

**Aerial Survey and Aerial Application
Safety and Operations Training for:**

Comisión Nacional Forestal

National Forestry Commission of Mexico, CONAFOR



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Table of Contents

- I. Introduction.....2
- II. Organizations and Key Personnel
 - A. Forest Health Protection Organization and Project Personnel.....3
 - B. CONAFOR Organization and Participants.....3
- III. Project Planning.....4
- IV. Project Activities
 - A. Classroom Training.....6
 - B. Flight Exercises.....7
 - C. Ground Checks.....9
- V. Summary.....12
- VI. Appendices
 - A. Agenda.....14
 - B. Project Aviation Safety Plan.....16
 - C. Security Plan.....23
 - D. Flight Request, Automated Flight Following and Satellite Phone.....30
 - E. Contributors and Contact Information.....33

Forest Health Protection Aerial Survey and Aerial Application Operations and Safety Training for Comisión Nacional Forestal

I. Introduction

During the Fall of 2009, Dr. Jaime Villa Castillo, Gerente de Sanidad for CONAFOR contacted the Forest Health Protection (FHP) Washington Office and requested that Jeff Mai, Aerial Survey and Aviation Safety Manager for FHP work with CONAFOR to provide aviation safety and operations training. A proposal was drafted and approved by the FHP International Activities Team (IAT). The project was made possible through funding and support by FHP IAT, FHP Rocky Mountain Region, Fire and Aviation Management Rocky Mountain Region, and the Forest Health Technology Enterprise Team.

FHP (then Forest Pest Management) first initiated insect and disease aerial detection survey (ADS) training in Mexico in 1987 when USFS Entomologist Bill Ciesla held a training with Jorge Marcias, Entomologist from, Sanidad Foestal of Secretaria Agricultura y Recursos Hidraulicos, at the University of Mexico Chapingo for 30 – 40 students. More recently, with the assistance of FHP aerial survey specialists Eric Johnson and Tim McConnell and with the support of the IAT, CONAFOR has initiated an ADS program to monitor forest insect and disease activity in Mexico's forests. Staffing, technology and pest issues have changed in the US and Mexico since FHP's ADS program's last formal interaction with CONAFOR six years ago. Aviation programs in the US and Mexico have evolved as have forest health issues that both countries are challenged to identify and manage. As a result the need for continued technology transfer and international professional collaboration between aerial survey specialists was identified.

Of specific interest to CONAFOR was safety and operations training for forest health professionals representing the states of Mexico. FHP's goal is to provide for continuous improvement in the areas of safety, efficiency and quality to benefit the agency and partners. The purpose of this project was to enhance internal and international professional networks, facilitate current information exchange and provide for mutually beneficial continued learning. Jeff Mai coordinated with Carlos Magallon, CONAFOR's Department Chief, to plan and execute this project with significant contributions by Brian Howell, Rocky Mountain Region Aerial Survey Program Manager and Gracie Moore, FHP Pilot. Carlos' enthusiasm for addressing the country's forest health issues coupled with a highly organized and dedicated staff has positioned CONAFOR to become effective in addressing a variety of complex issues. During recent years, CONAFOR has been conducting aerial application activities to manage a conifer sawfly, *Zadiprion falsus*. A stated priority for CONAFOR was to improve operational safety in all aviation activities and increase the effectiveness of aerial treatments against sawfly, primarily through the use of biopesticides. Therefore, this project was designed not only to enhance the aerial survey program but also to provide technology transfer of tools and methods utilized by FHP to safely conduct aerial application activities in the US.

II. Organizations and Key Personnel

FHP aviation programs include aerial application, photography and survey (www.fs.fed.us/foresthealth/aviation). These missions support a variety of cooperative state and federal forest health activities in order to protect and improve the health of our Nation's forests. In response to a formal invitation by CONAFOR, FHP Pilot Gracie Moore, Rocky Mountain Region Aerial Survey Program Manager Brian Howell, and FHP National Aviation Safety Manager Jeff Mai conducted classroom training, flight exercises, and field visits. Participants are pictured in Figure 1.

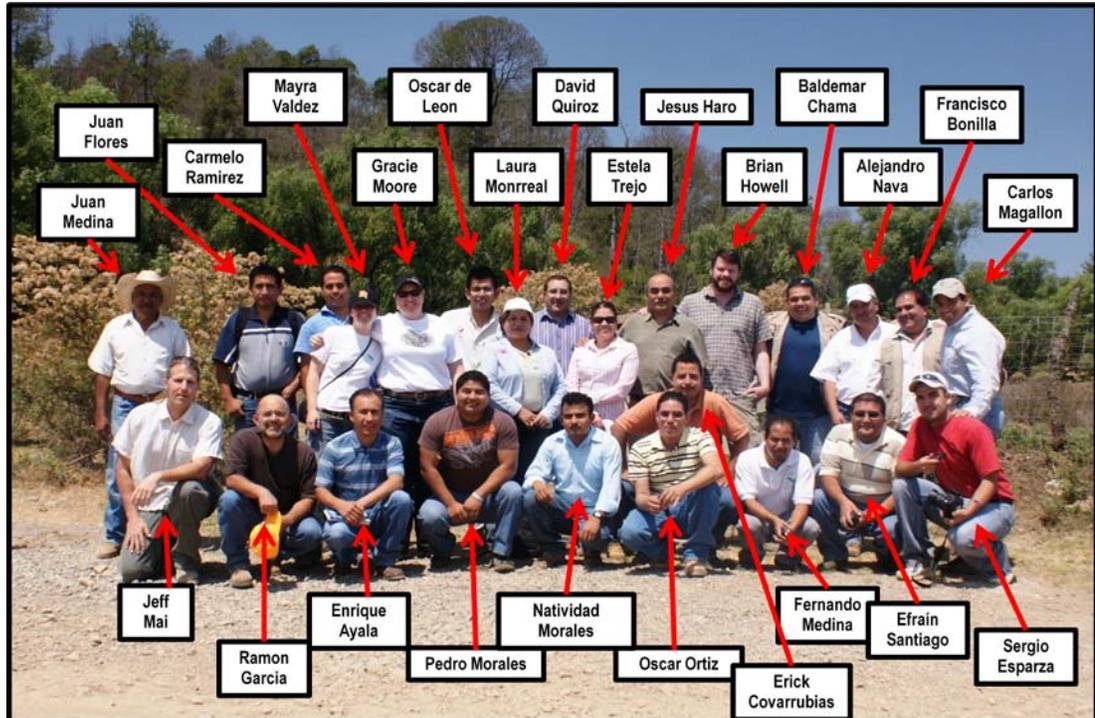


Figure 1. CONAFOR and US Forest Service field checks within the El Rodeo Ejido, Sierra Tigre Mountains, La Cofradia, May 20th, 2010.

CONAFOR is the National Forestry Commission of Mexico www.conafor.gob.mx and can be loosely considered the Mexican equivalent of the USFS. It is an agency of the Secretariat of the Environment and Natural Resources (SEMARNAT). CONAFOR was created by Presidential Decree in 2001. It is a public agency whose objective is to develop, support and promote conservation and restoration in Mexico's forests, as well as to participate in developing plans, programs, and enacting policies for sustainable forestry development. Gerente de Sanidad Dr. Jaime Villa Castillo made the invitation to FHP and met with the entire group during classroom training and during closeout. Department Chief Carlos Magallon was instrumental in designing the agenda, providing local arrangements and facilitating the entire session. Carlos' position with CONAFOR requires that he coordinate with the state representatives on all matters of planning and executing aviation operations and forest health activities. Attending CONAFOR state representatives and their locations are shown in Figure 2.

A summary of 2009 aerial application and survey program accomplishments in the US and Mexico is shown in Table 1. As in the US, CONAFOR utilizes aviation resources to capture information regarding current forest health issues, to support on-the-ground management activities and to conduct aerial treatments. Operating within a limited budget, aerial surveys are prioritized within forest types of particular interest such as the endangered Big-cone pinyon, *Pinus maximartinezii*, and for problem pest areas. CONAFOR effectively leverages accomplishing forest health objectives through education and technical support to Ejidos.

Table 1. Hardwood/softwood forested area and forest health aviation in the US and Mexico.

2009 Estimates	Forested Area (acres)	Survey Area (acres)	Aerial Application Area (acres)
CONAFOR	150,000,000	15,000,000	86,500
FHP and State Cooperators	747,000,000	403,000,000	787,000

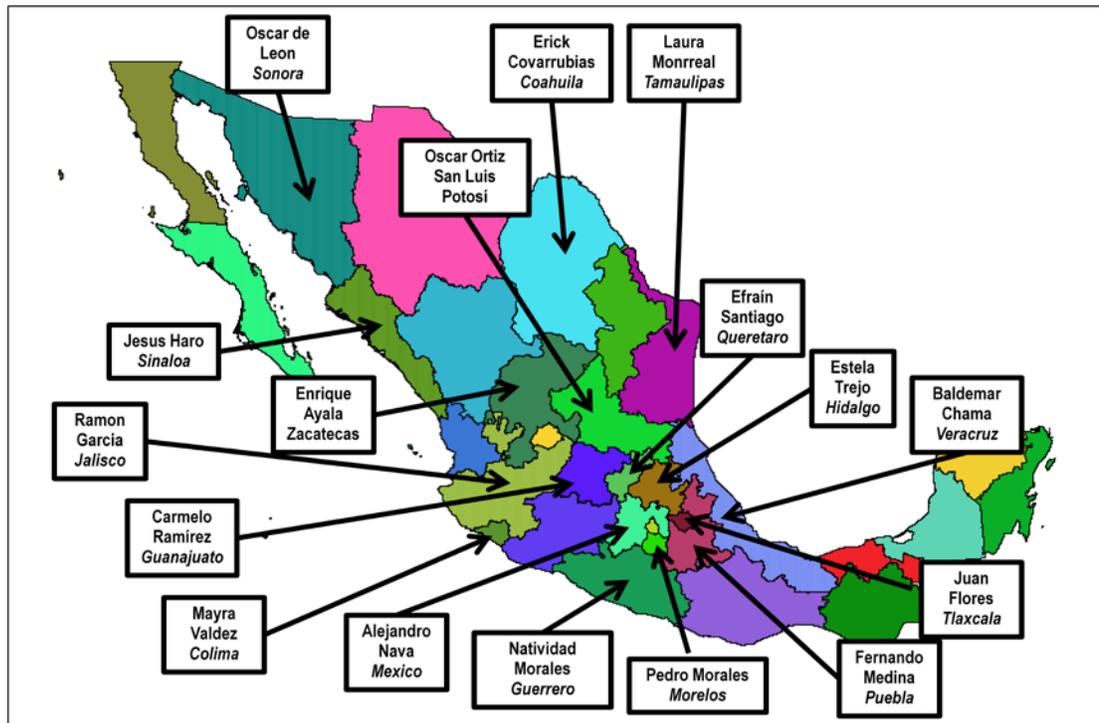


Figure 2. CONAFOR personnel and states represented May 18th – 20th, 2010. Not shown are additional personnel contributing at points during the project from CONAFOR’s forest health lab, headquarters and President of the El Rodeo Ejido.

III. Project Planning

The classroom training agenda (Appendix A) was developed to meet the needs identified by Carlos Magallon. CONAFOR has a number of personnel new to aerial survey and a

developing aerial application program. The focus of classroom training was aviation safety for CONAFOR aviation users, program management in the US, methods and efficiencies for both aerial application and aerial survey (see agenda in appendix of this report). Two aerial survey aircraft were utilized during the project (Figure 3).



Figure 3. Left USFS Cessna 206T N126Z, Rocky Mountain Region Airframe and Powerplant Mechanic Tim McClintock, Pilot Gracie Moore, Aerial Survey Program Manager Brian Howell (left to right); Right CONAFOR Cessna 182 XBJKO, surveyor Laura Monreal, Department Chief Carlos Magallon and surveyor Estela Trejo (left to right).

USFS Cessna N126Z and pilot meeting federal aviation regulations Part 135 standards were utilized in the project for three reasons: 1) to maximize operational safety for agency personnel, 2) to assure student aerial observers all had an opportunity to sketchmap during the one-day flight exercise, and 3) to exhibit an optimum aerial survey platform that is well-maintained and well-equipped for safety. Flying a government-owned aircraft into Mexico required extensive permission planning, coordination between key US and Mexico government agencies and support staff. The following lists most of the steps, contacts, approvals and documentation necessary to conduct this international project and utilize agency aircraft:

1. Project Proposal and FHP International Activities Team approval
2. Approved Foreign Travel Proposal and Official Government Passports
3. Letter of invitation from the government of Mexico, CONAFOR
4. Briefing paper and meeting with Rocky Mountain Region Deputy Regional Forester
5. Courtesy calls and guidance via direct communication with:
 - a. Washington Office (WO) Fire & Aviation Management staff
 - b. Director of US Customs and Border Patrol (CBP)
 - c. WO International Programs staff
6. Prearranged ground handling services at entry/exit points and Guadalajara
7. Manifest, flight plan entry/exit points, time* and date provided to CBP field contacts
8. Diplomatic Note authorizing mission from the Foreign Ministry
9. Project Aviation Safety Plan (PASP), reviewed by Rocky Mountain Region FHP Program Lead and Regional Aviation Officer, approved by Forest Health Technology Team Director (Appendix B)
10. Project Aviation Risk Assessment completed as part of the PASP to identify and mitigate hazards unique to mission (particularly involving communication, security and hostile areas to avoid in Mexico)
11. Agency Security Plan (Appendix C)
12. Country Clearance from the Foreign Agricultural Service

13. FAA and Mexican ATC flight plans
14. USFS Flight Request Form, agency flight following during departure and return trips (Appendix D)
15. Day Trip Authorizations for non-agency personnel conducting flight exercises in USFS aircraft while in Mexico
 - * Flight operations were located throughout four different time zones

IV. Project Activities

Classroom Training May 18, 2010 – Introductions were made and course objectives identified. CONAFOR Director Jaime Villa opened the session as the first-ever bilingual course, expressing gratitude and emphasizing the value of our continued partnership (Figure 4). FHP aviation operations history, safety and production statistics were presented. An accident review was provided, discussing contributing factors to eleven accidents and eleven incidents pertaining to aerial survey and aerial application operations in the US. Safety-related lesson plans were based on Interagency Aviation Training curriculum but modified to emphasize priority material within time constraints. Units taught also included forest host and pest recognition, survey techniques, ground checking aerial survey polygons and accuracy assessment. Examples of state and federal aviation operations and work, security, safety plans and aviation contract were provided and key elements discussed. Aircraft, equipment and operational parameters for survey and application were presented and discussed. Aerial application drift modeling, calibration techniques, weather and spray considerations utilized by FHP and cooperators were detailed. All were original lessons created specifically for CONAFOR and this was the first training of its type for nearly all students. Key material not presented in Spanish was translated in advance by Carlos Magallon, also providing verbal translation from English during class. Participants included primarily entomologists, foresters and pathologists (Figure 5) representing 17 different states throughout Mexico.



Figure 4. Gerente de Sanidad Dr. Jaime Villa Castillo.



Figure 5. The meeting room and students within the Hotel Guadalajara Plaza Expo.

Flight Exercises May 19, 2010 – Multiple flight legs originated from the Miguel Hidalgo y Costilla International Airport, Guadalajara (GDL). The day's activities included preflight safety and mission briefing, aerial sketchmapping exercises, concluding with post-flight debriefing. Eight separate flights were conducted out of GDL utilizing six digital mapping systems with three sketchmappers per flight leg. Flight routes were determined prior to the trip, designed to allow approximately one hour per leg, oriented in forested terrain with known pest problems and located in an area to accommodate ground checks the following day. Flight plans were opened and closed with GDL ATC for each leg and the day's operations were without incident. Digital mapping systems consisting of tablet, touch pen and wireless GPS were used with GeoLink mapping software version 6.2.11.15 (Figure 6). In order to familiarize with the route, airspace issues, forest mapping criteria and create the GeoLink projects in advance of the day's exercise, Garmen GPS route files and GeoLink key pad set-up were provided by CONAFOR prior to the trip.

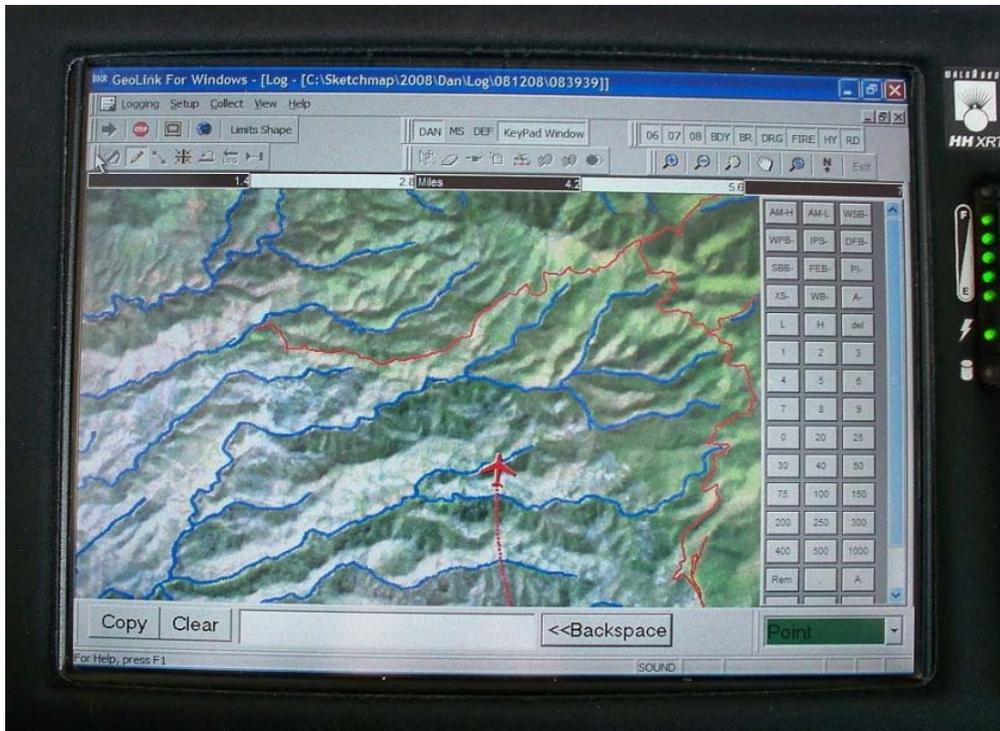


Figure 6. Portable tablet utilized in aircraft to sketchmap observed areas of forest damage using touch pen; customizable attribute key pad is on the right, aircraft position is shown real-time on a moving map display (background can be any combination of georeferenced map imagery and vector data); immediately following flight polygon, point or line feature and attribute data is converted to ArcMap-compatible shapefile.

The survey area was located approximately 30 miles from GDL, just south of Lake Chapala within the Sierra El Tigre Mountains. Flight operations were conducted between 6,000-7,000 feet MSL. Students received hands-on training in mapping system use and identification of aerial signatures (Figure 7). Mexico has extremely diverse hardwood forests ranging from arid to tropical and equally diverse coniferous forests including fir, cypress, cedar and more pine species than any other country. Forest pest species are similarly diverse. As in North America, aerial observer skills are best honed by field experts responsible for surveying geographically discrete regions. Some of the more common tree species encountered in the Sierra El Tigre Mountains include *Pinus devoniana*, *Pinus leiophylla*, *Pinus oocarpa*, *Pinus douglasiana*, *Pinus ayachuite*, and *Quercus spp.* Principle pests currently of concern in the survey area include the Mexican Pine Beetle, *Dendroctonus mexicanus* and a conifer sawfly, *Zadiprion falsus*.



Figure 7. Left Carlos Magallon assisting Alejandro Nava with digital mapping system while flying over the Sierra El Tigre Mountains; Right *Dendroctonus mexicanus* activity in pine.

CONAFOR mapping criteria consists of identifying aerially visible biotic and abiotic damage to broadleaf and conifer species. Damage polygons are captured for defoliation or mortality in pine, fir and broadleaf categories and damage intensity is estimated and expressed in trees per hectare or number of individual trees. Aboitic disturbances of interest are mapped including fire, illegal woodcutting, erosion, soil-caused forest injury and hurricane damage primarily in tropical hardwoods. Actual data captured during the flight exercise is shown in Figure 8.

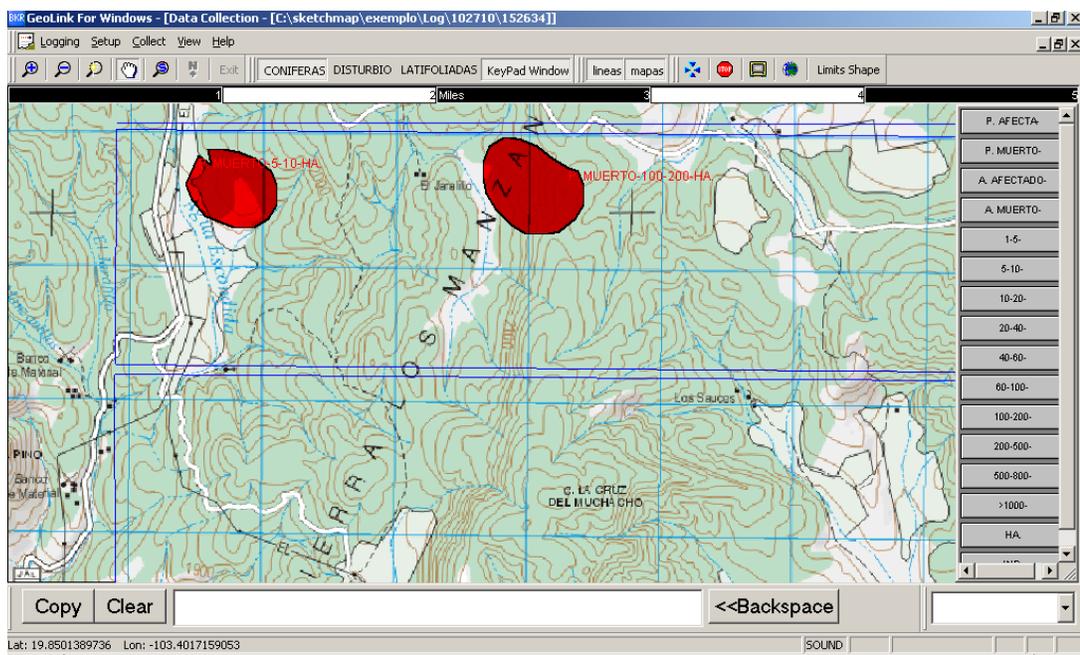


Figure 8. Screen capture of polygons as mapped by one student during the training; on the right is the attribute keypad for afectado (affected) and muerto (dead) *pinus* and *abies* with damage intensity ranges below.

Ground Checks May 20, 2010 – Session participants were joined by the head of CONAFOR’s forest health lab, Francisco Bonilla and President of the El Rodeo Ejido, Juan Medina to visit sites within the previous day’s aerial survey area (Figure 9). Digital mapping systems were available to navigate and compare aerially mapped areas during the ground checks. Two sites of interest were visited to discuss mortality, defoliation and management activities.



Figure 9. El Rodeo site, pictured left to right are Baldemar Chama, Juan Medina, Francisco Bonilla, Ramon Garcia and Carlos Magallon.

Site one: located within the rural community of El Rodeo; mixed pine/hardwood forest previously treated with *Bacillus thuringiensis* (Bt) for sawfly and exhibiting current evidence of defoliation. Francisco described history of the sawfly infestation beginning in 2004 as approximately 200-250 acres in size. Wildfire and subsequent *Dendroctonus mexicanus* activity preceded the sawfly infestation which is locally most active in *Pinus leiophylla* and *P. douglasiana* (Figure 10). Rarely attacked is *P. oocarpa*. Sawfly defoliation has not been observed in *P. devoniana* or *P. maximinoi*. Aerial application of Bt was initiated and has continued since. The infestation grew to approximately 2,000 acres in 2005 and 2,500 acres in 2006. CONAFOR has also conducted very limited aerial application of *Metarhizium* but have struggled somewhat with objections and environmental approval for use of this biopesticide.

Sawfly impacts are often observed in Mexico within intermediate to mature pine stands, not within plantations as typically observed in US forests. Repeated defoliation can cause tree mortality which is often associated with secondary agents, including *Dendroctonus sp.* While sawfly activity continues within susceptible stands, expansion is believed to have been slowed with the use of Bt. Francisco Bonilla estimates that without treatment the infested areas would be three or four times larger. Aerial application of Bt is made at a rate of 240 grams/ha in 20 liters/ha using hydraulic nozzles. Factors influencing the location and timing of application include level of infestation, amount of host material and biological window for the insect (between 2nd and 3rd instar, June – September). It is somewhat surprising that Bt is effective against sawflies (Hymenoptera) in Mexico; at the time of this report, we have not established what strain of Bt is being applied but to our knowledge no commercially available Bt is known to be effective against sawfly. However, the evidence supporting

assertions of Bt's effectiveness include anecdotal observations of larvae that have ingested Bt, changed color and experienced mortality prior to and during pupation. During the site visit, pupae were removed from the soil and of those collected we observed approximately 80% mortality (Figures 11 and 12). CONAFOR has also observed evidence of pupal parasitism and is working to isolate the causal agent with a long term goal of developing forest management recommendations that would favor the parasite.



Figure 10. Sawfly defoliation. Figure 11. Exhuming pupae. Figure 12. Mummified pupae.

Site two: located in an open ridge-top area approximately five miles east of El Rodeo near La Cofradia affording 360 degree views of the surrounding hillsides. The area is experiencing a combination of sawfly defoliation and Mexican pine beetle mortality (Figures 13 and 14). We compared the previous day's ADS data with the damage observable from this location. Sketchmapping techniques were discussed in detail, distinguishing between recent and older dead and mapping small groups versus scattered individual trees. The group emphasized the guiding principles of information capture and data utility, the purpose of which is to characterize current forest condition, recognizing ADS techniques as being a combination of art and science. Mapping errors of commission and omission were observed and discussed.



Figure 13. Second year *P. oocarpa* mortality. Figure 14. Current and older pine mortality.

V. Summary

Though the focus of this report and visit may appear limited in context considering the breadth of insect and pathogen activity in Mexico, aviation resources support detection and response for a variety of pests and conditions and are key to detecting problems and guiding management. The safety and operations training for both survey and application was successful. There remains a strong desire and continuing need to facilitate early detection and greater understanding regarding pests of mutual concern. CONAFOR continues to make progress with their aerial detection survey program and is confronting challenges to control sawfly, claiming some success through aerial application of Bt. Of the many Bt strains, some have shown toxicity to *Hymenoptera*. Further investigation would be valuable to determine if a previously unknown use for Bt may be beneficial in North America.

Additional aerial application control options and techniques to improve efficiency and safety were presented, inviting continued dialog between agency experts. Technology and techniques recommendations included use of rotary atomizers, differential GPS with a flow control system, and drift modeling for efficiency and safety (AgDisp and AgDrift). Alternative biopesticides that would be effective and could be utilized include Neem extract and nuclear polyhedrosis virus (NPV). Cooperation can be enhanced regarding treatment options and methods of interest to both agencies to improve success and understanding, particularly regarding biological controls. As a result of the 2010 project, communication channels have been opened between key personnel in the US and Mexico to further develop safe and effective pest detection and management activities.

Appendices

Appendix A: Agenda



Aviation Safety and Aerial Survey Training



For

Mexico's Comision National Forestal (CONAFOR)

Zapopan, Jalisco



May 18-20, 2010

(10 minute breaks approximately every hour, not shown)

Subject

Lead

Day One – May 18th

0800 – 0830 Introductions and Objectives

Jaime Villa

Carlos Magallon

0830 – 0930 Forest Health Operations in the United States

Jeff Mai

0930 – 1030 Aviation Accident Review

Jeff Mai

1030 – 1100 Aerial Signatures in Mexico

Brian Howell

1100 – 1200 Human Factors and Crew Resource Management

Jeff Mai

LUNCH

1300 – 1330	Aviation Safety & Accident Prevention Plans	Jeff Mai
1330 – 1430	Aircraft & Equipment for Aerial Spray and Survey	Jeff Mai
1430 – 1500	Ground Checking and Accuracy Assessment	Brian Howell
1500 – 1600	Aviation Risk Assessment	Jeff Mai
1600 – 1730	Digital Mapping System	Brian Howell

Day Two – May 19th

0800 – 0900	Pre-Mission Briefing at the Airport	Group
0930 – 1730	Conduct Missions	Group

Day Three – May 20th

0800 – 1730	Ground Check Aerial Mapping	Group
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Appendix B: Project Aviation Safety Plan

Aerial Survey & Application Operations and Safety Training - CONAFOR			
Project Aviation Safety Plan			
WO & Region 2 Forest Health Protection (FHP)			
Mission: International Activities		Project Name: Aerial Survey & Application Operations and Safety Training	
		Unit: WO-FHP	
Anticipated Project Date: May 15 – May 22, 2010		Start Time: 0800	Ending Time: 1800
Project Plan Prepared by: Jeff Mai		Title: National Aviation Safety Manger for FHP	Date: 032310
Note: Signature by the preparer verifies that all personnel have the required training for the mission. Attach Map, clearly showing areas to be flown; aerial hazards must be indicated.			
Project Plan Reviewed by: [REDACTED]		Title: [REDACTED]	Date: [REDACTED]
Project Plan Reviewed by: [REDACTED]		Title: [REDACTED]	Date: [REDACTED]
This Flight is Approved by: [REDACTED]		Title: [REDACTED]	Date: [REDACTED]

Project Description:

Project will utilize USFS Cessna 206T (N126Z), USFS Pilot, R2 FHP Unit Aviation Officer and FHP National Aviation Safety Manager to conduct international activities in cooperation with the National Forestry Commission of Mexico (CONAFOR).

The purpose of the mission is to provide international support and cooperation to CONAFOR, consistent with FHP's mission and mutual interest the detection and management of forest pests. FHP International Activities goals: 1) protect US forests from exotic pests, 2) facilitate strong forest pest management programs in neighboring countries, 3) develop biological control options, 4) share forest health technology and expertise worldwide. This project specifically provides aerial survey, aerial application aviation safety training, technical information and advice regarding survey and application methods. Training includes practical flight exercises for approximately 25 students, utilizing three fixed wing aircraft for aerial survey with digital aerial sketchmapping systems, and concludes with on-the-ground site visits to areas surveyed.

CONAFOR Department Chief Carlos Magallon will notify Mexican Authorities prior to Mexico entry and exit. N126Z will have sticker and registration prior to entry into Mexico.

Point-to-point

May 15th – depart Rocky Mountain Metro (BJC) on/or about Saturday May 15 (May 14 if flight planning and current weather dictate); RON Tucson International Airport (TUS).

May 16th – depart TUS for Mexico, FAA handoff to Mexican ATC, fuel stop at Culiacan (CUL) and clear Customs (alternate fuel is Mazatlan MZT); following clearance, continue on to Guadalajara (GDL)

Mission Use

May 19th – cycle aerial survey exercises with two additional aircraft provided by CONAFOR; mapping exercise area is approximately 30 minutes flight time from GDL, south of Lake Chapala; USFS personnel will not fly in CONAFOR aircraft; CONAFOR personnel will fly in USFS aircraft. Flights controlled out of GDL, aerial observation and radio communication air-to-air between all mission aircraft. USFS Crew is staying at Hotel Guadalajara Plaza Expo 1-800-987-5292.

Point-to-point

May 21st – depart GDL for CUL refuel (alternate fuel is MZT), cross border with Mexican ATC handoff to FAA, land at Nogales (OLS) for Customs clearance; continue to TUS and RON at Hilton Garden Inn Tucson Airport 520-741-0505.

May 22nd – depart TUS for BJC

N126Z will continuously be attended by USFS personnel while in Mexico except when locked and disabled in the GDL hanger overnight (see Security Plan for disabling and other security measures)

Attachments: <input checked="" type="checkbox"/> Map 1		<input checked="" type="checkbox"/> Other: Security Plan	
Project Supervisor: Jeff Mai		Phone: [REDACTED]	Call: [REDACTED]
Helicopter Manger:		Phone:	Call:
Participants: Brian Howell, Gracie Moore			

Type of Flight: Pt-Pt and Recon	Desired Aircraft Type: fixed wing C206T	Charge Code:
Type Procurement: fleet	Method of Payment:	Projected Cost:

Vendor:		Phone:	Cell:
Aircraft N#: N126Z	Make & Model: C206T	Aircraft Color: orange/white	
Pilot Name: Gracie Moore		Pilot Carded: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	A/C Carded: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Flight Follow: FAA VFR BJC to TUS; Mexico ATC IFR to GDL; all with AFF and Sat Phone/Intercom positive comm.		Request or Flight #: _____	
Method of Resource Tracking: <input checked="" type="checkbox"/> Phone <input type="checkbox"/> Radio		<input checked="" type="checkbox"/> Prior to Takeoff <input checked="" type="checkbox"/> Each Stop Enroute <input checked="" type="checkbox"/> Arrival at Dest.	
Scheduling Dispatch Phone: Ft Collins _____		Destination Dispatch Phone: Same as Scheduling	
FM Receive: _____	FM Transmit: _____	Tones: _____	
FM Receive: _____	FM Transmit: _____	Tones: _____	
FM Receive: _____	FM Transmit: _____	Tones: _____	
AM Air to Air: _____	AM Unicom: _____	Other: _____	

Fort Collins Dispatch Center (FCDC) to monitor AFF during point-to-point flights on May 15, 16, 21 & 22. Acquire frequencies and tones from FCDC prior to departure. Positive communication will be accommodated with FCDC by use of satellite phone operating through N126Z intercom. FCDC will be telephoned from the ground prior to all departures and following all landings during point-to-point flight legs. N126Z will be on an IFR flight plan with Mexico ATC facilitating constant radio communication with Mexico ATC.

Search and Rescue Procedures in US Airspace: FCDC initiates, following the Interagency Aviation Mishap Response Guide, Working Draft 2010_Region2.doc

Emergency Procedures in Mexico Airspace: N126Z will have constant radio contact with Mexico ATC during point-to-point and mission flights, utilize 121.5 and squawk 7700. In the event of "overdue aircraft" determination during point-to-point flights, FCDC contacts Mexico ATC, FCDC notifies US Embassy in Guadalajara.

International dialing instructions out of US: international and country code '011-52', then the state code '33' or '72', then last 8-digits of the phone number.

GDL telephone (52) 33-3688-6399, Approach 120.800, Tower 118.100

US Embassy Guadalajara (52) 33-3825-2700; after hours emergency (52) 33-3826-5553

CONAFOR contacts in Guadalajara: Jaimi Villa and Carlos Magallon _____

Mexico various airport information www.flightstats.com and www.univ-wea.com/#1

Mexico IDs, customs, length www.aircraft-charter-world.com/airports/northamerica/mexico.htm

US Airport Information, cords, elev, freqs www.airnav.com

FBOs

CUL - Uvayemex (52) 72-2273-1156 Unicom 118.5, Manny Aviation (52) 72-2273-0981

GDL - Aerotron (52) 33-3284-2300 Unicom 130.65

(refuel using multi-service card)

Start Location	Latitude	Longitude	Elevation	Runway length & Surface or Helispot Size
US-BJC	39.9088056	-105.1171944	5673'	9000'
Destination Location	Latitude	Longitude	Elevation	Runway length & Surface or Helispot Size
US-TUS	32.1160833	-110.9410278	2643'	10996'
US-OLS (north leg Customs)	31.4177222	-110.8478889	3955'	7199'
MX-CUL (fuel each way, south leg Customs)	24.76643	-107.46958	108'	7500'
MX-MZT (fuel alt.)	23.167315	-106.27015	38'	8800'
MX-GDL	20.525198	-103.29921	5012'	13100'
Reverse return as noted				**All lengths are longest available

Passenger Name	Weight	Departure Point	Destination Point
Grace Moore	175	Duration of Pt-Pt	Duration of Pt-Pt
Brian Howell	240	Duration of Pt-Pt	Duration of Pt-Pt
Jeff Mai	205	Duration of Pt-Pt	Duration of Pt-Pt

Cargo Weight	Cubic Feet	Hazardous Material		Destination
Sketch Tablets (3) – 45 lbs		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Duration of Pt-Pt
Digital SLRs/GPS – 10 lbs		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Duration of Pt-Pt
Laptops (2) – 15 lbs		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Duration of Pt-Pt
Survival Gear – 25 lbs		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Always on board
RON bags (3) – total 75 lbs max		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Duration of Pt-Pt
Sat Phone – 5 lbs		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Always on board
Required Documentation – 5 lbs		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Always on board

Type of Flight	Personnel Protective Equipment Requirements
<input type="checkbox"/> Air Ops general/ground personnel	Nomex clothing, hardhat w/in strap, gloves, leather boots, eye protection, hearing protection, fire extinguisher
<input checked="" type="checkbox"/> Fixed Wing point to point flights	Field clothing, hearing protection
<input checked="" type="checkbox"/> Fixed Wing mission flights	Field clothing, hearing protection
<input type="checkbox"/> Rotor Wing flights	Flight helmet, Nomex clothing, gloves, leather boots, eye protection, hearing protection, approved secondary restraint harness for doors off flights, PFD for all PAX as required

Justification statement for low-level flights:

N/A

Special Instructions:

Aircraft Manager must confirm with Dispatch prior to the flight that affected routes' Schedulers contacted for Route Activity

Military Training Route (MTR) Information

MTR	Route Legs-Altitude	Activity	Time	Time Zone
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST

Military Training Route (MTR) Information

MTR	Route Legs-Altitude	Activity	Time	Time Zone
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST

Military Training Route (MTR) Information

MTR	Route Legs-Altitude	Activity	Time	Time Zone
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST
<input type="checkbox"/>		<input type="checkbox"/> Hot <input type="checkbox"/> Cold	Start Stop	<input type="checkbox"/> UTC <input type="checkbox"/> PST

Special Instructions:

Pilot is aware of MTRs and will follow appropriate FAA requirements; point-to-point is scheduled for weekends when MOA use, if any, is limited. Maintain visual separation if MOA active.

Job Risk Analysis: Aircraft manager/pilot review with all participants as part of preflight briefing

Is everything approved with clear instructions, aviation plan signed and reviewed?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Are communications and flight following established, including repeater tones?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Can terrain, altitude, temperature or weather that could have an adverse effect be mitigated?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Are all aerial hazards identified and known to all participants?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Have mitigating measures been taken to avoid conflicts with military or civilian aircraft	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Have adequate landing areas been identified and/or improved to minimum standards	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Are all agency personnel qualified for the mission?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Is the pilot carded and experienced for the mission to be conducted?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> NA
Are there enough agency personnel to accomplish the mission safely?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Will adequate briefings be conducted prior to flight to include Pilot, Passengers and Dispatch?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Are all involved aware that the pilot has the final authority, but if any passenger feels uncomfortable, that they can decline the flight without fear of reprisal?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Is the aircraft capable of performing the mission with a margin of safety?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Have manifests of cargo and passengers, load calculations and/or weight & balance completed?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Is the aircraft properly carded?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Do all personnel have the required PPE?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Fuel planning, adequate fuel on board, fuel truck location, availability of commercial fuel?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Remember; maps of areas/sites, handheld radios, cell phones, day/survival packs, sic sacks	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> NA
Will the mission be conducted at low levels? (Below 500' AGL)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> NA
Can the same objective be achieved by flying above 500' AGL?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> NA
Are pilot flight and duty times compromised?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> NA
Is there an alternative method that would accomplish the mission more safely?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> NA
Flight Mgr. Signature: /s/ <u>jeff.mai</u>	Date: <u>3/19/10</u>	Pilot Signature: /s/ <u>gracie.moore</u>	Date: <u>3/19/10</u>

Job Hazard Analysis: Aircraft manager/pilot review with all participants as part of preflight briefing

<u>Hazard</u>	<u>Hazard Mitigation</u>
MTR's	Practice risk management. Check routes in advance, confirm that Dispatch has made calls
Private aircraft	See and avoid. Transmit in the blind on 122.925 near backcountry airstrips
Airport traffic	Stay in radio contact. Announce intentions, use established patterns
Weather	Use weather advisory. Maintain VFR minimums. Cancel mission if conditions deteriorate
Terrain	Avoid performance related situations, cross terrain at it's lowest point, consider downdrafts
Low level obstacles	Complete a high level recon, no unnecessary low level flight
Unimproved landings	Recon LZ. Download on first load. Stay in radio contact
Doors off helicopter operations	Use approved secondary restraint harness. Remove loose items from cabin
Pilot not familiar with area	Supply hazard maps. Complete high level recon prior to low level work
Noise, rotor wash	Wear ear and eye protection, utilize dust abatement
Internal and external loads	Have trained personnel assigned to the mission, plan around fuel, Hook and equipment checks
Unplanned aircraft events	All personnel equipped with required PPE and trained in crash procedures, maintain flight follow
Hazardous materials	Trained personnel will handle, inform pilot, utilize Hazmat guide w/current exemption
Non aviation personnel	Maintain control, provide through briefings
Communications	Maintain communications at all times, establish backup options, and know alternate frequencies. Take handheld radio along. Call in prior to landing. If radio contact is lost, climb, check tones, if unable to re-establish, return to best suitable landing area and check in
Overload conditions/CG issues	Complete accurate load calculations and/or Weight and Balance
Wintertime operations	Use appropriate clothing for varying altitudes/climatic conditions, utilize winter survival kit
Prop/Rotor hazards	Pilot perform aircraft safety brief, Approach/Depart sensibly after shutdown & prop/rotor stop
Multiple project aircraft	Adequate aerial supervision. Carded managers for each aircraft. Establish and maintain separation, utilize common frequencies communications
Aircraft Fueling	Vendor responsibility. No agency personnel onboard. Aircraft shutdown unless closed circuit, open port in accordance with NFPA 407 3-21, 4073-21.2(b). Trained personnel staff extinguisher
Line Officer Signature or Authorized Representative: _____	Date: _____

Chart 3-2: Risk Assessment		HAZARD PROBABILITY				
Matrix		Frequent	Likely	Occasional	Seldom	Unlikely
		A	B	C	D	E
EFFECT	Catastrophic	I	Extremely High			Medium
	Critical	II	High	High	Medium	
	Moderate	III	High	Medium		
	Negligible	IV	Medium	Low		

RISK ASSESSMENT WORKSHEET

Additional aviation risks and mitigations are addressed in FHP Aviation Program Risk Assessments updated in 2009, see "Aerial Survey" <http://www.fs.fed.us/foresthealth/aviation/safetv/safetv-riskmgmt.shtml>

Assignment: FHP Mexico	Date: May 15-22, 2010	Probability (A-E)	Effect (I-IV)	Risk Level
Describe Hazard:				
1. Tampering or theft of aircraft while in Mexico		D	II	M
2. SAR response delay while in Mexico		B	II	H
3. Stranded due to mechanical, certified agency AMPs unavailable		D	II	M
4. Mexico military intercept		C	III	M
5. Stranded due to insufficient refueling options		D	II	M
6. Communications failures		C	I	H
7. Hostile border activity, northern Mexico only (see Map 1)		B	I	E
Mitigation Controls:		Probability (A-E)	Effect (I-IV)	Risk Level
1. Secured and disabled per Security Plan		E	III	L
2. Emergency procedures (page 2) minimize delay, AFF by FCDC and mishap response includes Mexico & US emergency contacts		D	II	M
3. Utilize best available equivalent Mexico AMP, communicate with agency AMP for return to service via Sat Phone		D	IV	L
4. CONAFOR/GDL to provide notice to Zapopan for May 19th; Pt-Pt flight planning to avoid restricted Mexico airspace, contact Embassy by Sat Phone if detained (numbers on Page 2 and in Security Plan)		E	IV	L
5. Flight planning to list primary and secondary PEMEX fuel sources, preferably at controlled Mexico airports		E	III	L
6. Have all necessary Mexico frequencies, Satellite Phone, and at least one cell phone with international dialing capability, Brian Howell speaks fluent Spanish		D	III	L
7. Monitor Alerts & Warnings, avoid landing in/minimize exposure over hostile; Foreign Agriculture Service represents USDA within Embassy grants/rejects country clearance based on security situation		C	III	M
FINAL RISK EFFECT: LOW <u>MEDIUM</u> HIGH (CIRCLE ONE)				
Operation Approved by:		Title:		Date:

PROJECT AVIATION SAFETY PLAN BRIEFING

Project Aviation Safety Plan Briefing

A copy of this briefing page will be on file with FHP National Aviation Safety Manager after completion of this project.

Briefing Leader: _____

Briefing Date: _____ Time: _____ Location: _____

Discussion Items:

a. Hazard Analysis (as outlined in plan)

b. Safety Air Ops (Ground)

c. Safety Air Ops (Flight)

d. Military Training Routes

e. Flight Following

f. Frequencies

g. Fueling

h. Emergency Evacuation. Plan

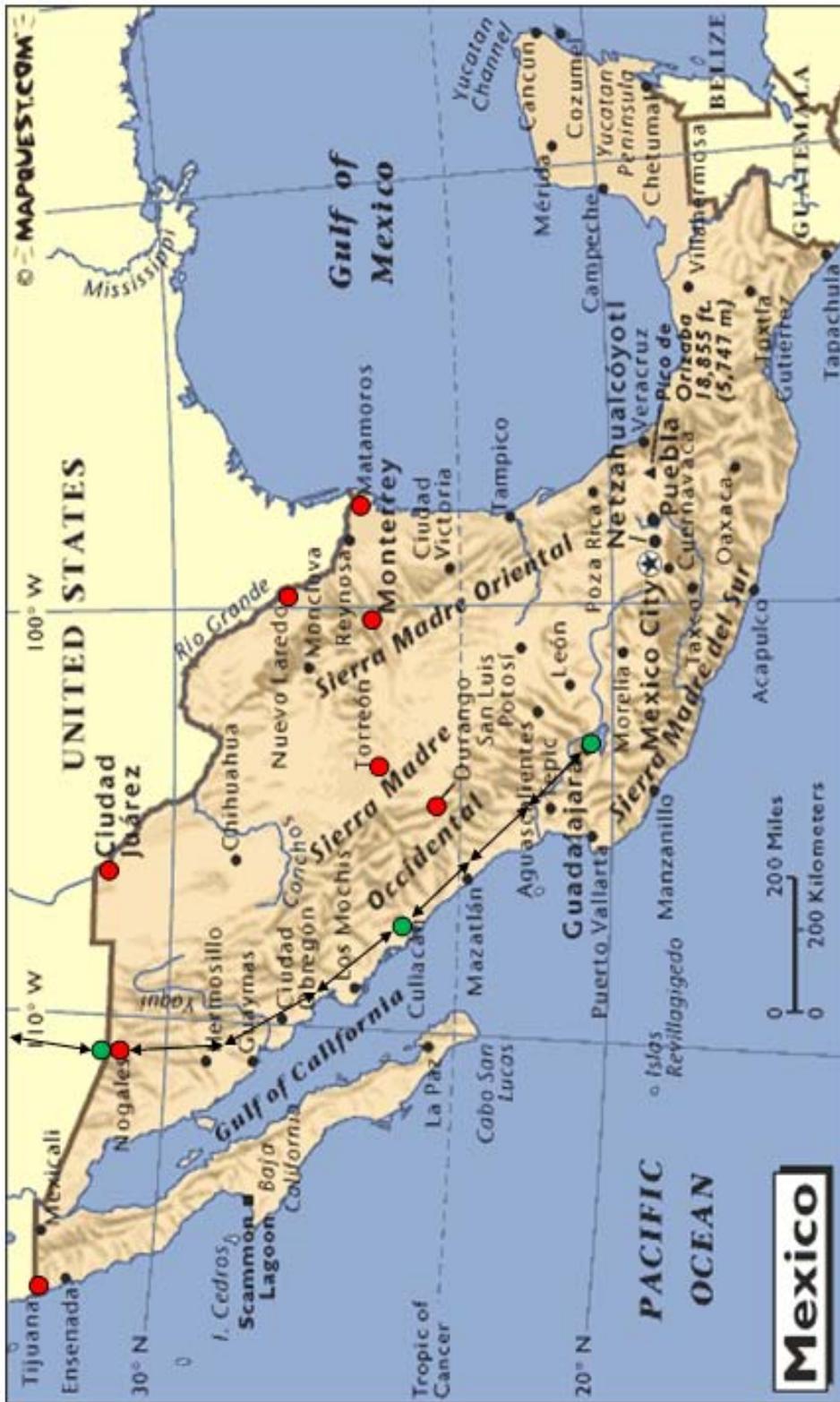
i. Authorities

j. Weather Considerations

k. Other

L. other

Attendees Signature and Concurrence:



MAP 1 - Flight Route TUS to GDL, GREEN = Airports to utilize, RED = State Dept. Warning Areas until April 12, 2010

Appendix C: Security Plan

SECURITY PLAN

**USFS Forest Health Protection
International Activities with the National Forestry
Commission of Mexico (Comision Nacional Forestal - CONAFOR)**

Aerial Survey and Application Operations and Safety Training

May, 2010

**US Forest Service
Forest Health Protection - FHTET
2150 Centre Avenue, Building A, Suite 331
Fort Collins, CO 80526-1891
970-372-7493 (Jeff Mai, cell)**

TABLE OF CONTENTS

I. PURPOSE AND OBJECTIVE.....	25
II. AUTHORIZED PERSONNEL.....	25
III. AIRCRAFT SECURITY.....	25
IV. FACILITY SECURITY.....	26
A. Guadalajara Airport (GDL).....	26
B. Refueling.....	26
C. Emergency Services.....	26
V. COMMUNICATIONS.....	27
A. Mishap Response.....	27
B. CONAFOR Contact Information.....	27
C. Military Notice.....	27
D. International SOS.....	27
E. Radio Usage.....	28
F. Telephones.....	28
VI. THREAT RESPONSE REPORTING PROTOCOL.....	28
VII. SECURITY RISK ASSESSMENT AND MATRIX.....	29

USFS Forest Health Protection and CONAFOR

SECURITY PLAN - 2010

I. PURPOSE

To provide an outline of procedures regarding personnel, property, equipment and communications to be followed and minimize security risks while operating in Mexico. Security is adequate from Rocky Mountain Metro Airport (departure) to Tucson International Airport (lay over). This plan addresses security-related concerns for that portion of the mission south of the border, after clearing US Customs and while operating from Guadalajara International Airport (GDL).

II. AUTHORIZED PERSONNEL

Only authorized personnel shall be permitted on or near the aircraft, see Administrative Information in Project Aviation Safety Plan (PASP). CONAFOR personnel attending aviation safety and management training on May 18th shall be verified and manifested prior to accessing aircraft during practical flight exercises on May 19th. The USFS Project Supervisor, Fixed-Wing Manager and CONAFOR Department Chief shall identify and monitor other persons permitted on site (i.e., emergency and airport representatives).

III. AIRCRAFT SECURITY

Security standards pertaining to Cessna 206T (N126Z) while in Mexico will conform to reasonable and prudent standards that would be required under agency policy as if operating in the US. USFS mission personnel must abide by applicable regulations issued by the International Civil Aviation Organization, Department of Civil Aviation Mexico, Homeland Security and State Department with regard to aircraft operations and security. Mexican Registration shall be obtained for N126Z prior to entry into Mexico. Only controlled Mexican airports shall be utilized for refueling during point-to-point (primary is Culiacan CUL, alternate is Mazatlan MZT); N126Z shall be secured in hanger while not in use at GDL. At a minimum, USFS project personnel will assure that:

- N126Z is disabled when not in use so that it cannot be started and/or flown by anyone other than the authorized agency pilot (prop lock, hidden kill switch, keys controlled by pilot).
- N126Z and any associated crew gear and aerial survey equipment must be attended or safeguarded at all times.

- Access to the GDL hanger areas is restricted to authorized personnel of GDL airport, CONAFOR and verified representatives directly involved with the project.
- Access to N126Z during mission use on May 19th is by authorized crew members only and supervised at all times.
- Daily preflight inspection shall include careful examination for evidence of tampering.

IV. FACILITY SECURITY

A. GDL Airport

Is a controlled airport, with gated access, security day and night. In addition to N126Z being locked in a hanger overnight, the security fencing, staffing and lighting around the airport limits the potential for an intruder to tamper with the aircraft. Agency personnel shall maintain situational awareness regarding established security controls and potential threats at GDL (i.e. gates, fences, permitted vehicles and personnel) to assure adequate security.

B. Fuel stops en route to/from GDL

Only controlled airports during point-to-point flight and government aviation fuel (PEMEX) shall be utilized. The PASP identifies preferred and alternate airports to be utilized. Agency personnel will monitor fueling and continuously attend N126Z unless stored in hanger overnight at GDL.

C. Emergency Services

CONAFOR will identify nearest emergency services available on-site and from nearby communities during project. Police and fire telephone numbers are listed under IV Threat Response Reporting Protocol (below), additional emergency procedures and contacts are listed in the PASP. Two primary Guadalajara hospitals are:

Hospital Mexico-Americano 011 (52) 33-3648-3333
Colomos 2110 Col. Ladron de Guerva
Guadalajara, Jalisco 44620

Hospital Civil De Guadalajara Juan I. 011 (52) 33-3617-7067
Salvador Quevedo y Zubieta 750 Col. Independencia
Guadalajara, Jalisco 44340

V. COMMUNICATIONS

A. Mishap Response

Point to point – while in Mexican airspace en route to/from GDL, N126Z will have constant contact with Mexico ATC (GDL controls emergency response). Additionally, USFS Fort Collins Interagency Wildfire Dispatch Center 970-295-6800 will flight follow N126Z using AFF and initiate response in accordance with PASP if overdue for planned fuel stops.

Mission use – N126Z will be within approximately 30 minutes flight time south of GDL and will have air to air communications with CONAFOR project aircraft. All aircraft will have air to ground communications with Mexican ATC (Approach & Tower frequencies in PASP, GDL telephone (52) 33-3688-6399). Ground based CONAFOR and USFS personnel staged at GDL will monitor all flight legs and have ability to initiate emergency response (additional contacts listed in PASP).

B. CONAFOR Contact Information

CONAFOR office, Periferico Poniente 5360; Zapopan, Jalisco 45019

Main Office Telephone: 011 (52) 33-3777-7000

Jaime Villa Castillo, Gerente de Sanidad (“Director”), [REDACTED]

Carlos Magallon, Department Chief, [REDACTED]

Carlos is primary contact for project planning and will be working directly with USFS personnel during classroom training, flight and field exercises.

C. Mexican Authorities and Military Notice

CONAFOR will provide notification of entry and exit into the country to appropriate Mexican Authorities and notify Zapopan Military Base of all project aircraft and area of operation scheduled on May 19th for the purposes of deconfliction if necessary and security in general.

D. International SOS

The USFS has acquired 24-hour emergency medical, security, and evacuation services from International SOS. Agency personnel will log into www.international.sos.com prior to departure, review security concerns and protocol, print and carry their International SOS cards. Within US, call 1-800-523-6586. From outside the US, call collect 1-215-942-8226 (Philadelphia).

E. Radio Usage

Radio transmissions will be limited to flight following, emergencies and air-to-air coordination only. Concise, clear text communications will be in English. For any emergency in Mexico transmit on 121.5 from GPS radios and/or use transponder code 7700.

F. Telephones

In the event radios are inoperative during security-related or other emergency, cell phones shall be carried and configured for international dialing; 3G cards should provide adequate service in Mexico providing plan is configured for international. Additionally, N126Z shall have a satellite phone with intercom connectivity to enable use during flight. As an added safety measure, point-to-point legs will use AFF in conjunction with positive communication maintained by radio and/or satellite phone (sat phone intercom system will be tested for feasibility in April 2010 prior to departure from Rocky Mountain Metro Airport).

VI. THREAT RESPONSE REPORTING PROTOCOL

If a security breach or threat is detected at any time, do not put yourself in harm's way by attempting to resolve the situation yourself. Insofar as possible, secure the area to make sure that nothing is tampered with and then use the following protocol:

- Contact the CONAFOR Department Chief Carlos Magallon [REDACTED]
- Contact Mexico Police by dialing 066, for fire emergency 068 (international directory assistance 09)
- If warranted, US Consulate <http://guadalajara.usconsulate.gov/>
 - Progreso 175, Col. Americana; Guadalajara, Jalisco 44160
 - Telephone: 011 (52) 33-3268-2100
- If warranted, US Embassy <http://mexico.usembassy.gov/eng/main.html>
 - Progreso 175, Col. Americana; Guadalajara, Jalisco 44100
 - Telephone: 011 (52) 33-3825-2700 or 33-3825-2998, emergency services after hours 011 (52) 33-3826-5553

Terrorist events such as shooting or attacking an aircraft while in flight must be reported to the local authorities and State Department. Aircraft accidents must also be reported in accordance with agency policy and the PASP.

VII. SECURITY RISK ASSESSMENT AND MATRIX

This assessment is constructed based upon consultation with CONAFOR, restricting point-to-point fuel stops to controlled Mexico airports, parking N126Z overnight only in GDL hanger, and by utilizing other security measures as previously described vulnerability is low. Travel alerts are being monitored. Guadalajara is not among the areas of concern indicated in alerts; the crime rate in proximity to GDL is relatively low.

The probability of threat is “Improbable” based upon very low likelihood an event would occur during the brief period of time N126Z will utilize GDL. It is noted that Guadalajara is a large population center with important Mexican government buildings, important infrastructure, commercial buildings and arenas. In the event there is a breach of security at GDL, security measures employed to reduce the risk of unauthorized access to N126Z and disabling measures are sufficient to confine severity of consequences to “Marginal”. Event consequences would likely be confined to a minor delay in USFS mission, minor hanger or aircraft damage in the event of forced entry and tampering.

Though not a Forest Service aviation facility and use of GDL is transient in nature, this evaluation and matrix is provided in project context:

Probability of Threat	Severity of Event Consequences		
	Catastrophic	Critical	Marginal
Possible	Security Standard III	Security Standard III	Security Standard II
Improbable	Security Standard III	Security Standard II	Security Standard I
Remote	Security Standard III	Security Standard II	Security Standard I

Appendix D: Flight Request, Automated Flight Following and Satellite Phone

In accordance with the PASP, the following schedules were confirmed with Dispatch prior to departure and return point-to-point flights. Automated flight following (AFF) was utilized and functioned without interruption throughout the US and Mexico. In addition to AFF, positive radio communication was maintained with agency, US and Mexico air traffic control as appropriate. A satellite phone connected to intercom provided backup communications while in Mexico. The satellite phone was useful to communicate itinerary changes with agency dispatch and coordinate ground handling changes to clear customs.

Departure - Rocky Mountain Metro (BJC) to Guadalajara (MMGL):

United States Department of the Interior Bureau of Land Management AIRCRAFT FLIGHT REQUEST/SCHEDULE								Change #:		6. Aircraft Info- VERSION 2					
										FAA N#: 126Z					
1. Initial request information						Cost-Accounting Management Code(s):		Billee Code (OAS A/C only):		Flight Schedule No.		Pax Seats			
Initial Date/Time: 5/11 1130		To/From: John/Grace		Phone Number:		[REDACTED]		[REDACTED]		Make/Model: Cessna TU-206		3			
Check one: <input checked="" type="checkbox"/> Point-to-Point <input type="checkbox"/> Mission Flight <input type="checkbox"/> Desired A/C Type: <input type="checkbox"/> Helicopter <input checked="" type="checkbox"/> Airplane										Color: White/Orange					
Mission Objective/Special Needs: Provide international support and cooperation to the National Forestry Commission of Mexico (CONAFOR), consistent with USFS Forest Health Protection (FHP) mission and mutual interest in the detection and management of forest pests.										Vendor: USFS					
MMGL= Guadalajara, MX MMCL= Culiacan, MX Ft. Collins Dispatch has a copy of the aviation safety plan with other contact information.										Phone No. Pilot C- [REDACTED]					
Satellite phone in aircraft- [REDACTED]										Pilot(s): Grace Moore					
2. Passenger/Cargo Information – Indicate Chief of Party with an asterisk (*)															
Name/Type of Cargo (last name, initial)		LBS or CU ft	No.	Dept Arpt	Dest Arpt	Return to	Name/Type of Cargo (last name, initial)		LBS or CU ft	Project Order/Request No.	Dept Arpt	Dest Arpt	Return to		
Brian Howell		240		BJC	MMGL	BJC	Survival Gear		25		BJC	MMGL	BJC		
*Jeff Mai		205		BJC	MMGL	BJC	RON bags		75		BJC	MMGL	BJC		
Sketch tablets		45		BJC	MMGL	BJC	Sat phone		5		BJC	MMGL	BJC		
SLRs/GPS		10		BJC	MMGL	BJC	Documentation		5		BJC	MMGL	BJC		
Laptops		15		BJC	MMGL	BJC									
3. Flight Itinerary (For Mission-Type Flights, Provide Points of Departure/Arrival and Attach Map with Detailed Flight Route and Known Hazards Indicated)															
DEPART WITH		DEPART FROM			Enroute		ARRIVE AT		DROP OFF		Key Points		Info Relayed		
Date	No. PAX	Lbs	Airport/Place	ETD	ATD	ETE	Airport/Place	ETA	ATA	No. PAX	Lbs	Drop-Off Points, Refueling Stops, Flight Check-ins, Pickup Points		To/From	
5/15	2		BJC	0900		2+30	GUP	1130						/	
5/15	2		GUP	1230		2+00	TUS	1430				Overnight		/	
5/16	2		TUS	0900		3+45	MMCL	1245						/	
5/16	2		MMCL	1415		2+45	MMGL	1700				All times are local		/	
														/	
														/	
4. Flight Following:				5. Method of Resource Tracking:				7. Administrative				8. Review (if applicable)			
<input checked="" type="checkbox"/> FAA IFR Satellite <input checked="" type="checkbox"/> FAA VFR w/ check-in every _____ Minutes to FAA or Agency Agency VFT with check-in via radio every _____ Minutes Frequencies: Has Automated Flight Following				<input checked="" type="checkbox"/> Phone Radio <input checked="" type="checkbox"/> To Scheduling Dispatcher@ 970-295-6800 <input checked="" type="checkbox"/> Prior to Takeoff <input checked="" type="checkbox"/> Each Stop Enroute <input checked="" type="checkbox"/> Arrival at Destination To_@ (Other Office) (Phone Number)				Type of Payment Document: _ OAS-23 or _ OAS 2 FS 6500-122 Other: Route Document To: 9. Close-out Closed by:				_ Hazard Analysis Performed _ Dispatch/Aviation Mgr. Checklist _ Other: Date/Time: /			

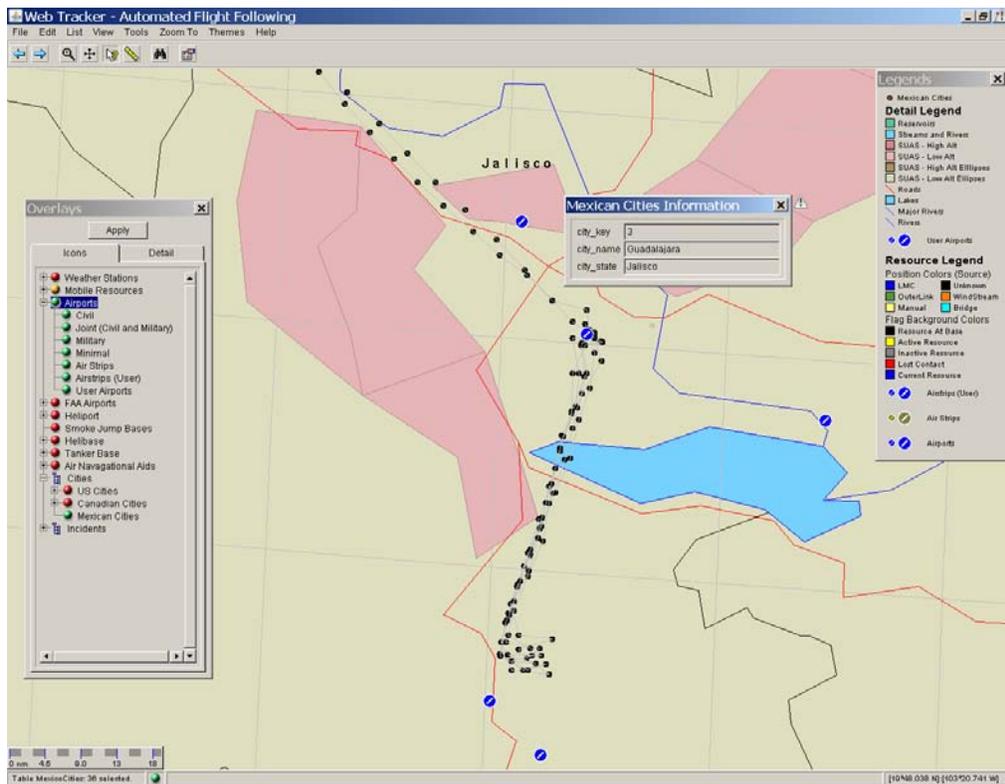
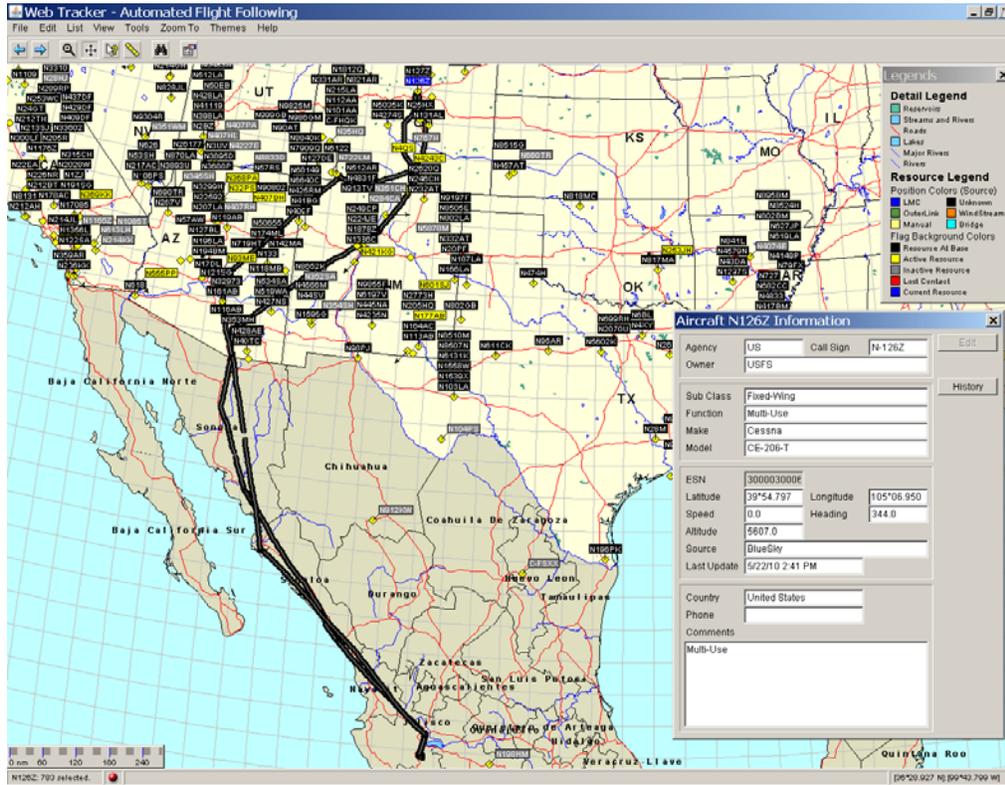
Return - Guadalajara (MMGL) to Rocky Mountain Metro (BJC):

United States Department of the Interior Bureau of Land Management AIRCRAFT FLIGHT REQUEST/SCHEDULE										Change #:		6. Aircraft Info- VERSION 2 FAAN#: 126Z		
1. Initial request information						Cost-Accounting Management Code(s):		Billee Code (OAS A/C only):		Flight Schedule No.		Pax Seats		
Initial Date/Time: 5/11 1130		To/From: John/Grace		Phone Number:						Make/Model: Cessna TU-206		3		
Check one: <input checked="" type="checkbox"/> Point-to-Point <input type="checkbox"/> Mission Flight <input type="checkbox"/> Desired A/C Type: <input type="checkbox"/> Helicopter <input checked="" type="checkbox"/> Airplane										Color: White/Orange		Vendor: USFS		
Mission Objective/Special Needs: Provide international support and cooperation to the National Forestry Commission of Mexico (CONAFOR), consistent with USFS Forest Health Protection (FHP) mission and mutual interest in the detection and management of forest pests. MMGL= Guadalajara, MX MMCL= Cullacan, MX Ft. Collins Dispatch has a copy of the aviation safety plan with other contact information. Satellite phone in aircraft-										Phone No. Pilot C-		Pilot(s): Grace Moore		
2. Passenger/Cargo Information – Indicate Chief of Party with an asterisk (*)														
Name/Type of Cargo (last name, initial)		LBS or CU ft	No.	Dept Arpt	Dest Arpt	Return to	Name/Type of Cargo (last name, initial)		LBS or CU ft	Project Order/Request No.	Dept Arpt	Dest Arpt	Return to	
Brian Howell		240		BJC	MMGL	BJC	Survival Gear		25		BJC	MMGL	BJC	
*Jeff Mai		205		BJC	MMGL	BJC	RON bags		75		BJC	MMGL	BJC	
Sketch tablets		45		BJC	MMGL	BJC	Sat phone		5		BJC	MMGL	BJC	
SLRs/GPS		10		BJC	MMGL	BJC	Documentation		5		BJC	MMGL	BJC	
Laptops		15		BJC	MMGL	BJC								
3. Flight Itinerary (For Mission-Type Flights, Provide Points of Departure/Arrival and Attach Map with Detailed Flight Route and Known Hazards Indicated)														
DEPART WITH		DEPART FROM			Enroute		ARRIVE AT		DROP OFF		Key Points		Info Relayed	
Date	No. PAX	Lbs	Airport/Place	ETD	ATD	ETE	Airport/Place	ETA	ATA	No. PAX	Lbs	Drop-Off Points, Refueling Stops, Flight Check-ins, Pickup Points		To/From
5/21	2		MMGL	0900		2+45	MMCL	1145						/
5/21	2		MMCL	1315		3+45	OLS	1700						/
5/21	2		OLS	1800		1+00	FFZ	1900				Overnight		/
5/22	2		FFZ	0900		2+20	DRO	1120						/
5/22	2		DRO	1220		1+45	BJC	1405				All times are local		/
4. Flight Following:														
<input checked="" type="checkbox"/> FAA IFR Satellite <input checked="" type="checkbox"/> FAA VFR w/ check-in every _____ Minutes to FAA or Agency Agency VFT with check-in via radio every _____ Minutes Frequencies: Has Automated Flight Following														
5. Method of Resource Tracking:														
<input checked="" type="checkbox"/> Phone Radio <input checked="" type="checkbox"/> To Scheduling Dispatcher@ 970-295-6800 <input checked="" type="checkbox"/> Prior to Takeoff <input checked="" type="checkbox"/> Each Stop <input type="checkbox"/> Enroute <input checked="" type="checkbox"/> Arrival at Destination To: @ _____ (Other Office) (Phone Number)														
7. Administrative Type of Payment Document:														
<input type="checkbox"/> OAS-23 or OAS 2 <input type="checkbox"/> FS 6500-122 Other: Route Document To: 9. Close-out Closed by: _____ Date/Time: / /														
8. Review (if applicable)														
<input type="checkbox"/> Hazard Analysis Performed <input type="checkbox"/> Dispatch/Aviation Mgr. Checklist <input type="checkbox"/> Other:														

Satellite phone wired through intercom and aircraft antenna:



AFF position details for USFS Cessna N126Z departure and return legs, also includes operations during flight exercises out of Guadalajara and south of Lake Chapala:



Appendix E: Contributors and Contact Information

Thanks to the following individuals for contributing technical information and instructional materials:

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