if there are any obscured obstructions and a safe ingress and egress during actual application. Application height will be between 25' and 40' above the canopy.

In the event of an inflight engine failure, the pilot will steer the aircraft away from any persons, vehicles and structures.

APPROVED *[Signature]* , DSM-FSDO  
BY 6-14-99

FIGURE 3-12-5 Example of FAA Approved Congested Area Plan of Operation



If aerial application will be conducted over a congested area, then a congested area waiver is required. Prior written approval is required from appropriate officials in the area for which the operations are conducted. A plan for each complete operation **must** have been submitted to and approved by appropriate personnel of the Federal Aviation Administration Flight Standards District Office (FSDO), having jurisdiction over the area where the operation is to be conducted. See [Figure 3-12-5](#). Notice of intended operation **must** be given to the public through all news media. For additional information, see [Congested Area Approval on page 2-6-1](#).

Review the approval letters from the appropriate local officials and the congested area waiver approval letter from the FAA FSDO.

1. If a congested area waiver is required and the contractor has the letters of approval, then check YES in *Block10, Congested Area Waiver*.
2. If a congested area waiver is required and the contractor either **does not** have or has **not** obtained the appropriate approval/waiver, then check NO in *Block10, Congested Area Waiver*, and note under *Deficiencies Noted*.
3. If the aerial application will **not** be conducted over or near any congested area (and is therefore **not** required), then check N/A under *Block 10, Congested Area Waiver*, Continue with the procedures for [Pilot Inspection on page 3-12-11](#).



## Pilot Inspection

### Pilot Certificate

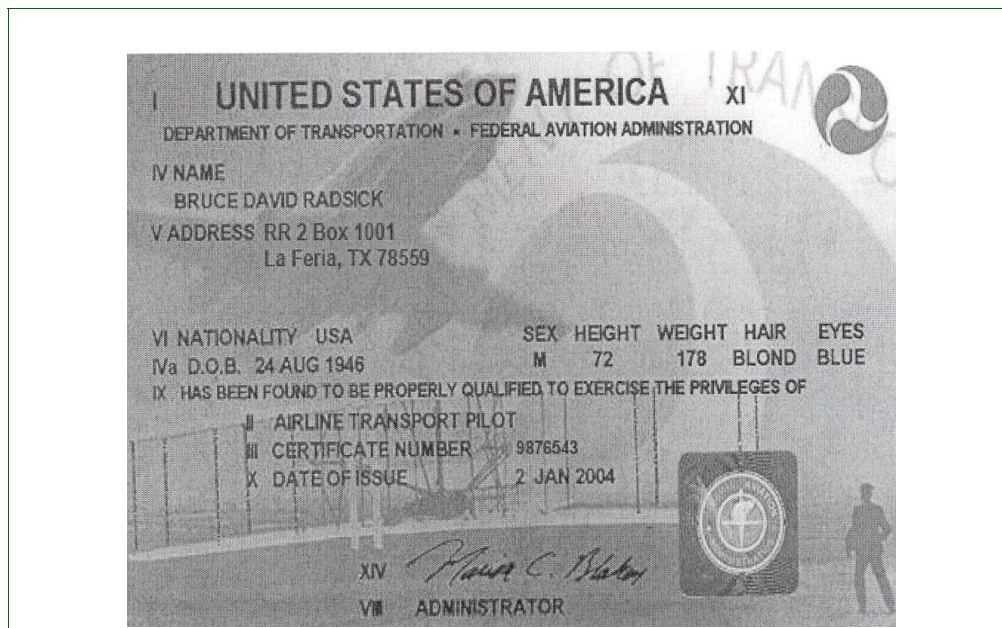


FIGURE 3-12-6 Example of Pilot Certificate (New Style)

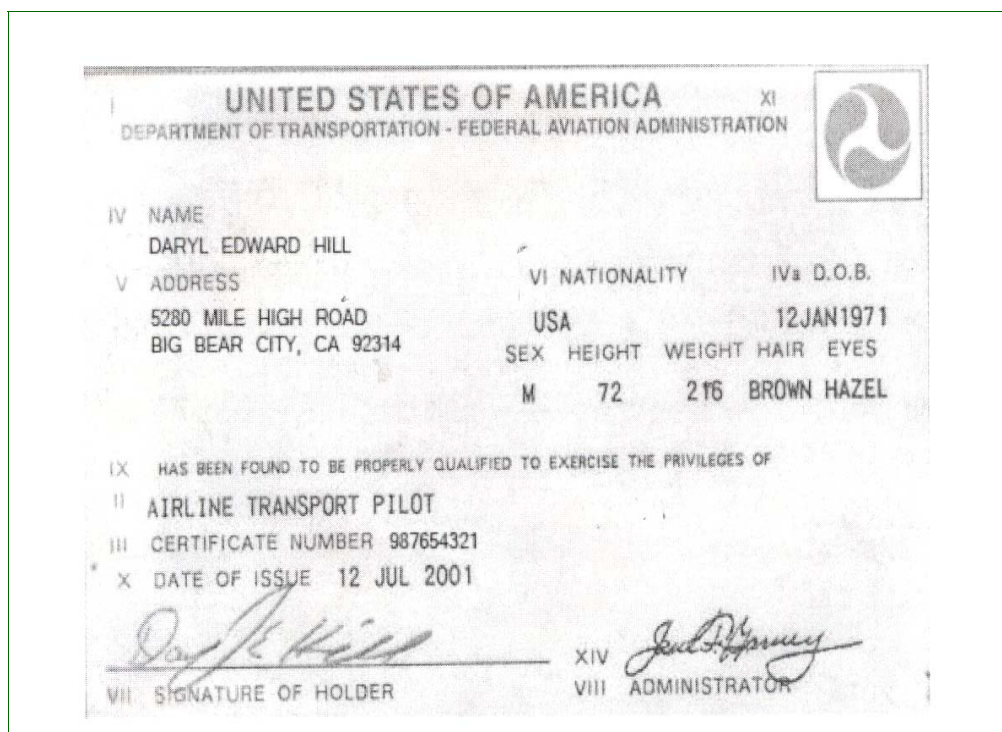


FIGURE 3-12-7 Example of FAA Pilot Certificate (Old Style)

The Pilot Certificate includes pilot identification, statistics, and qualifications, such as Commercial Pilot or Airline Transport Pilot, ratings and limitations, and is valid until suspended or revoked.

A Temporary Airman Certificate—Airline Transport Pilot or Commercial is acceptable in lieu of the Pilot Certificate, **only** provided that 120 days have **not** elapsed since the date of issuance and will **not** elapse prior to the end of the application program. See the example in **Figure 3-12-9 on page 3-12-13**.

Review the Pilot Certificate (or Temporary Airman Certificate) and follow the instructions below:

1. Ask the pilot for the current address and telephone number. (The address listed on the pilot certificate is **not** always accurate.) Record the pilot's current address and telephone number in *Block 11, Pilot's Name & Mailing Address and Telephone No.*
2. Locate the certificate number and the type of certificate. Record the certificate type and certificate number in *Block 12, Certificate & No. (ATP or Commercial)*.
3. Check the back of the pilot certificate for ratings and limitations. See **Figure 3-12-8**. Record the ratings in *Block 13, Ratings*.

**RATINGS**

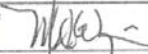
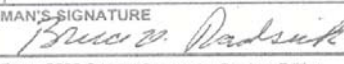
- a. Aircraft category ratings
  1. airplane
  2. rotorcraft, etc.
- b. Airplane class ratings
  - single/multi engine land or sea
- c. Aircraft type ratings
  - large aircraft weighing more than 12,500 maximum gross authorized weight, i.e., DC-3, PV-2, DC-4
- d. VFR only (visual flight rules) or INSTRUMENT AIRPLANE follows TYPE RATINGS
- e. Instrument ratings
  1. airplane
  2. helicopter

**FIGURE 3-12-8 Ratings and Limitations Listed on Pilot Certificate (back)**

I. UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION						III. CERTIFICATE NO. 987654321	
<b>II. TEMPORARY AIRMAN CERTIFICATE</b>							
THIS CERTIFIES THAT				IV. DARYL EDWARD HILL V. 5280 MILE HIGH ROAD BIG BEAR CITY, CA 92314			
DATE OF BIRTH	HEIGHT	WEIGHT	HAIR	EYES	SEX	VI. NATIONALITY	
12/25/1971	70 IN	175	BROWN	HAZEL	M	USA	
IX. has been found to be properly qualified and is hereby authorized in accordance with the conditions of issuance on the reverse of this certificate to exercise the privileges of  COMMERCIAL PILOT							
RATINGS AND LIMITATIONS							
XII. AIRPLANE SINGLE ENGINE LAND							
XIII.							
THIS IS <input checked="" type="checkbox"/> AN ORIGINAL ISSUANCE <input type="checkbox"/> A REISSUANCE OF THIS GRADE OF CERTIFICATE					DATE OF SUPERSEDED AIRMAN CERTIFICATE		
<b>BY DIRECTION OF THE ADMINISTRATOR</b>						EXAMINER'S DESIGNATION NO. OR INSPECTOR'S REG. NO. WP21	
X. DATE OF ISSUANCE 03/19/2004			X. SIGNATURE OF EXAMINER OR INSPECTOR <i>Owen T. Dullaghan</i> Owen T. Dullaghan			DATE DESIGNATION EXPIRES	
VII. AIRMAN'S SIGNATURE <i>Daryl E Hill</i>							
FAA Form 8060-4 (8-79) USE PREVIOUS EDITION							

FIGURE 3-12-9 Example of Temporary Airman Certificate

## Medical Certificate

UNITED STATES OF AMERICA Department of Transportation Federal Aviation Administration					
<b>MEDICAL CERTIFICATE</b> <u>Second</u> <b>CLASS</b>					
This certifies that (Full name and address):					
Radsick, Bruce, David RR 2 Box 1001 La Feria, TX 78559					
Date of Birth	Height	Weight	Hair	Eyes	Sex
08/24/46	72"	204	Brn	Blue	Male
has met the medical standards prescribed in part 67, Federal Aviation Regulations, for this class of Medical Certificate.					
Limitations	MUST WEAR GLASSES WHILE EXERCISING THE PRIVILEGES OF AN AIRMAN				
Date of Examination			Examiner's Designation No.		
08/02/2002			08401-1		
Examiner	Signature 				
	Typed Name Michael Kilgore, M.D.				
AIRMAN'S SIGNATURE 					
<small>FAA Form 8500-9 (3-99) Supersedes Previous Edition</small>					

**FIGURE 3-12-10 Example of FAA Form 8500-9, Medical Certificate**

An FAA Medical Certificate (First Class or Second Class) is required for the pilot. The medical certificate remains valid through the end of the twelfth month, as follows:

- ◆ First Class medical certificate expires after 6 months, but continues as a Medical Certificate Second Class for the next 6 months, for a total of 12 months
- ◆ Second Class medical certificate (originally issued as Second Class, **not** First Class), is valid for 12 calendar months

Review the Medical Certificate. List the class of the certificate (First or Second) and the date of examination in *Block 14, Medical Class/Date*. Note any discrepancies under the *Deficiencies Noted* section.

<b>EXAMPLE</b>	Pilot's medical expired. Will bring to COR for verification prior to program start.
----------------	---

## Flight Review

DATE	MEMORANDA
04-07-02	Mr. Bruce Radsick holder of Pilot Certificate 98765432 has satisfactorily completed a flight review required by FAR 61.56 on 04-07-02 in a Cessna 172. <i>Doug J. E. [Signature]</i> 556 876532 CFI Exp 04-30-03
04-04-04	Mr. Bruce Radsick holder of Pilot Certificate 98765432 has satisfactorily completed a flight review required by FAR 61.56 (a) on 04-04-04 in a Cessna 206. <i>Doug J. E. [Signature]</i> 556 876532 CFI Exp 04-30-03

FIGURE 3-12-11 Example of a Flight Review Recorded in Log

No person may act as pilot-in-command of an aircraft unless within the preceding 24 calendar months he or she has either:

- ◆ Accomplished a flight review given to him or her, in an aircraft for which he or she is rated by a certified instructor and had his or her log book endorsed by the person who gave the review
- ◆ Satisfactorily completed a pilot proficiency check for a pilot certificate, rating or operating privileges within the preceding 24 calendar months

Check the pilot's logbook for successful completion and verification of the pilot's most recent flight review as follows:

1. Verify that the pilot was given and successfully accomplished a flight review in the aircraft for which he or she is rated by a certified instructor.
2. Check the date the flight review was performed. The most recent successful flight review **must** have occurred within the last 24 months.
3. Verify that the flight review is endorsed in the logbook by the person who gave the review.
4. If your review confirms the last flight review date is valid, then enter the date in *Block 15, Flight Review Date*.

5. If within the preceding 24-calendar month period, the pilot has satisfactorily completed a pilot proficiency check for a pilot certificate, rating or operating privileges, then this is acceptable in lieu of the flight review. If so, then issuance date on the pilot's certificate is within the last 24 months.
6. If the review is invalid, or the logbook is not available, then note the information in the *Deficiencies Noted* block.

### Government Issued Photo Identification

The photo identification (ID) **must** be issued by either the Federal or State government, and is used to verify the identification of the pilot. Ask the pilot for his or her passport or driver's license. Review the document and verify the pilot's identification.

If the pilot had the required identification, then check YES in *Block 16, Government Issued Photo ID*.

If the pilot **did not** have a government identification available, then check NO in *Block 16, Government Issued Photo ID* and note the information under *Deficiencies Noted*.

### Total Time

Total time is a minimum of 1,000 pilot in command (PIC) flight hours, and is used to verify time. To verify total time, ask the pilot. If there is any doubt, then check the pilot's log.

1. Confirm that the number of hours is at least 1,000.
2. Record the total hours in *Block 17, Total Time*.

### Total PIC Time in Type

Total pilot in command (PIC) time in type is a minimum of 25 flight hours, and is used for information purposes **only**. If the pilot meets all other requirements and experience, then the pilot should be accepted. There are **no** minimum requirements for total time in type.

Determine total time in type as follows:

1. Ask the pilot for total time in type.
2. Enter the total time in type in *Block 18, Total PIC Time in Type*.

<b>EXAMPLE</b>	AT-301, C-182.
----------------	----------------



If the application is made over congested areas, then 25 PIC flight hours is an FAA requirement for the application pilot. FAR 137.53(b)(1).




### **Total Agricultural and/or Observation Time**

Total AG and/or Observation time required for the observation aircraft pilot is 50 flight hours to ensure that the pilot has experience in agricultural applications or observing agricultural applications. The 50 flight hours can either be all in applications or all in observations or any combination of the two to meet the 50 hour flight requirement.

To verify the total AG aviation and/or observation time, ask the pilot for total AG and/or observation time. If there is any doubt, then check the pilot's logbook. Record the hours in *Block 19, Total AG and/or Observation Time*.

## Letter of Competency for Agricultural Pilot

	United States Department of Agriculture	Animal and Plant Health Inspection Service	Plant Protection and Quarantine	Aircraft and Equipment Operations Route 3, Box 1001 Edinburg, TX 78539
---	---	---	------------------------------------	--

January 2, 2002

Mr. Bruce D. Radsick, holder of certificate number 9876543, has satisfactorily demonstrated the knowledge and skills regarding agricultural aircraft operations as required by Federal Aviation Regulation 137.19 (e). He is qualified to serve as pilot-in-command in agricultural aircraft operated under Agricultural Aircraft Operator Certificate number U6SG138Y held by the United States Department of Agriculture.

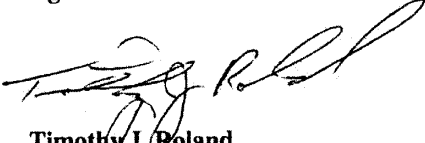
  
Timothy J. Roland  
Director

FIGURE 3-12-12 Example of Agricultural Pilot Letter of Competency

The Agricultural Pilot Letter of Competency is used to certify that the pilot is qualified to serve as pilot-in-command in agricultural aircraft operation as required by Federal Aviation Regulation 137.19(e). A letter of competency for the observation pilot is the same as that for the agricultural (AG) pilot.

Review the pilot's letter of competency for validity. If the letter is valid, check YES in *Block 20, Observation Pilot/Applicator Letter of Competency*. If the letter is **not** valid or missing, then list under *Deficiencies Noted*.



### Total Agricultural Aviation (AG) Time

Total agriculture aviation (AG) time is 100 pilot in command (PIC) flight hours for the applicator pilot. Check the pilot logbook or ask the pilot to obtain the total AG time. The pilot **must** have at least 100 hours minimum AG time. Record the time in *Block 21, Total AG Time*.

### State Applicator License



**FIGURE 3-12-13** Example of Pilot's State Applicator's License




**Important**

**Do not** confuse the pilot's **State Pesticide Applicator's License** with the State Applicator's Business License.

Review the pilot's State Applicator's License. Record the State where the license was issued, the applicator's license number, and expiration date, and record the information in *Block 22, State of Issue, Applicator's License No. & Expiration Date*.

## Aircraft Inspection

### Aircraft Registration Certificate

REGISTRATION NOT TRANSFERABLE		
UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION CERTIFICATE OF AIRCRAFT REGISTRATION		This certificate must be in the aircraft when operated.
NATIONALITY AND REGISTRATION MARKS <b>N</b> 731EQ	AIRCRAFT SERIAL NO. 18802843T	
MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT CESSNA A188B ICAO Aircraft Address Code: 52347465		
ISSUED TO	UNITED STATES DEPARTMENT OF AGRICULTURE APHIS-PPQ RT 3 BOX 1001 EDINBURG TX 78539	This certificate is issued for registration purposes only and is not a certificate of title. The Federal Aviation Administration does not determine rights of ownership as between private persons.
	GOVERNMENT	
It is certified that the above described aircraft has been entered on the register of the Federal Aviation Administration, United States of America, in accordance with the Convention on International Civil Aviation dated December 7, 1944, and with the Federal Aviation Act of 1958, and regulations issued thereunder.		
DATE OF ISSUE SEPT. 07, 1985	 ADMINISTRATOR	
U.S. Department of Transportation Federal Aviation Administration		
AC Form 8050-3(7/89) Supersedes previous editions		

**FIGURE 3-12-14 Example of Aircraft Registration Certificate (Nationality and Registration Marks)**

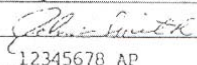
Inspect the Aircraft Registration Certificate as follows:

1. Review the aircraft registration certificate and locate the *Nationality and Registration Marks* section.
2. Check the aircraft for the number painted on the side of the fuselage. The number is preceded by an N and is also called the N number or tail number.

<b>EXAMPLE</b>	N731EQ
----------------	--------

3. Verify that the number on the aircraft registration certificate is the same as the number painted on the aircraft's fuselage. Enter the N number in *Block 23, Aircraft Registration No.*
4. Locate the make and model listed in the *Manufacturer and Manufacturer's Designation of Aircraft* block of the aircraft registration certificate. Enter the make and model number in *Block 24, Make/Model.*

## Aircraft Log

DATE	RECORDING TACH TIME	TODAYS FLIGHT	TOTAL TIME IN SERVICE	DESCRIPTION OF INSPECTIONS, TESTS, REPAIRS AND ALTERATIONS ENTRIES MUST BE ENDORSED WITH NAME, RATING AND CERTIFICATE NUMBER OF MECHANIC OR REPAIR FACILITY. (SEE BACK PAGES FOR OTHER SPECIFIC ENTRIES.)
2004 May 10	1707.9			Performed 100 Hr. inspection in accordance with Cessna
	263.0	ESMOH		Service Manual and FAR 43 Appendix D. Inspected and
	3104.6	T.T.	A/C	lubed flight controls. Repacked and inspected wheel bearings. Serviced and inspected battery, brakes and Hyd. systems. ELT inspected satisfactory, battery due Mar 97. Replaced Hyd., vacuum air and oil filters as required. Complied with SEB 96-99. All AD's current as of this date, see listing located in rear of log book. Complied with AD 96-01-98, 96-02-99, 96-03-99. Engine and aircraft systems operation checks complied with satisfactory. " I certify that this aircraft has been inspected in accordance with a 100 Hr inspection and was determined to be in airworthy condition."
				 12345678 AP

**FIGURE 3-12-15 Example of Aircraft Log**

Each logbook entry for annual inspection **must** be signed by an FAA-licensed mechanic with inspection authorization (IA), and **must** have the required mechanic's signature above the mechanic's license number. The letters IA are part of an official license number.

<b>EXAMPLE</b>	Mechanic's license number: A&P 1234567IA
----------------	--

Inspect the logbook as follows:

1. Check the date of the last annual inspection. To avoid program delays, there should be enough time from the date of the last inspection to last through the life of the contract.
  - A. If more than 12 months have elapsed, then a new inspection is required.
  - B. If less than 12 months have elapsed, then a fresh annual inspection is preferable, but **not** required unless the 12-month period lapses before the contract is completed.
2. Enter the date of the last annual inspection in *Block 25, Date of Annual Inspection*.

3. If large aircraft, then an FAA-approved progressive maintenance program is acceptable in lieu of the annual inspection.

## 100-Hour Inspection

The mechanic **must** sign-off on the 100-hour inspection, but is **not** required to have inspection authorization.

Check the logbook for the last 100-hour inspection as follows:

1. If agricultural aircraft operates over congested areas, then check the number of hours logged since the last 100-hour inspection. The mechanic **must** sign-off on the 100-hour inspection, but is **not** required to have inspection authorization for the 100-hour inspection
  - A. If 100 hours or more have been logged, then another inspection is required.
  - B. If less than 100 hours have been logged, inspection is **not** yet required.
2. If the agricultural aircraft **does not** operate over congested areas, then the 100-hour inspection is **not** required.
3. If observation aircraft, then check the number of 100 hours logged/flown since the last 100-hour inspection.
  - A. If 100 hours or more have been logged, then another inspection is required.
  - B. If less than 100 hours have been logged, inspection is **not** yet required.
4. Enter the aircraft time since the last 100-hour inspection in *Block 26, Aircraft Time Since 100 Hour Inspection*.
5. If large aircraft, then an FAA-approved progressive maintenance program is acceptable in lieu of the 100-hour inspection.

## Airworthiness Certificate

UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION -- FEDERAL AVIATION ADMINISTRATION SPECIAL AIRWORTHINESS CERTIFICATE			
A	CLASSIFICATION: Restricted		
	PURPOSE: Agricultural & Pest Control		
B	MANU-FACTURER	NAME	
		ADDRESS	
C	FLIGHT	FROM	
		TO	
D	N-- 731EQ *	SERIAL NO.	18802843T
	BUILDER Cessna Aircraft Co.	MODEL	A188B
E	DATE OF ISSUANCE	9-14-77	EXPIRY
	OPERATING LIMITATIONS COATED IN BY FAR 91.301 ARE A PART OF THIS CERTIFICATE		
	SIGNATURE OF FAA REPRESENTATIVE	DESIGNATION OR OFFICE NO.	
		Lester A. Delano	PC4
Any alteration, reproduction, or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS.			
FAA FORM 8130-7 (3-69) SUPERSEDES FAA FORMS 1362-B; 8100-3; 8130-5			SEE REVERSE SIDE

FIGURE 3-12-16 Example of Airworthiness Certificate

The FAA Airworthiness Certificate is issued as either Standard or Special. Agricultural aircraft are required to have the Special Airworthiness Certificate. This certificate card is pink, and carries a restricted classification on the top line and agricultural and pest control purpose on the next line.



Restricted category civil aircraft **must** be operated for the special purpose for which the aircraft is certificated (Agriculture and Pest Control).

The Special Airworthiness Certificate **must** be available with other documents for inspection at the site from which flight operations are conducted. However, the certificate is **not** required to be carried in agricultural aircraft.

Inspect the Special Airworthiness Certificate as follows:

1. Verify the pink certificate card is a Special Airworthiness Certificate.
2. Verify that *Block A, Classification* is Restricted, and *Block A, Purpose* is Agricultural & Pest Control.

3. Enter the category (standard or special) in *Block 27, Airworthiness Certificate Category*.



## Certificate of Insurance

PI-97

### CERTIFICATE OF INSURANCE

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY, AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER, THIS CERTIFICATE DOES NOT AMEND, EXTEND, OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW.

<p>NAME &amp; ADDRESS OF INSURANCE AGENCY</p> <p>USDA APHIS PPQ AIRCRAFT OPERATIONS RT 3 BOX 1001 EDINBURG, TX 78539</p> <p>PHONE NUMBER: (956) 580-7270 FAX NUMBER: (956) 580-7276</p>	<p>NAME &amp; ADDRESS OF THE INSURED PEST CONTROL COMPANY (PLEASE NOTE: This must be the same name &amp; Address as shown on the Pesticide Applicator License)</p> <p>USDA APHIS PPQ AIRCRAFT OPERATIONS RT 3 BOX 1001 EDINBURG, TX 78539</p> <p>COMPANY'S PESTICIDE LICENSE NUMBER: 5294-000</p>
---	---

This is to certify that policies of insurance listed below have been issued to the insured company name above, are in force at this time.

TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE	EXPIRATION DATE	LIMITS OF LIABILITY IN THOUSANDS (000)	
				Each Occurrence	Aggregate
GENERAL LIABILITY	AEF 012345-001	01/05/04	01/05/05	Bodily Injury: \$ 1,000,000	\$ 1,000,000
AIRCRAFT LIABILITY	WC 294-000567	09/16/04	09/16/05	Property Damage \$ 1,000,000	\$ 1,000,000
				And/or Bodily Injury & Property damage Combined: \$ 1,000,000	

EXCLUSIONS:

Deductible not to exceed \$5,000 for the total amount of liability insurance.

**SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED**  
Before the expiration date thereof, the issuing company will mail, within 15 days, written notice to the below-named certificate holder.

CERTIFICATE HOLDER:

OKLAHOMA DEPARTMENT OF AGRICULTURE,  
FOOD & FORESTRY  
PLANT INDUSTRY & CONSUMER SERVICES  
P O BOX 528804  
OKLAHOMA CITY OK 73152-8804

DATE ISSUED 01/05/2004

*Charles S. Smith* CHARLES S. SMITH  
Authorized Representative of Insurance Agency

FAX NUMBER: (405) 522-0625

**FIGURE 3-12-17 Example Certificate of Insurance**

The Certificate of Insurance is issued by the insurance agency and is used to verify the contractor's aircraft has the insurance coverage specified in the aerial application contract.

Inspect the insurance certificate as follows:

1. Verify that the insurance coverage listed on the insurance certificate is exactly the specified in the aerial application contract.
  - ❖ Bodily injury
  - ❖ Bodily injury and property damage combined
  - ❖ Date issued
  - ❖ Effective date
  - ❖ Expiration date
  - ❖ Type of insurance
  - ❖ Limits of liability
  - ❖ Property damage
  - ❖ Policy number
2. Verify the certificate is signed by an authorized representative of the insurance agency.
3. If the insurance certificate is as specified, then check YES in *Block 28, Proof of Insurance*
4. If the certificate is **not** as specified in the solicitation, or **not** available, then check NO in *Block 28*, and list under *Deficiencies Noted*.

### **Aircraft Working Speed in Miles per Hour (MPH)**

Verify the working speed of the aircraft in miles per hour (MPH) as follows:

1. Ask the pilot for the aircraft's expected working speed in miles per hour (MPH).
2. Consult the charts in [Aircraft Performance by Category on page 2-4-6](#) to verify the working speed given.
3. List the speed in *Block 29, Speed [MPH]*.

### **Date Aircraft Available**

Check the date listed in *Block 5, Date*, and enter the same date in *Block 30, Date Available*.



### Aircraft Category

Check the aircraft category in **Figure 2-4-1, List of Aircraft by Category and Assigned Swath Spacing and Spray Tip Size, on page 2-4-4** or in the aircraft categories chart in the current *APHIS Aerial Application Prospectus*. Enter the aircraft category in *Block 31, Category - A, B, C, or D*.

### Chemical

Check the aerial application contract for the chemical to be used for aerial application. Enter the name of the chemical in *Block 32, Chemical*.

### Rate per Acre

Check the aerial application contract for the rate per acre. Enter the rate in *Block 33, Rate/Acre*.

### Assigned Swath

Check the assigned swath for the aircraft in [Aircraft Categories and Assigned Swath Spacing on page 2-4-2](#), or in the current *APHIS Aerial Applicators Prospectus*. List the assigned swath in *Block 34, Assigned Swath*.

### Guidance Type

Check the aerial application contract for the guidance type specified: Differential Global Positioning System (DGPS) or flagging. List the type in *Block 35, Guidance Type*: if DGPS, specify the *Precision DGPS Make*. If flagging, specify the *Non-Precision type* (flagging, Kytoons, balloons, or flags, etc.).

## Application Systems Inspection

Follow the procedures in this section to inspect the aircraft's application systems.

### Dry System Inspection

If a dry application system is being used, then inspect the dry system following the procedures listed below.

#### Spreader

Inspect the spreader as follows:

1. Locate the make and model number of the spreader, and list in *Block 36. Spreader*.
2. Verify that the installed spreader is acceptable for that aircraft (refer to the Federal Prospectus).
3. Inspect the spreader for cleanliness and freedom from contamination. I
4. If the spreader is clean and free of contamination, then check YES in *Block 37. Spreader Clean and Free of Contamination*.
5. If the spreader requires cleaning, advise the contractor, check NO in *Block 37*, and make a note under *Deficiencies Noted*, spreader requires cleaning.

#### Spray Tank

Inspect the spray tank as follows:

1. Inspect the dry system spray tank to confirm the tank is clean, free of contamination, and dry, and the internal valves are sealed.
2. If the spray tank is clean and dry and the internal valves are sealed, then check YES in *Block 38. Spray Tank Clean/Dry and Internal Valves Sealed*.
3. If the dry system spray tank is **not** clean or dry or the internal valves are **not** sealed, then check NO in *Block 38*, and make a note under *Deficiencies Noted*, and advise the contractor.

#### Air Agitation, RAM Air Intake, Vent Tube

Inspect to air agitation, RAM air intake, and vent tube flow regulator as follows:

1. If you determine the air agitation, RAM air intake, and vent tube flow regulator are installed properly, then check YES in *Block 39. Air Agitation, RAM Air Intake and Vent Tube Flow Regulator Installed Properly*.
2. If the air agitation, RAM air intake, or vent tube flow regulator are **not** properly installed, then check NO in *Block 39*, advise the contractor, and note under *Deficiencies Noted*.

**Special  
Equipment**

Check for any special equipment (flagman, smoker, etc.), that is required and specified in the aerial application contract. Make sure the equipment is in good working order. List special equipment in *Block 40. Special Equipment*.

**Emergency  
Jettison Device**

If the aircraft will be operating over congested areas, then an emergency chemical jettison device is required by FAR 137.53(c)(2).

Inspect the emergency chemical jettison device as follows:

- 1.** If you determine the device is aboard, in the proper location, and operating as specified, then check YES in *Block 41. If Operating Over Congested Areas, an Emergency Chemical Jettison Device Required by FAR 137.53(c)(2)*.
- 2.** If the device is **not** aboard, or is aboard but **not** in the proper location or **not** operating properly, then check NO in *Block 41*, advise the contractor, and note under *Deficiencies Noted*.

## Liquid System Inspection

If a liquid application system is being used, then inspect the system following the procedures listed below.

### Spray Tank Interior

Inspect the spray tank interior as follows:

1. Climb onto the aircraft wing to inspect the hopper.
  - A. **Do not** step on the boom or any part of the wing that is **not** painted with nonskid material to avoid causing damage to the aircraft structure.
  - B. Use available handholds to prevent injury to yourself.
2. Look inside the hopper and make sure the inside is clean and dry, and has **no** foreign matter clinging to the sidewalls.
  - A. Check for residue of other chemicals dried on or caked to the sidewalls.
  - B. Inspect gaskets and seals and look for bulging or loose sealant compounds that may break loose and plug the spray system.
3. If the spray tank system is clean, then check YES under *Block 42, Spray tank interior cleaned of all contamination*.
4. If the spray tank system requires cleaning, then advise the contractor, check NO under *Block 42, Spray tank interior cleaned of all contamination*, and note under *Deficiencies Noted*.
  - A. Using a good cleaning agent (such as non-sudsing ammonia or Top Job<sup>®</sup>), and a good scrub brush to clean with should remove most residue.
  - B. If excessive residue is inside the hopper, then you should suspect that other parts of the spray system are also contaminated.
  - C. Corrosive chemicals such as Malathion will loosen most residues and cause plugging of strainers, screens, and spray tips, which result in program delays and improper application rates.

### Leakproof Spray System Components

Check the condition of gate seal, hoses, and other spray system components to make sure they are leakproof. This is to prevent pesticide spills and leaks that will cause damage to the environment and loss of expensive pesticides. All leaks **must** be repaired before operations begin.

Inspect the components as follows:

1. Check the hoses for fraying and bulging.
2. Make sure hose clamps are tight.

3. Check the condition of the gate seal. Have the pilot open the gate. After the gate is open, check the seal for cuts and fraying.
4. After the system is filled with chemical, check for leaks at all connections and spray nozzles. **Do not** begin operations until all leaks are repaired.
5. Check for leaks in the system periodically during the program. If practical, check for leaks after each load.
6. Look at the underside of the fuselage and the tail wheel assembly and check for chemical. If there is any chemical, then this may indicate a severe leak at the spray pump, gate seal, or other connections while the system is under pressure; and could also be evidence that part of the load was jettisoned through the jettison (dump) gate during the flight.
7. If there is **no** evidence of leaks after inspection, then check YES in *Block 43, Leak proof-Check condition of hoses, gate seal, and other spray system components.*
8. If there is any evidence of leaks, advise the contractor, check **NO** in *Block 35, Spray tank interior cleaned of all contamination,* and list under *Deficiencies Noted.*

### Aircraft Jettison (Dump) Valve

The aircraft **must** be designed specifically for aerial application and meet the requirements of FAR Part 137 (Cessna Ag-Truck, Thrush, etc.). The aircraft **must** be equipped with a jettison (dump) valve that meets Agricultural Part FAR 137.53(C)(2), to ensure that the hopper load can be jettisoned in an emergency.

Aircraft converted from passenger or cargo certification to aerial application (DC-4, Lockheed PV2, etc.), **other than** helicopters, **must** be able to jettison at least one-half of the aircraft's maximum authorized load of agricultural chemical within 45 seconds when operating over a congested area. If the aircraft is equipped with a device for releasing the tank or hopper as a unit, then there **must** be a means to prevent inadvertent release by the pilot or other crew members.

If the aircraft is equipped with a dump valve that meets FAR 137.53(C)(2), then check YES in *Block 37, Equipped with dump valve that meets agricultural part FAR 137.53(C)(2).*

If the aircraft is **not** equipped with a dump valve or is equipped with a dump valve that **does not** meet FAR 137.53(C)(2), then check **NO** in *Block 37, Equipped with dump valve that meets agricultural part FAR 137.53(C)(2),* advise the contractor, and note under *Deficiencies Noted.*

## Drain Valve(s)

The drain valve(s) **must** be located at the lowest point(s) in the system to allow for complete draining of the spray system at the end of the program. The aircraft may also be used for other purposes during the course of the program which require draining the spray system before such use.

Check all low points for drain valves or removable plugs that will allow draining the spray system.

On most Category C and D aircraft, expect three low points:

- ◆ Boom T or Y strainer
- ◆ Spray pump
- ◆ Spray tank

If the drain valve(s) are located at the lowest point(s) in the system, then check **YES** in *Block 45, Drain valve(s) located at lowest point(s) in the system.*

If the drain valve(s) are **not** located at the lowest point(s) in the system, then check **NO** under *Block 45, Drain valve(s) located at lowest point(s) in the system,* and list under *Deficiencies Noted.*

## Emergency Shut-off Valve

The emergency shutoff valve should be located between the hopper and pump. The valve should be as close to the hopper as possible to prevent the loss of pesticide and damage to the environment in the event of a major spray system leak.

Inspect the emergency shut-off valve as follows:

1. Check to be sure the emergency shut-off valve is installed at the proper location.
2. Have the pilot operate the valve to ensure the valve can be **closed** from the cockpit. (The pilot does **not** have to be able to open the valve from the cockpit.)
3. Check that the valve closes completely and without difficulty on the pilot's part.

If the shutoff valve is installed at the proper location, can be closed from the cockpit, and closes completely and without difficulty, then check **YES** in *Block 46, Emergency shut-off valve located between the hopper and pump.*

If the shutoff valve is **not** properly installed, or cannot be properly closed completely from the cockpit, then check **NO** in *Block 46,* inform the contractor, and note under *Deficiencies Noted.*

## Bleed Lines on Spray Booms

If spray booms are equipped with a boom shut-off valve located at the 3/4 position and the valve is closed, then bleed lines **do not** need to be installed.

To determine if bleed lines are required, use a tape measure to measure from the center of the fuselage to the wing tip and determine the 3/4 position of the wingspan.

- ◆ If the aircraft is equipped with a spray boom that is longer than 3/4 of the overall wingspan and/or the outermost nozzle is more than 3 inches from the end of the spray boom, then installation of a bleed line is necessary
- ◆ Entrapped air in the boom will cause the nozzles to continue to spray after closing the spray valve, until the pressure generated by the entrapped air has bled down to 7 pounds per square inch (PSI). The check valve located in the end cap of the spray nozzle will close at 7 PSI

If bleed lines are required on spray booms, then check to make sure they are installed correctly to remove entrapped air from the end of the spray boom. (See the current *APHIS Aerial Application Prospectus* for correct installation of bleed lines).

Inspect and confirm that the bleed lines are installed as follows:

- ◆ 3/8 inch inside diameter, and constructed from copper or other chemical-resistant material
- ◆ Attached to either the end of the boom or the outermost working nozzle port, provided the nozzle port is less than 3 inches from the end of the boom
- ◆ Attached with a tee to the outermost working nozzle positioned at 3/4 or less of the wingspan
  - ❖ PPQ will accept the outmost nozzle anywhere between 60 percent to 75 percent of the wingspan
  - ❖ If the nozzle is not at the 3/4 wingspan position, then use the next available port inside the 3/4 position, provided that position is more than 60 percent of the wingspan
- ◆ Have a shut-off valve installed between the boom and the bleed line nozzle to remove air from the boom and prevent chemical from entering the nozzle without going through the bleed line

If bleed lines are required and are properly installed, then check YES in *Block 47, Bleed lines installed on spray booms when required.*

If bleed lines are required but are **not** properly installed, then check NO in *Block 47*, advise the contractor, and note under *Deficiencies Noted.*

## Pump Capacity

A pump capacity to deliver 40 per square inch (PSI) to all spray nozzles is required to ensure the required pressure can be delivered to all spray nozzles, regardless of the chemical and the chemical level in the spray tank.

Several types of spray pumps are acceptable for PPQ spray programs, as follows.

- ◆ Category C and smaller aircraft usually have centrifugal pumps installed. Centrifugal pumps are the most common, and will pump most materials with minimum wear
  - ❖ Centrifugal pumps are powered by either of the following:
    - Hydraulic motor driven by the aircraft engine
    - Wind driven (have either a fixed pitch fan with 2-to-4 blades or variable pitch fan with 2-to-6 blades)
- ◆ Larger Category A and Category B aircraft may be equipped with gear or other type pumps.
  - ❖ Gear or other type pump(s) should be as connected as follows:
    - If two pumps are used, then they should be connected so that both pumps will pump the insecticide through the total span of the spray boom(s)
    - Individual pumps connected to separate booms should **not** be accepted because adjusting the pumps so that each will pump the same rate is difficult

If the pump is as specified above, then check YES in *Block 48, Pump with capacity to deliver 40 PI to all spray nozzles*.

If the pump will not deliver 40 PSI to all spray nozzles regardless of the chemical and level in the spray tank and/or is not an acceptable type, then check NO in *Block 48*, inform the contractor, and list the deficiency under *Deficiencies Noted*.

## Functional Pressure Gauge

A functional pressure gauge with a minimum range of zero-to-60 PSI, but **no** greater than zero-to-100 PSI is required to ensure that the gauge covers the required operating range and that the scale is **not** so small that reading the gauge is difficult.

1. Locate the gauge mounted either in the cockpit or on the spray boom.
2. Make sure the gauge is visible from the pilot's view and within the required range, and that gauge pressure can be easily read.
3. Check that the gauge reads zero (0) when **no** pressure is in the system.



4. Check that the gauge has a functional minimum range of 0-to-60 PSI, but no greater than 0-to-100 PSI.

If the pressure gauge meets the specifications above, then check YES in *Block 49, Functional pressure gauge with a minimum range of zero to 60, but no greater than zero to 100 PSI.*

If the pressure gauge does not have a minimum range of zero-to-60 and a maximum range of zero-to-100 PSI, and does not meet the specifications above, then check NO in *Block 49*, inform the contractor, and note under *Deficiencies Noted*.

### **In-line Strainer Between Pump and Boom**

An in-line strainer located between the pump and boom is required to prevent foreign matter from clogging nozzle strainers and spray tips. Check as follows:

1. Locate the in-line strainer either just after the spray valve or in the T at the center of the boom.
2. Check the strainer for cleanliness.
3. Verify the mesh is as specified in the contract.
4. A 50-mesh, in-line strainer should be used for most chemicals.
  - A. Most strainers are not identified as to mesh size.
  - B. To determine mesh size, mark a one inch line on the strainer and use a small pointed object (such as a push pin) to count the strands within that inch. A 50 mesh strainer has 50 strands per inch.
5. Many aircraft spray systems are equipped by the manufacturer with a 40 mesh in-line strainer.
  - A. Cut a 50 mesh screen slightly larger than the inside of the strainer, and insert the 50-mesh screen (with overlap) inside the existing strainer.
  - B. If the system is very clean, then use discretion in accepting the 40 mesh screen in lieu of the 50 mesh screen.

If the in-line strainer is located between the pump and the boom and is as specified above, then check YES in *Block 50, In line strainer - between pump and boom.*

If the in-line strainer is not in the proper location or does not meet the specifications above, then check NO in *Block 50*, inform the contractor, and note under *Deficiencies Noted*.

### **Unused Nozzle Openings**

All unused nozzles **must** be removed and the openings plugged to prevent inadvertent or intentional turning on of excess nozzles. Verify that **only** the correct number of nozzles are installed for calibration.

## Special Equipment

If the unused nozzles are removed, the unused openings are properly plugged, and the correct number of nozzles are installed for calibration, then check YES in *Block 51, Unused nozzles removed and openings plugged*.

If the unused nozzles have not been removed or the openings have not been properly plugged, then check NO in *Block 51*, inform the contractor, and note under *Deficiencies Noted*.

All special equipment (automatic flagman, DGPS, smoker, etc.) specified in the aerial application contract **must** be installed and operational, including ground support equipment (pumps, meters, etc.).

Locate the required special equipment and verify the equipment is installed and operational as follows:

1. Check the smoker without having the pilot fly the aircraft.
  - A. Operate the smoker on the ground and listen for the sound of the pump motor.
  - B. Check the smoker oil (supplied by the contractor) and verify a sufficient amount is on hand to operate the smoker.
2. Check the automatic flagman.
  - A. Ask the pilot to pop a flag while on the ground.
  - B. Check the flags and verify a sufficient supply of flags is on hand.
3. Check the accuracy of the differentially corrected global positioning system (DGPS), and check the pilot's knowledge and skills using the DGPS by utilizing the procedures developed for this test. (See [Differential Global Positioning System \(DGPS\) Accuracy Check on page 3-11-2](#) under [Aircraft Guidance](#).)  
This check is normally performed by a PPQ pilot when available; otherwise, the contracting officer's representative (COR) is responsible for conducting this check.

If all special equipment specified in the aerial application contract is properly installed and operational, then check YES and list the specific special equipment in *Block 52, Special equipment required*.

If the special equipment is not installed properly or not operational or missing, then check NO in *Block 52*, inform the contractor, and list under *Deficiencies Noted*.

## Chemical in Hopper

Accurately determine the amount of chemical remaining in the spray tank or hopper before or after flight. The aircraft will be equipped with a gauge and/or will have calibrated divisions on the tank that are small enough to accurately determine the amount of chemical remaining in the tank. If you are unable to locate the gauge or calibrated divisions on the tank, then ask the pilot to show you the location.

If you verified the method to determine the amount of chemical remaining in the spray tank or hopper before and after flight, then check YES in *Block 53, A method to determine the amount of chemical in the hopper, in flight and on the ground.*

If you were not able to verify the gauge or calibrated divisions for determining the chemical remaining, then check NO in *Block 53*, inform the contractor, and note under Deficiencies Noted.

## Number of Nozzles Installed for Application

The correct number of nozzles **must** be installed for proper calibration to ensure that the spray aircraft will deliver the desired rate of pesticide per acre.

- ◆ To determine the correct number of nozzles, use the calibration formula in [Dispersal Systems Calibration on page 3-10-1](#)
- ◆ To determine the correct spray tip size required for the aircraft and pesticide being used, see [Aircraft Performance Category, Assigned Swath Spacing, and Spray Tip Size on page 2-4-4](#)

If the correct number of nozzles are installed, then list the number of nozzles installed in *Block 54, No. of Nozzles Installed for Application.*

If the correct number of nozzles, are **not** installed, then note under *Deficiencies Noted.*

## Spray Tip and Strainer Size

The correct size spray tip and tip strainers, SS8002/50 mesh, constructed from approved materials **must** be correctly installed. (See xx for particular aircraft and tip size.) The aerial application contract specifies the spray tip size and type, stainless steel (SS), flat fan 8002). PPQ, Aircraft and Equipment Operations (AEO), has determined (for most aircraft) the correct spray tip size for different aircraft, based on airspeed and pesticide being used.



The Contracting Officer's Representative (COR) **does not** have the authority to authorize the contractor's use or installation of spray tips **other than** those listed for the type of aircraft and pesticide being used.

Inspect the spray tip and strainer as follows:

1. Inspect each spray tip to verify the tips is the correct size and constructed of stainless steel (SS)
2. Inspect the orifice for evidence of tampering or altering, especially on programs where payment is by the gallon or acre. (Altering the orifice opening is not beneficial to the contractor on programs where payment is made by the flight hour.)
3. Inspect the spray tip strainers to verify that they are installed and of the correct mesh size.
  - ❖ Most spray tip strainers are **not** identified by mesh size
  - ❖ To determine mesh size, measure on inch on the screen and use a small pointed object (such as a push pin) to count the number of strands in one inch; the total number of strains in one inch equals the mesh size

**EXAMPLE**

Spraying Systems Company recommends a 100-mesh strainer be used for spray tips 80015 and smaller, and a 50-mesh strainer be used for spray tips 8002 through 8008. Tip strainers are **not** recommended for orifices 8010 and larger. If using Sevin XLR Plus®, then install the 4514-20 slotted strainer; this replaces other type strainers.

List the size spray tip and strainer in *Block 55, Spray Tip and Strainer Size*.

**Operating Boom Pressure (psi)**

The operating boom pressure per square inch (psi) **must** be documented to be used as a reference (to all involved) that the boom pressure is to be set at the psi listed.

In most cases, the spray system is calibrated for the boom pressure to be set at 40 psi. However, resetting the psi to achieve the desired flow rate per minute may be necessary, especially when applying ULV applications and the calibration requires 8-1/2 nozzles rounded up to 9 nozzles installed on the aircraft. In this case, at 40 psi the flow would be too high and a lower psi setting would be in order.

List the operating boom pressure per square inch in *Block 56, Operating Boom Pressure (PSI)*.

Continue with [Certification on page 3-12-39](#).

## Deficiencies, Corrections, and Remarks

### Deficiencies Noted

As you conduct your inspect and document the results, be sure to note any deficiencies found during the inspection under the *Deficiencies Noted* section.

<b>EXAMPLE</b>	Correct number of nozzles were not installed. Pilot will change nozzles and have ready for re-inspection by 1:00 pm today (6/24/06).
----------------	--

### Deficiencies Corrected

Once the deficiency is corrected, then note the date the corrective action was taken, and the results after re-inspection of the deficient item under the *Deficiencies Corrected* block.

### Remarks

Make any other notes under *REMARKS*.

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## Certification

After the inspection is completed and documented on the *PPQ Form 816, Aircraft and Pilot Acceptance*, the official conducting the inspection (PPQ Pilot), and the contract pilot or contractor **must** review the completed document and then sign the form.



# 3

Aerial Application  
Manual

## Program Start-up

### *Worksite Organization and Inspection*

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#### Contents

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#### Introduction

The **Worksite Organization and Inspection** section of **Program Start-up** provides procedures for efficient organization and inspection of the loading facilities and worksite.

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#### Organization

Proper organization will increase efficiency and reduce accidents at the work site. Care **must** be taken when designing the layout of the work site, especially for pesticide storage (see **Program Planning, Pesticides and Pesticide Storage on page 2-8-1**). Proper organization and inspection of the worksite helps assure dependable facilities for rapidly loading the aircraft.

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#### Inspection

##### Daily Inspection

Perform the following steps at the worksite at least once a day:

1. Inspect the work site.
2. Identify any problems.
3. Take corrective action.

At least one inspection per day at the work site is recommended for items that may change from day-to-day. **Table 3-13-1** contains a list of items that **must** be checked periodically, as local needs dictate.

**TABLE 3-13-1 Items for Inspection at the Worksite**

If the item is:	Then look for the following:
Aircraft loading area	<ul style="list-style-type: none"> <li>◆ Location is away from other aircraft and traffic areas</li> <li>◆ Easy access to spray planes</li> <li>◆ Non-porous surface</li> <li>◆ Security measures are in place and used to <b>exclude</b> unauthorized persons</li> </ul>
Aircraft parking area	<ul style="list-style-type: none"> <li>◆ Access to fuel</li> <li>◆ Access to loading area</li> <li>◆ Security measures are in place and used to <b>exclude</b> unauthorized persons</li> </ul>
Containment for pesticide spills	<ul style="list-style-type: none"> <li>◆ Proper size dikes and liners are installed around tanks or barrels</li> <li>◆ Complete spill kit accessible</li> </ul>
Fresh water supply	Available on site
Garbage container	Available on site
Object free area	Equipment is out of this zone around each runway (see <b>Object Free Areas (OFAs) and Pesticide Storage</b> for information about the required object free area)
Pesticide storage area	<ul style="list-style-type: none"> <li>◆ <b>No</b> smoking, <b>No</b> eating, <b>No</b> drinking signs are visible</li> <li>◆ Personal protection equipment is replaced as the equipment is used</li> <li>◆ Pesticide labels and Material Safety Data Sheets (MSDS) are available</li> <li>◆ Security measures are in place and used to <b>exclude</b> unauthorized persons</li> <li>◆ Spill kit contents and supplies are replaced as contents are used</li> <li>◆ Tanks or barrels are arranged on a non-porous surface or an impermeable lining is used</li> </ul>
Restroom	Available on site
Safety <ul style="list-style-type: none"> <li>◆ First aid kits</li> <li>◆ Fire extinguishers</li> <li>◆ Pesticide spill and accident information sheet</li> <li>◆ Protective clothing</li> <li>◆ Respirators</li> <li>◆ Spill kits</li> <li>◆ Training on proper use of equipment for new personnel assigned to the project</li> <li>◆ Work unit hazard information</li> </ul>	<ul style="list-style-type: none"> <li>◆ Items are all on site and in working order ready for use</li> <li>◆ Training is properly conducted</li> </ul>



## Loading Facilities

Proper organization and inspection of the worksite helps assure dependable facilities for rapidly loading the aircraft. Accurate rapid loading may help with program efficiency, by increasing the number of loads per day that can be applied and reducing the operational hours required to complete a project. This could mean significant savings to the associated costs of the project which could benefit landowners and taxpayers.

One way to reduce lost time is to give careful consideration to the position of loading stations. The station should be spaced so the aircraft can taxi up to and away from any station and be positioned so the aircraft will **not** obstruct the runway while the aircraft is being loaded.

### Loading Liquid Pesticides

Load liquid pesticides into large aircraft at a minimum rate of 100 gallons per minute, and all other aircraft at a rate of 50 gallons per minute. Pumps, meters, and plumbing should be of sufficient capacity to maintain this loading rate regardless of the number of aircraft being loaded at one time. Under average conditions, there should be approximately one-third as many loading stations as there are aircraft operating from the airstrip, or one loading station for every three aircraft.

Strainers should be incorporated in the loading system so foreign material will **not** be pumped through the meters and into the aircraft. Foreign material will impair the accuracy of meters, clog nozzles, cause check valves to leak, and cause bypass valves to stick open.

Loading hoses should be of sufficient length to permit loading aircraft without parking the aircraft on a specific spot. Time is lost in parking aircraft at precise locations that may be too close to obstructions.

### Loading Granulated Pesticides

Several types of mechanical loading devices can be used to load granulated pesticides into aircraft. Acceptable types are auger, belt, and hopper. Auger and chain-type loaders have been found to be unsatisfactory for clay granules. If a loader is suspected of grinding and reducing the size of the granules, then a sample of the material should be collected and submitted for size analysis.

### Loading Bran, Grits, and Rolled Wheat

Mechanical loaders should be used for loading bran, grits, and rolled wheat into all large aircraft; belt, chain, and auger types are best. Blowers should **not** be used for loading bran. When blown into a hopper, bran may pack and **not** flow uniformly.

Small aircraft can be loaded by hand, provided protective measures are taken to prevent pesticide exposure of personnel and all safety standards shown on the label and provided by the EPA are followed. This is of particular importance when dealing with pesticide dust formulations.

### **Computing Aircraft Loads**

When aircraft loads are computed, each aircraft should be loaded to equal the amount of pesticide required for a specified number of swaths, plus a small cushion or reserve. This ensures that the aircraft will **not** run out during a swath run. Quite often, pilots may **not** know where they ran out or some who may know may **not** return to that exact point to continue applications; this would leave untreated areas.

# 4

Aerial Application  
Manual

# Program Supervision

## *Operational Plan*

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### Contents

- Introduction [page 4-1-1](#)
- Operational Plan [page 4-1-1](#)
- Daily Operational Plan Flow Chart [page 4-1-3](#)

---

### Introduction

The **Operational Plan** section of **Program Supervision** provides information for creating and using of the operational plan for the specific aerial application program.

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### Operational Plan

The operational plan for the aerial application program is developed by the Contracting Officer's Representative (COR) and Program Manager.

The following items **must** be included in the decision process for developing the operational plan:

- ◆ Operational procedures for the pest program
- ◆ Site-specific circumstances and restrictions

Consider and include all steps that must be taken on a daily basis and incorporate these in the daily operation plan for the specific aerial application program.

Decisions that the COR and program manager **must** make during daily operations of the aerial program include the following:

- 1.** Are all required aircraft and equipment on hand and ready to use, and are all personnel on hand and ready to begin?
  - A.** If **not**, can the missing or less than acceptable items be obtained and made ready for use before spraying begins?
  - B.** Can an alternative plan be implemented **without** violating contract provisions?
  - C.** If **not**, then delay spray operations until all required items are obtained and ready to use.

2. Have all parties within the spray block been notified?
  - ❖ If not, can the parties be notified and precautions taken before spraying begins?
  - ❖ Are sensitive areas protected?
  - ❖ If not, is another spray block available and have those parties been notified and sensitive areas protected?
  - ❖ Delay operations until all parties have been notified and precautions have been taken
3. Do one or more of the following weather conditions predominate?
  - ❖ Dew on vegetation
  - ❖ Fog
  - ❖ Ground and air temperature is incorrect
  - ❖ Rain
  - ❖ Wind speed exceeds pesticide label or guidelines
4. If the weather conditions are acceptable, then begin spray operations.
5. Monitor weather conditions throughout the day to determine if deposition is poor or weather conditions have deteriorated and either apply, stop spray operations or delay operations until weather conditions improve.

## Daily Operational Plan Flow Chart

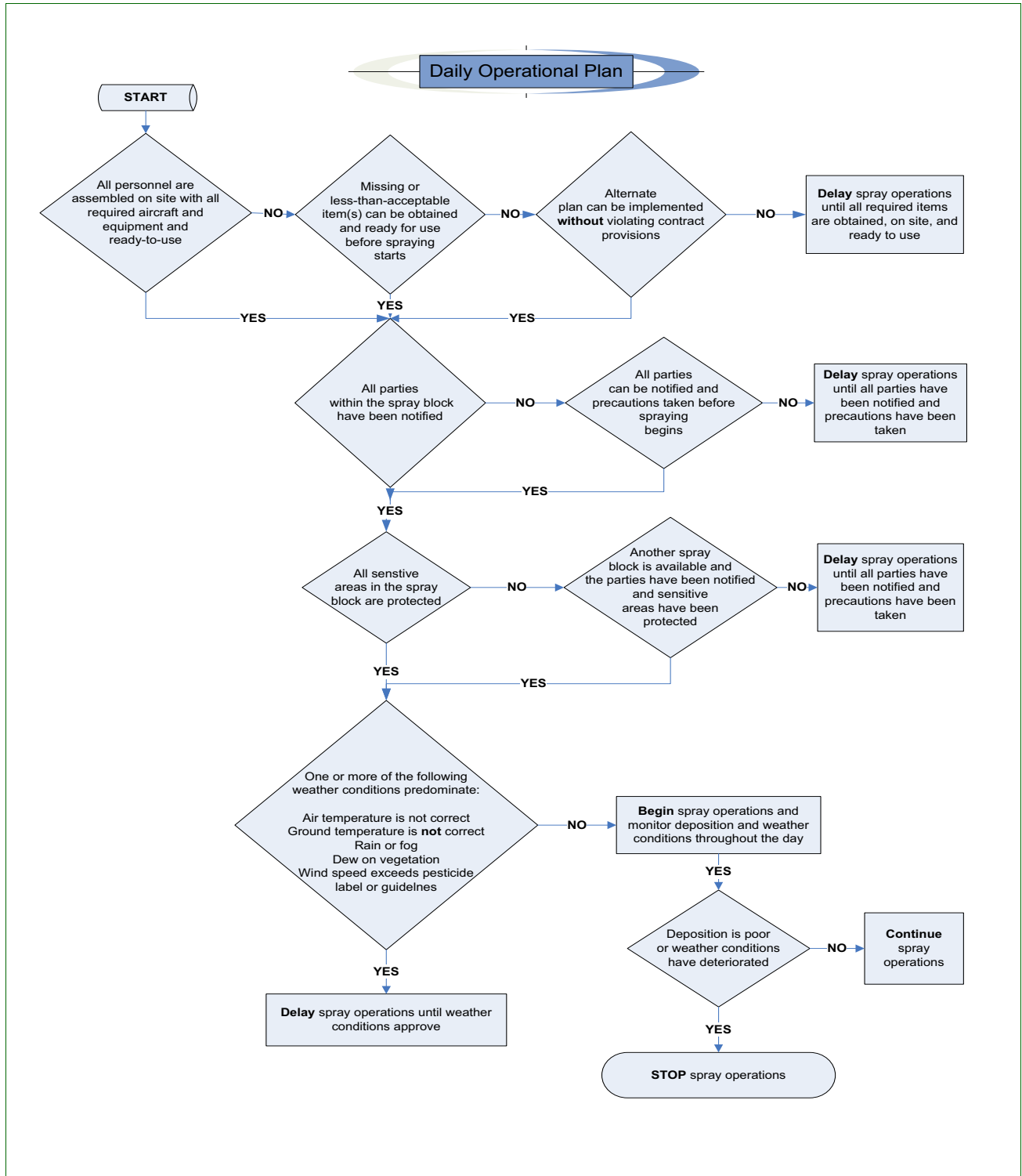


FIGURE 4-1-1 Daily Operational Plan Flow Chart



# 4

Aerial Application  
Manual

# Program Supervision

## *Control Operations*

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## Introduction

The **Control Operations** section of **Program Supervision** provides general guidelines for control activities the Program Manager or Contracting Officer's Representative (COR) to use as a basis to determine the requirements for a specific pest control program or State.

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## Aircraft Assignment and Control Operations

### Aircraft Assignment

When assigning aircraft to treat various blocks and the choice to use faster, large-load carrying aircraft is available, then use the faster, large load carrying aircraft to treat those blocks that are farthest from the airstrips.

If the terrain is rugged, then use the best performing aircraft in those blocks. Assign the more proficient pilots to areas involving rugged terrain. Assignments **must** be coordinated with the contractor's representative.

### Area Division

Development of the target pest and host plants may vary within the treatment area. The boundaries of the treatment area may need to be divided according to phenological development stages of the target pest and/or host plants.

**EXAMPLE** To treat the gypsy moth development in mountainous areas, the infested area or treatment block boundaries may extend from lower (warmer) elevations up to the higher (cooler) elevations of the mountains. Gypsy moth development is correlated with temperature, so egg masses at lower elevations will hatch earlier and larvae will develop faster than those at higher elevations.

The ideal target treatment window may occur when the larvae are at the second instar development stage. Work can progress in areas of the treatment block where the larvae are at the instar stage. As larvae in the higher or cooler areas develop and conform with treatment criteria, work can begin in these areas.

Operations can usually be managed more effectively by dividing the treatment area into units when one or more of the following conditions occur:


- ◆ Large or complex areas require use of many aircraft
- ◆ Separate geographic entities

Large units may require separate supervision and staffing.



Units should be further divided into blocks so the length of the flight lines are appropriate for the aircraft requested or available for the project (see [Table 4-2-1](#)).

**TABLE 4-2-1 Determine the Length of Flight Lines**

If using:	And the quantity is:	Then:
Large aircraft		USE longer flight lines
Small aircraft	One aircraft	USE shorter flight lines
	Two or more aircraft flying in formation	USE longer flight lines

The use of Kytoons®, light, mirrors, or electronic or DGPS guidance allows for considerable extension of the flight lines. However, there are limitations **other than** the guidance system, such as the chance of adverse weather conditions increasing somewhere along the flight line as the line is lengthened. This can cause a reduced work day or poor application over part of the block.

For boundaries in rural areas, the use of fence flagging is effective and should be posted as needed to ensure accurate application. The use of landmarks such as buildings, country roads, fence lines, highways, railroads, rivers, telephone and power lines, trees and brush patches, windmills, etc., also effectively help pilots locate spray block boundaries.

When the use of more than one aircraft is planned for treating separate blocks as part of a larger program, then the blocks **must** be arranged so that pilots can treat their assigned blocks without danger of collision. See [Formation \(Team\) Flying on page 4-2-4](#).

Blocks which either contain or are adjacent to sensitive areas (beehives, mink farms, poultry farms, water reservoirs, etc.) **must** be arranged so that flights and turns over sensitive areas will be avoided or held to a minimum.

### Height of Ferry and Application

When dividing blocks, establish and identify the following:

- ◆ Aircraft ferry routes
- ◆ Altitude of flight during ferry trips
- ◆ Height of flight during application

Normal ferry altitude is at least 500 feet above ground level (AGL) for rural areas. Higher ferry altitude may be required in urban areas to avoid unnecessary disturbance to residents or to avoid local air traffic.

Normal application height is based on the wingspan of the aircraft being used. The standard assignment to make is one and one-half of the wingspan length of the application aircraft.

**EXAMPLE** A Cessna AgTruck has a wingspan of 41 feet 3 inches. The normal application height is 60 feet.

### Formation (Team) Flying

Operating aircraft in formation may be desirable or necessary at times. Formation flying is most likely to occur when a number of small aircraft are used or when there are more aircraft than blocks.

For aircraft flying in formation, do as follows:

- ◆ Use aircraft of similar type, swath width, flow rate, and comparable speed
- ◆ Have each aircraft carry equal loads
- ◆ If pilots have difficulty spacing themselves properly, then the pilots may be assigned to follow a formation-proficient or experienced teammate



Flying in formation should be permitted **only** where straight flight lines can be followed. Flying contours in formation is too dangerous.

Productivity is lower with team flying than when aircraft are working separately, because the leading aircraft **must** make wider turns to permit the trailing aircraft to complete their swath runs, and the leading aircraft usually **must** wait for the other aircraft to be loaded.

### General Briefing

Hold a briefing session for all personnel, including those of the contractor, before work starts and continue to hold briefing with personnel as often as necessary during the course of the program. During briefing, describe the program, purpose, procedures to be followed, sensitive areas, obstructions or hazards within the area and en route, policy on flight over farms or residences, traffic patterns, minimum ferry altitudes (500 above ground level (AGL)), precautions for handling the pesticide, and other safety measures. See [General Briefing Sessions on page 3-7-1](#) for a detailed checklist for briefing all program personnel.

### Pilot Briefing

Briefing pilots is best accomplished through the use of observation aircraft so that each pilot can be shown landmarks, block boundaries, sensitive areas, hazards, etc. Brief each pilot individually about each block assigned. To avoid confusion and depending on block size, brief the pilot on **no** more than two blocks at a time.

### Flagger Briefing

If flaggers are used, they should be briefed along with the pilots. Discuss the type and number of markers to be used, the location of markers in relation to block boundaries, and other markers that may be located inside the block. Orienting flaggers by means of a reconnaissance flight may be necessary.

### Spray Block, Sensitive Area, and Buffer Zone Verification

After taking a pretreatment reconnaissance flight with each pilot and confirming that everything (buffer zones, spray blocks, and sensitive areas) is recorded on a master program map, then jointly sign and date the map.



The pilot **must** have a clear understanding of where the buffer zones, sensitive areas, and spray block boundaries are located in the treatment area.

When observation aircraft are **not** available, then using ground vehicles to show pilots and/or flaggers their assigned blocks may be necessary.

### Pilot Experience

All pilots, especially those with minimum experience, should be observed closely during applications to determine if their work is satisfactory. If the pilot **does not** perform satisfactorily, then the pilot should be replaced regardless of the amount of experience. Experience alone **does not** necessarily determine pilot acceptability. A pilot who is **not** conscientious or **not** capable or who has an inappropriate attitude may contribute toward program difficulties.

When electronic guidance is required, use the procedures under [Aircraft Guidance on page 3-11-1](#) to verify the pilot's ability, knowledge, and skills required to operate the system.

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## Terrain Type

Always allow pilots to participate in flight planning and swath pattern decisions. Prior to the start of treatment, flat and rolling terrain will be divided into rectangular blocks whenever possible to enable the pilot to fly straight parallel lines. When boundaries are curved or crooked, pilots are inclined to straighten up the flight lines as treatment progresses; this causes skips which then require multiple flights (to cover the skipped areas).

When feasible, blocks should be aligned with the general direction of most fences and highways (e.g., north-south or east-west on the Great Plains), to aid the pilot in keeping direction and spacing. Try **not** to plan east-west flight lines at sunrise and sunset.

Pilots prefer to treat crosswind, starting on the downwind side, and working upwind so they will **not** fly through the spray from previous swaths. This also protects ground personnel from the treatment formulation (spray). Pilot safety **must** always be addressed.

### Flat and Rolling Terrain

When treating flat and rolling terrain where maintaining a reasonable altitude **without** deviating off-course is impossible, then the pilot should fly straight parallel lines and crosswind as practical. When spraying the treatment formulation, the pilot should begin on the downwind side of the block and move upwind on each progressive swath run to avoid flying through suspended spray from the preceding swath.

### Rugged Terrain

When the terrain is too mountainous or rugged for a pilot to maintain a reasonable altitude over hills and valleys, then block boundaries will be designed to follow contours. Pilots are capable of spacing their swaths properly in curving flight lines when they can follow contours. GPS guidance can greatly assist with this.

When practical, separate rugged terrain areas for treatment from rolling or level areas. In rugged areas, wind, turbulence, and other conditions may limit the period of time that treatment can be applied effectively. In such areas, the aircraft will start treatment operations in the early morning (when wind and temperature conditions are optimal), and remain until weather conditions become unsuitable. The aircraft should then move to the flat, lower areas for treatment.

If the terrain is too rugged for straight flight lines, then the pilot(s) should follow the contour of the slopes. Uphill flying in canyons and valleys is hazardous and difficult for the pilot to judge the degree of the slope. Unless the pilot is flying a powerful, high-performance aircraft capable of maintaining the required application altitude and

speed, the area should be flown down slope **only**. Keep in mind that this approach will significantly increase the amount of time needed to complete each load and each plane may have to carry less material to lighten the load. These factors must be figured in when planning the overall course of a program.

### **Congested Areas**

Although the term congested area has **not** been defined specifically by the Federal Aviation Administration (FAA), a congested area applies in general to any city, town, community, or group of buildings in which people would be subject to injury as a result of the malfunction of low-flying aircraft.

If the congested area is **not** part of the treatment area, then arrange blocks adjacent to congested areas so the aircraft will **not** fly or make turns over congested areas. To minimize the hazard in such areas, the FAA places restrictions on aircraft used for treating congested areas.

If a single engine aircraft can operate in a pattern at such an altitude that the aircraft can land in an emergency **without** endangering persons or property on the surface, then the aircraft can treat where there are groups of buildings and very small towns.

**Only** multi-engine aircraft and helicopters with limited loads can be approved for larger towns and cities.

### **Contractor Plan for Congested Areas**

Requirements to treat over congested areas are listed in Federal Aviation Regulations FAR Part 137, "Treatment Over Congested Areas." The contractor is responsible for obtaining necessary waivers and complying with the regulations.

The contractor **must** submit a plan for each congested area operation to the FAA Flight Standards District Office (FSDO) having jurisdiction over the area where the operation is conducted. A letter of authorization signed by the city or town authorities (for the congested area) **must** accompany each plan. The operator **must** provide additional documentary evidence relative to aircraft and pilots.

In the bid invitation, state the approximate percentage of congested area involved so that bidders will be prepared to apply for the waiver well in advance of operations and thus avoid program delays.

### **Class C and Class D Airspace Notifications**

Before operating in Class C and/or Class D airspace, the contractor **must** notify the appropriate air traffic control authorities. Any operation on or near a military airport **must** be coordinated with the appropriate military authority. The contractor **must** obtain permission

from an authorized official to use any airport. Obtain radio frequencies used locally. Contact Aircraft and Equipment Operations (AEO)<sup>1</sup> for information and assistance during program planning.

The FAA-FSDO, and State, county, and local law enforcement agencies **must** be informed whenever aircraft will be operating at low elevations in areas as described in this section.

Complaints of low-flying aircraft are usually directed to such agencies. Include a description of the aircraft to be used. Maintain close liaison with these agencies after operations get under way. Advise the contractor to request the local Flight Service Station to issue a Notice of Airmen (NOTAM) describing dates, times, location, altitude, and aircraft types.

### **Ferrying and Turnaround Routes**

Where possible, plan ferrying and turnaround routes to avoid flights over congested areas, bodies of water, and other sensitive areas that are **not** to be treated.

### **Racetrack Pattern**

When large blocks are treated, setting up two parallel flight lines approximately 1 mile apart for aircraft operating at less than 130 mph (113 knots) may be advantageous.

If possible for aircraft operation above 130 mph, the flight lines should be two miles apart. This allows a timesaving 180° turn instead of the conventional keyhole pattern necessary with formation flying. In addition, the racetrack pattern lends to a safer and less complex procedure turn. This turn reduces pilot work load and facilitates continuous visual contact with the next landmark.

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## **Swath and Swath Checking**

Aircraft have been assigned a working swath width as shown in the current *APHIS Aerial Application Prospectus* under *Aircraft Categories*. The Contracting Officer's Representative (COR) and other program personnel **do not** have the authority to change the assigned widths for aircraft that are listed in the prospectus.

If the aircraft **not** listed in the *APHIS Aerial Application Prospectus*, then a swath width **must** be assigned. Contact PPQ Aircraft and Equipment Operations (AEO) for assistance.

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<sup>1</sup> USDA-APHIS-PPQ, Aircraft and Equipment Operations, 22675 N. Moorefield Road, Bldg. #6415, Edinburg, TX 78541-9398; phone 956-580-7270; FAX 956-580-7276.

## Procedures to Follow When a PPQ Pilot is Unavailable

If a PPQ pilot is **not** available, then follow the procedures below to check the swath width.

### Swath Width Check

The best time to swath check an aircraft is when there is very low wind. If there is any air movement, the aircraft should be flown as directly into the wind as possible. The effective swath allowed should be **no** wider than that which can be obtained in a low-wind condition. When flying crosswind, the spray will drift and cover a wider swath. However, since the pilot **cannot** always fly crosswind conveniently, the wind will **not** always have the same velocity, and spraying formulation is often done when there is **no** wind.

Swath checks should be conducted in open areas away from trees or buildings. To set up for swath checks, receptacles (dycards for liquid, sticky cards for bait formulation), should be placed perpendicular to the direction of flight. More accuracy is obtained when there are sufficient receptacles to place at 5 feet intervals over a distance at least twice as long as the expected swath width, so the total swath can be determined even though the pilot **does not** fly directly over the center.

To assist the pilot:

1. Use two flaggers or cars with lights on, spaced 50 to 100 yards apart, and aligned so the pilot will fly over the center of the card line.
2. Instruct the pilot to line up with the markers far enough away so the aircraft will be in level flight, at cruising speed, and at the required height when the spray is turned on.
3. Turn on the booms at least 500 feet before reaching the receptacles and leave the booms on about 1500 feet beyond.
4. Turn off the booms, and then continue to fly the aircraft straight and level for another 10 to 15 seconds. Abrupt pull-ups or turning too soon will distort the deposit pattern. The aircraft should remain away from the swath recovery area at least 15 minutes to allow the ultra-low volume spray formulations to settle. Some spray formulations, such as solid bait, will fall directly to the ground and will **not** require a long waiting period before checking.

Flying at a height equal to the wingspan usually produces the widest, most effective swath. Flying at a height less than the wingspan, or with a spray boom less than two-thirds of the wingspan usually produces a narrower, less-effective swath. Flying at a height much greater than the wingspan, or with nozzles spaced throughout the full wingspan **does not** increase the swath appreciably.



When the aircraft will be operated at a height about equal to one-and-one half the wingspan, then nozzle spacing should be generally uniform (symmetrical) along the boom.

---

## Crew and Work Assignments

Supervise the crew and work assignments as follows:

1. Ensure that all aircraft, equipment, and personnel are ready.
2. Distribute equipment and radios to project personnel and provide the necessary training for their work assignments.
3. Establish a daily operational plan with input from the ground crew and the pilot(s).
4. Monitor daily work assignments of both APHIS personnel and cooperating personnel.
5. Hold meetings and briefings to identify problems, provide progress reports to personnel, adjust work assignments, and provide additional training (see [Program Personnel Briefings on page 3-7-1](#) and [Program Personnel Duties on page 2-7-3](#)).

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## Weather

Weather has an important role in aerial application. Winds may displace the pesticide formulation within the target area. High temperatures combined with low humidity may cause fine liquid pesticide formulation to evaporate or drift away **without** reaching the target.

Before and during application, have trained personnel monitor weather conditions and record the following:

- ◆ Air temperature and ground temperature
- ◆ Cloud formation
- ◆ Fog
- ◆ Wind speed and direction

Weather monitors **must** be able to communicate with the COR at all times (see [Ground Observer on page 2-7-7](#) and [Personnel, Materials, and Equipment on page 2-7-1](#)).

Weather readings are critical to effective applications and should be taken frequently for ultra-low-volume (ULV) formulations. Weather monitoring should occur within the treatment block for more accurate readings.



When applying ULV formulations, control activities should **stop** when safe and accurate placement of the spray formulation on treatment areas could be jeopardized by weather conditions.

To minimize drift and volatilization, **do not** use ULV formulations when any of the following weather conditions exist:

- ◆ Air turbulence could seriously affect the normal deposition pattern
- ◆ Fog is present or is imminent
- ◆ Heavy dew is on foliage
- ◆ Rain is falling or is imminent
- ◆ Temperature changes could cause the spray formulation to move outside of the treatment block or to non-target areas
- ◆ Wind velocity exceeds 10 miles per hour (unless a lower wind speed is required for pesticide application under State law or pesticide label requirements)

Field observers should watch for and report the following conditions that can indicate poor weather conditions for applying liquid sprays:

- ◆ Treatment formulation begins to rise instead of falling to the ground (inversions)
- ◆ Excessive drift occurs
- ◆ Soil and air temperature is incorrect

### **Air and Soil Temperature**

Daily operation times for most projects using liquid formulation begin at first light (daybreak) and continue until the soil temperatures rise above the air temperature (usually mid morning).

Daily operation times for programs using baits and flakes are more flexible because these materials are less sensitive to temperature.

When using liquid ultra low volume (ULV) formulations, special consideration **must** be given to monitoring the air and ground temperature difference. This is one of the critical indicators of the time to quit treating for the day.

The best weather for spraying treatment is usually from dawn until mid-morning. As the morning progresses, inversions occur when the soil warms the air above; as the soil surface warms, the air above begins to rise. When the soil temperature and air temperature equalize, the upward air currents (thermals) increase and cause the fine pesticide formulation droplets to float or even begin to rise as they

### **Ultra Low Volume (ULV) Formulations**

near the ground. If the droplets float or rise, then offsite pesticide drift and reduced efficacy due to the pesticide **not** reaching the target is more likely.

Consistent monitoring of the deposition pattern on dye cards, the air and ground temperature are the best methods of determining the effects of weather factors on application. When weather inversions occur, consider terminating application for the day.

The soil temperature should be taken by placing the thermometer probe on an unshaded site; then shade the thermometer for 3 minutes before reading. For rangeland programs, the air temperature should be taken 5 feet above the surface in the open, but with the thermometer shaded. Other programs may require taking a reading much higher above the canopy of vegetative cover. Some programs may require monitoring.

## Bait Formulations

A bait formulation is an active pesticide ingredient mixed with food or another substance to attract a specific type of pest. The pest eats the bait and expires. The active pesticide ingredient in most bait formulations is generally relatively low (usually less than five percent).

In some situations (pest habits, environmental sensitivity), etc.), wheat bran bait is an effective alternative to liquid pesticides. Baits are commonly used in the Grasshopper and Mormon Cricket Control Programs.

Bait formulations (such as wheat bran) and other solid materials (such as pheromone flakes) are **not** as sensitive to air and ground temperatures. Bait formulations can be applied throughout the day, and are **not** affected by temperature inversions. Rain and high winds still affect the application of bait treatments.

## Daily Start-up Procedures

At the start of each workday and prior to allowing application aircraft to load or leave the airport, contact all ground observers and the aerial observer to confirm that all personnel are in place and weather conditions are within tolerances for aerial application of the material being used.

Generally, projects using liquid formulation begin at first light (daybreak) and continue until the soil temperatures rise above the air temperature (usually mid-morning). Daily operation times for programs using baits and flakes are more flexible because the materials are less sensitive to temperature.

## Evening Pesticide Application



Planning pesticide application in the evening is **not** advisable, unless the program is an emergency.

If the application is an emergency, then be sure to plan for safe evening operations, and determine the approximate time darkness will occur. Although GPS guidance now allows for night operations, safety is still a consideration and all safety factors **must** be considered.

If operating aircraft **without** GPS guidance, then the pilot should **not** be permitted to take off with a load **without** the assurance of adequate time to complete the round trip before dark. There **must** be adequate daylight to do satisfactory application work. Although the airport may be lighted for safe landing after dark, this is irrelevant to having proper light on the actual treatment area.

## Visual Observations

Ground and aerial observers **must** monitor or perform visual inspections of many aspects of aircraft and pesticide performance during operations.

Observers should be aware of the following elements and record or report them to the Contracting Officer's Representative (COR) clearly and accurately.

## Pesticide Deposition

Record or report the following elements to the COR as indicated:

- ◆ Drift (movement of pesticide formulation by wind, air currents, or volatilization outside the intended area, usually as fine droplets during or shortly after application)
- ◆ Skips (areas within the control block that **did not** receive treatment due to poor aircraft guidance, pilot error, or aircraft's running out of chemical)
- ◆ Swath displacement (distance the swath deposition is offset from the center flight line due to a crosswind)
- ◆ Swath spacing when formation flying ((GPS ensures the aircraft are spaced the proper distance from each other)
- ◆ Swath for each aircraft **does not** overlap; and space or skips are left between patterns
- ◆ Uniformity of deposition pattern (pesticide formulation should be applied and deposited as evenly as possible over the width of the swath)

## Application Aircraft

Record all the following, and where indicated notify the COR and airport supervisor of the specified information:

- ◆ Height of flight and identity of aircraft that are flying at **other than** the assigned height
- ◆ Jettisons
  - ❖ Report to the COR and airport supervisor immediately the accidental release, leak, or intentional jettison of pesticide formulation
  - ❖ Record, secure, and report the time and location of the jettison to the COR and airport supervisor
- ◆ Plugged nozzles (incorrect operating nozzles affect calibration and reduce efficacy; significant variance in boom readings may also indicate plugged nozzles)
  - ❖ Identify the aircraft by number
  - ❖ Notify the COR and the airport supervisor of any nonoperating nozzles, nozzles that operate intermittently, or nozzles that have **only** partial output

- ◆ Proper shutoff and turn on
  - ❖ Verify that aircraft are opening and closing the boom or bait spreader at the proper boundaries and over sensitive areas
  - ❖ Verify that nozzles **do not** trail off or continue to operate after the boom has been shutoff (could be caused by inadequate, plugged, or improperly installed bleed lines on the boom)
  - ❖ Ensure positive nozzle shutoff
- ◆ Turnarounds
  - ❖ Verify that aircraft completes the turn prior to re-entering the treatment block and resuming treatment
  - ❖ Verify that aircraft is level, on track, and is at cruising speed at the beginning of each pass
- ◆ Weather Conditions
  - ❖ Record and clearly and accurately report weather conditions (as described under [Weather on page 4-2-10](#)) to the aerial observer or COR

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## Spray Deposition Monitoring

### Dyecard Samplers

Use dyecards to monitor liquid formulation spray deposition. Dyecards are made of water- or oil-sensitive paper and are used to provide valuable information on swath width, spray droplet deposition pattern, and droplet size; and to identify leaks in the spray system. When systematically placed, dyecards can verify the non-treatment of sensitive areas and the treatment of other areas that are **not** targeted for treatment. Maintaining dye cards as part of the program file is important.

Position, recover, record, and evaluate the dyecards as listed below:

1. Position dyecards as follows:
  - A. Identify each dyecard with a code or number for record keeping purposes.
  - B. Place dyecards at regular intervals; spacing depends on size of block, sensitive sites, and time allowed for placement.
  - C. Tack dyecards to tops of fence posts, stakes, or other devices to hold the dyecards above vegetation.
2. Recover dyecards as follows:

- A. Wait at least 15 minutes after the spray aircraft have left the area before retrieval; this should allow ample time for the pesticide formulation to reach the target area.
  - B. Pick up dyecards in the same order they were placed.
  - C. Use adequate card holders to prevent smearing of dyecards.
3. Record the following information on the card batch:
- A. Name and location of place pesticide was used.
  - B. Target pest.
  - C. Site to which dyecards were applied (i.e., cotton field).
  - D. Year, month, day, and time of application.
  - E. Trade name and EPA registration number of pesticide.
  - F. Amount of pesticide used and its formulation (i.e., Malathion ULV concentrate, 8.0 fluid ounces per acre).
4. Evaluate the deposition pattern on the dyecards.

### Dyecard Appearance With Various Treatments

**Figures 4-3**, through **4-6** show examples of how dyecards appear with various treatments.

xx Need dyecards to scan

**FIGURE 4-2-1 Dyecard of Acceptable Deposition Pattern of Malathion ULV Concentrate at 8.0 Fluid Ounces Per Acre Rate**

xx need

**FIGURE 4-2-2 Dyecard of Typical Deposition Pattern of a Leak in the Spray System**

xx need

**FIGURE 4-2-3 Dyecard of Acceptable Deposition Pattern for Sevin XLR Plus® at a 20.0 Fluid Ounces Per Acre Rate**

xx need

**FIGURE 4-2-4 Dyecard of Typical Deposition Pattern for Sevin XLR Plus ® at a 16.0 fluid Ounces Per Acre Rate**

## Environmental Monitoring

When environment monitoring is required, then ensure monitoring is set up in the proper locations and that personnel are equipped and in communication. Environmental monitoring samples **must** be drawn according to the Environmental Monitoring Plan for the specific pest program or site-specific circumstances. Environmental monitors **must** be coordinated with treatment operations in order to carry out their duties. See [Environmental Monitoring on page 2-9-1](#) for more information.

## Pesticide Supply Monitoring

Although determining the amount of pesticide to order for the project is an important step in program planning, monitoring the pesticide supply on hand as pesticides are used during the control operations is just as important in program supervision.

Consider the actual amount of pesticide being used as compared to the actual number of acres that have been treated in the block. A disparity between these two figures will indicate calibration problems or other application problems (see [Dispersal Systems Calibration on page 3-10-1](#)).

### Pesticide Supply Formulas

Use the formulas in [Figure 4-2-5](#) determine the quantity of pesticide on hand.

<b>Pesticide Supply Adequacy to Ensure On-time Completion of Project</b>	
1. Determine the number of acres remaining in the treatment block.	
Number of acres in treatment block remaining to be treated	
+ <u>Number of acres in buffer zones and sensitive <b>no</b> spray zones (if any)</u>	
= Total acres remaining to be treated	
2. Determine the number of acres a gallon of pesticide will treat.	
<u>128.0 fluid ounces per gallon</u>	
Application rate per acre in fluid ounces (of pesticide)	
= Number of acres one gallon of pesticide will treat (at given application rate)	
3. Determine the number of gallons of pesticide required to complete the project.	
<u>Number of acres remaining</u>	
Acres 1 gallon will treat	
= Number of gallons required to complete project	
4. Determine the total amount of pesticide that has been delivered.	
Initial amount delivered	
+ <u>Subsequent amounts delivered</u>	
= Total pesticide delivered	

**FIGURE 4-2-5 Formula to Determine the Total Amount of Pesticide on Hand**

5. Determine the amount of pesticide on hand. Total pesticide delivered – <u>Total amount used</u> = Total amount of pesticide on hand
---

**FIGURE 4-2-5 Formula to Determine the Total Amount of Pesticide on Hand**

See **Table 4-2-2** to determine whether there is an adequate supply of pesticide on hand to ensure on-time completion of the project.

**TABLE 4-2-2 Determine if On-hand Pesticide Supply is Adequate to Complete Project**

If:	And:	Then:
Total gallons of material (pesticide or insecticide) required to finish the treatment	Are less than the number of gallons on hand	Supply is adequate
	Are more than the supply on hand	NOTIFY the Program Manager of the shortage

Continue to monitor the rate of pesticide use and investigate the reason for any significant difference or change. You **must** predict any shortage well before the pesticide supply is depleted. The number of days required for delivery of additional pesticide **must** be planned.

See **Pesticides and Pesticide Storage on page 2-8-1** for worksheets and additional information.

## Safety Monitoring

Monitor safety aspects of the control program operations including:

- ◆ Aircraft and pilots
- ◆ Airport and pesticide storage
- ◆ Ground personnel
- ◆ Personal protective equipment
- ◆ Spill kits
- ◆ Vehicle safety

Verify that all personnel are getting adequate rest. Aerial control projects are physically demanding in difficult conditions, and often require overtime hours.



Program personnel who are tired or drowsy are a hazard to themselves and to others.



See [Safety Procedures on page 3-6-1](#) and [Worksite Organization and Inspection on page 3-13-1](#) for more detailed information.

---

## Daily Shutdown

The Contracting Officer's Representative (COR), with input from the aerial observer, ground observers, and contractor personnel determine when to shutdown daily activities.

Consider the following when determining shutdown:

- ◆ Safety concerns (such as turbulence, wind-shear, and pilot fatigue)
- ◆ Spray deposition
- ◆ Weather conditions

---

## Daily End-of-Day Briefings

Conduct a briefing at the end of each day with all program personnel, contractor personnel, or any combination of persons (depending on the need) to communicate problems with the current day's activities, and to plan the next day's program activities. Use these daily end-of-day briefings to resolve differences in the area that has been treated according to aerial observers and application aircraft pilot(s).

At the end of each day, mark on the program map where treatment stopped for the day and where the application will begin the next day.

See [Daily Briefings and Map Updates on page 4-3-1](#) for more information.

---

## Program Updates

The Contracting Officer's Representative (COR) makes daily progress reports to the Regional Program Manager, State Program Manager, State Cooperator, landowner chairperson, and/or extension agent, as appropriate.

The daily progress reports will include the following information:

- ◆ Acres treated
- ◆ Contractor performance
- ◆ Gallons sprayed
- ◆ Gallons remaining

- ◆ Problems/concerns/solutions
- ◆ Other required information specific to the program or State

Report the following events, and record and update the Daily Log and Program Log as these occur:

- ◆ Accidents involving aircraft, vehicles, or personnel
- ◆ Gunshots at and/or bullet holes in the aircraft
- ◆ Pesticide spills and/or pesticide jettison from application aircraft
- ◆ Requests for additional supplies
- ◆ Restraining orders
- ◆ Threatened lawsuits
- ◆ Unusual complaints or phone calls requiring further investigation
- ◆ Vandalism

Maintain and update all records, program logs, and the Master Program Maps.

Update pesticide supply records by comparing the calculated amount of pesticide to the actual amount used.

---

## Daily Evaluation of Results

Daily checks of the aerial application results should be made to promptly determine whether all areas have been satisfactorily treated. Contracts usually require that the contractor re-treat skips and inadequately-treated areas at the contractor's expense. See [Pest Mortality Assessment on page 2-10-1](#) for more information.

---

## Additional Treatments (Respray)

Pesticide labels contain information about the maximum number of applications allowed and the required length of time (if any) to wait before applying additional treatments to an area.

Additional expenditures for respraying may be prohibitive or **not** cost effective. Consult pest program managers, guidelines, manuals, and/or environmental impact statements for policies on respraying areas.

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Aerial Application  
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## Program Supervision

### *Daily Briefings and Map Updates*

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Daily Briefings [page 4-3-1](#)

    Step 1: Prepare for the Daily Briefing [page 4-3-1](#)

    Step 2: Conduct the Briefing and Update the Master Program Maps [page 4-3-2](#)

Master Program Map Maintenance [page 4-3-3](#)

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#### Introduction

The ***Daily Briefings and Map Updates*** section of ***Program Supervision*** provides information about preparing for and conducting daily briefings, and updating program maps.

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#### Daily Briefings

Decision making, supervision of pilots and program personnel, and coordination of project tasks can be facilitated by holding briefing meetings. Information on conducting briefings and topics to discuss with all program personnel are found in [Program Personnel Briefings on page 3-7-1](#).

Daily briefings should be conducted by the Contracting Officer's Representative (COR) to ensure that all updated information is being exchanged by all program personnel. In addition to the items discussed in preceding sections, the following items should be reviewed on a daily basis with pilots and contractor personnel.

##### **Step 1: Prepare for the Daily Briefing**

Prior to the daily briefing, do the following:

1. Inform contractor's representative of the time, location, and persons required to attend the daily briefing.
2. Notify any or all of the following personnel to attend the meeting:
  - ❖ Aerial observer
  - ❖ Airport supervisor
  - ❖ Ground personnel

3. Meet with the aerial observer, airport supervisor, and ground personnel to update the Daily Log and discuss any problems with the contractor's performance.
4. If the spray block is characterized by one or more of the following, then accompany the pilot on a reconnaissance flyover of the spray block to determine daily assignments and plan spray operations:
  - ❖ Aerial hazards
  - ❖ Rough terrain
  - ❖ Sensitive areas located inside or adjacent to the spray block
  - ❖ Uneven boundaries

### **Step 2: Conduct the Briefing and Update the Master Program Maps**

During the briefing, do the following:

1. Indicate on the master program map, the spray block(s) or portions of block(s) that have been completed, as follows.
  - A. Mark the starting point and the stopping point, and any skips.
  - B. Shade in completed areas.
  - C. Compare the amount of actual pesticide used with the acres sprayed as recorded on the updated master program map.
2. Discuss any problems with today's operation concerning the following:
  - ❖ Clogged nozzles
  - ❖ Deposition on sensitive areas
  - ❖ Drift
  - ❖ Droplet size
  - ❖ Pesticide spills
  - ❖ Safety concerns or procedures that are **not** being followed
  - ❖ Site-specific issues that need to be addressed
  - ❖ Skips
  - ❖ Swathing
  - ❖ Unreasonably long or sloppy reloading or refueling
  - ❖ Other contractor performance that is **not** meeting contract requirements
3. Plan tomorrow's spray operation and consider the following:

- A. Decide how the weather forecast affects the operational plan.
  - B. Decide on the starting time.
  - C. Let the pilots participate in determining how the blocks will be flown.
  - D. Verify and document the following:
    - All parties in the spray block have been notified
    - Ground observers (scouts, flaggers, etc.) have been informed of the following:
      - Direction of the flight
      - Exact starting point
      - Location of access roads
      - Location of landmarks, hazards, and nontarget, restricted, and sensitive areas
    - Pilots are aware of landmarks, hazards, and restricted military areas
    - Plans are in place to protect sensitive areas
4. Use the meeting as an opportunity to get input from program personnel and update the master program map (see [Master Program Map Maintenance](#)).

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## Master Program Map Maintenance

During the daily briefing, you can obtain the following information that will be useful to update the program map:

- ◆ Alert the program manager of potential pesticide shortages
- ◆ Chart program progress
- ◆ Check for accuracy of calibration error

The following guidelines work for large programs and can be modified for smaller blocks update the master program and other maps:

1. Ask the pilots to mark the exact starting and stopping points for the sprayed area(s) completed that day.
2. If a substantial number of acres is involved, then indicate skips in the spray block.
3. Draw lines connecting the corners to enclose the completed treatment area(s).
4. Color or line in the on the map, the to indicate where the area has been treated.

5. Record the date the area was treated.
6. Determine the number of acres sprayed (see **Figure 4-3-1**).

1.	Count the number of <b>whole</b> sections completed on the program map = A	A = _____
2.	Determine the number of sections partially completed on the program map = B	B = _____
3.	Determine the fraction of the partially completed sections that <b>has been treated</b> on the program map = C	C = _____
4.	Calculate: $A + (B \times C) = D$ (to determine the total number of sections treated)	D = _____
5.	Multiply: $D \times 640 = E$ (to determine the total number of acres treated)	E = _____
6.	Estimate any significant amount of acreage skipped or avoided in the spray block = F	F = _____
7.	Subtract: $E - F = G$ (to determine the actual number of acres treated)	G = _____
8.	Divide $G \div$ (number of acres 1 gallon of pesticide will treat at target application rate) = H (calculated number of gallons used)	H = _____
9.	Determine the actual number of gallons used from the completed PPQ Form 802, Daily Aircraft Record = I	I = _____
10.	Subtract $I - H = J$ (difference between actual and calculated number of gallons used)	J = _____
11.	DIVIDE $(J \div I) \times 100 = K$ (percent difference between the calculated and actual number of gallons used)	K = _____

**FIGURE 4-3-1 Formula to Determine the Difference Between the Calculated and Actual Number of Gallons of Pesticide Used**

7. Compare the actual number of gallons sprayed against the calculated number of gallons used based on acreage.
8. Verify the calculated number of gallons used (H) is close to the actual number of gallons used (I).
9. Determine the cause of any significant difference between these (H and I) numbers; a difference of plus or minus 5 percent is significant.

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## Program Supervision

### *Contractor Performance*

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#### Introduction

The ***Contractor Performance*** section of ***Program Supervision*** provides instructions for inspecting and monitoring the contractor's performance throughout the control program.

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#### Monitoring Contractor Performance

Monitoring the contractor's performance is an ongoing task throughout the control program. Contractors have many different responsibilities. The frequency for inspecting equipment and monitoring the contractor's actions range from continuously—to per load—to daily.

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#### Inspecting and Monitoring Contract Compliance

During the control program, inspect and monitor the following elements for compliance with contract specifications:

- ◆ Aircraft and equipment
- ◆ Airport operations
- ◆ Personnel
- ◆ Pesticide applicator

Other elements should be added to the list which address local conditions or circumstances. See ***Safety Procedures on page 3-6-1, Pesticides and Pesticide Storage on page 2-8-1, Worksite Organization and Inspection on page 3-13-1.***

## Aircraft and Equipment

During the control program, inspect and monitor the aircraft and equipment elements as listed in [Figure 4-4-1](#).

Elements to Monitor	Frequency	Method
Aircraft and equipment meet contract specifications	Daily	Compliance inspections performed by COR or program manager
Aircraft and equipment required type and number available	Daily	Compliance inspections performed by COR or program manager

**FIGURE 4-4-1 List of Aircraft and Equipment Elements to Inspect or Monitor**

## Airport Operations

During the control program, inspect and monitor airport operation elements as listed in [Figure 4-4-2](#).

Element to Monitor	Frequency	Method
Garbage	Daily	Observation by airstrip supervisor, COR, and airport recorder/timekeeper
Pesticide spills, leaks	Per load	Observation by airstrip supervisor, COR, and timekeeper
Safety hazards	Continuously	Observation by airstrip supervisor, COR, timekeeper

**FIGURE 4-4-2 List of Airport Operation Elements to Monitor**

## Pesticide Applicator

During the control program, inspect and monitor the pesticide applicator elements as listed [Figure 4-4-3](#),

Elements to Monitor	Frequency	Method
Acres treated	Per load	Meter, program maps, boom timer, and calculations
Gallons dispensed	Per load or daily	Total all load amounts for the day using <i>PPQ Form 802, Daily Aircraft Record</i>
Deposition	Per load	Dye cards and visual observations
Leaks or pesticide jettisons	Per load	Observation of dispersal equipment by all observers and dyecards
Total operational hours	Daily	Record aircraft downtime on daily aircraft records
Contractor left airport in good order after operations are complete	Before contractor is released	Compliance inspections performed by the COR and airport authority

**FIGURE 4-4-3 List of Pesticide Applicator Elements to Inspect or Monitor**



## Personnel

During the control program, inspect or monitor the personnel elements listed in [Figure 4-4-4](#).

Element to Monitor	Frequency	Method
Personnel are on time for daily start-up and briefings	Daily	Daily contacts with personnel by COR
Personnel's work performance and attitude	Daily	Daily contacts with personnel by COR

**FIGURE 4-4-4 List of Personnel Elements to Inspect or Monitor**

## Recording Notes

### Daily Log

Record notes in the Daily Log about the contractor's actions that are observed during monitoring, inspection results, and any action taken. These notes are important for the Contracting Officer's Representative (COR) to complete the required *PPQ Form 817, Aerial Contractor Performance Evaluation Report* following the completion of each contract. (See [PPQ Form 817, Aerial Contractor Performance Evaluation Report on page A-1-60](#) for an instructions on completing the form.)

The completed PPQ Form 817 is used to determine whether the contractor met contract specifications and if the contractor should be considered for future contracts. The Contracting Officer (CO) in Minneapolis MBS, may also use this as documentation for assessing liquidated damages or for giving the contractor extra consideration in future contracts for outstanding service on previous contracts.



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## Program Supervision

### *Pesticide Spill Management and Emergency Procedures*

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Emergency Procedures for Spills	page 4-5-4
Follow-up Procedures	page 4-5-5

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#### Introduction

The ***Pesticide Spill Management and Emergency Procedures*** section of **Program Supervision** provides information about creating and implementing a contingency plan for pesticide spills and accidents, and emergency procedures to follow for pesticide spills. Coordinate the information in this section with **Pesticides and Pesticide Storage on page 2-8-1** and **Safety Procedures on page 3-6-1**.

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#### Contingency Planning

Developing and having a contingency plan in place prior to the initial delivery of pesticides and the start of treatment is a preventative measure that will help lessen the likelihood of a pesticide spill and help ensure an effective and efficient response to any pesticide spill that may occur.

Contingency plans to contain and manage pesticide spills **must** be in place prior to pesticide delivery. Program personnel should be briefed on emergency procedures and hazard information. Personnel **must** be trained in the proper use of safety and pesticide spill equipment and protocols.

See also the PPQ *Treatment Manual, Chapter 7*, for additional information on emergencies, developing spill contingency plans and guidelines, safety, clean-up, and disposal, and the Material Safety Data Sheets (MSDS) for bleach, lime, and lye.

### **Emergency Contacts List**

Develop and assemble a list of emergency contacts that will be part of the contingency plan for accidents or pesticide spills.

Include contact names, phone numbers, fax numbers, and addresses for the following persons and agencies; and include others as local conditions dictate:

- ◆ APHIS Environmental Protection Program Manager
- ◆ CHEMTREC, 1-800-262-8200 (call if a spill occurs during transportation)
- ◆ Pest Detection and Management Programs (PDMP) (Riverdale)
- ◆ State plan health director (include home phone)
- ◆ State pesticide enforcement official
- ◆ Regional office of the Environmental Protection Agency (EPA)
- ◆ Tribal agency (as appropriate)
- ◆ Local ambulance
- ◆ Local fire department
- ◆ Local hospital
- ◆ Local police department
- ◆ Local poison control center
- ◆ Pesticide monitoring lab
- ◆ National Response Center

Distribute a copy of this list and information to CORs and other personnel as they arrive on site. Information will vary from State-to-State.

If you maintain a hard copy of this manual, then place a copy of the *Contingency Plan and Emergency Contacts List* behind the red *Emergency Contacts* tab.

## Pesticide Spill Kit

Every pesticide storage site **must** have an accessible spill kit to contain and clean up accidental leaks or spills. Confirm that the site has a spill kit with at least the items listed in **Figure 4-5-1**. The kit can be supplemented with additional items. To properly handle large pesticide spills, assess the spill to determine any additional equipment needed.

Item	Quantity
50-gallon plastic garbage can with wheels (to hold contents)	2 each
Approved respirator with approved canisters	2 sets
Bar soap	2 bars
Broom and dustpan	1 each
Emergency eyewash system	1 system
Fire extinguisher, 5 lb.	1 each
First Aid kit	1 kit
Goggles or safety glasses	2 pairs
Heavy duty plastic garbage bags	50
Kitty litter	100 pounds
Lime	50 pounds
Lime and lye Material Safety Data Sheets (MSDS)	1 each
Liquid detergent	1 quart
Lye (sodium hydroxide - NaOH)	50 pounds
Pesticide label and MSDS	1 each
Plastic tarp (25 ft by 25 ft)	1 each
Potable water	5 gallons
Rain suits (unlined or disposable coveralls)	2 suits
Rubber boots (unlined)	2 pairs
Rubber gloves (unlined)	4 pairs
Scrub brushes	2 each
Shovel (spade tip)	1 each
Shovel (square tip)	1 each

**FIGURE 4-5-1 Spill Kit Contents for Pesticide Storage Area**

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## Pesticide Spill Management



Any spillage of pesticide should be cleaned up immediately. If immediate clean-up is **not** possible, then the affected area should be fenced off until there is **no** danger to people, livestock, or wildlife.

### Emergency Procedures for Spills

These emergency procedures for spills contain major highlights to be considered in the event of a pesticide spill.

Follow the emergency procedures as listed below:

- 1.** Safety and first aid: the most immediate concern is for the health and well-being of persons in and around the area.
  - A.** Evacuate the immediate area.
  - B.** Obtain first aid or medical treatment for anyone exposed to the pesticide.
  - C.** Contact the Poison Control Center for advice (see the number listed on the emergency contacts list).
  - D.** If necessary, alert the nearest medical facility (see the numbers listed on the emergency contacts list).
- 2.** Evaluate the spill situation, then initiate appropriate steps.
- 3.** Report the spill to the Program Manager and Contracting Officer's Representative (COR).
- 4.** The Contracting Officer's Representative (COR) or Program Manager will notify the following:
  - A.** State cooperator
  - B.** PPQ Regional Office
  - C.** National Monitoring Coordinator
  - D.** If an aircraft is involved, then notify State, county, or local police
  - E.** APHIS Environmental Protection Program Manager (Riverdale), FAX 301-734-7828
- 5.** Consult pesticide labels and Material Safety Data Sheets (MSDS) for appropriate protective clothing and hazards.
- 6.** If trained to wear protective gear, then put on protective gear.
- 7.** Contain the spill by stopping further spillage, preventing further spread, and covering the spill.
- 8.** Safeguard the contaminated area as follows.

- A.** Rope off or fence off the area.
  - B.** Post warning signs.
  - C.** Guard the site as needed.
- 9.** Clean up and collect all contaminated materials.
  - 10.** Decontaminate affected surfaces, including personnel, PDE, and equipment

### **Follow-up Procedures**

After the spill has been contained, follow-up using the procedures listed below:

- 1.** Dispose of contaminated material.
- 2.** Carry out monitoring procedures as directed by the Program Manager or Pesticide Monitoring Coordinator.
- 3.** Prepare an interim report as soon as possible for the National Monitoring Coordinator.
- 4.** Send or FAX a copy of the interim report to:

Environmental Protection Program Manager  
4700 River Road, Unit 124.24A8  
Riverdale, MD 20737

FAX 301-734-7828





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## Program Supervision

### *Information Program*

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#### Introduction

The ***Information Program*** section of ***Program Supervision*** provides guidelines for responding to the news media and the general public. The memorandums and information from Legislative and Public Affairs (LPA) are to be used for effective communication with the media and the public who may be involved with, or interested in program activities. Developing an effective public relations and informational program is an important part of a successful treatment program. Communicating to the public correctly about the particulars of the operation is critical to gaining public understanding and public support. When public health and/or economic interests are threatened, the Agency responsible for dealing with the crisis **must** inspire public trust and confidence.

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#### Legislative and Public Affairs (LPA)

LPA's Public Affairs staff coordinates responses regularly with USDA on matters involving the national media. Reprints of information developed by the LPA staff are a valuable resource when acting as a spokesperson to the local media or private individuals. Continue in this section for guidelines for responding to the news media and the general public.

The LPA contact is the following:

Lawrence Hawkins, Public Affairs Specialist  
USDA-APHIS-LPA  
650 Capital Mall, Suite 6-400  
Sacramento, CA 95814

E-mail: larry.e.hawkins@aphis.usda.gov  
Phone: 916-930-5509  
FAX: 916-930-5521

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## Communications Guidelines

### Responding to the News Media

Accurate, consistent, and timely communications to the public, stakeholders, media, and Congress is vital to our effectiveness as an Agency. Because APHIS program activities often involve high profile and/or sensitive issues, following APHIS policy on responding to inquiries from Congress and media is important.

Although you may be the subject matter expert and spokesperson for an APHIS issue, advance notification to LPA of Congressional or media interest is key to this policy. LPA is charged with ensuring that information provided to Congressional representatives and reporters is up-to-date, accurate, and consistent with information being provided by officials at the Department level, including the Office of Communications, the Office of Congressional Relations, and the Office of Intergovernmental Affairs.

Many of you are experts in your particular programs and do extensive public outreach about our mission. However, in this age of instantaneous electronic information, any story from local media, trade press, or on the Internet can easily be picked up and distributed nationally via news wires and networks. Please be mindful of this reality and tap into the communications expertise in LPA when outreach results in media and Congressional interest in our work.

### Clearance Procedures

When you receive Congressional, State Legislature, major media, sensitive or highly-controversial issue, local media requests or requests for Agency records, you **must** follow the clearance procedures described below.

#### Congressional

All Congressional calls and written inquiries should be referred to Legislative and Public Affairs (LPA) at 202-720-2511. Refer Congressional letters to LPA; first call 301-851-4111, and then FAX the letter to 301-734-5387.

#### State Legislature

Any request to testify before or brief a State Legislature should be referred to LPA.

#### Major Media

All major media calls should be referred to LPA. Major media include network news program, all television shows, any radio network or news wire service, and all major daily newspapers (e.g., *Albuquerque Journal*, *Chicago Tribune*, *Dallas Morning News*, *Los Angeles Times*, *New York Times*,

*The Tennessean*, etc. *The Journal of Commerce*, based in Washington D.C., is also considered major media, and has a national distribution to many of our stakeholders.

### Sensitive or Highly Controversial Issues

All media calls dealing with sensitive or highly controversial issues should be referred to LPA.

#### EXAMPLE

Sensitive or highly controversial issues include: biosecurity/bioterrorism, Bovine Spongiform Encephalography (BSE) or foot-and-mouth disease (FMD) exclusion, pesticide use in eradication programs, biotechnology regulation, wildlife damage management programs using lethal techniques, phytosanitary trade barriers, exotic animal abuse or pet theft, issues related to the APHIS budget, indemnification in pest or disease eradication programs, and any pending lawsuit.

### Local Media

Before responding to local media about non-sensitive or non-controversial issues, alert LPA. Small local media include s weekly or hometown newspapers. Keep in mind that local news can easily be picked up by wire services and distributed nationally.

### Agency Records Requests

All requests for Agency records should be referred to LPA. Agency records that are **not** published, **not** bound, or **not** in brochure format for public dissemination; or that are **not** found on the Web page are subject to review and analysis under the Freedom of Information Act (FOIA). If you receive a phone call or written request for records or information that your office **does not** normally give out, then the requester needs to make a written FOIA request for the information. Refer FOIA inquiries to 301-851-4102.

### Procedures to Follow for Media Requests

The steps outlined below should be followed when a request is received from the media:

1. Ask for the name, affiliation, and phone number of the individual.
2. Determine the topic for the interview or visit.
3. Find out when the media representative needs the information.
4. Respond to the request according to the clearance guidelines outlined earlier.
5. Tell the interviewer that someone will get back to the interviewer after the most appropriate and knowledgeable spokesperson for the Agency is identified.
6. Notify your supervisor.

## General Tips for Positive Communication

Some tips on dealing with reporters, community leaders, or members of organizations so you can help them inform the public about APHIS activities and programs.

- ◆ Know who you are talking with
  - ❖ Identify yourself and obtain the identity of your interviewer
  - ❖ Remember as an employee of APHIS, you represent the Agency and USDA. There is **no** such thing as a private opinion or an off-the-record comment about APHIS programs or actions
- ◆ Be courteous and polite
  - ❖ Approach every request for information as an opportunity to tell the APHIS story. The public has a right to know how our programs operate
  - ❖ If you are **not** the proper person to release information, then tell the requester you need time to gather information in order to answer questions accurately. Help find a person who can answer the questions
  - ❖ If the requester is a reporter, you can refer the reporter to the Public Affairs (PA) office, Legislative and Public Affairs (LPA)
- ◆ Stay within your field of work; you are qualified to speak about your job and what you do
  - ❖ If you are asked about subjects outside your area of responsibility, simply tell the requester that would be inappropriate for you to provide information on the subject
  - ❖ If inappropriate to provide the information, be responsive by offering to refer the requester to your supervisor, LPA, or the proper source of information
- ◆ **Do not** debate
  - ❖ If asked to comment on rumors, what if situations, policy, or charges against the agency or another organization, then ask for the facts and offer to report back after you have had a chance to obtain information related to the questions
  - ❖ Keep in mind, you **do not** need to have an answer for every question and that every question is **not** necessarily appropriate or require an answer
  - ❖ If you **do not** know the answer, say so in a diplomatic manner

- ◆ **Do not** justify Agency programs; most of the programs of APHIS exist as a result of public demand and legislative action
  - ❖ Concentrate on providing information about what we do and how; justification for our programs resides in legislation and policy decisions
  - ❖ Remember, we are **not** the spokespersons for the industries of agriculture
  - ❖ Refer questions related to how our programs benefit agricultural industries, beyond eliminating threats to the industry, to the particular industry representatives for an answer
- ◆ Offer additional information to clarify a story. Too often, specific questions are answered as briefly as possible without offering background facts to complete the story; this can result in inaccuracies
- ◆ **Do not** offer unnecessary information
  - ❖ **Do not** volunteer something that will raise more questions than answers
  - ❖ Stay focused on the subject at hand
- ◆ Avoid jargon and technical terms

<b>EXAMPLE</b>	<b>Do not say</b>	<b>Say</b>
	Morbid	Sick
	Equine	Horse or pony
	Bovine	Cow or cattle

- ◆ Avoid red-flag words that result in an emotional reaction; there is usually a more neutral word that can be substituted

<b>EXAMPLE</b>	<b>Do not say</b>	<b>Say</b>
	Coyote	Predator
	Puppy mill	Unlicensed or illegal dealer
	Kill or depopulate	Euthanate; euthanasia
	Assessed a civil penalty	Fined

- ◆ Be aware of deadlines (all reporters have deadlines)
  - ❖ Ask the interviewer for the deadline, so that you can obtain and supply the needed information in time (your answers **must** be accurate)
  - ❖ If you **cannot** verify your information before a deadline, **do not** speculate or guess

- ◆ Use pre-cleared information pieces
  - ❖ Press releases, brochures, fact sheets, videos, and other APHIS information pieces are designed to explain APHIS programs
  - ❖ Refer to the APHIS information pieces when responding to requests for information
- ◆ Keep Headquarters informed
  - ❖ Once you have provided assistance to media representatives, inform your supervisor immediately; this can help if your supervisor is contacted by the same reporter
  - ❖ Requests for interviews from major media and sensitive or highly controversial subjects should be referred to LPA
  - ❖ All contacts by the media to Headquarters offices should be referred to LPA

### **Know the Media**

**Do not** wait for a crisis to become familiar with your local media representatives.

### **Provide Background Information**

Compile a packet of proactive information about APHIS and your program area.

### **Do Not Hide the Facts**

Tell your side first. Fight the instinct to sweep embarrassing news under the rug.

### **Pick One Spokesperson**

Find the most qualified person to speak for the issue.

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## Interview Response Guide

Prepare yourself for the interview by reviewing and following the guidelines listed below.

1. Prepare
  - ◆ Develop and refine your answers in advance and practice
2. Focus
  - ◆ Clear your mind of distractions
  - ◆ Concentrate on the interview at hand
  - ◆ Take a deep breath and relax
3. Think
  - ◆ Keep it simple
  - ◆ Speak conversationally and confidently
  - ◆ Select and emphasize 1-2 key points
  - ◆ Give direct answers
4. Attention
  - ◆ Listen carefully to questions
  - ◆ **Do not** get ahead of the question
  - ◆ Pause before you speak
  - ◆ Clarify
5. Wrap-up
  - ◆ Use an anecdote, explanation, or illustration
  - ◆ Make points **not** covered in the interview
  - ◆ Stop when the interview is over

**FIGURE 4-6-1 Interview Response Guide**

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## Interview Tips

### Professional Appearance

Dress appropriately for the situation; a professional appearance would include the following:

- ◆ Neat hair
- ◆ Neat shave (if male)
- ◆ Solid blue shirt or uniform shirt (empty pockets)
- ◆ Jacket or coat (as appropriate)
- ◆ **Do not** wear sunglasses (preferably **no** glasses)

- ◆ **Do not** wear a hat or cap (unless the weather is freezing, raining, or snowing)

### Think Smart

- ◆ Stay calm, natural, and breathe
- ◆ Stick to your area of expertise
- ◆ Be prepared for the unexpected
- ◆ Be cooperative, professional, and positive
- ◆ **Do not** take questions personally
- ◆ **Do not** get defensive

### Move Professionally

- ◆ Keep hands and arms relaxed, and knees slightly bent
- ◆ Maintain eye contact with the interviewer (real or imaginary)
- ◆ **Do not** shift weight, rock, or swivel
- ◆ **Do not** make faces at the camera

### Speak Professionally

- ◆ Pause before you speak
- ◆ Keep answers short
- ◆ **Do not** use jargon
- ◆ **Do not** say ahh, uhh, umm, ugh
- ◆ **Do not** give your personal opinion
- ◆ If you **do not** know the answer to a question, then say so, and get the answer or refer to someone who can answer

### When the Interview Is Over

- ◆ Stop talking as soon as the interview is over; you're **never** off the record
- ◆ **Do not** talk yourself into a hole
- ◆ Follow-up (request a copy of the finished product, get the interview air date or print date)
- ◆ Ask someone you trust for a critique of your performance



## Telephone Interview Tips

Tips for conducting interviews by telephone are listed below.

1. Get rid of nearby distractions.
2. **Do not** take other calls during the interview.
3. Ask for time to prepare.
4. Make sure you ask what areas are to be covered.
5. Ask who else has been or will be interviewed.
6. Ask the reporter if the call is being recorded.
7. Review the key points you have made before you hang up.
8. Ask if the reporter needs clarification on any point.
9. Ask when the interview will be printed or broadcast.



# 4

Aerial Application  
Manual

# Program Supervision

## Complaints

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### Introduction

The *Complaints* section of **Program Supervision** provides information about the types of complaints that may be received and procedures for responding to such complaints.

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### Complaints

Aerial spray programs often encompass large land areas, that may be adjacent to sensitive areas, and involve urban areas or restricted airspace. Projects of this nature sometimes lead to conflict with people directly involved with the treatment block or people who live near the area, but may **not** be aware of the purpose or need for the program.

The Contracting Officers Representative (COR) and Program Manager should be aware that although the voluntary treatment program has been requested by land managers or other cooperators, **not** everyone in the area may support the project. In some cases, complaints about the program may arise from various people and these complaints may need to be addressed.

#### Common Complaints

In many cases, common complaints can be resolved by simply explaining operational procedures or guidelines to the complainer. Resolutions to other complaints may be more complex and may require mitigation between the party involved and the Program Managers or Regional staff.

### Complaints from Individuals Participating in the Spray Program

Examples of complaints from individuals participating in the spray program are listed below.

**EXAMPLE**

My land did **not** get sprayed and I paid my money.

You didn't kill all the bugs.

There appear to be strips of land which didn't get sprayed.

My land got sprayed several times.

I paid to have my land sprayed and now grasshoppers are moving onto my treated range and cropland from unsprayed areas.

The spray planes were too high when they came over my place.

The wind was blowing when they sprayed my land.

You quit spraying my land even though there wasn't any wind and it was **only** 10:00 a.m.

### Complaints Regarding Non-target Species

Examples of complaints about non-target species are listed below.

**EXAMPLE**

You sprayed my cows. Will it hurt them?

You sprayed my farm pond. Will it kill the fish?

Your spray killed my bees.

Your aircraft flew over and scared my chickens and turkeys. They piled up in the corner and smothered.

Your spraying killed some fish in the stream.

### Complaints Regarding Environmental Concerns

Examples of complaints about environmental concerns are listed below.

**EXAMPLE**

Your plane(s) sprayed over this river and lake.

I think you should stop using chemicals and use biological control agents.

You are killing all the beneficial insects.

Your spraying will kill all the insects needed as food for birds.

### Complaints from Non-participants Including Personal Property and/or Health

Examples of complaints about personal property and health from non-participants are listed below.

**EXAMPLE**

I got sprayed and I shouldn't have.

You sprayed over my house.

Your planes flew over and treated our residential area.

Your spray damaged the paint on our cars.

Your planes flew over our place and sprayed-. I know because our pet is acting sick.

Although we are **not** in the treatment area, we believe your treatment is making us sick.

### Complaints of a General Nature

Examples of general-nature complaints are listed below.

**EXAMPLE**

We were **not** informed of your spraying (from residents, groups, media, police, etc.).

I work nights and sleep during the day. Your planes wake me and I don't like it.

### Record of Incident/Complaint

The Record of Incident/Complaint is used to provide documentation of an incident or a complaint received and may serve as a guideline to develop a worksheet that fits your specific requirements. The example in **Figure 4-7-1** was developed for use with the Boll Weevil Program.

**BOLL WEEVIL ERADICATION PROGRAM  
RECORD OF INCIDENT/COMPLAINT**

DATE 7-4-2005 COMPLAINT NUMBER 001

CALLER'S NAME Gloria James PHONE NUMBER 210-285-6229

ADDRESS OR LOCATION RR1, Box 8, Cottonville, TX 45585  
T28S, R101E

NATURE OF INCIDENT/COMPLAINT (INCLUDE DATE AND TIME) 7-4-2005 11:05am  
Mrs. James called and was concerned that her fields  
were not treated as agreed to.

INITIAL PROGRAM RESPONSE (INCLUDE DATE AND TIME) 7-4-2005 11:06am  
Informed Mrs. James that I would investigate actual  
treatment times and dates in her area, and provide  
that information to her.

FOLLOW-UP ACTION (INCLUDE DATE AND TIME) 7-5-2005 8:30am  
I phoned Mrs. James and told her that her fields were  
treated on 7-3-2005 at 7:30am. I mailed her a  
copy of the flight path recorder printout for her fields.

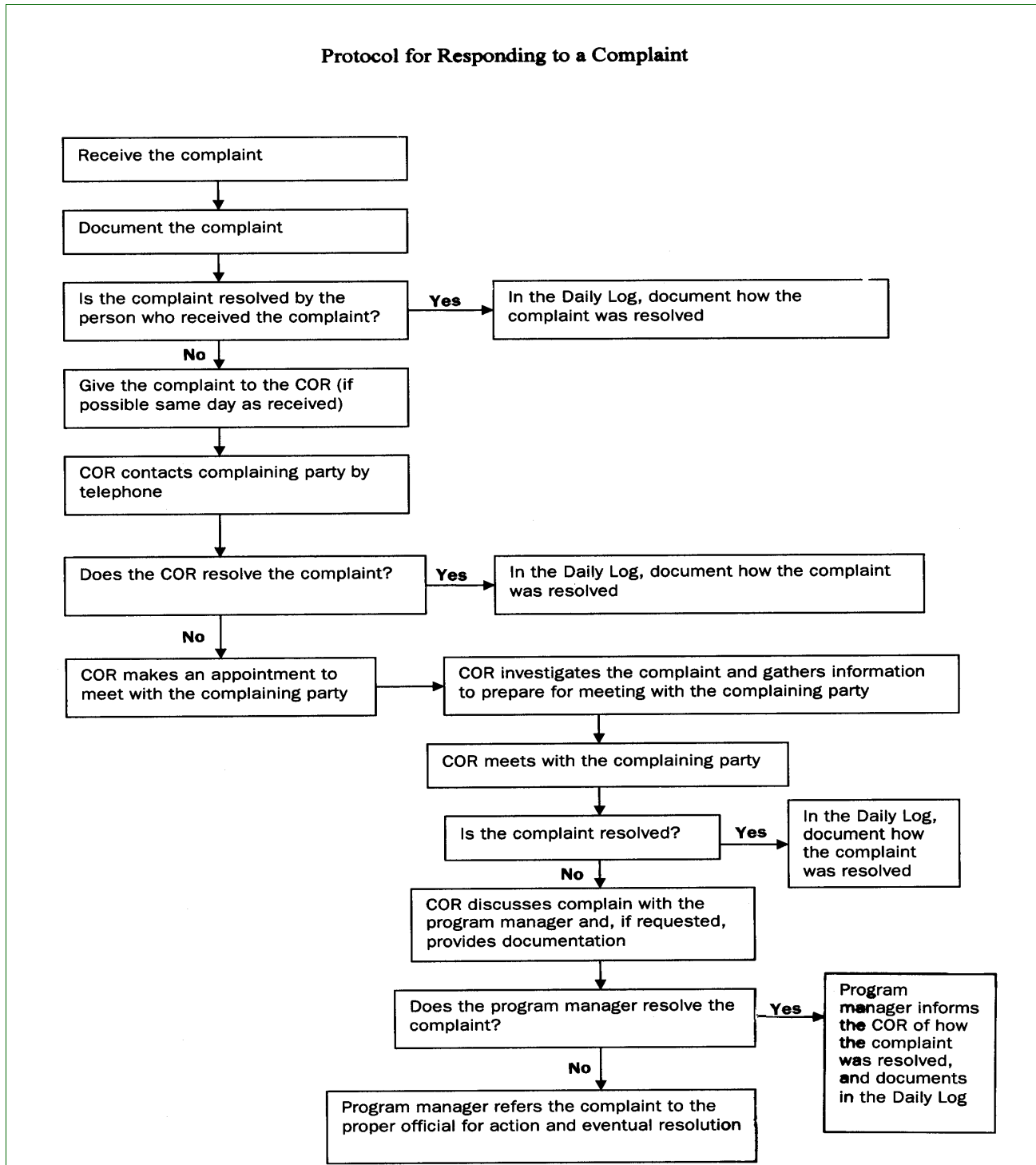
CALL RECEIVED BY Emily Ruth

MAP OF AREA:  
See flight path recorder copy.

FIGURE 4-7-1 Example of a Record of Incident/Complaint

## Protocol for Responding to Incidents and Complaints

The flowchart in **Figure 4-7-2** is to be used as a guideline to develop the protocol for responding to incidents or complaints.



**FIGURE 4-7-2** Flow Chart of Protocol for Responding to Incidents and Complaints





# 4

Aerial Application  
Manual

## Program Supervision

### *Program Shutdown*

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#### Introduction

The ***Program Shutdown*** section of ***Program Supervision*** provides information about tasks, evaluations, and forms which **must** be completed when shutting down field operations at the end of the aerial treatment program.

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#### Procedures

These procedures are to be used the end of the project to shutdown field operations and complete the remaining paperwork.

Shutdown generally falls into two major categories: worksite and administrative. The administrative paperwork and its distribution will vary from program-to-program and region-to-region. Program managers will need to consult with the Regional Office and/or Minneapolis Business Site (MBS) each season to tailor this information to your specific needs.

## Worksite Shutdown

Worksite shutdown involves completion of unfinished tasks and closure of airport shutdown operations.

### Items to Complete for Worksite Shutdown

Items that need to be addressed and completed for worksite shutdown are shown in **Figure 4-8-1**. Each individual program will have unique circumstances that can be added as items on the checklist.

Worksite Shutdown Checklist
1. Update Daily Logs, Base Logs, and Master Program Maps.
2. Provide final program updates to the Regional Program Manager, State Program Manager, and all cooperators.
3. Disassemble the chemical storage tanks.
4. Triple rinse all pesticide containers and dispose of them according to prior arrangements.
5. Load rinsate <sup>1</sup> onto an application aircraft and apply in the spray blocks. Sometimes the cost is charged to the program as either other gallons of pesticide applied or as a separate charge by the contractor to the program ( <b>must</b> be agreed upon between the Contracting Officer (CO) and contractor's representative).
6. Ensure that the contractor has met obligations with the airport authorities (such as paying airport user fees and fuel bills).
7. Evaluate and release the contractor.
8. Record date and time of the contractor's release in the program logs (Base Log and Daily Log).
9. Write a release statement on the final <i>PPQ Form 802, Daily Aircraft Record</i> , for the application, observation, guidance, or other aircraft used on the project.
10. Obtain all necessary signatures from the contractor's representative.
11. Remove the storage tank dike and liner.
12. Clean all garbage and debris from the airport worksite and other areas used.
13. Meet with the airport authorities to make sure they are satisfied with the cleanup.
14. Complete the mortality assessment.
15. Remove flagging from the field.
16. Make necessary repairs to vehicles and equipment.
17. Resupply spill kits, safety equipment, or other supplies that were used.
18. Inventory equipment and supplies.
19. Place equipment and supplies into storage or deliver the equipment and supplies to the next project.

**FIGURE 4-8-1 Worksite Shutdown Checklist**

- 1 Rinsate is the liquids that are rinsed from pesticide containers and tanks, aircraft hoppers and booms, mixing equipment, etc. The best way to dispose of rinsate is to apply to the spray block as normal pesticide.

## Administrative Tasks

The next step is to satisfy program paperwork requirements, and prepare billing statements to cooperators.

Create a financial statement and complete the following forms as part of the shut-down process:

- ◆ *APHIS Form 94, Record of Public Funds Received*
- ◆ *APHIS Form 329, Contract Delivery Receipt*
- ◆ *PPQ Form 136, Work Achievement Report*
- ◆ Financial statement for the project (use actual costs)
- ◆ *PPQ Form 802, Daily Aircraft Record*
- ◆ *PPQ Form 817, Aerial Contractor Performance Evaluation Report*

### **PPQ Form 817, Aerial Contractor Performance Evaluation Report**

Complete *PPQ Form 817, Aerial Contractor Performance Evaluation Report*, for each contractor to document whether the contractor met contract specifications (or **not**), and if the contractor should be considered for future contracts. Refer to the *Daily Log* for notes about the contractor's actions that have been observed during monitoring, inspection results, and any action taken. See [PPQ Form 817, Aerial Contractor Performance Evaluation Report on page A-1-60](#) for an instructions on completing and distributing the form.

The completed form is reviewed by the Contracting Officer (CO) in Minneapolis MBS. The CO may use the form for assessing liquidated damages. If the contractor provided or performed outstanding service in the past that has been documented on previous evaluations, then the CO may give the contractor extra consideration in future contracts.

### **APHIS Form 329, Contract Delivery Receipt**

The program manager **must** complete and submit *APHIS Form 329, Contract Delivery Receipt*, to MBS as soon as possible following the contractor's release from the program. APHIS Form 329 is required by Minneapolis Business Site (MBS) to enable MBS to issue payment to the contractor. Some contractors may offer the Government a discount for prompt or quick payment. In other cases, the Government may be liable for penalties for a delayed payment to the contractor.

Follow the distribution instructions under PPQ Form 802 below. See [APHIS Form 329, Contract Delivery Receipt on page A-1-29](#) for information about completing and distributing the form.

## PPQ Form 136, Work Achievement Report

### Prepare the Financial Statement

Before completing *PPQ Form 136, Work Achievement Report*, prepare a financial statement for the project and use the actual direct and associated program costs (**do not** use estimates). The financial statement is a complete and itemized record of the actual program costs.

1. Include the following items and the actual costs for each in the financial statement:
  - A. Direct Costs
    - i. Pesticide
    - ii. Application
    - iii. Observation
    - iv. Other
  - B. Associated Costs
    - i. Salaries
    - ii. Per diem
    - iii. Mileage and vehicle costs
  - C. Communications
    - i. Supplies
    - ii. Tank rental
    - iii. Miscellaneous
  - D. Cost per acre for the project (total costs divided by the number of acres treated, or when using RAATs, protected)
2. Review the cooperative agreements, Memorandum of Understandings (MOUs), and program guidelines to determine the number of acres each cooperator or party agreed to pay for treatment.
3. Distribute the total cost among cooperators and list on the financial statement.
4. Send the report, financial statement, copy of the program map, and a copy of the cooperator billing letters to the Regional Program Manager.

Use the financial statement information to complete PPQ Form 136.

### Bill the Appropriate Parties

Prepare a cover letter for each cooperator and state in the cover letter the amount the cooperator owes (distributed cost per acre x number of acres). Include a copy of the financial statement with the cover letter given or sent to each cooperator. See the example in Appendix A.

### **APHIS Form 94, Record of Public Funds Received**

As payment for treatment rendered is received from each cooperator, complete *APHIS Form 94, Record of Public Funds Received*.

Program manager should send the completed form and payments to the regional office (xx is this still true or are these sent directly to Minneapolis?) See [APHIS Form 94, Record of Public Funds Received](#) on **page A-1-26**, for an example and instructions for completing and distributing the form.

## PPQ Form 802, Daily Aircraft Record

Verify and tally *PPQ Form 802, Daily Aircraft Record*, as follows:

1. Make sure all *PPQ Form 802, Daily Aircraft Record*, that were used are complete and signed by contractor's representative.
2. Total all the information from all the completed *PPQ Form 802*. This will give the total gallons of pesticide applied and the total hours of observation aircraft flight.
3. Distribute as *PPQ Form 802* follows:
  - ❖ Take *Part 1* of *PPQ Form 802* and attach to the APHIS Form 329 original
  - ❖ Mail the attached forms to Minneapolis Business Site (MBS) at the following address:  
  
xx
  - ❖ Give *Part 2* of *PPQ Form 802* to the contractor's representative
  - ❖ File *Part 3* in the program file office records
  - ❖ Mail *Part 4* to the following address:

USDA-APHIS-PPQ  
Aircraft Equipment Operations  
22675 N. Moorefield Road, Bldg. 6415  
Edinburg, TX 78541-9398

See [PPQ Form 136, Detailed Work Plan on page A-1-32](#) for more information.



# Appendix A

## *Forms and Worksheets*

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## **Introduction**

The *Forms* appendix provides examples of forms used with aerial application programs, and instructions for completing and distributing these forms.



## Aerial Program Description Data Sheet

<b>AERIAL PROGRAM DESCRIPTION DATA SHEET</b>	
Complete the following information and include with each solicitation.	
1.	<b>Pesticide</b> _____ gallons or _____ pounds, plus or minus 25 percent, for control of _____ in the State of _____ <b>Estimated number of acres</b> _____
2.	<b>Location</b> _____
3.	<b>Pesticide</b> [ <i>name of pesticide</i> ] _____ <b>Rate of Application</b> [ <i>actual formulation</i> ] _____
4.	<b>Location of pesticide storage site</b> _____
5.	<b>Pesticide will be delivered in</b> [ <i>barrels, bags, boxes, or bulk</i> ] _____
6.	<b>Aircraft required</b> a) Category and number _____ Matched <input type="checkbox"/> Yes <input type="checkbox"/> No Fixed wing <input type="checkbox"/> Yes <input type="checkbox"/> No b) Observation <input type="checkbox"/> Yes <input type="checkbox"/> No with minimum speed of _____ mph   (If application aircraft is Category A or B=160 mph; if application aircraft is Category C=150 mph; if application aircraft is Category D or all helicopter categories=130 mph)
7.	<b>Estimated average ferry distance</b> _____ miles <b>Elevation range of work area</b> _____
8.	<b>Minimum block size</b> _____ <b>Approximate percentage of area not to be treated</b> _____ %
9.	<b>Congested area(s) percentage</b> _____ %
10.	<b>Estimated reporting date</b> _____
11.	<b>Estimated starting date</b> _____
12.	<b>Number of operational hours allowed to complete the contract</b> _____
13.	<b>Number of days required for State certification</b> _____
14.	<b>Guidance</b> (Type: DGPS or Flagging) _____ Furnished by contractor <input type="checkbox"/> Yes <input type="checkbox"/> No
15.	<b>Recording equipment</b> Furnished by contractor <input type="checkbox"/> Yes <input type="checkbox"/> No Furnished by Government <input type="checkbox"/> Yes <input type="checkbox"/> No
16.	<b>Pesticide loading equipment required</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
17.	<b>Pesticide mixing equipment required</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
18.	<b>Water transport</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
19.	<b>Contracting Officer's Representative</b> [ <i>name and phone number</i> ] _____
20.	<b>Weight factor for evaluation</b> _____ % Technical Proposal _____ % Price Proposal
21.	<b>Site specific information</b> Rough terrain _____ % Sensitive areas _____ % Water _____ % Buffers required _____ %

FIGURE A-1-1 Example of Aerial Program Description Data Sheet (blank)

## Purpose

The *Aerial Program Description Data Sheet* is used to xx.

## Instructions

To complete the *Aerial Program Description Data Sheet*, refer to the current *APHIS Aerial Application Prospectus*, [APHIS Aerial Application Prospectus on page 2-5-2](#), and the instructions in [Table A-1-1](#).

**TABLE A-1-1 Instructions for Completing the Aerial Program Description Data Sheet**

Block		Instructions
1	Pesticide	<ol style="list-style-type: none"> <li>ENTER the estimated total number of gallons or pounds needed to adequately cover the treatment block (the contract will allow for plus or minus 25 percent of the estimated total listed) (see <a href="#">Formulas to Determine the Quantity of Pesticide to Order on page 2-8-4</a>)</li> <li>ENTER the name of the pest program</li> <li>ENTER the name of the State where treatment is being applied</li> <li>ENTER the estimated acres in the treatment area</li> </ol>
2	Location	<p>ENTER the location of the treatment block, use city name, county name, closest towns, villages, or other identified areas</p> <p><b>EXAMPLE</b> A band starting 5 miles south of the city of Wilmington, NC, south to Southport, then west to Seaside.</p>
3	Pesticide	<ol style="list-style-type: none"> <li>ENTER the name of the pesticide formulation (such as Sevin®XLR Plus) for control</li> <li>ENTER the dosage rate (such as 20.0 fl oz per acre)</li> </ol>
4	Location of pesticide storage site(s)	<ol style="list-style-type: none"> <li>ENTER the name and location of the airport that will serve as the base for the aerial application</li> <li>ENTER the name and telephone number of the airport contact for pesticide delivery</li> </ol>
5	Pesticide will be delivered in	<ol style="list-style-type: none"> <li>DETERMINE the type of container in which the pesticide is delivered based on the quantity of pesticide needed for the treatment program <ul style="list-style-type: none"> <li>◆ If the total area to be treated is huge, then order in bulk</li> <li>◆ If the total area to be treated is small, then order by barrel, bag, or box (see <a href="#">Pesticides and Pesticide Storage on page 2-8-1</a>)</li> </ul> </li> <li>ENTER the container type</li> </ol>

**TABLE A-1-1 Instructions for Completing the Aerial Program Description Data Sheet**

Block		Instructions
6	Aircraft required	<ol style="list-style-type: none"> <li>1. LIST the Category and number (SEE <a href="#">Aircraft Category on page 2-5-2</a>, current <i>APHIS Aerial Application Prospectus</i>, and <a href="#">Aircraft Selection and Aircraft Facilities on page 2-4-1</a>)</li> <li>2. If you want more than one aircraft to fly together at the same speed and at the same swath width following straight flight lines, then CHECK the <i>Matched YES</i> block <ul style="list-style-type: none"> <li>◆ If <b>not</b>, then CHECK the <i>Matched No</i> block</li> <li>◆ If you enter <b>No</b> and you have requested more than one aircraft, then make sure the requested aircraft can fly well together</li> </ul> </li> <li>3. DETERMINE the minimum speed of the observation aircraft and the number of four-place aircraft needed with a designated minimum (see <a href="#">Observation Aircraft on page 2-5-3</a>)</li> <li>4. ENTER the number of four-place aircraft needed and the designated minimum speed</li> </ol>
7	Estimated average ferry distance	<ol style="list-style-type: none"> <li>1. ESTIMATE the distance to the spray block from the airfield, and the elevation of the airfield and spray block (SEE the program map of the treatment block)</li> <li>2. ENTER the average ferry distance</li> </ol>
	Elevation range of work area	ENTER the elevation range of the work area
8	Minimum block size	<ol style="list-style-type: none"> <li>1. DETERMINE the number of individual treatment block(s) and the total number of acres</li> <li>2. IDENTIFY the size and shape (shape varies) of each individual block; and be prepared to describe individual blocks</li> <li>3. ENTER the percentage of buffer zones (area <b>not</b> to be treated) within the treatment block</li> <li>4. ENTER additional information in <i>Block 22</i> (such as anticipated length of runs, e.g., short runs over high elevation, etc.</li> </ol>
9	Congested areas, percentage	ENTER the percentage of the treatment block in congested areas, e.g., city, town, community, or group of building (see <a href="#">Congested Areas on page 4-2-7</a> )
10	Estimated reporting date	ESTIMATE and ENTER the date and time you want the contractor to report on site ( <b>must</b> be by or before noon)
11	Estimated starting date	ESTIMATE and ENTER the date and time when all aircraft, equipment, and personnel are on site and ready to begin spray application
12	Number of operational hours allowed to complete the contract	DETERMINE and ENTER the maximum number of actual spray time needed to complete the treatment area (see <a href="#">Aircraft Selection and Aircraft Facilities on page 2-4-1</a> for operational hours of various aircraft)

**TABLE A-1-1 Instructions for Completing the Aerial Program Description Data Sheet**

Block		Instructions
13	Number of days required for State and/or Tribal Government certification	<ol style="list-style-type: none"> <li>1. CONSULT State regulatory cooperators and the respective Tribal representative to determine the number of days that are required to obtain State certification and Tribal certification (if applicable); this information necessary for out-of-state bidders</li> <li>2. ENTER the number of days required for each</li> </ol>
14	Guidance: (Type: DGPS or flagging)	<ol style="list-style-type: none"> <li>1. DETERMINE the type guidance system that will be used (SEE <a href="#">Guidance Type on page 2-5-3</a> and the completed <i>PPQ Form 136, Detailed Work Plan (DWP)</i>)</li> <li>2. ENTER the name of type system (Also, identify the type of guidance to be furnished: Kytoon®, electronic equipment (DGPS or ground flagging using mirrors, lights, or flags)</li> <li>3. If the equipment will be furnished by the contractor, then CHECK the <i>Furnished by contractor</i> YES box</li> <li>4. If Federal or State Government will be responsible for providing guidance to navigate pilots during application, then CHECK the <i>Furnished by contractor</i> NO box</li> </ol>
15	Recording equipment	<ol style="list-style-type: none"> <li>1. DETERMINE if recording equipment is required (see the <i>APHIS Aerial Application Prospectus</i>)</li> <li>2. If recording equipment is required to be furnished by the contractor, then check the <i>Furnished by Contractor</i> YES box, if <b>not</b>, CHECK NO</li> <li>3. If recording equipment is required to be furnished by Federal or State Government, then CHECK the <i>Furnished by Government</i> YES box; if <b>not</b>, CHECK NO</li> </ol>
16	Pesticide loading equipment required:	<ol style="list-style-type: none"> <li>1. Based on the pesticide to be used, DETERMINE whether loading equipment (such as pumps and meters) is needed (see the <i>APHIS Aerial Application Prospectus</i>)</li> <li>2. If loading equipment is required, then CHECK YES box; if <b>not</b>, then CHECK the <b>NO</b> box</li> </ol>
17	Pesticide mixing equipment required	<ol style="list-style-type: none"> <li>1. If pesticide formulation is a suspension, then CHECK the YES box; if <b>not</b>, CHECK the NO box (see the <i>APHIS Aerial Application Prospectus</i>)</li> <li>2. LIST the type of mixing equipment needed</li> </ol>
18	Water transport	<ol style="list-style-type: none"> <li>1. DETERMINE If the formulation requires mixing with water (see the current <i>APHIS Aerial Application Prospectus</i>);</li> <li>2. If the formulation requires mixing with water, then CHECK the YES box</li> <li>3. If the formulation does not require mixing with water, CHECK the <b>NO</b> box</li> </ol>
19	Name and phone number of Contracting Officer's Representative (COR)	ENTER the COR's name and phone number (the Regional Office and Minneapolis Business Site (MBS) require the Contracting Officer's Representative (COR) name and phone number to call and get additional information related to this <i>Description Data Sheet</i> )

**TABLE A-1-1 Instructions for Completing the Aerial Program Description Data Sheet**

Block		Instructions
20	Weight factor for evaluation <sup>1</sup>	<ol style="list-style-type: none"> <li>1. DETERMINE the weight factors (see <a href="#">Weight Factor on page 2-5-5</a>)</li> <li>2. Based on the environmental sensitivity of the program, place a percentage of importance (weight factor) on the technical qualifications and a percentage of importance on the price</li> </ol>
21	Site specific information	ESTIMATE and ENTER the percentage for each of the various categories of terrain (rough or rugged, sensitive areas, water, buffer zones) in the treatment area (see the program map and land managers)
22	Additional information	LIST any other important information that should be included in the contract or will be helpful to bidders (see <a href="#">Additional Information on page 2-5-5</a> )

- 1 According to the *APHIS Aerial Applicators Prospectus*, the weight factor may range from 20/80 (20 percent technical proposal and 80 percent price proposal) for standard jobs up to 60/40 (60 percent technical proposal and 80 percent price proposal) for very sensitive jobs. A standard job would have **no** environmental concerns (such as sensitive areas within the treatment area and/or extensive flagging around buffer zones). A very sensitive job would have environmental concerns and/or extensive flagging around buffer zones.

### **Distribution of the Aerial Program Description Data Sheet**

FAX the completed *Aerial Program Description Data Sheet* to the Regional Program Coordinator at xx (need names of program managers and FAX numbers).

## Cooperative Agreement

**NOTICE OF COOPERATIVE AGREEMENT AWARD  
BETWEEN THE  
\_\_\_\_\_ (COOPERATOR) Individual  
AND THE  
UNITED STATES DEPARTMENT OF AGRICULTURE  
ANIMAL AND PLANT HEALTH INSPECTION SERVICE,  
PLANT PROTECTION AND QUARANTINE, (APHIS)**

### ARTICLE 1

The objective of this Agreement is to implement the APHIS Grasshopper Program in conjunction with cooperators in the various counties in the state of \_\_\_\_\_. Although grasshoppers (including Mormon crickets) are a natural part of rangeland ecosystems in the western U.S., they have the potential for sudden and explosive increases resulting in outbreaks that can decimate rangeland forage and threaten adjacent cropland. The Program's objectives are to prevent, control, or suppress grasshoppers' rangeland to protect forage, prevent re-infestation and wide spread outbreaks, and prevent the movement of grasshoppers from Federal rangeland borders to adjacent agricultural lands.

### ARTICLE 2

The Cooperator is authorized to enter into this Agreement under the provisions of the Plant Protection Act 7 U.S.C. 7701-7772, (Public Law 106-224).

APHIS is authorized pursuant to 7 U.S.C. 1448 To cooperate with states, ranchers' committees and similar organizations, and individuals to carry out operations or measures to control insect pests including grasshoppers on rangeland.

### ARTICLE 3

The cooperating parties agree that:

- a. Grasshopper infestations can be suppressed through the application of approved insecticides at approved rates.
- b. This is an eradication program; however, the best practical control job possible will be conducted with available funds, personnel, facilities, and time. APHIS will, generally, not repeat treating acreage with Program insecticides.
- c. Survey maps will be jointly reviewed and on-site inspections of private ranch lands will be made to determine which areas subject to this Agreement will be treated. Such determinations shall be made in accordance with the Program Guidelines.
- d. APHIS and the State, where the State is involved, shall jointly develop detailed Financial and Work Plans outlining actions to be carried out by each party to accomplish the cooperative program covered by this Agreement prior to the signing of this Agreement. These documents are incorporated into this Agreement by reference.
- e. The estimated overall per acre cost of the Program is \$ \_\_\_\_\_ per acre using the insecticide \_\_\_\_\_. The total cost per acre was determined using an

FIGURE A-1-2 Example of a Cooperative Agreement (page 1 of 3)

average distributable cost figure of \$\_\_\_\_\_ per acre for salaries, per diem, travel, vehicles, and operating expenses for State and Federal personnel directing the Program; plus a contract cost of \$\_\_\_\_\_ per acre for pesticide and application expenses. The cooperator's per acre cost is \$\_\_\_\_\_ per acre.

- f. Funds provided by the cooperating rancher will be deposited into an escrow account on or before \_\_\_\_\_. Said funds shall be released only as provided in this Agreement, except that a cooperating rancher whose land has been excluded from the Program may have his funds refunded prior to the conclusion of the program.
- g. That the monies made available by the Federal Government for the Program will not be expended unless or until each proposed control activity is jointly approved by the parties.
- h. No additional costs will be billed the cooperator for unforeseen expenses subsequent to the Program nor will APHIS declare excess funds to said Cooperator.
- i. Identified control areas, cannot be accepted for treatment until funds are advanced to APHIS as agreed.
- j. Entering into this Agreement and signature of the Cooperator constitutes a valid request for treatment on State and/or county land, as specified in the Detail Work Plan (PPQ Form 136). No other written request will be required.
- k. APHIS' obligations shall be limited to an amount contingent upon the passage of an appropriation by Congress from which expenditures may legally be met.
- l. Specific Program Guidelines will be established by APHIS and distributed to PPQ's State Plant Health Directors.

#### ARTICLE 4

The Cooperator agrees to/that:

- a. Ensure that all known bee colonies are removed from the proposed treatment area or otherwise protected before treatment begins.
- b. Pay APHIS approximately \_\_\_\_\_ (depending on State participation) of the per acre cost of the Program on HIS/HER private lands, as authorized by this Agreement.
- c. Pay HIS/HER share of the total cost to APHIS prior to commencing the Program to satisfy costs incurred in accordance with the provisions of this Agreement.
- d. Accept that the funds paid to APHIS constitute the full share and total payment for the program in accordance with the provisions of this Agreement.  
Provide to APHIS a copy of this Agreement signed by the Cooperator together with a check covering HIS/HER share of the Program cost in accordance with the provisions of this Agreement.

#### ARTICLE 5

APHIS agrees to/that:

- a. Provide technical direction for all phases of this cooperative effort to control grasshoppers on rangeland.
- b. Furnish employees to aid in any survey and treatment operations required in this joint

FIGURE A-1-3 Example of a Cooperative Agreement (page 2 of 3)

- effort.
- c. Establish Program Guidelines specifying the manner and method of treatment for grasshopper control on rangelands.
- d. Provide notification to the State and the Cooperator of any area which is excluded from treatment and a brief explanation of the reasons for such exclusion.
- e. Contract for pesticide, supplies, and equipment required in this cooperative effort.
- f. Contract for any applicators required to apply pesticide in this cooperative effort.
- g. Contract for any applicators required to apply pesticide in this cooperative effort.
- h. Enter into an Agreement with the Cooperator to facilitate transfer of funds to APHIS as agreed for their share of the total cost of the Program as outlined in the Work Plan.
- i. Contribute an amount not to exceed 33.3 percent of the total cost per acre on private lands, and 100 percent of the total cost per acre on Federal land as a share of the cost.
- j. Make an accounting of total Program expenditures by all the parties within 90 days after the conclusion of this cooperative effort. This accounting will be based on a financial status report of expenditures provided by APHIS and all the parties to the Program.

**ARTICLE 6**

All conditions and provisions of the Agreement shall become effective upon final signature and shall continue through September 30, 2004, subject to renewal in writing by the parties from year to year. Furthermore, this Agreement may be amended at any time by mutual agreement of the parties in writing. It may be terminated by either party upon 30 days notice in writing to the other party.

Cooperator: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Name: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

The United States Department of Agriculture, Animal and Plant Health Inspection Service,  
Plant Protection and Quarantine.

Regional Director: \_\_\_\_\_ Date: \_\_\_\_\_

USDA, APHIS Agreement # \_\_\_\_\_

Cooperator Agreement # \_\_\_\_\_

Cooperator Tax Id # \_\_\_\_\_

Expiration Date: \_\_\_\_\_

**FIGURE A-1-4 Example of a Cooperative Agreement (page 3 of 3)**



### **Purpose**

A cooperative agreement is a written agreement used to establish arrangements between APHIS and ranchers, States, and Native American Tribal Councils non-Federal entities for aerial application for pest control.

### **Instructions**

The cooperative agreement is completed as follows:

xx

### **Distribution**

Distribute the cooperative agreement as follows:

- 1.** Send the original to the appropriate Western Region Office or Eastern Region Office for approval.
- 2.** Keep a copy for the program file.

## Worksheet to Determine the Number of Aircraft Needed for a Program

<b>Worksheet to Determine the Number of Aircraft Needed for a Program</b>		
1.	Determine the total number of operational application hours to complete the program and list the time in military time	
	List the time you can begin application based on weather conditions and daylight (estimated time that conditions become favorable for application) in military time	A =
	List the time you must quit spraying based on when droplets begin to hand or drift off (estimated time that conditions become <b>unfavorable</b> for application) in military time	B =
	Subtract the time listed in A from the time listed in B to determine C (number of application hours available in a day). $B - A = C$	C =
	List the number of days available to complete the program	D =
	Multiply C times D to determine E (total number of operational application hours). $C \times D = E$	E =
2.	List the total number of acres you need to cover	F =
3.	List the average number of acres covered per hour based on the type of aircraft to be used (to determine the average number of acres the aircraft can treat in one hour, see xx)	G =
	Enter the name of the aircraft: _____	
4.	Divide F (total number of acres you need to cover) by G (average number of acres aircraft will treat in one hour) to determine H (total time required for one aircraft to cover the designated area). $F/G = H$	H =
5.	Divide H (total time required for one aircraft to cover the designated area) by E (total number of operational application hours) to determine I (average number of aircraft needed to complete the program). $H/E = I$	I =
6.	Round up I to the next whole number to determine the number of aircraft needed, and list the rounded number.	_____  Number of aircraft needed for the program

**FIGURE A-1-5 Worksheet to Determine the Number of Aircraft Needed for the Aerial Application Program**

### **Purpose**

The *Worksheet to Determine the Number of Aircraft* needed for the Aerial Application Program is used to determine the number of aircraft that will be needed to complete the program based on the size of the treatment area and the number of days you have to complete the treatment.

### **Instructions**

Follow the instructions on the worksheet.

### **Distribution**

File a copy of the worksheet in the program file.

## Worksheet for Calibration Trial

<b>Calibration Trial Worksheet</b>	
Date: _____ Pilot: _____	Material _____
Aircraft Make/Model _____	Desired Rate P/A _____
Spreader Make/Model _____	Desired Rate P/M _____
Spray Tip Type & Size _____	* Range % : Heavy _____ Light _____
Aircraft Speed ( MPH ) _____ Swath _____	
Load #: _____	Load #: _____
Loaded: _____	Loaded: _____
Drained: _____	Drained: _____
Applied: _____	Applied: _____
Time: _____	Time: _____
Rate: _____	Rate: _____
Percent: _____	Percent: _____
Adjustments: _____	Adjustments: _____
Load #: _____	Load #: _____
Loaded: _____	Loaded: _____
Drained: _____	Drained: _____
Applied: _____	Applied: _____
Time: _____	Time: _____
Rate: _____	Rate: _____
Percent: _____	Percent: _____
Adjustments: _____	Adjustments: _____
Load #: _____	Load #: _____
Loaded: _____	Loaded: _____
Drained: _____	Drained: _____
Applied: _____	Applied: _____
Time: _____	Time: _____
Rate: _____	Rate: _____
Percent: _____	Percent: _____
Adjustments: _____	Adjustments: _____
<b>* NOTE: Liquid : + or - 5% Dry : + or - 10%</b>	
AEO 10/2004	

FIGURE A-1-6 Example of Calibration Trial Worksheet

### **Purpose**

The Calibration Trial Worksheet is used to record the loading and calibration results from each calibration flight.

### **Instructions**

This worksheet can be obtained electronically from Aircraft and Equipment Operations (AEO).

### **Distribution**

Maintain a copy in the program file.



## Purpose

The *AD 700, Procurement Request*, is used to request the purchase of goods, materials, and services. A request is required before a transaction can be completed.

## Instructions

Follow the instructions in **Table A-1-2** to complete the form.

**TABLE A-1-2 Instructions for Completing AD,700, Procurement Request**

Block		Instructions
	TO	
1	Requesting Office	LIST the name and address of the office requesting the item
1A	Procurement Request No.	
1B	Date	LIST the date the form is completed
2	Receiving Office No.	
3	Contract Number	If the prices are from a GSA contract, the LIST the contract number
4	Order Date	Purchasing agent will complete
5		Purchasing agent will complete
6	Unit Code	Purchasing agent will complete
7	Fund Code	Purchasing agent will complete
8	Purchase Delivery Order Number	Purchasing agent will complete
9	SUB.	Purchasing agent will complete
	Check One	<ol style="list-style-type: none"> <li>1. If the request is over \$2,500, then CHECK the Purchase Order box</li> <li>2. If the request is under \$2,500 then CHECK the Delivery Order box</li> </ol>
10	TO	If known, LIST the name of the vendor's name, address, and phone number
11	Ship to	<ol style="list-style-type: none"> <li>1. LIST the address where the order should be delivered</li> <li>2. If requested, CHECK the inside delivery box</li> </ol>
12	Line Item	BEGIN with a 1 and number each item requested
13	Acct. Code	Leave blank
14	Description	If the LIST the vendor's or manufacturer's item number, brand, and description for the product or service requested
	Technical Contact Telephone Number	LIST the name and phone number of the person who can answer any questions about the requisition
15	Budget Object	Purchasing agent will complete
16	Acc. Line	Purchasing agent will complete
17	Quantity	LIST the requested amount for each item

**TABLE A-1-2 Instructions for Completing AD,700, Procurement Request**

Block		Instructions
18	Unit Issue	LIST the applicable unit (i.e., each, dozen, pkg, pair, box, etc.)
19	Unit Price	LIST the actual cost per unit; if <b>not</b> available, then ESTIMATE and LIST the estimated cost per unit
20	Amount	Automatic TOTAL cost per line item
21	FOB Point	Purchasing agent will complete
22	Discount Terms	Purchasing agent will complete
	Sub-Total	Automatic sub-total of all line items
23	Required Delivery	LIST the date the order is needed
23A	Negotiated Delivery	If applicable, LIST the date the vendor agreed to delivery the order; otherwise LEAVE blank
24	Ship Via	Purchasing agent will complete
26	Estimated Freight	Purchasing agent will complete
27	Total	Purchasing agent will complete
28	Acc. Line	
29	Accounting Classification	LIST the account code(s)
30	Distribution	LIST the percent of the total to be charged to each account code
31	Amount	Leave blank
	Recommended Source(s)	1. If you obtained price quote(s), then LIST the name of the representative 2. If any, ATTACH the quote(s) and comparisons
	Title	ENTER the job title of the individual authorized to obligate funds for the listed accounts
	Signature of Authorized Representative	Individual authorized to obligate funds to the listed account on behalf of the U.S. Government SIGNS

### Distribution

Distribute the AD 700 as follows:

1. Give the original to the appropriate personnel.
2. Keep a copy for the program file.



## APHIS Form 29, Occupational Medical Monitoring

UNITED STATES DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE																																																																																																											
OCCUPATIONAL MEDICAL MONITORING PROGRAM OCCUPATIONAL EXPOSURES <small>(Please print all information)</small>																																																																																																											
Section A (To be completed by employee)																																																																																																											
Name (Last, First, Middle Initial)				Social Security Number				Work Address (Include Laboratory, Building and Room)																																																																																																			
Date of Birth		Title, Series, Grade																																																																																																									
Sex Female      Male		Telephone Number																																																																																																									
Section B (To be completed by employee)																																																																																																											
Are you a respirator user?		If yes, what type? (Check all that apply)						Pesticide Applicator																																																																																																			
Yes      No		Negative Pressure		PAPR		SCBA		Yes		No																																																																																																	
Name of Occupational Exposure (List all actual/potential occupational exposures with which you work. Use continuation sheet, if necessary)				CAS or EPA Number		Work Use (Note 1)		Route of Entry S, I, R (Note 2)		Check box(es) Frequency			Check box(es) Duration																																																																																														
										1F	2F	3F	4F	1D	2D	3D																																																																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="12" style="text-align: center;">Section C (To be completed by employee)</td> </tr> <tr> <td colspan="12" style="text-align: center;"><small>I have reviewed the information and certify that it is accurate to the best of my knowledge.</small></td> </tr> <tr> <td colspan="4">Address</td> <td colspan="4">Signature</td> <td colspan="4">Telephone Number</td> </tr> <tr> <td colspan="4"></td> <td colspan="4"></td> <td colspan="4">Date</td> </tr> <tr> <td colspan="12" style="text-align: center;">Section D (To be completed by employee's supervisor)</td> </tr> <tr> <td colspan="12" style="text-align: center;"><small>I have reviewed the information provided by the employee and certify that it is accurate to the best of my knowledge.</small></td> </tr> <tr> <td colspan="4">Address</td> <td colspan="4">Signature</td> <td colspan="4">Telephone Number</td> </tr> <tr> <td colspan="4"></td> <td colspan="4"></td> <td colspan="4">Date</td> </tr> </table>												Section C (To be completed by employee)												<small>I have reviewed the information and certify that it is accurate to the best of my knowledge.</small>												Address				Signature				Telephone Number												Date				Section D (To be completed by employee's supervisor)												<small>I have reviewed the information provided by the employee and certify that it is accurate to the best of my knowledge.</small>												Address				Signature				Telephone Number												Date			
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Address				Signature				Telephone Number																																																																																																			
								Date																																																																																																			
Specify other work use:																																																																																																											
<small>Note 1 (Work Use): FM-Fume-Hood, BT-Bench Top, BS-Back Sprayer, T-Tractor, BSC-Biological Safety Cabinet, O-Outdoors, AP-Aircraft, E-Explosives, SH-Shooting; Note 2 (Route of Entry): S-Skin, I- Ingestion, R- Respiratory; Note 3 (Frequency): 1F-Daily, 2F-Weekly, 3F-Monthly, 4F-Seasonal; and Note 4 (Duration): 1D-Less than 1 hour, 2D-1 to 8 hours, 3D-More than 8 hours.</small>																																																																																																											

FIGURE A-1-8 Example of APHIS Form 29, Occupational Medical Monitoring Program Occupational Exposures

## Purpose

APHIS Form 29, Occupational Medical Monitoring Program Occupational Exposures, is used to request medical surveillance for occupational exposures through the APHIS Occupational Medical Monitoring Program.

## Instructions for APHIS Form 29

Print or type all the information requested on this form.

**TABLE A-1-3 Instructions for Completing APHIS Form 29, Occupational Medical Monitoring Program Occupational Exposures**

Block	Instructions
<b>Section A</b>	<b>Employee completes this section</b> If you <b>cannot</b> answer a question, please contact your supervisor, Occupational Medical Monitoring (OMM) Coordinator, or Location Administrative Officer (LAO) for assistance
Name (Last, First, Middle Initial)	Enter your last name, first name, and middle initial
Social Security Number	Enter your Social Security Number
Work Address (Include Laboratory, Building, and Room)	Enter your complete work address
Date of Birth	Enter your date of birth
Title, Series, Grade	Enter your title, series, and grade
Sex (Female or Male)	Check the appropriate box
Telephone Number	List your work telephone number
<b>Section B</b>	<b>Employee completes this section</b> Provide as much information as possible
Are you a respirator use? Yes or <b>No</b>	<ul style="list-style-type: none"> <li>◆ If you use a respirator when performing duties, check the YES box</li> <li>◆ If you <b>do not</b> use a respirator when performing duties, check the <b>NO</b> box</li> </ul>
If yes, what type? Negative Pressure, PAPR, or SCBA	If you use a respirator, check the appropriate box(es)
Pesticide Applicator	Check the appropriate box

**TABLE A-1-3 Instructions for Completing APHIS Form 29, Occupational Medical Monitoring Program Occupational Exposures (continued)**

Block	Instructions
Name of Occupational exposure <i>(List all actual/potential occupational exposures with which you work. Use continuation sheet if necessary.)</i>	<ul style="list-style-type: none"> <li>◆ List actual and potential exposures to chemical hazards (pesticides, solvents, etc.), physical hazards (noise lasers, radiation, etc.), biological hazards (rabies, animal blood and body fluids, etiologic agents, exposure to animals, etc.), other hazards (asbestos and any other respiratory hazards), and any exposures to chemicals where an alteration of health status may occur</li> <li>◆ Give specific information about pesticides, chemicals, dust, or noise; <b>do not</b> give general descriptions</li> </ul> <p><b>EXAMPLE</b> Specific information such as Admire 2F; methyl alcohol; cotton dust; work with a Kalamazoo band saw that is labeled as noise hazardous.</p>
CAS or EPA Number	<ul style="list-style-type: none"> <li>◆ Obtain chemical names and CAS number from the Material Safety Data Sheet (MSDS) for the product; pesticide names are provided on the pesticide label and the MSDS</li> <li>◆ If the pesticide is registered, the EPA assigns a number</li> </ul>
Work Use (Note 1)	<p>Enter one or more of the following designations to describe how you use the item listed; be specific:</p> <p>BS—Back sprayer          BSC—Biological safety cabinet          BT—Bench top          FM—Fume hood          O—Outdoors</p>
Route of Entry S, I, R (Note 2)	<p>Enter one or combinations of the following three main routes to describe your specific situation:</p> <p>I—Ingestion exposure          R—Respiratory exposure          S—Skin exposure</p>
Frequency 1F, 2F, 3F, 4F	<p>Enter one of the following for how often you were exposed:</p> <p>F1—Daily          F2—Weekly          F3—Monthly          F4—Seasonal</p>
Duration 1D, 2D, 3D	<p>Use one or more of the following to describe the possible exposure time per day:</p> <p>1D—less than 1 hour          2D—less than 8 hours          3D—greater than 8 hours</p> <p><b>Do not</b> use &lt; or &gt; signs in your description</p>
<b>Section C</b>	<b>Employee completes this section</b>
I have reviewed the information and certify that it is accurate to the best of my knowledge	<ul style="list-style-type: none"> <li>◆ REVIEW the information entered on this form and certify that the this is accurate to the best of your knowledge</li> <li>◆ If you have any questions, CONTACT the APHIS Safety Office at 301-851-3114</li> </ul>
Address	ENTER the employee's address
Signature	Employee signs (employee certification)

**TABLE A-1-3 Instructions for Completing APHIS Form 29, Occupational Medical Monitoring Program Occupational Exposures (continued)**

<b>Block</b>	<b>Instructions</b>
Telephone Number	ENTER the employee's telephone number
Date	ENTER the date the employee signs the form
<b>Section D</b>	<b>Supervisor of employee completes this section</b>
I have reviewed the information provided by the employee and certify that it is accurate to the best of my knowledge	<ul style="list-style-type: none"> <li>◆ REVIEW the information provided on this form with your employee (person completing the form)</li> <li>◆ If necessary, MAKE corrections and have the employee initial any changes</li> <li>◆ DETERMINE if recommended participation is appropriate</li> <li>◆ If you have any questions, CONTACT the APHIS Safety Office at 301-851-3114</li> </ul>
Address	ENTER the supervisor's address
Signature	Supervisor signs (employee's supervisor's certification)
Telephone Number	ENTER the supervisor's telephone number
Date	ENTER the date supervisor signs this block

### **Distribution of APHIS Form 29**

Distribute the completed APHIS Form 29 as follows:

- 1.** FAX the original to Federal Occupation Health (FOH) at 1-415-437-8008 where it will be reviewed by the APHIS Medical Advisor.
- 2.** Give a copy to the employee.
- 3.** Keep the original for your files.



## Purpose

APHIS Form 29, Continuation Sheet is used when there is **not** have enough space on APHIS Form 29, Occupational Medical Monitoring, to list all the actual/potential occupational exposures.

## Instructions for APHIS Form 29

The employee completes the continuation sheet.

**TABLE A-1-4 Instructions for Completing the Continuation Sheet to APHIS Form 29**

Block	Instructions
Name (Last, First, Middle Initial)	Enter your last name, first name, and middle initial
Social Security Number	Enter your Social Security Number
Telephone Number	Enter your work telephone number
Date	List the date you complete the form
Name of Occupational Exposure (List all actual/potential occupational exposures with which you work)	<ul style="list-style-type: none"> <li>◆ List actual and potential exposures to chemical hazards (pesticides, solvents, etc.), physical hazards (noise lasers, radiation, etc.), biological hazards (rabies, animal blood and body fluids, etiologic agents, exposure to animals, etc.), other hazards (asbestos and any other respiratory hazards), and any exposures to chemicals where an alteration of health status may occur</li> <li>◆ Give specific information about pesticides, chemicals, dust, or noise; <b>do not</b> give general descriptions</li> </ul>
CAS or EPA Number	<ul style="list-style-type: none"> <li>◆ Obtain chemical names and CAS number from the material safety data sheet (MSDS) for the product; pesticide names are provided on the pesticide label and the MSDS</li> <li>◆ If the pesticide is registered, the EPA assigns a number</li> </ul>
Work Use (Note 1)	Enter one or more of the following designations to describe how you use the item listed; be specific: BS—Back sprayer BSC—Biological safety cabinet BT—Bench top FM—Fume hood O—Outdoors
Route of Entry, S, I, R, (Note 2)	Enter one or combinations of the following three main routes to describe your specific situation: I—Ingestion exposure R—Respiratory exposure S—Skin exposure
Frequency (Note 3)	Enter one of the following for how often you were exposed: F1—Daily F2—Weekly F3—Monthly F4—Seasonal

**TABLE A-1-4 Instructions for Completing the Continuation Sheet to  
APHIS Form 29 (continued)**

<b>Block</b>	<b>Instructions</b>
Duration (Note 4)	Use one or more of the following to describe the possible exposure time per day: 1D—less than 1 hour 2D—less than 8 hours 3D—greater than 8 hours <b>Do not</b> use < or > signs in your description
Specify other work use	xx

**Distribution of APHIS Form 29**

The *APHIS Form 29, Continuation Sheet*, is attached to and distributed with *APHIS Form 29, Occupational Medical Monitoring*. See [Distribution of APHIS Form 29 on page A-1-22](#).





## Purpose

APHIS Form 94, Record of Public Funds Received, is used to document the receipt and transmittal of collections, including payments received from cooperators.

## Cooperator Billing Statements and Payments

Bill appropriate parties by a copy of the itemized record, along with a cover letter.

## Instructions for Completing APHIS Form 94

Complete the original APHIS Form 94 as listed in [Table A-1-5](#).

**TABLE A-1-5 Instructions for Completing APHIS Form 94, Record of Public Funds Received**

Block		instructions
1	TRANSMITTAL NO.	Enter the transmittal number created by the using office to track this form
2	DATE FORWARDED	Enter the date you submit the form
3	TO	Leave blank (address is preprinted)
4	FROM	Enter the complete name and address, (street, city, State, Zip Code, etc.) of the submitting office; the receipted copy will be mailed back to this address
5	DATE RECEIVED	Enter the date you receive the check or money order
6	FOR MRP-BS-MBS USE <b>ONLY</b>	Leave blank
7	AMOUNT	Enter the amount of each check or money order on a separate line
8	REMITTER	Enter the name of the person who
9	PURPOSE/ACCOUNTING CODE	Enter your 10-digit accounting code, budget object code, agreement number, phytosanitary certificate, animal by-product certificate, bill number, or reasons for the check (jury duty, travel rebate, etc.)
10	TOTAL AMOUNT SENT	Add the line amounts listed under Block 7, and enter the total
11	SENT BY	Sign the form as the APHIS 94 submitter
12	TITLE	Enter your title and work phone number
13	AMOUNT	Leave blank; MBS use <b>only</b>
14	RECEIVED BY	Leave blank; MBS use <b>only</b>
15	DATE	Leave blank; MBS use <b>only</b>
16	MBS TITLE	Leave blank; MBS use <b>only</b>

### **Distribution of APHIS Form 94, Record of Public Funds Received**

Make two copies of the completed APHIS Form 94 and distribute as follows:

- 1.** Send the original and one copy along with the collection to:  
  
USDA-APHIS-ART  
PO Box 952180  
St. Louis, MO 63195-2180
- 2.** Program managers should send payments and the completed form to the regional office.
- 3.** File one copy of the form until the receipted copy is received from APHIS; if you have **not** received the receipted copy from MRP-MBS within three weeks of submitting the APHIS, then notify the MBS-Accounts Receivable Team.
- 4.** Retain the receipted copy in your files.

**APHIS Form 329, Contract Delivery Receipt**

**PRESS HARD - You are making 4 copies**

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**CONTRACT DELIVERY RECEIPT** USDA-APHIS

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<p style="text-align: center;"><b>COPY DISTRIBUTION</b></p> <p><small>White - Financial Services - MRP-MBS, Minneapolis          Canary - Contracting Officer - MRP-MBS, Minneapolis OR Procurement and Engineering          Branch, ASD, Hyattsville          Pink - Retain for your Record          Goldenrod - (NEC items only) - Property Services MRP-MBS, Minneapolis</small></p>		<p>1. CONTRACT NO. 53-12345-4-CO#1</p> <p>2. FINANCIAL DATA CODE 123-1234-123</p>	
<p>3. NAME AND ADDRESS OF CONTRACTOR ABC Applicators, Inc. PO Box 123 Anytown, CO 80751</p>		<p>4. NAME AND ADDRESS OF CONSIGNEE USDA-APHIS-PPQ 1220 Cok Avenue Helena, MT 59601</p> <p>FTS PHONE NO.</p>	

---

5. ITEM(S) RECEIVED (List ALL items received from partial delivery and complete delivery)

ITEM NO.	DESCRIPTION OF SUPPLY OR SERVICE RECEIVED	QUANTITY RECEIVED	DATE RECEIVED
01	Aerial Application of Dimilin - 66 gal @ \$222.00 per gallon = \$14,652.00	66 gal	06/21-22/2004
02	Observation Aircraft - 6.0 hours @ \$140.00 per hour = \$840.00	6.0 hrs	06/21-22/2004

SAMPLE

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6. TYPE OF DELIVERY ("X" One)       PARTIAL DELIVERY       COMPLETE DELIVERY

---

7. REMARKS

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I certify that the articles, and/or services indicated above have been received, inspected and accepted as complying with the contract terms and conditions (except as noted under "Remarks") as of the data shown below.

<p>8. SIGNATURE OF AUTHORIZED OFFICIAL <i>Joseph A. Sample</i></p>	<p>9. TYPED OR PRINTED NAME AND TITLE JOSEPH A. SAMPLE, SPHD</p>	<p>10. DATE THIS RECEIPT DISTRIBUTED 07/07/2004</p>
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APHIS FORM 329 (AUG 82) Previous editions obsolete. U.S. GOVERNMENT PRINTER OFFICE 1996-719-558

**FIGURE A-1-11 APHIS Form 329, Contract Delivery Receipt**

## Purpose

APHIS Form 329, Contract Delivery Receipt, is an accountable form completed by the program manager and used by Minneapolis Business Services (MBS) to issue payment to the contractor.

## Instructions for Completing APHIS Form 329

The program manager **must** complete APHIS Form 329 and submit as soon as the supplies or services are received.

**TABLE A-1-6 Instructions for Completing APHIS Form 329**

Block		Instructions
1	CONTRACT NO.	1. List the contract number Issued by Minneapolis Business Site (MBS) 2. Verify the numbers match exactly to avoid delay of the contractor's payment
2	FINANCIAL DATA CODE	List the appropriation code issued by the regional office
3	NAME AND ADDRESS OF CONTRACTOR	List the contractor's name and address (street name, PO Box, city, State, Zip Code, etc.)
4	NAME AND ADDRESS OF CONSIGNEE	List the consignee's name and address (street name, PO Box, city, State, Zip Code, etc.)
	FTS PHONE NO.	List the phone number
5	ITEM(S) RECEIVED	List ALL items received from partial delivery and complete delivery (a brief description and quantity of services completed by the contractor)
	ITEM NO.	List the item number
	DESCRIPTION OF SUPPLY OR SERVICE RENDERED	List a brief description and quantity of services completed by the contractor
	QUANTITY RECEIVED	List the quantity/units for line item received
	DATE RECEIVED	List the date the supplies were received or the services were rendered. If a service was received over several consecutive days, then list the beginning and ending dates
6	TYPE OF DELIVERY	Place an X in the appropriate box
	PARTIAL DELIVERY	Partial Delivery is sometimes used on projects that extend over a long period of time, to provide operating capital to the contractor
	COMPLETE DELIVERY	Complete delivery of supplies or services was received
7	REMARKS	List any other information that will be useful to the work unit, regional office, or MBS (i.e., Detailed Work Plan numbers, contract bid price for application, speed and payment rate for observation aircraft, or distribution made)

**TABLE A-1-6 Instructions for Completing APHIS Form 329 (continued)**

Block		Instructions
8	SIGNATURE OF AUTHORIZED OFFICIAL	Program manager, officer-in-charge, or State Plant Health Director signs
9	TYPED OR PRINTED NAME AND TITLE	Type or print the name and title of person who signs <i>Block 8</i>
10	DATE THIS RECEIPT DISTRIBUTED	Enter the date the receipt is distributed

### Distribution of APHIS Form 329

Submit APHIS Form 329 to MBS as soon as possible following releasing the contractor from the program (services received) or when supplies are received (supplies received). Some contractors may offer the Government a discount for a prompt or a quick payment. In other cases, the Government may be liable for penalties for a delayed payment to the contractor.

Distribute the completed APHIS Form 329 shown in [Table A-1-7](#) below.

**TABLE A-1-7 Distribution of APHIS Form 329**

If:	Then:
Part 1 (White)	Attach to original copy of PPQ Form 802 and mail to MBS, Accounts Payable, Claims and Payment Section, xx
Part 2 (Canary)	<ol style="list-style-type: none"> <li>1. Send to the Contracting Officer (CO) at MBS</li> <li>2. <b>Do not</b> send a copy of PPQ Form 802 unless the COR or program manager has withheld a portion of the payment (for negligent spillage, leakage, or jettisoned load)</li> <li>3. MSB will also receive a bill from the contractor; the CO will be able to resolve any discrepancy between the contractor's billing and the amount on APHIS Form 329</li> </ol>
Part 3 (Goldenrod)	Send to the budget section of the regional office
Part 4 (Pink)	Retain for office records



## Purpose

PPQ Form 136 is a multi-part form that can be used as either a Detailed Work Plan or a Work Achievement Report.

When used as a *Detailed Work Plan*, the completed PPQ Form 136 contains a broad estimate of various costs and is used to request needed resources, to alert the Region Office for budgeting purposes, and to alert the Minneapolis Business Site (MBS) for contracting purposes.

## Instructions for PPQ Form 136, Detailed Work Plan

The following materials and information are needed to prepare the *PPQ Form 136, Detailed Work Plan*, and the accompanying checklist:

- ◆ Completed environmental documentation
- ◆ Cooperative agreements
- ◆ Control option information
- ◆ Memorandum of Understanding
- ◆ *Federal Prospectus for Aerial Application*
- ◆ Map showing land ownership
- ◆ Proof of cooperator cost on deposit (escrow or bank letter), and figures from recent past programs
- ◆ Figures from recent programs (to help estimate costs)

Refer to the items above and follow the instructions in **Table A-1-8** to complete *PPQ Form 136, Detailed Work Plan* (DWP). After the DWP is completed, then complete the accompanying Work Checklist (see [Work Checklist \(accompanies PPQ Form 136, Detailed Work Plan\) on page A-1-37](#)).

**TABLE A-1-8 Instructions for Completing PPQ Form 136, Detailed Work Plan**

Block name	Instructions
Detailed Work Plan	PLACE an X in the Detailed Work Plan box or CIRCLE Detailed Work Plan
Work Achievement Report	LEAVE blank
Plan Number	LIST the Work Unit number or Regional Designated number
Fiscal Year	LIST the current fiscal year
Est. Starting Date	ESTIMATE and ENTER the date the project
State	LIST the State where the project will occur

**TABLE A-1-8 Instructions for Completing PPQ Form 136, Detailed Work Plan**

Block name	Instructions
Pest	LIST the pest species and/or species complex
Counties	ENTER the county or counties where the project will occur
Environmental Assessment Name/ Number	LIST the applicable environmental assessment (EA) name and number  If applicable, LIST the date the Finding of No Significant Impact (FONSI) was signed
Environmental Monitoring Required	If environmental monitoring is required, then CHECK the YES box; if <b>not</b> required, CHECK <b>NO</b>
Pesticide/Biological Agent	ENTER the name of the pesticide/insecticide that will be used for the treatment
Formulation	LIST the formulation of the pesticide
Rate of Application	LIST the actual formulation (of the pesticide) per acre (the full recipe)  <b>EXAMPLE</b> Applying Dimilin at 10 oz. per acre, mixed into 16 oz. water per acre, or crop oil at 8 oz. per acre.
Number of Applications	LIST the number of times the area will be treated
Method of Treatment	LIST the method of treatment to be used (i.e., aerial, ground equipment, etc.)
Number of Aircraft Required	LIST the number of aircraft needed to treat the block in the appropriate time frame
Category of Aircraft	DETERMINE and LIST the category of aircraft needed
Number of Observation Aircraft Required	If observation aircraft are required, then ENTER the number required; if observation aircraft are not required, then ENTER NONE
Percent Congested Area	1. REFER to the program map for congested area(s) and consider ferry routes to the treatment block 2. LIST the percentage of the treatment block that contains the congested area(s)
Name and Location of Airstrip  Ferry Distance	1. LIST the name and city of the airstrip where the pesticide storage will be located 2. LIST the ferry distance (number of miles by air from the airstrip to the treatment block)
Location of pesticide storage	1. SELECT a storage site as close as possible to the airstrip 2. LIST the pesticide storage site location in relation to the airstrip and treatment area  <b>EXAMPLE</b> The pesticide is stored in the airport office.



**TABLE A-1-8 Instructions for Completing PPQ Form 136, Detailed Work Plan**

Block name	Instructions
Full Service Contract	If the contract is full-service (contractor arrange for or supplies all necessary equipment, supplies, and pesticide for the project), then CHECK the YES box  If the contract is <b>not</b> full-service, then CHECK the <b>NO</b> box
Type of Guidance	1. LIST the type of aircraft guidance (DGPS or Flagging) 2. LIST the party responsible for providing the aircraft guidance (contractor, Federal, State) 3. If preprinted in this block, line out or cross out Loran or GPS
Land Ownership	REFER to land ownership maps, and LIST the land owner by category (private, State, Federal Agency, etc.)
Acres	LIST the number of acres owned by the corresponding category (private, State, Federal Agency, etc.)
Other	LIST any other pertinent information
Costs	LIST in the appropriate blocks the amount expended under the appropriate columns
Salaries	1. ESTIMATE the salary expenditure for each category (PPQ, State, private, etc.) 2. LIST the cost in under the appropriate column category
Per Diem	1. ESTIMATE the travel/per diem for each category (PPQ, State, private, etc.) 2. LIST the cost in under the appropriate column category
Mileage and Vehicle Costs	1. REFER to the appropriate Western Region or Eastern Region Office mileage figures for agency-owned vehicles 2. USE actual figures for leased vehicles and GSA-owned vehicles 3. ESTIMATE the mileage and vehicle expenditure for each category (PPQ, State, private, etc.) 4. LIST the estimated cost in under the appropriate category
Misc. (Communications, supplies, etc.)	LIST the estimated costs for associated items that will be charged to the project (communications, supplies, and if any, ATV or motorcycles)
Pesticide Storage Costs and Tank Rental	LIST the estimated cost associated with pesticide storage and tank rental (containment dikes, local labor, equipment rental, cleanup following completion of project)
Pesticide	1. ESTIMATE the cost of the pesticide 2. DIVIDE the cost among the cooperators 3. LIST the cost for each under the appropriate column
Application	1. ESTIMATE the contractor's cost for pesticide application 2. DIVIDE the cost among the cooperators 3. LIST the cost for each under the appropriate column

**TABLE A-1-8 Instructions for Completing PPQ Form 136, Detailed Work Plan**

Block name	Instructions
Observation Aircraft	1. If observation aircraft will be used, then ESTIMATE the number of hours required for the project 2. MULTIPLY the number of hours x the hourly rate (SEE the Federal Prospectus) 3. DISTRIBUTE the costs between PPQ and State and LIST under the appropriate column
Other	1. LIST other others associated with the project 2. DISTRIBUTE the costs among the cooperators 3. LIST the cost under the appropriate column
Total	1. ADD the amount in the category (salaries, per diem, etc.) by row 2. ENTER the row total for each category
Total	1. ADD the amount by individual column (PPQ, State, Other, etc.) 2. ENTER the total for each column 3. ADD the <i>Total</i> row and ENTER the grand total
Remarks/Treatment Results	LIST any related information, details (if "Other" is selected in any of the proceeding blocks), or treatment results
Cost/Acre	1. DIVIDE the grand total costs by the number of acres in the treatment block 2. LIST the cost per acre
Signature of PPQ Plant Health Director	PPQ State Plant Health Director (SPHD) SIGNS this block
Date	State Plant Health Director (SPHD) ENTERS the date the form is complete

**Distribution of PPQ Form 136, Detailed Work Plan**

Distribute *PPQ Form 136, Detailed Work Plan*, as follows:

1. Complete the Work Checklist.
2. Make a copy of both the completed Detailed Work Plan and the Work Checklist.
3. Attach the Work Checklist to the Detailed Work Plan.
4. Send the original to the appropriate Western Region or Eastern Region Office.
5. File a copy in the program files.

## Work Checklist (accompanies PPQ Form 136, Detailed Work Plan)

WORK CHECKLIST				
1. Enter the following information: Detailed Work Plan number: _____ Environmental Assessment number: _____ Date the FONSI was signed: _____				
2. Has the U.S. Fish and Wildlife been contacted to identify issues and concerns regarding endangered species in the projected treatment area? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable				
3. Will an Essential Data Sheet be prepared to contract for aerial application? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable				
4. Will pesticide and storage facilities be ordered? Pesticide? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable Storage facilities? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable				
5. Will resources for environmental monitoring be needed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not applicable <input type="checkbox"/> Planned & Ready				
6. Estimate the acreage for each type of land ownership involved in the program. Also, indicate the following status of related documents: Y (Yes), N (No), or NA (Not applicable).				
Land Ownership	Estimated Acreage	Request Letter	Cooperative Agreement	Escrow Letter
Private				
State				NA
Bureau of Land Management (BLM)			NA	NA
U.S. Forest Service (FS)			NA	NA
Bureau of Indian Affairs (BIA) / Tribal Authority			NA	NA
Rural Development (FSA)			NA	NA
Bureau of Reclamation			NA	NA
Military			NA	NA
Other:				
7. Remarks:				

FIGURE A-1-13 Example of Work Checklist (accompanies PPQ Form 136, Detailed Work Plan)

## Purpose

The Work Checklist is used to ensure that all necessary activities are done for each aerial application contract. The checklist accompanies the complete *PPQ Form 136, Detailed Work Plan*.

## Instructions

Use the completed *PPQ Form 136, Detailed Work Plan*, and follow the instructions in **Table A-1-9** to complete the work checklist for each aerial application contract.

**TABLE A-1-9 Instructions for Completing Work Checklist (Attachment to Completed PPQ Form 136, Detailed Work Plan)**

Block		Instructions
1	Detailed Work Plan Number	ENTER the Detailed Work Plan Number (see the completed <i>PPQ Form 136, Detailed Work Plan</i> )
	Environment Assessment Number	ENTER the Environmental Assessment Number (see the completed <i>PPQ Form 136, Detailed Work Plan</i> )
	DATE the FONSI was signed	ENTER the date the Finding of No Significant Impact (FONSI) was signed (see the FONSI)
2	Has the U.S. Fish and Wildlife been contacted to identify issues and concerns regarding endangered species in the projected treatment area?	<p>If the U.S. FWS has been contacted, CHECK the <b>YES</b> box</p> <p>If the FWS should be contacted, but has <b>not</b> been contacted yet, then CHECK the <b>NO</b> box</p> <p>If the FWS does <b>not</b> need to be contacted, CHECK the <b>NOT APPLICABLE</b> box</p>
3	Will an Essential Data Sheet be prepared to contract for aerial application?	<p>If an Essential Data Sheet will be or has been prepared, then CHECK the <b>YES</b> box</p> <p>If an Essential Data Sheet will be <b>not</b> be prepared, CHECK the <b>NO</b> box</p> <p>If an Essential Data Sheet is not required, then CHECK the <b>Not Applicable</b> box</p>
4	Will pesticide and storage facilities be ordered?	<p>If pesticide facilities will be ordered, then CHECK the <b>YES</b> box</p> <p>If pesticide will <b>not</b> be ordered, CHECK the <b>NO</b> box</p> <p>If storage facilities will be needed, then CHECK the <b>YES</b> box</p> <p>If storage facilities will not be needed, then CHECK the <b>NO</b> box</p>
5	Will resources for environmental monitoring be needed?	<p>If resources for environmental monitoring will be needed, then CHECK the <b>YES</b> box</p> <p>If resources for environment monitoring will <b>not</b> be needed, then CHECK the <b>NO</b> box</p> <p>If resources will not be needed because environmental monitoring is <b>not</b> required, then CHECK the <b>NOT APPLICABLE</b> box</p>

**TABLE A-1-9 Instructions for Completing Work Checklist (Attachment to Completed PPQ Form 136, Detailed Work Plan)**

<b>Block</b>		<b>Instructions</b>
6	Estimate the acreage for each type of land ownership involved in the program. Also, indicate the following status of related documents	<ol style="list-style-type: none"> <li>1. ESTIMATE the acreage by land owner (private, State, Bureau of Land Management (BLM), U.S. Forest Service (FS), Bureau of Indian Affairs (BIA)/Tribal Authority, Rural Development (FSA), Bureau of Reclamation, Military, Other</li> <li>2. LIST the acreage in the appropriate block</li> <li>3. If a cooperative agreement is required and has been signed, then ENTER a <b>Y</b>; if a cooperative agreement is required, but has <b>not</b> been signed, then ENTER an <b>N</b>; if a cooperative agreement is <b>not required</b>, ENTER <b>NA</b></li> <li>4. If an escrow letter is required ENTER a <b>Y</b>; if an escrow letter is required but has <b>not</b> been received, ENTER an <b>N</b>; if an escrow letter is not required, ENTER <b>NA</b></li> </ol>
7	Remarks	ENTER any relevant remarks

### **Distribution**

Distribute the Work Checklist as follows:

- 1.** Complete the Work Checklist.
- 2.** Make a copy of the completed Work Checklist.
- 3.** Attach the Work Checklist to the completed *PPQ Form 136, Detailed Work Plan*.
- 4.** Send the original to the appropriate Western Region or Eastern Region Office.
- 5.** File a copy in the program files.

## PPQ Form 136, Work Achievement Report

USDA-APHIS-PPQ R Detailed Work Plan R Work Achievement Report			Plan Number		Fiscal Year	
			Est. Starting Date		State	
Pest (List species and/or species complex)				Counties		
Environmental Assessment Name/Number					Environmental Monitoring Required R Yes R No	
Pesticide/Biological Agent				Formulation		
Rate of Application				Number of Applications		
Method of Treatment						
Number of Aircraft Required				Category of Aircraft		
Number of Observation Aircraft Required				Percent Congested Area		
Name and Location of Airstrip				Location of Pesticide Storage		
Ferry Distance:						
Full Service Contract R Yes R No				Type of Guidance (Loran, GPS, etc.)		
Land Ownership Specify Private, State, Federal Agency, etc.			Acres		Other	
Costs	PPQ	State	Other	Other	Other	Total
Salaries						
Per Diem						
Mileage and Vehicle Costs						
Misc. (Communications, Supplies, etc.)						
Pesticide Storage Costs and Tank Rental						
Pesticide						
Application						
Observation Aircraft						
Other:						
Other:						
Total						
Remarks/Treatment Results					Cost/Acre	
Signature of PPQ Plant Health Director				Date		

PPQ Form 136 (January 95) Previous editions are obsolete

FIGURE A-1-14 Example of PPQ Form 136, Work Achievement Report

## Purpose

*PPQ Form 136, Work Achievement Report*, is used to report the actual direct and associate costs of a treatment program.

PPQ Form 136 is a multi-use form that can also be completed as a Detailed Work Plan (DWP).

## Instructions for Completing PPQ Form 136, Work Achievement Report

Refer to the financial statement to complete *PPQ Form 136, Work Achievement Report* (see [Prepare the Financial Statement on page 4-8-4](#)),

**TABLE A-1-10 Instructions for Completing PPQ Form 136, Work Achievement Report**

Block name	Instructions
Detailed Work Plan	LEAVE blank
Work Achievement Report	PLACE an X in the Work Achievement Report box or CIRCLE
Plan Number	LIST the Work Unit number or Regional Designated number
Fiscal Year	LIST the current fiscal year
Est. Starting Date	ENTER the date of the project
State	LIST the State where the project is located
Pest	LIST the pest species and/or species complex
Counties	LIST the county or counties where the project is located
Environmental Assessment Name/Number	LIST the appropriate environmental assessment (EA) name and number
Environmental Monitoring Required	If environmental monitoring is required, then CHECK the YES box; if <b>not</b> required, CHECK <b>NO</b>
Pesticide/Biological Agent	ENTER the name of the pesticide/insecticide used for the treatment
Formulation	LIST the formulation of the pesticide
Rate of Application	LIST the actual formulation (of the pesticide) per acre (the full recipe)  <b>EXAMPLE</b> Applying Dimilin at 10 oz. per acre, mixed into 16 oz. water per acre, or crop oil at 8 oz. per acre.

**TABLE A-1-10 Instructions for Completing PPQ Form 136, Work Achievement Report**

Block name	Instructions
Number of Applications	LIST the number of times the area was treated
Method of Treatment	LIST the method of treatment used (i.e., aerial, ground equipment, etc.)
Number of Aircraft Required	LIST the number of aircraft used to treat the block in the appropriate time frame
Category of Aircraft	LIST the category of aircraft used
Number of Observation Aircraft Required	If observation aircraft were used, then ENTER the number If observation aircraft were <b>not</b> used, then ENTER NONE
Percent Congested Area	1. REFER to the program map for congested area(s) and consider ferry routes to the treatment block 2. LIST the percentage of the treatment block that contains the congested area(s)
Name and Location of Airstrip  Ferry Distance	1. LIST the name and city of the airstrip where the pesticide storage is located 2. LIST the ferry distance (number of miles by air from the airstrip to the treatment block)
Location of pesticide storage	LIST the pesticide storage site location in relation to the airstrip and treatment area
Full Service Contract	If the contract is full-service (contractor arrange for or supplies all necessary equipment, supplies, and pesticide for the project), then CHECK the YES box If the contract is <b>not</b> full-service, then CHECK the <b>NO</b> box
Type of Guidance	1. LIST the type of aircraft guidance (DGPS or Flagging) 2. LIST the party responsible for providing the aircraft guidance (contractor, Federal, State) 3. If preprinted in this block, line out or cross out Loran or GPS
Land Ownership	REFER to land ownership maps, and LIST the land owner by category (private, State, Federal Agency, etc.)
Acres	LIST the number of acres owned by the corresponding category (private, State, Federal Agency, etc.)
Other	LIST any other information
Costs	LIST the actual expenditure amount under the appropriate columns as listed in the blocks
Salaries	LIST the actual salary expenditure for each category (PPQ, State, private, etc.)
Per Diem	LIST the travel/per diem for each category (PPQ, State) under the appropriate column category



**TABLE A-1-10 Instructions for Completing PPQ Form 136, Work Achievement Report**

Block name	Instructions
Mileage and Vehicle Costs	<ol style="list-style-type: none"> <li>1. REFER to the appropriate Western Region or Eastern Region Office mileage figures for agency-owned vehicles</li> <li>2. USE actual figures for leased vehicles and GSA-owned vehicles</li> <li>3. LIST the actual mileage and vehicle expenditure for each category (PPQ, State, private, etc.)</li> </ol>
Misc. (Communications, supplies, etc.)	LIST the actual costs for associated items charged to the project (communications, supplies, and if any, ATV or motorcycles)
Pesticide Storage Costs and Tank Rental	LIST the actual cost associated with pesticide storage and tank rental (containment dikes, local labor, equipment rental, cleanup following completion of project)
Pesticide	<ol style="list-style-type: none"> <li>1. ESTIMATE the cost of the pesticide</li> <li>2. DIVIDE the cost among the cooperators</li> <li>3. LIST the cost for each under the appropriate column</li> </ol>
Application	<ol style="list-style-type: none"> <li>1. LIST the contractor's actual cost for pesticide application (cost may be distributed; if appropriate DIVIDE the cost among the cooperators)</li> <li>2. LIST the actual cost for each under the appropriate column</li> </ol>
Observation Aircraft	<ol style="list-style-type: none"> <li>1. If a contractor observation aircraft was used</li> <li>2. CALCULATE the actual number of hours used for the project</li> <li>3. MULTIPLY the number of hours x the hourly rate (SEE the Federal Prospectus)</li> <li>4. DISTRIBUTE the costs between PPQ and State</li> </ol>
Other	<ol style="list-style-type: none"> <li>1. LIST other others associated with the project</li> <li>2. DISTRIBUTE the costs as appropriate</li> </ol>
Total	<ol style="list-style-type: none"> <li>1. ADD the amount in the category (salaries, per diem, etc.) by row</li> <li>2. ENTER the row total for each category</li> </ol>
Total	<ol style="list-style-type: none"> <li>1. ADD the amount by individual column (PPQ, State, Other, etc.)</li> <li>2. ENTER the total for each column</li> <li>3. ADD the <i>Total</i> row and ENTER the grand total</li> </ol>
Remarks/Treatment Results	LIST any related information or treatment results
Cost/Acre	<ol style="list-style-type: none"> <li>1. TOTAL all columns and rows to achieve the grand total</li> <li>2. DIVIDE the grand total costs by the number of acres in the treatment block</li> <li>3. LIST the cost per acre</li> </ol>
Signature of PPQ Plant Health Director	PPQ State Plant Health Director (SPHD) SIGNS this block
Date	State Plant Health Director (SPHD) ENTERS the date the form is complete

### **Distribution of PPQ Form 136, Work Achievement Report**

Distribute PPQ Form 136, Work Achievement Report, as follows:

- 1.** Gather the financial statement, the program map, and the cooperator's billing letters. Make a copy of each.
- 2.** Make a copy of the completed PPQ Form 136, Work Achievement Report.
- 3.** Attach the financial statement, the program map, and a copy of the cooperator's billing letters to the original PPQ Form 136, Work Achievement Report.
- 4.** Send the original packet to the appropriate Region Office (Western Region or Eastern Region).
- 5.** File a copy of the packet in the program file.

PPQ Form 802, Daily Aircraft Record

PRESS HARD WITH BALL POINT PEN - YOU ARE MAKING FOUR COPIES

U.S. DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE PLANT PROTECTION AND QUARANTINE		DATE 6-22-05	CONTRACT NO. 53-6390-5-0057	PEST Grasshopper
<b>DAILY AIRCRAFT RECORD</b>		STATE MT	COUNTY POWELL	BLOCK DWP MT 100-05
CONTRACTOR'S NAME AND MAILING ADDRESS (include Zip Code)				
ABC Aero Applicators PO Box 1234 SOMERS, CO 80700				
PESTICIDE Dimilin (102.)	APPLICATION RATE/ACRE 32oz. mix			
APPLICATION AIRCRAFT MAKE/MODEL Turbine Air Tractor AT 402 B	FOR USE WHEN PAYMENT IS BY THE HOUR		OBSERVATION AIRCRAFT MAKE/MODEL	
REGISTRATION NO. N 5000Q	TACHOMETER OR HOBBS METER		REGISTRATION NO. N	
		End		
		Start		
		Total Hours		

TRIP NO.	TAKE-OFF LOCAL TIME	LANDING LOCAL TIME	HRS. & MIN.	TAKE-OFF GALS./LBS.	LANDING GALS./LBS.	APPLIED GALS./LBS.	ACRES	REMARKS
1	525	650	1 HR. 15 MIN.	352	5	347	1388	
2	705	810	1 HR. 5 MIN.	357	5	352	1408	
3	825	920	55 MIN.	357	5	352	1408	
4	940	1045	1 HR. 5 MIN.	357	5	352	1408	
5	1100	1210	1 HR. 10 MIN.	357	5	352	1408	
6	1230	1400	1 HR. 30 MIN.	357	0	357	1428	
				TOTAL GALS./LBS. LOADED ON AIRCRAFT →	2137			
				TOTAL GALS./LBS. DRAINED OR REMAINED ON AIRCRAFT →	- 0			
						TOTAL GALS./LBS. APPLIED AND ACRES TREATED →	2112 8448	

COMMENTS (Record all periods of shutdown and reasons therefor. If shutdown is caused by an aircraft, be sure to identify the aircraft by number.)

TOTAL of 66 gallons of Dimilin used in treatment block.

SIGNATURE OF TIMEKEEPER <i>John L. Harris</i>	SIGNATURE OF APPLICATION CONTRACTOR'S REPRESENTATIVE <i>Marcell Smith</i>
--	--

PPQ FORM 802 (MAR 92) (Previous editions are obsolete.) PART 1 - FIELD SERVICING OFFICE

FIGURE A-1-15 Example of PPQ Form 802, Daily Aircraft Record (blank)

## Purpose

PPQ Form 802, *Daily Aircraft Record*, is a legal, written record of spray operations for a given day. Payments to the contractor are based on information entered on these forms. PPQ Form 802, *Daily Aircraft Record*, provides for either one application aircraft or observation aircraft on each form.

## Instructions for Completing PPQ Form 802, Daily Aircraft Record

Complete a separate PPQ Form 802 for the observation aircraft, and a separate PPQ Form 802 for the application aircraft.

Under current operating conditions, an aircraft seldom makes 10 flights per day. If more than 10 flights are made in one day, then complete an additional form and continue the flight numbering sequence and make a notation in the *Comments* section.

Accurately complete all items on the form. Under *Comments*, be sure to record all periods aircraft is **not** operational and the reason.

PPQ Form 802 should be signed by the contractor's designated representative and the airport recorder (timekeeper) at the end of operations each day.

Should the contractor or his/her representative disagree with comments listed on the PPQ Form 802, "signed under protest" may be entered on the form. If the subject is controversial, the versions of both the COR and the contractor's representative may be written on the reverse side of the PPQ Form 802. If the versions are lengthy, they may be written in the *Comments* section of the form and continued on the back of the form. Then the CO should be immediately contacted.



As each aircraft is released from the program, note this on the last PPQ Form 802 for that aircraft and record the release in the Daily Log. This will provide a complete record of each aircraft and will account for all work days.

If one or more aircraft are released under the *Termination for Convenience of the Government* section of the contract, then the CO **must** be notified immediately by telephone.

**TABLE A-1-11 Instructions for Completing PPQ Form 802, Daily Aircraft Record**

<b>Block</b>	<b>Instructions</b>
DATE	1. LIST today's date for the record 2. If spray operations were canceled for some reason (such as weather), then COMPLETE PPQ Form 802 for that date and note the reason under <i>Block 29, COMMENTS</i>
CONTRACT NO.	LIST the contract number received from MBS
PEST	LIST the pest or program name
STATE	LIST the State where the treatment is being conducted
COUNTY	LIST the county or counties where the treatment is conducted
BLOCK	LIST the designated name of the treatment block
CONTRACTOR'S NAME AND MAILING ADDRESS	LIST the contractor's name and complete mailing address, include Zip Code (see the contract)
PESTICIDE	LIST the name and formulation of the pesticide being used (i.e., Sevin XLR Plus®, Fyfanon ULV®, etc.)
APPLICATION RATE/ACRE	LIST the application rate being used (i.e., 20.0 fl. oz. per acre, 32 oz. mix etc.)
APPLICATION AIRCRAFT MAKE/MODEL	◆ If form is completed for application aircraft, then LIST the make and model number of the <b>application</b> aircraft (i.e., Cessna 188, 600 hp Thrush, Turbine Air Tractor, etc.) (see <i>Federal Prospectus</i> )  ◆ If form is completed for <b>observation</b> aircraft, then leave this block <b>blank</b>
REGISTRATION NUMBER	◆ If form is completed for application aircraft, then LIST the "N" number located on the <b>application</b> aircraft  ◆ If form is completed for <b>observation</b> aircraft, then leave this block blank
TACHOMETER OR HOURS METER	FOR USE WHEN PAYMENT IS BY THE HOUR  If payment is not by the hour, then <b>leave</b> the <i>START</i> , <i>END</i> , and <i>TOTAL HOURS</i> blocks <b>blank</b>
START	RECORD the reading (in hours) when the observation aircraft begins the trip; be sure to include the tenths and hundredths digits
END	RECORD the reading (in hours) when the observation aircraft finishes the trip or finishes for the day
TOTAL HOURS	SUBTRACT the time listed in <i>Block 14</i> from the time listed in <i>Block 15</i> and record the total time, including tenths and hundredths (this figure is used to calculate payment to the contractor)

**TABLE A-1-11 Instructions for Completing PPQ Form 802, Daily Aircraft Record**

Block	Instructions
OBSERVATION AIRCRAFT MAKE/MODEL	 <p><b>Important</b></p> <p><b>Do not</b> record observation aircraft information on the same form as the application aircraft.</p> <ul style="list-style-type: none"> <li>◆ If form is completed for observation aircraft, then LIST the make and model of the <b>observation</b> aircraft (i.e., Cessna 182, Mooney 201, etc.)</li> <li>◆ If form is completed for application aircraft, then <b>leave</b> this block <b>blank</b></li> </ul>
REGISTRATION NO.	<p>Use this block <b>only</b> if the form is being used to record information for the <b>observation</b> aircraft</p> <p>LIST the “N” number as found on the <b>observation</b> aircraft</p>
TRIP NO.	RECORD the trips in sequence of the application aircraft, beginning with 1
TAKE-OFF LOCAL TIME	RECORD the time the aircraft takes off from the airstrip
LANDING LOCAL TIME	 <p><b>Important</b></p> <p>Take off and landing time is considered when full power is applied for the purpose of take off and landing when the aircraft comes to a stop at the refueling or loading site.</p>
HRS & MINS	RECORD the elapsed time the trip lasted in hours and minutes
TAKE-OFF GALS/LBS	RECORD the number of gallons/pounds of pesticide loaded on the aircraft (this is the number taken from the meter in the loading process or the total weight of dry material)
LANDING GALS/LBS	RECORD the number of gallons/pounds of pesticide remaining in the aircraft after returning from a trip
APPLIED GALS/LBS	SUBTRACT the number of recorded in <i>the Landing Gals/LBS block</i> from the number in <i>TAKE-OFF GALS/LBS</i> and list the difference
ACRES	LIST the total acres treated for the trip
REMARKS	RECORD any pertinent details regarding the trip (such as landing due to plugged nozzles, weather, etc.)
TOTAL GALS/LBS LOADED ON AIRCRAFT	ADD the entire column of <i>Take-off GALS/LBS</i> and record the total
TOTAL GALS/LBS DRAINED OR REMAINED ON AIRCRAFT	ADD the entire column of <i>LANDING GALS/LBS</i> and record the total
TOTAL GALS/LBS APPLIED AND ACRES TREATED	ADD the entire column <i>APPLIED GALS/LBS</i> and record the total

**TABLE A-1-11 Instructions for Completing PPQ Form 802, Daily Aircraft Record**

Block	Instructions
COMMENTS	<ul style="list-style-type: none"> <li>◆ RECORD any pertinent information or explanations in this section (i.e., leaks, aircraft pesticide jettison, unsafe practices, protests, etc.)</li> <li>◆ RECORD all periods of shutdown and reasons for shutdown; if shutdown is caused by aircraft, then be sure to identify and list the aircraft by number</li> <li>◆ Continue writing on the back of the form if needed</li> </ul>
SIGNATURE OF TIMEKEEPER	Timekeeper signs
SIGNATURE OF APPLICATION CONTRACTOR'S REPRESENTATIVE	Application contractor's representative signs

### Distribution of PPQ Form 802

Distribute PPQ Form 802 as follows:

1. Attach *Part 1* (White) of PPQ Form 802 to APHIS Form 329 and mail both forms to MBS at the following address:

USDA-APHIS-MBS  
 xx

2. Give *Part 2* (Pink) to the contractor's representative.
3. Retain *Part 3* (Green) for office files.
4. Forward *Part 4* (Yellow) to the address listed below:

USDA-APHIS-PPQ  
 Aircraft and Equipment Operations  
 22675 N. Moorefield Road, Bldg. 6415  
 Edinburg, TX 78541-9398

Phone: 956-580-7270  
 FAX: 956-580-7276

## PPQ Form 816, Contract Pilot and Aircraft Acceptance

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0579-0298. The time required to complete this information collection is estimated to average .25 hours per response, including the time for reviewing instructions, searching existing sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

**FORM APPROVED  
 OMB NUMBER  
 0579-0298**

U.S. DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE PLANT PROTECTION AND QUARANTINE  <b>CONTRACT PILOT AND AIRCRAFT ACCEPTANCE</b>	1. PROGRAM	2. REGION
	3. INSPECTION SITE	4. CONTRACT NO.
6. CONTRACTOR'S NAME & MAILING ADDRESS (Include Zip code)	7. REGISTERED AIRCRAFT OWNER'S NAME & MAILING ADDRESS (Include Zip code)	
TELEPHONE NO. _____	TELEPHONE NO. _____	
8. STATE APPLICATOR BUSINESS LICENSE & EXPIRATION DATE :	9. FAA AG CERTIFICATE NO.	10. CONGESTED AREA WAIVER, IF REQUIRED YES ___ NO ___ N/A ___

**PILOT INFORMATION (NOTE: FOR OBSERVATION PILOT COMPLETE BLOCKS 11 - 20 ONLY)**

11. PILOT'S NAME & MAILING ADDRESS (Include Zip code)	16. GOVERNMENT ISSUED PHOTO ID : YES ___ NO ___ (Passport, Driver's License)	
	17. TOTAL TIME : _____ (1,000 Hours minimum)	
TELEPHONE NO. _____	18. TOTAL PIC TIME IN TYPE (ie: AT-301, C - 182 ) : _____ 25 hours minimum	
12. CERTIFICATE & NO. (ATP or Commercial) :	19. TOTAL AG AND / OR OBSERVATION TIME : _____ ( Observation Pilot ) 50 hours minimum	
13. RATINGS :	20. OBSERVATION PILOT / APPLICATOR LETTER OF COMPETENCY : YES ___ NO ___	
14. MEDICAL CLASS / DATE :	21. TOTAL AG TIME : _____ (100 Hours minimum)	
15. FLIGHT REVIEW DATE :	22. STATE OF ISSUE , APPLICATOR LICENSE NO. & EXPIRATION DATE :	

**AIRCRAFT INFORMATION (NOTE: FOR OBSERVATION AIRCRAFT COMPLETE BLOCKS 23 - 30 ONLY)**

23. AIRCRAFT REGISTRATION NO. <b>N</b>	28. PROOF OF INSURANCE : YES ___ NO ___	
24. MAKE / MODEL :	29. SPEED (MPH) :	33. RATE / ACRE :
25. DATE OF ANNUAL INSPECTION :	30. DATE AVAILABLE :	34. ASSIGNED SWATH :
26. AIRCRAFT TIME SINCE 100 HOUR INSPECTION :	31. CATEGORY- A, B, C or D :	35. GUIDANCE TYPE : Precision DGPS Make : _____ Non-Precision ( Flagging, Kytoons etc.) _____
27. AIRWORTHINESS CERTIFICATE CATEGORY :	32. CHEMICAL :	

**APPLICATION SYSTEMS**

**DRY**

36. SPREADER : MAKE _____ MODEL _____	39. AIR AGITATION, RAM AIR INTAKE AND VENT TUBE FLOW REGULATOR INSTALLED PROPERLY : YES ___ NO ___
37. SPREADER CLEAN AND FREE OF CONTAMINATION : YES ___ NO ___	40. SPECIAL EQUIPMENT REQUIRED (Flagman, smoker etc.) SPECIFY :
38. SPRAY TANK CLEAN / DRY AND INTERNAL VALVES SEALED : YES ___ NO ___	41. IF OPERATING OVER CONGESTED AREAS, AN EMERGENCY HOPPER JETTISON DEVICE REQUIRED BY FAR 137.53 (C)(2): YES ___ NO ___

PPQ Form 816  
September 2006

**FIGURE A-1-16 Example of PPQ Form 816, Contract Pilot and Aircraft Acceptance (front)**



<b>APPLICATION SYSTEMS ( cont'd )</b>		
LIQUID	YES	NO
42. Spray tank interior dry and cleaned of all contamination :		
43. Leak proof - Check condition of hoses, gate seal, and other spray system components :		
44. Equipped with dump valve that meets agricultural part FAR 137.53 (C) (2) :		
45. Drain valve(s) located at lowest point(s) in the system :		
46. Emergency shut-off valve located between the hopper and pump - ask for demonstration :		
47. Bleed lines installed on spray booms when required (See prospectus for correct installation of bleed lines) :		
48. Pump with capacity to deliver 40 PSI to all spray nozzles :		
49. Functional pressure guage with a minimum range of zero to 60 but no greater than zero to 100 PSI :		
50. In line strainer - between pump and boom :		
51. Unused nozzles removed and openings plugged :		
52. Special equipment required - i.e., flagman, smoker (Specify) :		
53. A method to determine the amount of chemical in the hopper; in flight and on the ground :		
54. NO. OF NOZZLES INSTALLED FOR APPLICATION : _____	55. SPRAY TIP AND STRAINER SIZE, i.e., SS 8002/50 MESH (See prospectus for specific aircraft and tip size) :	56. OPERATING BOOM PRESSURE (PSI) :
<b>DEFICIENCIES NOTED :</b>		
_____		
_____		
<b>DEFICIENCIES CORRECTED:</b>		
_____		
_____		
<b>REMARKS:</b>		
_____		
_____		
<b>CERTIFICATION</b>		
<i>I certify that I have completed the above inspections and have noted findings as:</i> <input type="checkbox"/> ACCEPTABLE <input type="checkbox"/> UNACCEPTABLE		
57. OFFICIAL SIGNATURE	TITLE	DATE
58. PILOT/CONTRACTOR SIGNATURE	TITLE	DATE
PPQ FORM 816 (Reverse)		

FIGURE A-1-17 Example of PPQ Form 816, Aircraft and Pilot Qualification Acceptance (back)

### Purpose

PPQ Form 816, *Aircraft and Pilot Qualification Acceptance*, is used to document the results of the pilot and aircraft check-in inspection. The Contracting Officer's Representative (COR) or the PPQ Pilot reviews the information on the completed *Aircraft and Pilot Qualification Acceptance Report* to verify that all contract specifications are met before the pilot and aircraft are allowed to perform the contracted work. See [Pilot and Aircraft Inspection on page 3-12-1](#).


### Instructions for Completing PPQ Form 816

Follow the instructions given in [Table A-1-12](#). For inspection information, see [Pilot and Aircraft Inspection on page 3-12-1](#).

**TABLE A-1-12 Instructions for the Aircraft and Pilot Qualification Acceptance Report**

Block		Instructions		
1	PROGRAM	LIST <b>only</b> the acronym for the name of the program  <table border="1"> <tr> <td><b>EXAMPLE</b></td> <td>Western Boll Weevil Eradication Program (WRBWEP)</td> </tr> </table>	<b>EXAMPLE</b>	Western Boll Weevil Eradication Program (WRBWEP)
<b>EXAMPLE</b>	Western Boll Weevil Eradication Program (WRBWEP)			
2	REGION	LIST <b>only</b> the acronym for the name of region in which the program is being conducted  <table border="1"> <tr> <td><b>EXAMPLE</b></td> <td>Western Region (WR)</td> </tr> </table>	<b>EXAMPLE</b>	Western Region (WR)
<b>EXAMPLE</b>	Western Region (WR)			
3	INSPECTION SITE	LIST the name of the site where the inspection is made  <table border="1"> <tr> <td><b>EXAMPLE</b></td> <td>Morris Airstrip</td> </tr> </table>	<b>EXAMPLE</b>	Morris Airstrip
<b>EXAMPLE</b>	Morris Airstrip			
4	CONTRACT NO.	LIST the number of the aerial application contract		
5	DATE	LIST the check-in date (date inspection conducted)		
6	CONTRACTOR'S NAME AND MAILING ADDRESS (include Zip code)	LIST the contractor's name, mailing address, and Zip code		
	TELEPHONE NO.	LIST the contractor's telephone number		

**TABLE A-1-12 Instructions for the Aircraft and Pilot Qualification Acceptance Report  
 (continued)**

Block		Instructions
7	REGISTERED AIRCRAFT OWNER'S NAME AND MAILING ADDRESS (include Zip code)	1. CHECK the aircraft registration certificate registration number, aircraft serial number, make/model, and to whom issued and VERIFY the registration marks (tail number) on the aircraft are the same as listed on the certificate (see <a href="#">PPQ Form 816, Contract Pilot and Aircraft Acceptance on page A-1-50</a> ) 2. If the contractor is the registered owner, WRITE "SAME"   <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>The registration certificate is <b>not</b> required to be carried in agricultural aircraft, but <b>must</b> be available for inspection at the site from which flight operation is being conducted. Commercial nonagricultural observation aircraft <b>must</b> have the registration certificate on board at all times.</p> </div>
	TELEPHONE NO.	LIST the registered aircraft owner's telephone number
8	STATE APPLICATOR BUSINESS LICENSE/ EXPIRATION DATE	1. CHECK the contractor's pesticide license (issued to the business; <b>do not</b> confuse with the State applicator license issued to the pilot ( <i>Block 22</i> )) 2. LIST the registration number and expiration date as shown on the document (see <a href="#">State Pesticide Applicator's License (Business) on page B-1-7</a> )
9	FAA AG CERTIFICATE NO.	1. REVIEW the operator's FAA Agricultural Operating Certificate 2. RECORD the certificate number found in the lower left hand corner of the document (see <a href="#">FAA Operating Certificate on page B-1-3</a> )
10	CONGESTED AREA WAIVER, IF REQUIRED	If the treatment is being conducted in a congested area, then CHECK the appropriate block to indicate whether a congested area waiver (letters of approval) is on file (if required), YES (required and on file) <b>NO</b> ( <b>not</b> on file), or N/A ( <b>not</b> required)
<b>PILOT INFORMATION</b>		If for <b>OBSERVATION</b> PILOT, then COMPLETE BLOCKS 11-20 <b>ONLY</b>
11	PILOT'S NAME & MAILING ADDRESS (Include Zip code)	1. ASK for the pilot's current address and telephone number (the address listed on the Pilot Certificate is not always correct) 2. LIST the pilot's current name and mailing address
	TELEPHONE NO.	LIST the pilot's current telephone number
12	CERTIFICATE & NO. (ATP or Commercial)	1. CHECK the FAA Pilot's Certificate for the certificate number (located on front) and certificate type (located on back) 2. LIST the type of certificate (Commercial or Airline Transport Pilot (ATP)) and the certificate number
13	RATINGS	1. CHECK the pilot's certificate for ratings and limitations (located on back) 2. LIST the pilot's ratings and limitations

**TABLE A-1-12 Instructions for the Aircraft and Pilot Qualification Acceptance Report  
 (continued)**

Block		Instructions
14	MEDICAL CLASS/ DATE	<ol style="list-style-type: none"> <li>CHECK the pilot's Medical Certificate for the class (First or Second required) and date of examination. A First Class certificate expires after 6 months, but becomes valid for the next 6 months as a Second Class certificate (for a total of 12 months). A certificate originally issued as Second Class is valid for 12 months.</li> <li>LIST the class of the certificate (First or Second) and the date of the examination</li> </ol>
15	FLIGHT REVIEW DATE	LIST the date the flight was reviewed by a certified instructor and the pilot's logbook was endorsed by the certified instructor who gave the review
16	GOVERNMENT ISSUED PHOTO ID	If the pilot presented the required identification (issued by Federal or State government such as passport or driver's license, then CHECK YES; if the pilot did not present the identification, check NO
17	TOTAL TIME	<ol style="list-style-type: none"> <li>ASK the pilot for the total flight time (must be 1,000 hours PIC minimum); if there is any doubt about the hours, CHECK the pilot's logbook</li> <li>LIST the total flight hours</li> </ol>
18	TOTAL TIME IN TYPE	<ol style="list-style-type: none"> <li>ASK the pilot for the total time in type (this is for information only)</li> <li>ENTER the total time</li> <li>If the pilot meets all other requirements and experience, then there are <b>no</b> additional minimum requirements for total time in type, and the pilot should be accepted</li> </ol>
19	TOTAL AG and/or OBSERVATION TIME	<ol style="list-style-type: none"> <li>ASK the pilot for the total agricultural (AG) aviation time; if there is any doubt about the hours, CHECK the pilot's logbook</li> <li>LIST the total AG time or observation time (<b>must</b> be 50 hours minimum)</li> </ol>
20	OBSERVATION PILOT (APPLICATOR LETTER OF COMPETENCY)	<ol style="list-style-type: none"> <li>ASK for the pilot's letter of competency</li> <li>If the pilot has been issued an agricultural pilot letter of competency, then CHECK YES; if <b>not</b> or if the letter is not valid or is missing, then CHECK NO</li> </ol>
21	TOTAL AG TIME	<ol style="list-style-type: none"> <li>CHECK the pilot's logbook or ask the pilot to obtain the total AG time; 100 hours minimum is required</li> <li>If the pilot has at least 100 hours minimum AG time, then list the hours; if not, list under Deficiencies Noted</li> </ol>
22	STATE OF ISSUE, APPLICATOR LICENSE NO. & EXPIRATION DATE	<ol style="list-style-type: none"> <li>REVIEW the pilot's State Applicator License for the license number and date of expiration</li> <li>LIST the State where the license was issued, the license number, and expiration date</li> </ol>
<b>AIRCRAFT INFORMATION</b>		<b>FOR OBSERVATION AIRCRAFT COMPLETE BLOCKS 23-30 ONLY</b>

**TABLE A-1-12 Instructions for the Aircraft and Pilot Qualification Acceptance Report  
(continued)**

Block		Instructions
23	AIRCRAFT REGISTRATION NO.	<ol style="list-style-type: none"> <li>CHECK the aircraft registration certificate for the number listed in the <i>Nationality and Registration Marks</i> block and the number painted on the side of the aircraft fuselage and verify they are the same</li> <li>LIST the aircraft N/tail number</li> </ol>
24	MAKE/MODEL	<ol style="list-style-type: none"> <li>CHECK the make and model number found on the aircraft registration certificate's <i>Manufacturer and Manufacturer's Designation</i> of Aircraft block</li> <li>LIST the make and model number of the aircraft</li> </ol>
25	DATE OF ANNUAL INSPECTION	<ol style="list-style-type: none"> <li>CHECK the aircraft logbook entry for the date of the last annual inspection signed by a licensed FAA mechanic with inspection authorization (indicated by IA at the end of the inspection number); if more than 12 months have elapsed, then a new inspection is required</li> <li>LIST the annual inspection date</li> </ol>
26	AIRCRAFT TIME SINCE 100 HOUR INSPECTION	<ol style="list-style-type: none"> <li>CHECK the aircraft logbook for the number of hours flown since the last inspection; if more than 100 have been flown, then another inspected is required</li> <li>LIST the number of hours flown since the last 100-hour inspection</li> </ol>
27	AIRWORTHINESS CERTIFICATE CATEGORY	<ol style="list-style-type: none"> <li>CHECK the aircraft's airworthiness certificate to determine the category (Standard Airworthiness Certificate or Special Airworthiness Certificate)</li> <li>LIST the category (Standard or Special)</li> </ol>
28	PROOF OF INSURANCE	<ol style="list-style-type: none"> <li>VERIFY that the contractor has the insurance coverage specified in the aerial application contract (see current APHIS Aerial Application Prospectus) and inspect the Certificate of Insurance</li> <li>If the contractor has proof of specified insurance, check YES; if not, check NO</li> </ol>
29	SPEED (MPH)	<ol style="list-style-type: none"> <li>ASK the pilot for his working speed</li> <li>VERIFY the working speed (see <a href="#">Aircraft Performance by Category on page 2-4-6</a>)</li> <li>LIST the working speed in MPH</li> </ol>
30	DATE AVAILABLE	<ol style="list-style-type: none"> <li>CHECK the date in <i>Block 5</i> of this form</li> <li>LIST the same date (as entered in <i>Block 5</i>)</li> </ol>
31	CATEGORY	<ol style="list-style-type: none"> <li>CHECK the aircraft categories chart (see <a href="#">Aircraft Categories and Assigned Swath Spacing on page 2-4-2</a>)</li> <li>LIST the aircraft category</li> </ol>
32	CHEMICAL	<ol style="list-style-type: none"> <li>CHECK the aerial application contract</li> <li>LIST the chemical specified in the contract</li> </ol>
33	RATE/ACRE	<ol style="list-style-type: none"> <li>CHECK the aerial application contract</li> <li>LIST the rate per acre specified in the contract</li> </ol>
34	ASSIGNED SWATH	<ol style="list-style-type: none"> <li>CHECK the aircraft categories chart for the assigned swath listed for the aircraft being inspected (see <a href="#">Aircraft Categories and Assigned Swath Spacing on page 2-4-2</a>)</li> <li>LIST the assigned swath</li> </ol>

**TABLE A-1-12 Instructions for the Aircraft and Pilot Qualification Acceptance Report  
 (continued)**

Block		Instructions
35	GUIDANCE TYPE	1. CHECK the aerial application contract for the type specified 2. List the type guidance system used
<b>APPLICATION SYSTEMS</b>		
<b>DRY</b>		COMPLETE <i>Block 36</i> through <i>Block 41</i> for DRY APPLICATION SYSTEMS <b>only</b>
36	SPREADER	LIST the make and model number
37	SPREADER CLEAN AND FREE OF CONTAMINATION	If the spreader is clean and free of contamination, CHECK YES; if <b>not</b> , CHECK NO
38	SPRAY TANK CLEAN/DRY AND INTERNAL VALVES SEALED	If the spray tank is clean and dry and the internal valves are sealed, CHECK YES; if <b>not</b> , CHECK NO
39	AIR AGITATION, RAM AIR INTAKE AND VENT TUBE FLOW REGULATOR INSTALLED PROPERLY	If the air agitation, ram air intake and vent tube flow regulator are properly installed, CHECK YES; if <b>not</b> , check NO
40	SPECIAL EQUIPMENT (Flagman, smoker etc.) SPECIFY	1. CHECK the aerial application contract for any special equipment 2. LIST any special equipment; be specific
41	IF OPERATING OVER CONGESTED AREAS, AN EMERGENCY HOPPER JETTISON DEVICE REQUIRED BY FAR 137.53(C)(2)	If the jettison device is required and is properly installed and operating, CHECK YES; if <b>not</b> , check NO
<b>LIQUID</b>		COMPLETE <i>Block 42</i> through BLOCK 58 for LIQUID APPLICATION SYSTEMS <b>ONLY</b>
42	Spray tank interior dry and cleaned of all contamination	1. CLIMB onto the aircraft wing to look inside the hopper (see <a href="#">Spray Tank Interior on page 3-12-30</a> ) 2. If the inside is clean, dry, and has <b>no</b> foreign material clinging to the sidewalls and there is <b>no</b> residue or chemicals dried or caked onto the sidewalls, and the gaskets and seals <b>do not</b> contain any bulging or loose sealant compounds, then CHECK YES 3. If the system requires cleaning, advise the contractor or not as in 2., then check NO
43	Leak proof - Check condition of hoses, gate seal, and other spray system components	1. CHECK the condition of hoses, gate seal, and other spray system components (see <a href="#">Leakproof Spray System Components on page 3-12-30</a> ) 2. If after checking, the conditions are as required, CHECK YES; otherwise CHECK NO

**TABLE A-1-12 Instructions for the Aircraft and Pilot Qualification Acceptance Report  
(continued)**

Block		Instructions
44	Equipped with dump valve that meets agricultural part FAR 137.53(C)(2)	<ol style="list-style-type: none"> <li>CHECK the jettison (dump) valve to ensure the loader can be jettisoned in an emergency (see <a href="#">Aircraft Jettison (Dump) Valve on page 3-12-31</a>)</li> <li>If after checking, you determine the jettison valve meets the requirements, then CHECK YES; otherwise CHECK NO</li> </ol>
45	Drain valve(s) located at lowest point(s) in the system	<ol style="list-style-type: none"> <li>CHECK the drain valve(s) and make certain they are located at the lowest point in the system (see <a href="#">Drain Valve(s) on page 3-12-32</a>)</li> <li>If after checking, you the drain valves or removable plugs all draining of the system as listed, then CHECK YES; otherwise, CHECK NO</li> </ol>
46	Emergency shut-off valve located between the hopper and pump	<ol style="list-style-type: none"> <li>ASK the pilot to demonstrate that the emergency shut-off valve located between the hopper and the pump is as close to the hopper as possible and can be closed completely and without difficulty by the pilot in the cockpit (see <a href="#">Emergency Shut-off Valve on page 3-12-32</a>)</li> <li>IF the emergency shut-off is located and can be operated as described in xx, then CHECK YES; if <b>not</b> CHECK NO</li> </ol>
47	Bleed lines installed on spray booms when required (see prospectus for correct installation of bleed lines)	<ol style="list-style-type: none"> <li>If required, CHECK the bleed lines on spray booms for correct installation (see <a href="#">Bleed Lines on Spray Booms on page 3-12-33</a>)</li> <li>If required and correctly installed, CHECK YES; if not correctly installed, check NO</li> <li>If bleed lines are <b>not</b> required, leave this block blank</li> </ol>
48	Pump with capacity to deliver 40 PSI to all spray nozzles	<ol style="list-style-type: none"> <li>CHECK the spray pump to ensure the required 40 PSI pressure can be delivered to all spray nozzles regardless of the chemical and chemical level in the spray tank (see <a href="#">Pump Capacity on page 3-12-34</a>)</li> <li>If the pump has the required pressure, then CHECK YES; if <b>not</b>, CHECK NO</li> </ol>
49	Functional pressure gauge with a minimum range of zero to 60 but no greater than zero to 100 PSI	<ol style="list-style-type: none"> <li>CHECK the functional pressure gauge to for a minimum range of zero to 60, but no greater than zero to 100 PSI, to ensure the gauge covers the required operating range and that the scale is readable (<b>not</b> hard to read because gauge numbers are too small) (see <a href="#">Functional Pressure Gauge on page 3-12-34</a>)</li> <li>If gauge is readable and covers the required operating range, then CHECK YES; if conditions are not met, then CHECK NO</li> </ol>
50	In line strainer between pump and boom	<ol style="list-style-type: none"> <li>CHECK in-line strainer for location between pump and boom to prevent foreign matter from clogging nozzle strainers and spray tips (see <a href="#">In-line Strainer Between Pump and Boom on page 3-12-35</a>)</li> <li>If the in-line strainer is as specified, then CHECK YES; if not, CHECK NO</li> </ol>
51	Unused nozzles removed and openings plugged	<ol style="list-style-type: none"> <li>VERIFY that <b>only</b> the correct number of nozzles are installed for calibration; excess nozzles <b>must</b> be removed and the openings plugged (see <a href="#">Unused Nozzle Openings on page 3-12-35</a>)</li> <li>IF as listed above, CHECK YES; if not, CHECK NO</li> </ol>

**TABLE A-1-12 Instructions for the Aircraft and Pilot Qualification Acceptance Report  
 (continued)**

Block		Instructions
52	Special equipment required i.e. flagman, smoker	<ol style="list-style-type: none"> <li>1. VERIFY that all special equipment required and specified in the aerial application contract is installed and operational (see <a href="#">Special Equipment on page 3-12-36</a>)</li> <li>2. If the equipment is installed and operational as specified, then CHECK YES; otherwise CHECK NO</li> </ol>
53	Method to determine the amount of chemical in the hopper; in flight and on the ground	<ol style="list-style-type: none"> <li>1. CHECK the method to accurately determine the amount of chemical that remains in the hopper or spray tank (see <a href="#">Chemical in Hopper on page 3-12-37</a>)</li> <li>2. If the method is accurate, then CHECK YES; if not, CHECK NO</li> </ol>
54	NO. OF NOZZLES INSTALLED FOR CALIBRATION	<ol style="list-style-type: none"> <li>1. CHECK the calibration formula ( <a href="#">Dispersal Systems Calibration on page 3-10-1</a>) to determine the number of nozzles to install to ensure the spray aircraft will deliver the desired amount pesticide per acre (see <a href="#">Aircraft Performance Category, Assigned Swath Spacing, and Spray Tip Size on page 2-4-4</a>)</li> <li>2. LIST the number of nozzles installed for calibration</li> </ol>
55	SPRAY TIP AND STRAINER SIZE	<ol style="list-style-type: none"> <li>1. CHECK the spray tip and strainer size to ensure the correct size spray tip and tip strainers are installed and constructed from approved materials (see <a href="#">Aircraft Performance Category, Assigned Swath Spacing, and Spray Tip Size on page 2-4-4</a>)</li> <li>2. LIST the spray tip size and tip strainer size</li> </ol>
56	OPERATION BOOM PRESSURE (PSI)	LIST the operating boom pressure PSI (see <a href="#">Operating Boom Pressure (psi) on page 3-12-38</a> )
<b>DEFICIENCIES NOTED</b>		RECORD any items missing, incorrect, or <b>not</b> as specified in the contract
<b>DEFICIENCIES CORRECTED</b>		RECORD the date and deficiency is corrected
<b>REMARKS</b>		RECORD any additional notes
<b>CERTIFICATION</b>		
I certify that I have completed the above inspections and have noted findings as		CHECK the appropriate YES or NO block
57	OFFICIAL SIGNATURE	Person performing the inspection and completing this report SIGNS (Contracting Officer's Representative (COR) or PPQ Pilot)
	TITLE	Person completing report LISTS title
	DATE	LIST the date signed
58	PILOT/CONTACTOR SIGNATURE	Pilot or contractor completes this section REVIEWS this document for accuracy or discrepancies and SIGNS
	TITLE	Pilot or contractor lists title
	DATE	Pilot or contractor lists date signed



### **Distribution of PPQ Form 816, Pilot and Aircraft Acceptance**

After the PPQ Form 816, Pilot and Aircraft Acceptance, is completed, then distribute as follows:

1. Give a copy to the contractor.
2. Send the original to PPQ Aircraft and Equipment Operations listed below:

USDA-APHIS-PPQ  
Aircraft and Equipment Operations  
22675 N. Moorefield Road, Bldg. 6415  
Edinburg, TX 78541-9398

Phone: 956-580-7270  
FAX: 956-580-7276

3. Keep a copy for the program file.

## PPQ Form 817, Aerial Contractor Performance Evaluation Report

UNITED STATES DEPARTMENT OF AGRICULTURE ANIMAL AND PLANT HEALTH INSPECTION SERVICE PLANT PROTECTION AND QUARANTINE		
AERIAL CONTRACTOR PERFORMANCE EVALUATION REPORT		
SECTION I.		
1. CONTRACTOR'S NAME AND ADDRESS (Include Zip Code) Billy Bob's Air Flight PO Box 1234 Mission, TX 78572	2. PROGRAM Boll Weevil Eradication	3. CONTRACT NUMBER 56-1234-4-TX 01
SECTION II.		
INSTRUCTIONS: Place an "X" in column A. or B. as appropriate for each performance standard. If a standard does not apply, indicate with N/A in column A.		
PERFORMANCE STANDARDS	A. MEETS FULLY SUCCESSFUL	B. DOES NOT MEET FULLY SUCCESSFUL
1. Obtaining the necessary FAA, State, and all other required clearances including certification as an applicator of restricted-use pesticides (certified pesticide applicator) if required.	X	
2. Pilots obtaining the proper certification for agricultural flying prior to the starting date.	X	
3. Strict adherence to all EPA and State approved label instructions for chemicals, biological pesticides, biological materials, and compliance with all applicable Federal, State, and local environmental laws and regulations in performance of the contract.	X	
4. Contractor's personnel reporting to work on time daily and remaining on the job until officially released.	X	
5. Contractor reporting on date as directed and providing all required equipment, personnel, and facilities.	X	
6. All equipment meeting contract requirements. Fire extinguishers are not current		X
7. Avoiding repeated delays caused by malfunction of equipment or delays in loading between trips, which affect the total overall length of time in performing the contract.	X	
8. The Contractor utilizes and fosters good safety habits and attitudes. <i>Personnel need constant reminder of NO SMOKING zones</i>		X
9. The contractor will select the airport(s) to be used and make the necessary arrangements with proper authority for:	X	
a. The use of each airport.		
b. The payment of any fees charged for its use.	X	
c. The payment for repairs or damages that result from the Contractor's aircraft, equipment, or contamination from pesticides.	X	
d. Maintaining the areas used by the Contractor in a clean and orderly fashion during their use and cleanup after use, to the satisfaction of the Contracting Officer Representative (COR). <i>Left garbage</i>		X
10. Claims for damages brought against the Contractor concerning aerial application or any other operations have been addressed in a fair and timely manner.	X	
11. All required action has been taken for any pesticide spillage with regard to notification and cleanup.	X	
12. All operational guidelines and adherence to buffer zones required by the prospectus and any additional buffer zones specified by the COR were followed.	X	
SECTION III.		
1. Should this contractor be considered for future contracts? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If NO, provide justification and documentation when submitting the evaluation reports to the Contracting Officer.		
2. SIGNATURE OF OFFICER-IN-CHARGE <i>Robert Wilson</i>	3. DATE 7-4-04	
PPQ FORM 817 (JAN 82)		
PART 2 - PPQ OFFICER IN CHARGE		

FIGURE A-1-18 Example of PPQ Form 817, Aerial Contractor Performance Evaluation Report

### **Purpose**

*PPQ Form 817, Aerial Contractor Performance Evaluation Report*, is used by the Contracting Officer's Representative (COR) at the end of the program along with the notes in the *Daily Log*, to evaluate and document the aerial contractor's job performance during the program. The completed form is used to determine if the contractor met contract specifications and if the contractor should be considered for future contracts.

In addition, the Contracting Officer (CO) in Minneapolis MBS may also use the completed form as documentation for assessing liquidated damages or for giving the contractor extra consideration in future contracts because of outstanding service.

### **Instructions for Completing PPQ Form 817**

Review the notes recorded in the Daily Log of observations regarding the contractor that were made by the COR or program manager (re: monitoring, inspection results, and actions taken), and complete *PPQ Form 817*, follow the instructions in **Table A-1-13**.

**TABLE A-1-13 Instructions for Completing PPQ Form 817, Aerial Contractor Performance Evaluation Report**

Block		Instructions
<b>SECTION I</b>		
1	CONTRACTOR'S NAME AND ADDRESS	LIST the name and complete address (include Zip Code) of the contractor being evaluated
2	PROGRAM	LIST the name of the aerial application treatment program
3	CONTRACT NUMBER	LIST the contract number assigned by MBS
<b>SECTION II</b>		
1	PERFORMANCE STANDARDS	<ul style="list-style-type: none"> <li>◆ If the contractor fully completed the performance standard, then place an X in column A, <i>MEETS FULLY SUCCESSFUL</i></li> <li>◆ If the contractor <b>did not</b> fully complete the performance standard, then place an X in column B, <i>DOES NOT MEET FULLY SUCCESSFUL</i></li> <li>◆ If a standard <b>does not</b> apply, then write N/A in column A, <i>MEETS FULLY SUCCESSFUL</i></li> </ul>
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
<b>SECTION III</b>		
1	Should the contractor be considered for future contracts?	Place an X in the appropriate <b>YES</b> or <b>NO</b> block. If <b>NO</b> is checked, you believe the contractor should <b>not</b> be considered for future contracts, then provide justification and documentation to the MBS Contracting Officer (CO) when you submit this report to MBS
2	SIGNATURE OF OFFICER-IN-CHARGE	Contracting Officer's Representative (COR) completing this form signs
3	DATE	List the date signed

### **Distribution of PPQ Form 817**

Distribute PPQ Form 817 as follows:

1. Give a copy to the contractor.
2. Send the original to PPQ Aircraft and Equipment Operations listed below:

USDA-APHIS-PPQ  
Aircraft and Equipment Operations  
22675 N. Moorefield Road, Bldg. 6415  
Edinburg, TX 78541-9398

Phone: 956-580-7270

FAX: 956-580-7276

3. Keep a copy for the program file.





# Appendix B

## *Certificates and Letters*

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### Contents

Introduction	<b>page B-1-1</b>
FAA Operating Certificate	<b>page B-1-3</b>
FAA Certificate of Aircraft Registration	<b>page B-1-5</b>
State Pesticide Applicator's License (Business)	<b>page B-1-7</b>
FAA Airline Transport Pilot Certificate	<b>page B-1-8</b>
FAA Medical Certificate	<b>page B-1-10</b>
FAA Temporary Airman Certificate	<b>page B-1-11</b>
FAA Special Airworthiness Certificate	<b>page B-1-12</b>

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### Introduction

The ***Certificates and Letters*** appendix provides examples of certificates and letters issued by other agencies. These certificates and letters are referred to when completing program forms, and are used to fulfill other requirements of the Aerial Application Program.

## Certificate of Insurance

PI-97

### CERTIFICATE OF INSURANCE

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY, AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER, THIS CERTIFICATE DOES NOT AMEND, EXTEND, OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW.

<p>NAME &amp; ADDRESS OF INSURANCE AGENCY</p> <p>USDA APHIS PPQ AIRCRAFT OPERATIONS RT 3 BOX 1001 EDINBURG, TX 78539</p> <p>PHONE NUMBER: (956) 580-7270 FAX NUMBER: (956) 580-7276</p>	<p>NAME &amp; ADDRESS OF THE INSURED PEST CONTROL COMPANY (PLEASE NOTE: This must be the same name &amp; Address as shown on the Pesticide Applicator License)</p> <p>USDA APHIS PPQ AIRCRAFT OPERATIONS RT 3 BOX 1001 EDINBURG, TX 78539</p> <p>COMPANY'S PESTICIDE LICENSE NUMBER: 5294-000</p>
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This is to certify that policies of insurance listed below have been issued to the insured company name above, are in force at this time.

TYPE OF INSURANCE	POLICY NUMBER	EFFECTIVE DATE	EXPIRATION DATE	LIMITS OF LIABILITY IN THOUSANDS (000)	
				Each Occurrence	Aggregate
GENERAL LIABILITY	AEF 012345-001	01/05/04	01/05/05	Bodily Injury: \$ 1,000,000	\$ 1,000,000
AIRCRAFT LIABILITY	WC 294-000567	09/16/04	09/16/05	Property Damage \$ 1,000,000	\$ 1,000,000
				And/or	
				Bodily Injury & Property damage Combined:	\$ 1,000,000

EXCLUSIONS:

Deductible not to exceed \$5,000 for the total amount of liability insurance.

**SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED**  
Before the expiration date thereof, the issuing company will mail, within 15 days, written notice to the below-named certificate holder.

CERTIFICATE HOLDER:

OKLAHOMA DEPARTMENT OF AGRICULTURE,  
FOOD & FORESTRY  
PLANT INDUSTRY & CONSUMER SERVICES  
P O BOX 528804  
OKLAHOMA CITY OK 73152-8804

FAX NUMBER: (405) 522-0625

DATE ISSUED 01/05/2004

*Charles S. Smith* CHARLES S. SMITH  
Authorized Representative of Insurance Agency

FIGURE B-1-1 Example of Certificate of Insurance

### Purpose

The *Certificate of Insurance* is used to complete *PPQ Form 816, Contract Pilot and Aircraft Acceptance*.



## FAA Operating Certificate

  
U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Operating Certificate

This certifies that

U. S. DEPARTMENT OF AGRICULTURE  
ROUTE 3, BOX 1001  
EDINBURG, TEXAS 78539

has met the requirements of the Federal Aviation Act of 1958, as amended, and the rules, regulations, and standards prescribed therein, for the issuance of this certificate and is authorized to operate as an Air Operator and conduct Commercial Agricultural Aircraft Operations.

in accordance with said Act and its rules, regulations, and standards; dispensing of economic poisons is permitted.

This certificate is not transferable and, unless canceled, suspended, superseded, surrendered or revoked, shall continue in effect indefinitely.

By Direction of the Administrator.

  
CHARLES B. TAYLOR  
(Signature)

Certificate number: U6SG138Y

Effective date: APRIL 6, 1994

Issued at: SAN ANTONIO, TEXAS

MANAGER, SAT-FSDO  
(Title)

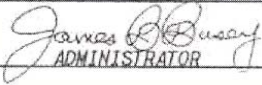

**FIGURE B-1-2 Example of FAA Operating Certificate for Commercial Agricultural Aircraft Operations**

### Purpose

The *Agricultural Operating Certificate* is issued by the FAA to operators who have demonstrated the ability to dispense economic poisons as described in FAR Part 137, Agricultural Aircraft Operations. PPQ uses the Agricultural Operating Certificate to verify the pilot is licensed by the FAA to dispense economic poisons (pesticides).

PPQ uses the form to complete *PPQ Form 816, Aircraft and Pilot Acceptance*. See **Agricultural Operating Certificate** on **page 3-12-6** and **Pilot and Aircraft Inspection** on **page 3-12-1**.

**FAA Certificate of Aircraft Registration**

<b>REGISTRATION NOT TRANSFERABLE</b>	
UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION CERTIFICATE OF AIRCRAFT REGISTRATION	
NATIONALITY AND REGISTRATION MARKS <b>N</b> 731EQ	AIRCRAFT SERIAL NO. 18802843T
MANUFACTURER AND MANUFACTURER'S DESIGNATION OF AIRCRAFT CESSNA A188B ICAO Aircraft Address Code: 52347465	
ISSUED TO UNITED STATES DEPARTMENT OF AGRICULTURE APHIS-PPQ RT 3 BOX 1001 EDINBURG TX 78539 GOVERNMENT	This certificate is issued for registration purposes only and is not a certificate of title. The Federal Aviation Administration does not determine rights of ownership as between private persons.
It is certified that the above described aircraft has been entered on the register of the Federal Aviation Administration, United States of America, in accordance with the Convention on International Civil Aviation dated December 7, 1944, and with the Federal Aviation Act of 1958, and regulations issued thereunder.	
DATE OF ISSUE SEPT. 07, 1985	 ADMINISTRATOR
 U.S. Department of Transportation <b>Federal Aviation Administration</b>	
AC Form 8050-3(7/89) Supersedes previous editions	

**TABLE B-1-1 Example of FAA Certificate of Aircraft Registration**

### Purpose

The *FAA AC Form 8050-3, Certificate of Aircraft Registration*, is issued by the Federal Aviation Administration (FAA). This certificate is also referred to as the aircraft registration certificate. The Aircraft Registration Certificate is issued by the FAA.

PPQ uses the Certificate of Aircraft Registration during inspection to verify and document the registrant's information and the identity of the aircraft. The Certificate of Aircraft Registration contains the following information about the aircraft:

- ◆ Make and model of aircraft
- ◆ Name and address of company, government or private organization, or individual to whom certificate is issued
- ◆ Registration number
- ◆ Serial number

The FAA **does not** determine right of ownership between private persons.



The certificate of aircraft registration is **not** required to be carried on agricultural aircraft, but **must** be available for inspection at the site from which flight operations are being conducted.

The certificate of aircraft registration is required to be carried on board the aircraft at all times on commercial nonagricultural observation aircraft.

See **Contractor's Name, Mailing Address, and Phone** on **page 3-12-4, Aircraft Inspection** on **page 3-12-20**, and **Instructions for Completing PPQ Form 816** on **page A-1-52**.

## State Pesticide Applicator's License (Business)

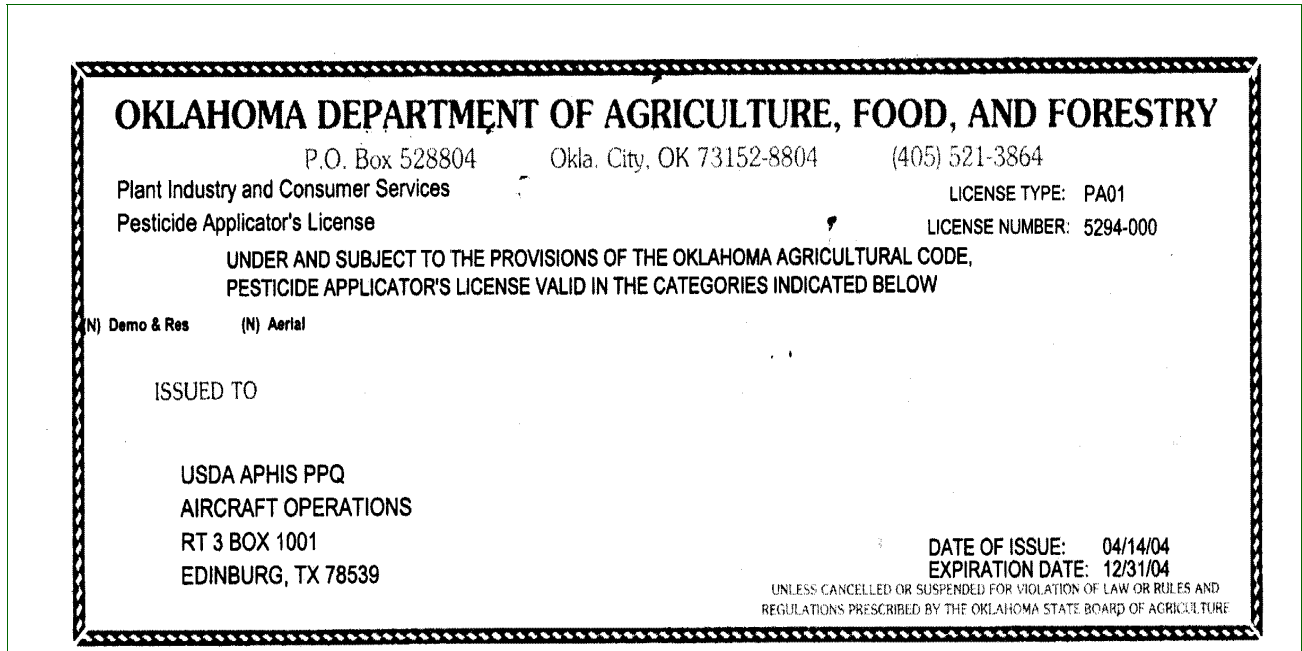


FIGURE B-1-3 Example of State Pesticide Applicator's License (Business)

### Purpose

The applicator's business license is issued the individual State to the pesticide applicator's business. USDA-PPQ uses this license during inspection to obtain the applicator's business license number and expiration date.



Important

**Do not** confuse the applicator's State **business** license with the State applicator's license.

See **Applicator's Business License** on **page 3-12-5** and **Instructions for Completing PPQ Form 816** on **page A-1-52**.



## FAA Airline Transport Pilot Certificate



FIGURE B-1-4 Example of Airline Transport Pilot Certificate (New Style 2004)

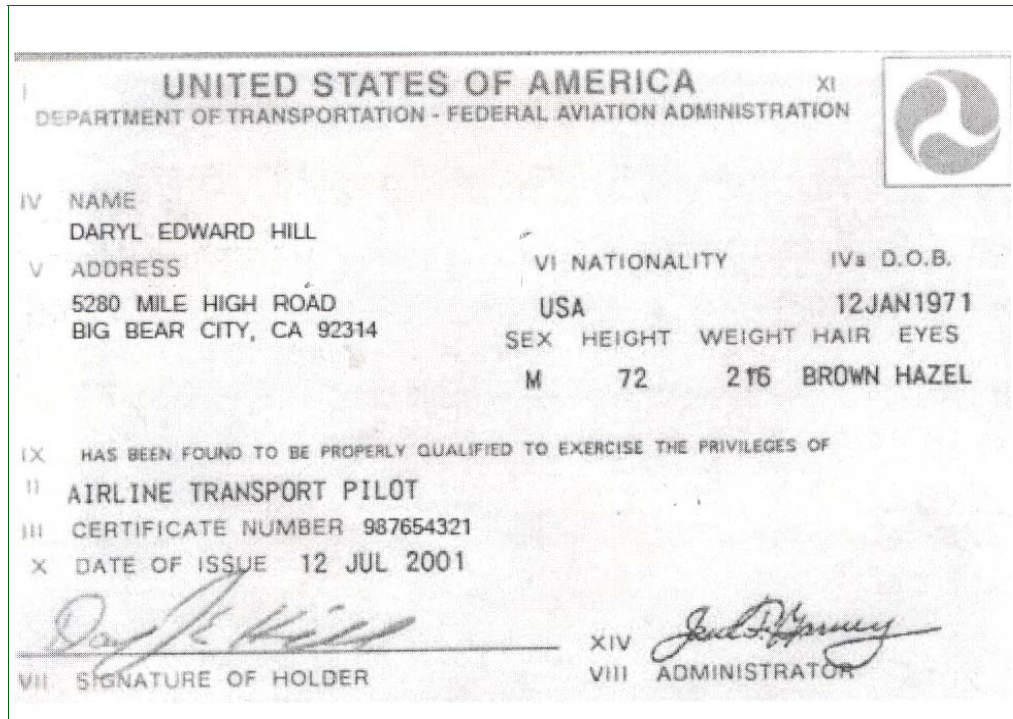


FIGURE B-1-5 Example of Pilot Certificate (Old Style 2001)

### **Purpose**

The Pilot Certificate is issued by the FAA and contains information about the pilot's identification, qualifications (such as Commercial Pilot or Airline Transport Pilot), and statistics. The Pilot Certificate is valid until suspended or revoked.

The Pilot Certificate is used during the PPQ-AEO inspection. See **Pilot Certificate** on **page 3-12-11**.

## FAA Medical Certificate

UNITED STATES OF AMERICA Department of Transportation Federal Aviation Administration <b>MEDICAL CERTIFICATE <u>Second</u> CLASS</b>					
This certifies that (Full name and address): Radsick, Bruce, David RR 2 Box 1001 La Feria, TX 78559					
Date of Birth	Height	Weight	Hair	Eyes	Sex
08/24/46	7-2"	204	Brn	Blue	Male
has met the medical standards prescribed in part 67, Federal Aviation Regulations, for this class of Medical Certificate.					
Limitations	MUST WEAR GLASSES WHILE EXERCISING THE PRIVILEGES OF AN AIRMAN				
	Date of Examination			Examiner's Designation No.	
08/02/2002			08401-1		
Examiner	Signature <i>Michael Kilgore</i>				
	Typed Name Michael Kilgore, M.D.				
AIRMAN'S SIGNATURE <i>Bruce W. Radsick</i>					
FAA Form 8500-9 (3-99) Supersedes Previous Edition					

**FIGURE B-1-6 Example of FAA Form 8500-9, Medical Certificate Second Class**

### Purpose

The Medical Certificate is issued by the FAA. The certificate is used by PPQ during the inspection.

See **Instructions for Completing PPQ Form 816** on **page A-1-52** for more information.



## FAA Temporary Airman Certificate

I. UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION						III. CERTIFICATE NO. 987654321	
ii. <b>TEMPORARY AIRMAN CERTIFICATE</b>							
THIS CERTIFIES THAT		IV. DARYL EDWARD HILL V. 5280 MILE HIGH ROAD BIG BEAR CITY, CA 92314					
DATE OF BIRTH	HEIGHT	WEIGHT	HAIR	EYES	SEX	NATIONALITY	VI.
12/25/1971	70 IN	175	BROWN	HAZEL	M	USA	
IX. has been found to be properly qualified and is hereby authorized in accordance with the conditions of issuance on the reverse of this certificate to exercise the privileges of <b>COMMERCIAL PILOT</b>							
RATINGS AND LIMITATIONS							
XII. AIRPLANE SINGLE ENGINE LAND							
XIII.							
THIS IS <input checked="" type="checkbox"/> AN ORIGINAL ISSUANCE <input type="checkbox"/> A REISSUANCE OF THIS GRADE OF CERTIFICATE				DATE OF SUPERSEDED AIRMAN CERTIFICATE			
BY DIRECTION OF THE ADMINISTRATOR						EXAMINER'S DESIGNATION NO. OR INSPECTOR'S REG. NO. WP21	
X. DATE OF ISSUANCE 03/19/2004		X. SIGNATURE OF EXAMINER OR INSPECTOR <i>Owen T. Duffaghan</i> Owen T. Duffaghan				DATE DESIGNATION EXPIRES	
VII. AIRMAN'S SIGNATURE <i>Daryl Hill</i>							
FAA Form 8060-4 (8-79) USE PREVIOUS EDITION							

FIGURE B-1-7 Example of Temporary Airman Certificate

### Purpose

The Temporary Airman Certificate is issued by the FAA and contains information about the pilot's identification, qualifications (such as Commercial Pilot or Airline Transport Pilot), and statistics. The Pilot Certificate is valid until suspended or revoked.

A valid Temporary Airman Certificate issued by the FAA is **only** acceptable provided 120 days have **not** or will **not** elapse prior to the end of the program. The Pilot's Certificate or Temporary Airman's Certificate is used by PPQ during inspection to obtain the certificate number, type of certificate, and ratings. See **Pilot Certificate** on **page 3-12-11**.

## FAA Special Airworthiness Certificate

UNITED STATES OF AMERICA DEPARTMENT OF TRANSPORTATION – FEDERAL AVIATION ADMINISTRATION SPECIAL AIRWORTHINESS CERTIFICATE			
A	CLASSIFICATION: <u>Restricted</u>		
	PURPOSE: <u>Agricultural &amp; Pest Control</u>		
B	MANU-FACTURER	NAME	
		ADDRESS	
C	FLIGHT	FROM	
		TO	
D	N- <u>731EQ</u> *	SERIAL NO. <u>18802843T</u>	
	BUILDER <u>Cessna Aircraft Co.</u>	MODEL <u>A188B</u>	
E	DATE OF ISSUANCE <u>9-14-77</u>	EXPIRY	
	OPERATING LIMITATIONS DATED <u>1/1/77</u> ARE A PART OF THIS CERTIFICATE		
	SIGNATURE OF FAA REPRESENTATIVE <i>Lester A. Delino</i> Lester A. Delino	DESIGNATION OR OFFICE NO. <u>PC4</u>	
Any alteration, reproduction, or misuse of this certificate may be punishable by a fine not exceeding \$1,000 or imprisonment not exceeding 3 years, or both. THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS.			
FAA FORM 8130-7 (3-69) SUPERSEDES FAA FORMS 1362-B; 8100-3; 8130-5 SEE REVERSE SIDE			

FIGURE B-1-8 Example of FAA Form 8130-7, Special Airworthiness Certificate

### Purpose

The *Special Airworthiness Certificate*, issued by the FAA, gives the pilot FAA authorization to operate an aircraft. The restricted classification indicates type-certificated in the restricted category. Agricultural aircraft are required to have a Special Airworthiness Certificate. The certificate is pink card with a restricted classification on the top line and agricultural and pest control purpose on the next line.



Important

Restricted category civil aircraft **must** be operated for the special purpose for which the aircraft is certificated (Agriculture and Pest Control).

See **Airworthiness Certificate** on page 3-12-23.

## Letter of Request to FSDO for Congested Area Plan of Operation



United States  
Department of  
Agriculture

Animal and  
Plant Health  
Inspection  
Service

Plant Protection  
and Quarantine

Aircraft and Equipment Operations  
Route 3, Box 1001  
Edinburg, TX 78539

Subject: Congested Area Plan of Operation

Date: June 11, 1999

To: Mr. Terry Warren  
Des Moines Flight Standards District Office  
3021 Army Post Road  
Des Moines, Iowa 50321

The United States Department of Agriculture, Animal Plant Health Inspection Service, Plant Protection and Quarantine, Aircraft and Equipment Operations, request the approval of the enclosed "Plan of Operation" to aeri ally apply a Gypsy Moth Mating Disruption formulation (Disrupt II) to a 224-acre tract of land located in Clayton County, McGregor Heights, Iowa.

Your early consideration and approval is requested so that the projected treatment date of June 28-29, 1999, can be met.

If any additional information is needed, please contact this office at Area Code (956) 580-7270.

A handwritten signature in black ink, appearing to read "Timothy J. Roland".

Timothy J. Roland, Director  
Aircraft and Equipment Operations  
Invasive Species and Pest Management  
Plant Protection and Quarantine

Enclosures: 1. Congested Area Plan of Operation  
2. Maps of Treatment Area  
3. Written Approvals from Political Subdivisions  
4. Printed Public Notice of the Operation  
5. Agricultural Operating Certificate

cc:

Thomas C. Hyde, PPQ, AEO, Mission, TX w/o Enclosures  
Winfred McLane, PPQ, OPPC, Otis ANGB, MA w/o Enclosures  
Robert Meinders, SPHD, Des Moines, IA w/o Enclosures  
John Haanstad, Statesman, Des Moines, IA w/o Enclosures

FIGURE B-1-9 Example of USDA-AEO Cover Letter Request for Congested Area Plan of Operation

## Congested Area Plan of Operation

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### CONGESTED AREA PLAN OF OPERATION

In the interest of the public health, welfare and safety, the United States Department of Agriculture (USDA) , in cooperation with the Iowa Department of Agriculture has plans to aeri ally apply a formulation consisting of Hercon Environmental Gypsy Moth Mating Disruption Flakes ( Disrupt II) and Loveland Industries LI - 108 carrier to a 224 acre tract located in McGregor Heights within Clayton County Iowa to control the Gypsy Moth population within the area as depicted in Attachment #1. The Disrupt II formulation will be applied at the rate of 30.4 grams per acre flakes in a total formulation of 4 oz per acre.

The USDA Animal and Plant Health Inspection Service (APHIS) , Plant Protection and Quarantine (PPQ) , Aircraft and Equipment Operations (AEO) , will make the application of the Disrupt II formulation using an agency owned Cessna U206 (N72306) aircraft certificated in the restricted category . The exact date of the application is dependent on the life cycle development of the insect, however the projected dates of application are June 28 - June 29, 1999.

Both the pilots and aircraft are in complia nce with FAR 137.53 for operations over congested areas.

The base of operation will be the Prairie Du Chien , Wisconsin airport or the Monona, Iowa airport.

The USDA APHIS PPQ AEO has determined that the operation can be conducted in accordance with FAR 137.

Written approval has been obtained from the appropriate official/officials of the governing bodies of the political subdivisions over which the operations will be conducted. As required by the City of McGregor, a temporary NOTAM will be issued through the Fort Dodge FSS.(Attachment #2)

Notice of the intended operation was given to the public by means of publication in local and statewide newspapers and local radio stations and mailings to local residents. A public meeting was held on June 3, 1999 with the result that there was no opposition to the treatment. As stated in the press release, a 24 hour notice will be given if changes are made in the treatment date.(Attachment #3)


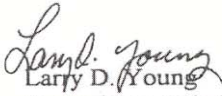
There does not appear to be any hazardous obstructions however, a reconnaissance flight of the operational area will be conducted prior to the actual application to determine if there are any obscured obstructions and a safe ingress and egress during actual application. Application height will be between 25' and 40' above the canopy.

In the event of an inflight engine failure, the pilot will steer the aircraft away from any persons, vehicles and structures.

**FIGURE B-1-10 Example of Congested Area Plan of Operation**

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## FAA Letter of Approval for Congested Area Plan

 <p>U.S. Department of Transportation</p> <p><b>Federal Aviation Administration</b></p> <p>June 14, 1999</p> <p>Mr. Timothy J. Roland USDA PPQ Aircraft and Equipment Operation Route 3, Box 1001 Edinburg, TX 78539</p> <p>Dear Mr. Roland:</p> <p>The congested area plan for agricultural aircraft operations, which you submitted on June 11, 1999, is approved with the following provisions:</p> <p>Plan is valid: June 26-30, 1999</p> <p>Boundaries of the congested area as follows: 224 acre tract of land in McGregor Heights, Iowa.</p> <p>Plan is valid until signed agreement with appropriate officials of the political subdivision expires.</p> <p>Approved category and class of aircraft to be used: Airplane-Single Engine</p> <p>Plan is limited to following weather conditions: VFR</p> <p>Expiration date for this approval: June 30, 1999</p> <p>Sincerely,</p> <p> Larry D. Young Supervisory Aviation Safety Inspector (Operations)</p>	<p>Flight Standards District Office 3021 Army Post Rd. Des Moines, Iowa 50321</p>
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**FIGURE B-1-11 Example of FAA Letter of Approval for Congested Area Plan**



CONGESTED AREA PLAN OF OPERATION

In the interest of the public health, welfare and safety, the United States Department of Agriculture (USDA) , in cooperation with the Iowa Department of Agriculture has plans to aerially apply a formulation consisting of Hereon Environmental Gypsy Moth Mating Disruption Flakes ( Disrupt II) and Loveland Industries LI - 108 carrier to a 224 acre tract located in McGregor Heights within Clayton County Iowa to control the Gypsy Moth population within the area as depicted in Attachment #1. The Disrupt II formulation will be applied at the rate of 30.4 grams per acre flakes in a total formulation of 4 oz per acre.

The USDA Animal and Plant Health Inspection Service (APHIS) , Plant Protection and Quarantine (PPQ) , Aircraft and Equipment Operations (AEO) , will make the application of the Disrupt II formulation using an agency owned Cessna U206 (N72306) aircraft certificated in the restricted category . The exact date of the application is dependent on the life cycle development of the insect, however the projected dates of application are June 28 - June 29, 1999.

Both the pilots and aircraft are in compliance with FAR 137.53 for operations over congested areas.

The base of operation will be the Prairie Du Chien , Wisconsin airport or the Monona, Iowa airport.

The USDA APHIS PPQ AEO has determined that the operation can be conducted in accordance with FAR 137.

Written approval has been obtained from the appropriate official/officials of the governing bodies of the political subdivisions over which the operations will be conducted. As required by the City of McGregor, a temporary NOTAM will be issued through the Fort Dodge FSS.(Attachment #2)

Notice of the intended operation was given to the public by means of publication in local and statewide newspapers and local radio stations and mailings to local residents. A public meeting was held on June 3, 1999 with the result that there was no opposition to the treatment. As stated in the press release, a 24 hour notice will be given if changes are made in the treatment date.(Attachment #3)

There does not appear to be any hazardous obstructions however, a reconnaissance flight of the operational area will be conducted prior to the actual application to determine if there are any obscured obstructions and a safe ingress and egress during actual application. Application height will be between 25' and 40' above the canopy.

In the event of an inflight engine failure, the pilot will steer the aircraft away from any persons, vehicles and structures.

APPROVED *Angel J. J.* , DSM-FSDO  
BY *6-18-99*

FIGURE B-1-12 Approved Congested Area Plan of Operation



# Appendix C

## *Labels and Material Safety Data Sheets*

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### Contents

Introduction	page C-1-1
Dimilin 2L	page C-1-2
Malathion	page C-1-4
Sevin XLR Plus	page C-1-6

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### Introduction

The ***Labels and Material Safety Data Sheets*** appendix provides examples of pesticide labels and material safety data sheets (MSDS) for some pesticides used in the aerial application treatment.



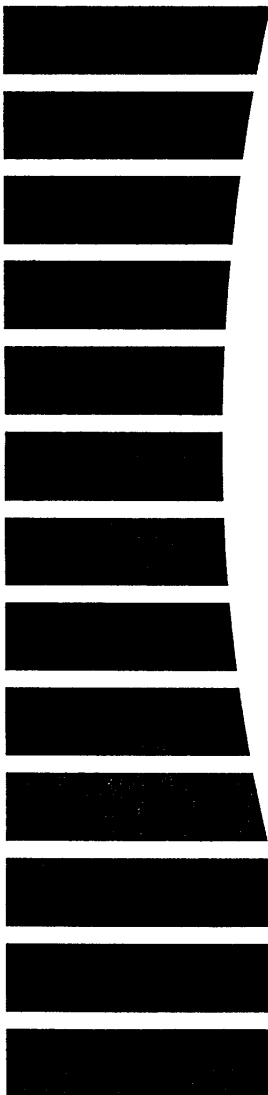
These labels and MSDS are **only** examples; you **must** always read the pesticide label on the chemical container being used and the current MSDS for the specified chemical.

Current labels, Material Safety Data Sheets (MSDS), and special local need registrations can be obtained at [www.cdms.com](http://www.cdms.com).

## Dimilin 2L

**Restricted Use Pesticide.** Due to toxicity to aquatic invertebrate animals. For retail sale to and use only by Certified Applicators, or persons under their direct supervision, and only for those uses covered by the Certified Applicator's certification.

# Dimilin® 2L



### Insect Growth Regulator Aqueous Flowable

For use on cotton, soybeans, rice, pears,  
stonefruit (excluding cherries), tree nuts,  
grassland and non-crop areas

**Net  
Contents:**

#### COMPOSITION

Active Ingredient: (% by weight)

diflubenzuron

N-[[[(4-Chlorophenyl)amino]carbonyl]-2,6-difluorobenzamide\* ..... 22%

Inert Ingredients: ..... 78%

TOTAL ..... 100%

\*Contains 2 lbs. diflubenzuron per gallon.

\*U.S. Patent Number: 6,057,370; and 6,376,430B1 and other patents pending.

#### EMERGENCY ASSISTANCE:

CROMPTON EMERGENCY PHONE 800-292-5898

SAFETY DATA AND INFORMATION 203-573-3303

TRANSPORTATION EMERGENCY (CHEMTREC) 800-424-9300

Have the product container or label with you when calling  
a doctor or going for treatment.

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

EPA REG. NO. 400-461

EPA EST. NO.

023CM/092503

Crompton Manufacturing Company, Inc.  
Middlebury, CT 06749


Crompton®, and Uniroyal Chemical®  
are Registered Trademarks of a  
subsidiary of Crompton Corporation

**Crompton**  
Uniroyal Chemical

www.cromptoncorp.com

FIGURE C-1-1 Example of Dimilin 2L Pesticide Label





**Uniroyal Chemical**  
CROMPTON CORPORATION  
199 Benson Road, Middlebury, CT 06749

# Material Safety Data Sheet

CROMPTON Emergency Phone: (203) 723-3670  
CHEMTREC Transportation Emergency Phone: 1-800-424-9300  
SAFETY DATA Information: (203) 573-3303

MSDS No. A340003      Date Issued: 4/14/94      Date Revised: 5/9/02; Supersedes: 4/1/02      R-11

*NOTE TO END-USERS: This MSDS is being provided to all interested persons in accordance with federal and state right-to-know laws. Precautionary Statements, First Aid Statements and Directions for Use of this product by end-users are contained on the product label and must be followed at all times.*

## IDENTIFICATION

Trade Name: DIMILIN <sup>®</sup> 2L	CAS Number: 35367-38-5 (active)
Chemical Name: N-[[ (4-chlorophenyl) amino] carbonyl]-2-6-difluorobenzamide	Chemical Family: Amide
Inerts: .....	22%
Common Name: Diflubenzuron	78%

## SPECIAL REGULATORY HAZARDS

Ingredient	CAS No.	Exposure Limit	OSHA (1910.1200)	EEC*
Diflubenzuron	35367-38-5	ND	Target organ effects	Possible Risk of Irreversible effects
Petroleum oil	64742-46-7	5 mg/m <sup>3</sup> (OSHA, ACGIH)	Oil mist	NA

Hazard assessment based on available data.  
Transportation: IMO Hazard Class: 9, Miscellaneous; ID No. UN3082; Marine Pollutant  
DOT/IATA/ICAO: Not Regulated

## PHYSICAL DATA

Appearance and Odor: Tan liquid; slight odor	Specific Gravity (H <sub>2</sub> O=1): 1.094
Solubility: ND	Vapor Pressure @ 20°C: NA
Melting Point: NA	Vapor Density (Air = 1): NA
Boiling Point: ND	Volatility @ 70°F: Low
Other Data: pH: 8.9	

## FIRE AND EXPLOSION HAZARD DATA

Flash Point: ND      Autoignition Temperature: ND

Extinguishing Media: Water fog, dry chemical, CO<sub>2</sub>. Do not use direct stream of water. Product will float and may reignite.      Flammable Limits: ND

Special Fire Fighting Procedures: Protect against inhalation of combustion products.

Unusual Hazards: None identified.

## REACTIVITY DATA

Stability: Stable at ambient temperatures and pressures.

Incompatibility: None Identified.

Decomposition Products: Oxides of carbon and nitrogen, HCl and HF under burning conditions.

NA = Not Applicable      ND = Not Determined      \* European Economic Community

Crompton makes no representation or warranty with respect to the information in this Material Safety Data Sheet. The information is however, as of this date provided, true and accurate to the best of Crompton's knowledge. This list of information is not intended to be all inclusive. Actual conditions of use and handling may require considerations of information other than, or in addition to, that which is provided herein.

FIGURE C-1-2 Example of Dimilin 2L Material Safety Data Sheet (MSDS)

Malathion

F  
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**MALATHION**

STOP

BEFORE USING THIS PESTICIDE  
READ THE LABEL

**FYFANON<sup>®</sup> ULV**

INSECTICIDE

ULTRA LOW VOLUME CONCENTRATE INSECTICIDE

**CHEMINOVA**

**Active ingredient:**

<b>Malathion**</b> .....	96.8%
<b>Inert ingredients</b> .....	3.2%

**\*\*O,O-dimethyl phosphorodithioate of diethyl mercaptosuccinate**  
 (1 gallon contains 9.9 pounds of malathion)

KEEP OUT OF REACH OF CHILDREN

CAUTION

Harmful by swallowing, inhalation or skin contact

**Avoid breathing spray mist • Avoid contact with skin • Do not contaminate food or feed products**

IN CASE OF A MEDICAL EMERGENCY, CALL TOLL FREE, DAY OR NIGHT, AREA CODE 800-228-5635, Ext. 153

**FIRST AID**

This product is an organophosphate and is a cholinesterase inhibitor.

If **swallowed**: Call a physician or poison control center immediately. Induce vomiting by giving 1 or 2 glasses of water and touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

If **inhaled**: Remove victim to fresh air immediately.

If **on skin**: Wash affected areas with soap and water.

If **in eyes**: Flush with water for at least 15 minutes and get medical attention.

**NOTE TO PHYSICIAN**: This material is a cholinesterase inhibitor. Treat symptomatically. Atropine is an antidote.

See side panels for additional precautionary statements.

**Product of Denmark**  
**CHEMINOVA - Lemvig - Denmark**  
 Phone: 97 83 41 00 - Telex: 66514 - Telecopier 97 83 45 55

**EPA Reg. No.: 4787-8**

**PRECAUTIONARY STATEMENTS**

**HAZARDS TO HUMANS (& DOMESTIC ANIMALS)**  
 Harmful by swallowing, inhalation or skin contact. Avoid breathing spray mist. Avoid contact with skin. Do not contaminate food or feed products.

**PERSONAL PROTECTIVE EQUIPMENT**: Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category F on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:

- Long sleeved shirt and long pants
- Chemical-resistant gloves, such as Barrier Laminate, or Butyl Rubber, or Nitrile Rubber, or Viton.
- Shoes plus socks.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**ENGINEERING CONTROLS STATEMENTS**: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**ENVIRONMENTAL HAZARDS**

This product is toxic to fish. Keep out of lakes, streams, ponds, tidal marshes and estuaries. Do not apply where runoff is likely to occur. Do not apply when weather conditions favor drift from areas treated. Do not contaminate water by cleaning of equipment or disposal of wastes. Shrimp and crab may be killed at application rates recommended on this label. Do not apply where there are important resources. This pesticide is highly toxic to bees exposed to direct treatment or to residues remaining on the treated area. Do not apply when bees are actively visiting the crop, cover crop, or weeds blooming in the treated area. Apply this product only as specified on this label.

**PHYSICAL OR CHEMICAL HAZARDS**

Before using, read the directions contained in this leaflet for the proper methods and procedures which must be followed to achieve effective insect control and avoid permanent damage to automobile and other paint finishes.

**DISCLAIMER**

The label instructions for the use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, automobile paint damage, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of CHEMINOVA. All such risks shall be assumed by the user.

CHEMINOVA warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use, subject to the risks referred to above.

Any damages arising from a breach of this warranty shall be limited to direct damages and shall not include consequential commercial damages such as loss of profits or values or any other special or indirect damages.

CHEMINOVA makes no other express or implied warranty including any other express or implied warranty of FITNESS or MERCHANTABILITY.

The sale of this product does not include a license under any patent owned by CHEMINOVA.

**User Safety Recommendations:**

Users should:

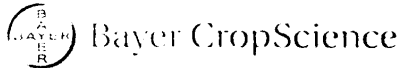
- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

FIGURE C-1-3 Example of Malathion Label

Product No.:	301	KCL/February 2002 Supersedes issue marked RRS/April 2000
Product Name:	FYFANON® ULV	
ISO Name:	Malathion	
EPA Reg. No.	67760-34	Page 6
Other Protection .....	Wear coveralls or long sleeved shirt and long pants. Wear shoes plus socks.	
8.2. Work/Hygienic Practices .....	If handled indoors, provide mechanical exhaust ventilation.	
	Persons working with this product for a longer period should have frequent blood tests of their cholinesterase levels. If the cholinesterase level falls below a critical point, no further exposure should be allowed until it has been determined by means of blood tests that the cholinesterase level has returned to normal.	
	Keep all unprotected persons and children away from working area.	
	Before removing gloves wash them with soap and water. Always wash hands, face and arms with soap and water before smoking, eating or drinking.	
	After work, take off all work clothes and shoes. Shower, using soap and water. Wear only clean clothes when leaving job. Do not wear contaminated clothing. Wash protective clothing and protective equipment with soap and water after each use.	
<b>9. PHYSICAL AND CHEMICAL PROPERTIES</b>		
9.1. Physical State .....	Liquid	
9.2. Colour .....	Colorless to pale yellow	
9.3. Odour .....	Slightly aromatic odour	
9.4. Melting Point .....	2.85°C	
9.5. Boiling Point .....	156-157°C at 0.7 mm Hg (however, see 10.1. Thermal Decomposition)	
9.6. Specific Gravity .....	1.23 g/ml at 20°C	
9.7. Vapor Pressure .....	3.4 x 10 <sup>-6</sup> mm Hg at 25°C 1.4 x 10 <sup>-4</sup> mm Hg at 45°C	
9.8. Viscosity .....	16.4 cP at 40°C 30.0 cP at 25°C	
9.9. Solubility in Water .....	148.2 mg/l at 25°C	
9.10. Solubility in Organic Solvents .....	Fyfanon® is soluble in most organic solvents such as aromatic hydrocarbons, esters and alcohols. It is moderately soluble in aliphatic hydrocarbons.	
9.11. Partition Coefficient n-Octanol/Water	K <sub>ow</sub> = 560	
9.12. pH .....	When equal amounts of Fyfanon® and distilled water are dispersed at 20°C, the pH measured in the water phase is 3.7-3.8.	
9.13. Flash Point .....	163°C (Pensky-Martens closed tester; however, see 10.1.)	
9.14. Autoignition Temperature .....	Not available	
9.15. Flammable Limits .....	Not available	
Material Safety Data Sheet according to 91/155/EEC (preparations)/93/112/EEC (substances) as amended. The information presented herein is believed to be accurate and reliable, but is presented without any warranty, express nor implied, on the part of Cheminova A/S.		

FIGURE C-1-4 Example of Malathion Material Safety Data Sheet (MSDS)

## Sevin XLR Plus



# SEVIN® brand XLR PLUS

## Carbaryl Insecticide

For Agricultural or Commercial Use Only

**ACTIVE INGREDIENT:**

Carbaryl (1-naphthyl N-methylcarbamate) ..... 44.1% by wt.

**INERT INGREDIENTS** ..... 55.9% by wt.

(Contains 4 Pounds Carbaryl Per Gallon)

E.P.A. Reg. No 264-333

E.P.A. Est. No. 264-MO-02

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION**

For **MEDICAL** And **TRANSPORTATION** Emergencies **ONLY** Call 24 Hours A Day 1-800-334-7577

For **PRODUCT USE** information Call 1-866-99BAYER (1-866-992-2937)

### STATEMENT OF PRACTICAL TREATMENT

Carbaryl is an N-Methyl Carbamate Insecticide.

**IF SWALLOWED:** Never give anything by mouth to an unconscious or convulsing person. If conscious and not convulsing, drink 1 to 2 glasses of water and induce vomiting by touching the back of the throat with finger. Get medical attention.

**IF IN EYES:** Flush eyes with plenty of water. Get medical attention if irritation persists.

**IF ON SKIN:** Wash thoroughly with soap and water.

**IF INHALED:** Move from contaminated atmosphere and call a physician.

**GENERAL**

Contact a physician immediately in all cases of suspected poisoning. Transport to a physician or hospital immediately and SHOW A COPY OF THIS LABEL TO THE PHYSICIAN. If poisoning is suspected in animals, contact a veterinarian.

**ANTIDOTE STATEMENT**

ATROPINE SULFATE IS HIGHLY EFFECTIVE AS AN ANTIDOTE. Narcotics and other sedatives should not be used. Further, drugs like 2-PAM (pyridine-2-aldoxime methiodide) are NOT recommended. See NOTE TO PHYSICIAN.

**NOTE TO PHYSICIAN**

Treat symptomatically. Overexposure to materials other than this product may have occurred.

Carbaryl is an N-methyl carbamate insecticide, which is a cholinesterase inhibitor. Overexposure to this substance may cause toxic signs and symptoms due to stimulation of the cholinergic nervous system. These effects of overexposure are spontaneously and rapidly reversible. Gastric lavage may be used if this product has been swallowed. Carbaryl poisoning may occur rapidly after ingestion and prompt removal of stomach contents is indicated.

Specific treatment consists of parenteral atropine sulfate. Caution should be maintained to prevent over atropinization. Improve tissue oxygenation as much as possible before administering atropine to minimize the risk of ventricular fibrillation. Mild cases may be given 1 to 2 mg intramuscularly every 10 minutes until full atropinization has been achieved and repeated thereafter whenever symptoms reappear. Severe cases should be given 2 to 4 mg intravenously every 10 minutes until fully atropinized, then intramuscularly every 30 to 60 minutes as needed to maintain the effect for at least 12 hours. Dosages for children should be appropriately reduced. Complete recovery from overexposure is to be expected within 24 hours.

Narcotics and other sedatives should not be used. Further, drugs like 2-PAM (pyridine-2-aldoxime methiodide) are NOT recommended.

To aid in confirmation of a diagnosis, urine samples should be obtained within 24 hours of exposure and immediately frozen. Analysis will be arranged by Bayer CropScience.

Consultation on therapy can be obtained at all hours by calling the Bayer CropScience emergency number 1-800-334-7577.

FIGURE C-1-5 Example of Sevin XLR Plus Label

<b>Material Safety Data Sheet</b>				MSDS Number: 00000000201		
<b>SEVIN® BRAND XLR PLUS CARBARYL INSECTICIDE</b>				MSDS Version 2.1		
1,2-Propylene glycol	57-55-6	NIOSH	REL		5 mg/m3	
		OSHA Z1	PEL		5 mg/m3	
		OSHA Z1A	TWA		5 mg/m3	
		US CA OEL	TWA PEL		5 mg/m3	
		WEEL	TWA		50 ppm	
			Form of Exposure	Total vapor and aerosol.		
		WEEL	TWA		10 mg/m3	
			Form of Exposure	Aerosol.		
		ACGIH	TWA		3 mg/m3	
			Form of Exposure	Respirable.		
		US CA OEL	TWA PEL		5 mg/m3	
			Form of Exposure	Respirable fraction.		
		US CA OEL	TWA PEL		10 mg/m3	
			Form of Exposure	Total dust.		
		US CA OEL	TWA PEL		5 mg/m3	
			Form of Exposure	Respirable fraction.		
US CA OEL	TWA PEL		5 mg/m3			
	Form of Exposure	Respirable fraction.				
US CA OEL	TWA PEL		10 mg/m3			
	Form of Exposure	Total dust.				
US CA OEL	TWA PEL		10 mg/m3			
	Form of Exposure	Total dust.				
ACGIH	TWA		10 mg/m3			
	Form of Exposure	Inhalable particulate.				
<b>SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES</b>						
<b>Appearance</b>	off-white to pale yellow					
<b>Physical State</b>	Liquid					
<b>Odor</b>	phenolic					
<b>pH</b>	4 - 5 at 10 wt/wt%.					
<b>Vapor Pressure</b>	17 mmHg at 20 °C					
<b>Vapor Density (air = 1)</b>	0.62					
<b>Specific Gravity</b>	1.1 at 20 °C					
<b>Boiling Point</b>	103 °C at 760 mmHg					
<b>Melting/Freezing Point</b>	-3 °C					
<b>Solubility (in water)</b>	miscible					

FIGURE C-1-6 Example of Sevin XLR Plus Material Safety Data Sheet (MSDS)





# Appendix C

## *Aerial Application Program Story*

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### Introduction

The *Aerial Application Program Story* appendix provides an example of how a typical aerial application grasshopper program operates, from the initial meetings to decide whether treatment is needed and wanted; to planning, application, and completion of a treatment. This story should give the reader a general overview of some of the logistical hurdles and topics that Program Managers and Contracting Officer's Representatives (CORs) **must** deal with when conducting aerial treatments.

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### Program Story

The following story, written by L. Keith Winks, is based on actual daily and base logs of a grasshopper treatment program that was conducted in the badlands of western North Dakota.

Every pest program and project is unique. This is just the story of one project. Conducting aerial treatment programs is difficult and often controversial, but the programs are challenging and interesting.

**Aerial Application Story**  
**L. Keith Winks**

You say we have a grasshopper meeting in February? How come we are talking about grasshoppers when it is 5° below zero outside?

Well, it's an open meeting for all folks to air their opinions. All interested and concerned people are notified usually by a county agent, grazing association or representative responsible for the meeting. If a meeting is **not** held for the general public, then we, PPQ, **cannot** do a program. This proposed meeting **must** be advertised in the local media, newspaper, radio, etc. Also at this meeting, ranchers may show intent to treat and give us a head start for planning.

What? I have to notify beekeepers? Yes, all beekeepers **must** be notified in all areas where control is anticipated.

Environmental assessment (EA)? Yokes. We need to send the EA to all the different groups for comment? Boy we better get cracking.

Make sure the Finding of **No** Significant Impact (FONSI) and the Record of Decision (ROD) are completed. We can't treat until they are signed and in place.

Let's see, are we or aren't we going to have a control program? Do we have enough people, vehicles, radios, GPS units, flagging, spill kits, safety material for training, wind meters, dye cards etc., etc.? I can't remember if the oil sensitive type work for Carbaryl or Malathion.

Oh no! The scouts have found grasshoppers and more grasshoppers! Well, I guess I had better contact the interested parties and give them an update. Let's see, we have Forest Service, Bureau of Land Management (BLM), State and private land in the area. Whoa. I have to contact all of these people? The ranchers and land managers want control? I had better have another meeting with all interested parties and discuss everything. Let's see, do I have the State Cooperative Agreement in place?

Is the State going to cost share? Oh ya, I will need a request letter from each of the Federal land managing agencies. Let's see, I'd better have the rancher committee sign the rancher agreement and then send it to the Region. Hey you ranchers, you need an account at a bank for your share of the cost. The money **must** be in this account before I can call in the contractor bids. What does that Hopper software program say? Is it worth it to treat? Whoa. I'd better make up the Detailed Work Plan and send it to the Region.

How big is this area? We need to delimit it. Do the hoppers extend into all the proposed area? If **not**, trim the block, If hoppers extend outside the area, notify the rancher committee. Remember, if we don't treat the entire infestation, there is a good chance the area will reinfest.

Oh my gosh! Have I notified the local State and Federal fish and wildlife agencies? I had better meet with them, and see if they have any concerns. Boy, everything is falling into place. Now what? You know I'd better be getting the contract in place. What do I do first? Well, I'd better read the prospectus and see what my duties as the Contracting Officer's Representative will be.

Well, I guess it is time to fill out the Description Data Sheet. Man, this is important. The whole project revolves around this. How many planes? What types? I hope the electronic guidance works. This **must** go to the Region ASAP. It takes about 10 days to 2 weeks before the planes come in and the project starts. The Aerial Program Description Data Sheet **must** be sent through the region to MBS in Minneapolis. I'd better order the insecticide. How much do I need? Be careful, we don't want to be cut short and I don't want to end up with a surplus.

Aircraft Operations, can you get a pilot up here to help us? The planes are coming! You say the wildlife agencies checked our spray block and found a location where someone found a candidate butterfly species 13 years ago? And seven eagle nests too? Now what?

**FIGURE D-1-1 Aerial Application Program Story (page 1 of 4)**



We have a good idea, skip the area with the liquids and go back with a ground bait rig and treat the perimeter. We have to stay out of the trees where the butterflies may live. Thank goodness the Grasshopper IPM Project trained us how to use this option.

..Region says we have to have a separate work plan and rancher agreement to do this. That doubles our paperwork and we need to make all those contacts again! I hope we have enough orange flagging to mark the area. Let's see that grasshopper sample—3rd and 4th instar *Ageneotettix*, *Aulocara*, and *sanguinipes*. Great! They should take the bait so this might work. The ranchers will let me know if it doesn't; that's for sure.

Well everyone, we need to put up the boundary flags. Hey, make sure they are big enough to see from the air! I hope the wind doesn't tear them down again. Somebody, set up the mortality assessment sites.

Oh my gosh, I almost forgot. We need a monitoring team. Well, I'd better call the Region and tell them we need them about 3 days before the program starts.

Good news! The ground crew and wildlife people said the eaglets in all seven nests have fledged, and there's no need to have buffer zones like last year. Got lucky this time.

Hey, things are starting to fall in place! Oh, no! Here come the planes. The insecticide is coming tomorrow! Do I have the storage tank for the chemical? Is it properly diked? I'd better sign for the chemical and send the waybill to the Region.

You're kidding! The airport manager said we have to move our chemical tank and dike? How come? The spot they said to put the first one is too close to the runway? I sure wish they would make up their minds. I hope that we can have the new one dug and ready by tomorrow before the tanker truck gets here with the insecticide. Man, more grey hairs and chewed fingernails.

Well, all the planes have arrived. I guess we'd better check them and make sure they are in compliance with the contract. Boy, am I glad we have a government pilot to help with this. The planes checked in fine except for some things that I would **never** have known about. I **never** heard of a prop log, let alone ask to see one. Our Government pilots really know what they are doing! I'm really glad we have the Aircraft Acceptance Form to go by.

Well, I guess we better fly in the observation plane and check the area with the contractor's chief pilot. Have all the bee hives been moved? How does the flagging look? xx signal strong? Maybe it would be a good idea to let the ground people take a flight so they can see what we are up against. Do all of the pilots have a map of the treatment area? Do all ground people have a map and know the operational plan? Time to get everyone together for a briefing. Man, this is rugged country. Thank goodness electronic guidance and the Global Positioning System (GPS) works here. I'm relieved that we called for these turbine powered airplanes.

Whoops—good thing we went flying—spotted some bees still left in the block by that old farmstead. They are at an unregistered location, but I'll talk to the landowner tonight and see if he knows who owns them. Hopefully they can be moved so the project isn't delayed. Everything looks great! We are ready to start tomorrow morning. What time do we get up? 3:00 a.m. Oh my gosh. Remember we're using Sevin XLR Plus @Oil and the recirculation pumps need to be running. We are lucky the company has sent their representatives to do this.

Ground crew, do you have your wind meters and dye cards? Radios working and charged batteries in the portables? Don't forget to monitor the ground and air temperature and put out the cards. If there are any sensitive areas, place cards around them. We don't want to spray anything where we may harm the environment! I sure wish the Little Missouri River didn't meander through the block. Let's make sure the contractor understands he **must not** treat within 500 feet of water.

Well, I guess I'd better go up in the observation plane and check the conditions. The **only** condition I'm sure of is that Dramamine® sure makes me jittery. I hope the observation plane's engine doesn't stall in mid air like last year. Have I forgotten anything? Hey ground crew, how are things down there! Conditions good; let's get the planes in the air, we won't have long to work after the sun gets up too high.

**FIGURE D-1-2 Aerial Application Program Story (page 2 of 4)**

Timekeeper, are all the planes loaded and are the amounts recorded on the Daily Aircraft Record? Don't forget to sign it and have their representative sign it. Let's see; have I updated my diary on all the events pertinent to this contract?

We're spraying! No plugged nozzles—great! The winds are coming up and the insecticide is starting to rise. We'd better call it a day. Don't forget to pick up the spray cards. Did any drift get in the sensitive areas? No? Great! Butterflies, eagles, fish; sure glad the monitoring team is here. I hope they don't run out of dry ice.

I'd better complete the master program map for the area we completed. Don't forget the daily and base logs. Oh ya, I've got to call the office ASAP with an update on acreage treated and amounts of pesticide used. Our secretary sure gets irritated when we don't do that. Well, I'd better meet with contractor's representative and see how they handled everything. I **must** remember to thank them for keeping the nozzles clean.

3:00 a.m. again! Don't forget to start the mortality assessment today. Were there any skips? There were? Well, record them on the map so we can treat them later. Two loads today; **not** bad.

3:00 a.m. again! We better wait to see what this storm front is going to do. Stand by ground crew. I hope you don't mind sitting by your radio all day. Hey Jim, I think there is an old bag of sunflower seeds under the seat in case you get hungry. Oh well, it's 4:00 p.m. and the front is still stalled. We'll try it again tomorrow.

3:00 a.m. again! Everyone is getting tired. I hope nobody has an accident. How much rain last night? 0.82 inches in the spray block and hail too. Boy, I hope the Carbaryl didn't wash off. This weather is crazy. Spraying grasshopper one day and throwing snowballs the next. I hope someone in town has a pump to rent so we can drain the dike. At least we know it doesn't leak!

Another day, another 3:00 a.m. Maybe we can get these last two loads out. It looks like a good day. Hopefully, this heavy dew won't delay us too long or the wind will shut us down. Why can't it ever be easy?

Observation plane to Jeff, did we stay far enough away from Nelson Foster's research plots? Yes? Great! Show the cards to Nelson as soon as we finish. He's pretty nervous. One puff of drift would ruin his whole summer's work.

Observation plane to Terry, the planes spooked about 50 head of cattle through a fence and they're heading down the road. Can you go and help the rancher herd them back? The other ground observers can cover for you on the weather readings. Wow, that's the first time I ever saw cows jump like deer. That poor rancher sure has a lot of fencing to do. I guess cows don't like 4 turbines flying 75 feet overhead at 130 miles per hour.

The spraying is finished and the ranchers are happy! All of the skips have been treated. I'd better release the contractor. Great, he has his gear cleaned up. Got to get the storage tank and dike cleaned up and talk to the airport manager again. Continue with the mortality checks. Ground crew, please pick up all the used flagging and take them to the jettison. Our ground crew sure did a nice job.

The ranchers want to know what they owe us. I'd better complete the financial statement and bill them. I also have to get the paperwork to MBS so we don't get assessed penalties. The 817s, the 802s, the 329s, the 132s, the 94s; I better get them to the right places. Where does it end? I better get the written reports to the Federal land managers on how the treatment went, and a map. Don't forget to bill the State.

Well another successful grasshopper treatment. You know, there's a lot of work and coordination, but it all has to be done. Better get ready to do the next one.

**FIGURE D-1-3 Aerial Application Program Story (page 3 of 3)**

# Glossary

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## Abbreviations, Definitions, and Terms

**APHIS Aerial Application Prospectus**—pre-establishes contract terms and conditions of pesticides in support of the aerial spray program (usually grasshoppers and Mormon crickets). The prospectus is distributed **only** to preapproved contractors who have met all qualification requirements of the Federal Acquisition Regulations for Government contractors and for aerial application of pesticides.

**Aileron**—Either of two movable flaps on the wings of an airplane that can be used to control the plane's rolling and banking movements.

**Airstrip recorder**—xx

**Airstrip supervisor**—xx

**Assigned swath**—swath width designated for the type of aircraft being used.

**Bait formulation**—active pesticide ingredient mixed with food or another substance to attract a specific type of pest. The pest eats the bait and expires.

**Congested area**—a congested area applies in general to any city, town, community, or group of buildings in which people would be subject to injury as a result of the malfunction of low-flying aircraft.

**Contracting Officer (CO)**—the official government agent to enter into contracts for the United States with authority based on legislation and implemented in accordance with the Federal Acquisition Regulation.

**Contracting Officer's Representative (COR)**—a person with written delegation of authority to act and serve as an agent (representative) of the contracting officer (CO) in monitoring and oversight of the terms and conditions of a specific contract.

**Cooperative agreement** —A written agreement used to establish arrangements between APHIS and non-Federal entities (ranchers, States, and Native American Tribal Councils) for aerial application for pest control.

**Differential Global Positioning System (DGPS)**—uses a base station at a known position to generate a correction factor for the Global Positioning System (GPS) units, so that the data is accurate.

**Flaggers**—ground personnel waving flags or other approved devices to guide the aircraft.

**Flight Standards District Office (FSDO)**—is the Federal Aviation Administration (FAA) office which is charged with regulating and enforcing FAA rules and regulations within a specific geographical area.

**Full service contract**—a contract in which the contractor either arranges for or supplies all necessary equipment, supplies, and pesticide for the project

**Global Positioning System (GPS)**—location system based on a constellation of satellites orbiting the earth at high altitude.

**Interval swath**—swath width the aircraft actually flies (track).

**Kytoons**—tethered balloons used by ground personnel to guide aircraft.

**Material Safety Data Sheet (MSDS)**—comprehensive source of information prepared by the manufacturer or importer of a chemical that describes the physical and chemical properties, physical and health hazards, routes of exposure, precautions for safe handling and use, emergency and first-aid procedures, and control measures.

**Memorandum of Understanding (MOU)**—xx

**Minute series map**—a map scale generally covering a single geographic quadrangle, bounded by equal minutes of latitude and longitude, i.e., 7.5-minute map series (7.5 minutes of latitude and 7.5 minutes of longitude); 15-minute map series, 30-minute map series.

**Mortality assessment**—method used to determine the death rate of plant pests.

**Pilot**—individual that has a current license and medical certificate to fly an aircraft.

**Program manager (PM)**—has overall responsibility for obtaining necessary items to conduct government programs, developing a written acquisition strategy for those items, and monitoring and coordinating various activities during the acquisition process.

**Reduced Area Agent Treatment (RAATs)**—intentional skips or intervals left between swaths as a way to reduce costs while maintaining effective management during treatment application. Pests with a migratory nature (such as grasshoppers or Mormon crickets) may eventually enter the treated area, and add to percent control in the process.

**Rinsate**—liquids that are rinsed from pesticide containers, tanks, aircraft hoppers and booms, and mixing equipment, etc.

**Swath width**—width of the spray that is parallel to the path of the application aircraft over which the desired spray deposition is achieved.

## **Glossary**

Abbreviations, Definitions, and Terms

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