USA-Portugal Wildland Fire Technical Exchange Project

Final Report
August 13, 2004

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Executive Summary

While we found the initial attack capabilities of the individual fire brigades, the Sapadores Florestais and private company first intervention assets to be quite good, they lacked a single, unifying command structure and common communications capability. Initial attack efforts were aggressive and often successful, however, once fires became large and burn more than a single burn period, there was a limited ability to successfully plan and implement effective perimeter control strategies and provide for multiple day logistical needs. The absence of handcrews also makes it difficult to implement a perimeter control strategy, especially in rugged or remote areas.

The wildland fire program also appears unbalanced. A greater emphasis is given to increasing combat capability, specifically in terms of equipment, with less emphasis given to fire prevention, in terms of education programs, law enforcement, fuels reduction and silviculture treatments. More effort should be channeled into prevention activities. The fire prevented does not have to be extinguished.

Finally, a comprehensive training program is needed within this broader framework of improvements to ensure that knowledge and skills are being successfully imported and transferred to those that must implement the actions.

Specific recommendations are organized in 6 topics including:

1. **Wildfire Incident Command and Control Structure—**a determination to integrate all assets in the most effective way. Currently 3 separate and distinct fire combat organizations can operate independently on the same fire.

2. **Wildfire Communication—**a radio system that can immediately dedicate strategic and tactical frequencies for a limited and temporary theater of operations allowing all assets within that theater unrestricted communications with one another.

3. **Wildfire Combat Assets—**the necessary assets are in place with the notable exception of specialized handcrews. More assets of any kind can always be useful but the absence of a reliable source of handcrews is a significant handicap.

4. **Perimeter Control Strategy and Tactics—**much of the fire combat effort is targeted toward protecting homes while the perimeter of the fire goes unchecked. As a result, fires continue to grow threatening new areas. There is also a high percentage of rekindles because perimeters are not completely extinguished.

5. **Balanced Wildland Fire Management Program—**one that places equal value on prevention activities along with detection and combat. Most fires are human caused and many are preventable. Fuel reduction and silviculture treatments are badly needed in some Districts. Fuels are quickly becoming more continuous and more flammable, covering vast landscapes.

6. **Comprehensive Wildland Fire Management Training Program**—capable of addressing the knowledge and skill needs from new recruit fire fighters, to fire brigade commanders, to municipal planners and community leaders.

Portugal's forests and rural agricultural zones are valuable national assets that deserve protection. This report identifies certain key structural and technical changes that would help stop the continuing erosion of productivity resulting from wildland fire damage. These reforms, many of which have been discussed in the past, would help Portugal avoid another potentially devastating year of fire-related loss.

Acknowledgements

We would like to thank those that made our trip so prosperous, including:

Tiago Oliveira, Deputy of the Secretary of Forests (XV Government)
Francisco Fernandes, National Service for Fire Protection and Civil Defense (SNBPC)
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Miguel Galante, National Forest Service (DGRF)
Paulo Mateus, National Forest Service (DGRF)
Manuel Rainha, National Park Service (ICN)
José Gardete, National Forest Service (DGRF)

All Governors, Mayors, personnel from the National Service for Fire Protection and Civil Defense, National School of Firefighters, Fire Brigades, Forest Service, Park Service, Forest Owners Associations, AFOCELCA, INFOCA (Andaluzia) and technical staff from several municipalities.

This technical exchange project was possible also due to support from:
US Forest Service
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US Embassy
Secretary of Forests
Portucel Group

Introduction

The year 2003 brought Portugal the worst fire season in recent history in terms of hectares burned and lives lost. Some attribute this to an unusual weather anomaly but the 2004 fire season has already demonstrated that a continuing potential exists for large, multiple day, campaign fire combat events. Climatologic forecasts also suggest that a continuing trend of hotter, drier summers is likely for some parts of the globe. Portugal needs be prepared for a continuation of seasonal fire weather similar to what occurred in 2003 and 2004.

General Impressions

During the 3-week tour we reviewed fire combat operations, interviewed fire brigade and emergency command center (CDOS/CPD) supervisors and staff, personnel from the National Service for Fire Protection and Civil Defense, the Forest Service, Forest Owners Associations, first intervention assets for private fiber companies, Mayors, Governors, and technical staff from several municipalities. As a result we developed some general impressions about the wildland fire program in Portugal.

First, we did not expect to find such high quality and quantity of fire combat equipment in use by the volunteer fire brigades, the Sapadores Florestais, and private first intervention teams. Air tankers, helicopters, fire engines (GPIs), water tenders (GRRs), wet prevention/first intervention vehicles, bulldozers and farm tractors are all included in the arsenal of fire equipment. The only necessary asset we didn't find was specialized handcrews for constructing fireline in rugged or remote terrain. While a small experimental program exists using the military at Boticas, specialized handcrew assets are basically nonexistent in Portugal. Any additional buildup of fire combat forces should concentrate on developing a reliable source of handcrews.

Second, we were encouraged by the advanced technology used in a few of the municipalities. This included real time GPRS tracking of vehicles on geospatial electronic maps; remote weather monitoring stations with data accessible by cell phone; remote video camera surveillance for fire detection; and the use of ultra-light aircraft to enhance fire detection capability. The CPDs all had GIS mapping capability, although some were not using the technology. Also, the Fire Lab in Lousa operated by the University of Coimbra rivals any for conducting fire physics experiments.

In short, Portugal has all the pieces of the puzzle to construct a world-class fire prevention, detection, forest intervention and combat program. However, what we find lacking is a comprehensive plan to fit them together. A national strategy is needed to effectively educate policy makers and the public, to build a balanced arsenal of assets, to integrate coordination and control of assets, to provide logistical support for combat on multiple-day campaign fires, and to attain the knowledge and training to effectively apply perimeter control strategies and tactics on large, landscape-scale fires.

Portugal Needs a National Strategy

It would be of great value for Portugal to develop a National Fire Plan; a plan that achieves political solidarity in moving forward collaboratively to reduce the problem of large, catastrophic fires. This plan needs to identify a balanced mix of activities to support fire prevention education, fuel reduction and silviculture treatments, detection and first intervention, wildland fire combat and tactics, and the restoration of severely burned areas.

Clearly, the current emphasis in Portugal is in increasing fire combat forces. This represents a last resort strategy. The first opportunity to reduce the fire problem lies in preventing fires though education, patrol and enforcement programs. The second opportunity lies in creating fire resistant landscapes through strategic application of fuel reduction and silviculture treatments. The third opportunity lies in a strong fire detection and first intervention program to extinguish fires before they become destructive. And finally, the last opportunity to reduce fire losses is to engage in fire combat.

A National Fire Plan should clearly define roles and responsibilities of all participants including National, District and Municipal government agencies as well as Forest Owners Associations and private companies. It strives to focus all the components of a balanced program in a synergistic fashion to gain the greatest improvement for the least cost. No single agency has the budget or the assets to independently solve the problem.

A Review of Public Policies is Needed

Public policies that affect land use changes such as planting forests in agricultural land set-asides and conservation rules for natural areas need to be reviewed to insure compatibility with the wildland fire prevention scheme for a given area. These policies provide incentives for the conversion of cultivated lands that once provided effective fire breaks, to large areas of planted, unmanaged monocultures which are now conducive to large fires. They also provide for the establishment of Natural Areas with unmanaged vegetation that potentially escalates the fire risk. Both situations result in an unacceptable fuel accumulation that makes fire suppression difficult, and consequently increases the risk of destruction of the ecosystem intended for preservation. Also, an increase in unauthorized building in the middle of forests and other wild areas complicates fire protection by diverting assets to protect structures rather than using them to stop fire spread.

Increasing Jobs in Rural Areas

An opportunity exists to create jobs that will attract working people back to rural areas doing prevention work in the fall, winter, and spring (fuel reduction and silviculture treatments) and providing a labor force for organized handcrews to combat fire in the

summer. The Sapadores Florestais program is already loosely based on this concept. Forest Owners Associations have demonstrated some success in attracting additional funding for prevention work paid for by members eager to provide maximum protection for their land.. As membership in these associations becomes more popular, and in their ability to pay for additional work increases, the program could easily support numerous 5-person squads that could be brought together as an organized handcrew trained for fire combat.

Professional versus Volunteer Fire Brigade Commanders

We were surprised to learn that the Commanders for the Volunteer Fire Brigades do not receive any payment for their leadership services. This is of great concern for several reasons. Fire Brigade Commander is a demanding leadership position that requires full-time presence of mind at all times with attention to protecting lives and property. This position is a key leader in the community in times of crisis. We were told that many volunteer fire brigade commanders can not afford to devote time away from their paid jobs to attend critical training provided by the national training center in Lousa. These individuals should have the highest level training possible as lives often hang on their judgment, knowledge and experience. It is our opinion that every Fire Brigade Commander should be a full-time, paid professional, subject to minimum national qualifications standards.

Establishing Accountability

Many questions we asked about fire program effectiveness went unanswered. Multiple government, municipalities and private funding sources contribute to the overall wildland fire protection program but it appears there has been no attempt to roll-up all the expenditures in an annual report. What effect do various elements of the program (prevention, detection, first intervention, and combat) have on the overall objective of protecting communities and natural resources? Which activities are the most effective and which are the least? Nationally, how much money is spent on extinguishing rekindled fires? Standards and schedules for reporting this valuable data could be addressed by a National Fire Plan.

Is the Protection of Forests and Rural Areas a National Priority?

This report falls on the heels of 3 previous reports from American wildland fire experts delivered in 1982, 1996, and 2003. Many of the same recommendations exist in all 4 reports. The real question is: how much does Portugal value its forests and rural agricultural lands? Is it enough to make the necessary changes that could stop the continuing erosion of productivity resulting from increasing wildland fire damage. This is a problem of political and social priorities.

Recommendations for Immediate Improvement

Our specific recommendations are organized in 6 topic areas including:

1. **Wildfire Incident Command and Control Structure—**a determination to integrate all assets in the most effective way. Currently 3 separate and distinct fire combat organizations can operate independently on the same fire.

2. **Wildfire Communication—**a radio system that can immediately dedicate strategic and tactical frequencies for a limited and temporary theater of operations allowing all assets within that theater unrestricted communications with one another.

3. **Wildfire Combat Assets—**the necessary asset are in place with the notable exception of specialized handcrews. More assets of any kind can always be useful but the absence of a reliable source of handcrews is a significant handicap.

4. **Perimeter Control Strategy and Tactics—**Much of the fire combat effort is targeted toward protecting homes while the perimeter of the fire goes unchecked. As a result, fires continue to threaten new areas. There is also a high percentage of rekindles because perimeters are not completely extinguished.

5. **A Balanced Program—**one that places equal value on prevention activities along with detection and combat. Most fires are human caused and many are preventable. Fuel reduction and silviculture treatments are badly needed in some Districts. Fuels are quickly becoming more continuous and more flammable, covering vast landscapes.

6. **Comprehensive Wildland Fire Management Training Program**—capable of addressing the knowledge and skill needs from new recruit fire fighters, to fire brigade commanders, to municipal planners and community leaders.

Observations,
Desired Situation of Wildland Fire Capability,
and Recommendations for Improvement

Topic 1: Wildfire Incident Command and Control Structure

Observation 1.1

On wildfire combat incidents in Portugal, we observed up to 3 separate and distinct organizations operating independently including Bombeiros Volunteer Fire Brigades, Sapadores Florestais, and private first intervention companies (eg. AFOCELCA). This situation is ineffective, inefficient, and compromises safety.

Desired Situation 1.1

All assets working on a wildfire combat incident should be under the direct command authority of one Incident Commander. Private company assets can be assigned to protect lands and developments of their sponsoring agent but the combat work must be coordinated and organized by one command function.

Recommendation 1.1

Portugal law assigns responsibility and authority for fire combat to the National Service for Fire Civil Protection (SNBPC). All resources engaging in combat actions should come under temporary command of the assigned Incident Commander while taking action related to the incident. Private company and Sapadores Florestais assets must respect this statute command authority and SNBPC Commanders must enforce their authority with respect to this statute.

Observation 1.2

Tactical supervision capability is stretched too thin on quickly escalating incidents. In a quickly changing wildfire environment, firefighting assets protecting houses and other developed areas must move as quickly as the fire front. This organizational agility can only be achieved when the tactical span-of-control averages 1 supervisor for every 5 to 7 GPI.

Desired Situation 1.2

The SNBPC should strive to have sufficient tactical fire ground supervisors to maintain a minimum of 1 supervisor per 7 GPI units when engaging in combat. A ration of 1 to 5 is preferred.

Recommendation 1.2

Additional fire ground tactical supervisors are needed to provide real-time intelligence, make tactical field assignments to GPIs, and continually move assets as the fire front progresses. On the fires we observed, Division Supervisor positions were over extended. Incident Commanders need to request additional tactical supervisors when they request GPSs from neighboring fire brigades. It should be noted that the reinforcement groups mobilized to high risk areas in anticipation of large fires have this level of tactical supervision.

Topic 2: Wildfire Communication

Observation 2.1

On escalating wildland fire incidents, radio frequencies were overloaded with traffic such that tactical supervisors often had difficulty contacting the GPIs and helicopters working on or near their Division.

Desired Situation 2.1

Wildfire incidents that extend more than 1 burning period need strategic and tactical radio frequencies specifically dedicated for use in the theater of operation.

Recommendation 2.1

The TETRA communication system is to be installed in Portugal over a 10-year time horizon and will give emergency operations the ability for dedicated theater of operations frequencies. The sooner this capability is made available the better. A temporary reallocation of radio frequencies may be an option in the interim.

Observation 2.2

As previously stated in Observation 1.1, up to 3 separate and distinct organizations can be operating independently on the same fire using 3 different radio frequencies. This compromises safety and effectiveness.

Desired Situation 2.2

Bombeiros, Sapadores Florestais, and private first intervention companies (eg. AFOCELCA) need a common radio frequency for tactical initial attack operations.

Recommendation 2.2

There is a reluctance to allow Sapadores Florestais and private company fire combat assets to talk on the same radio frequencies used by the Fire Brigades. If these resources are expected to support fire combat, they need this capability. Some fire brigade commanders have already recognized this need and are giving handheld fire brigade radios to Sapadores Florestais units to use while they are working in the fire combat zone. If this is the chosen solution then fire brigades will need more handheld radios. The preferred solution is to grant temporary authorization to Sapadores Florestais and private fire fighting companies to use fire brigade radio frequencies when assisting in combat activities.

Observation 2.3

Tactical fire ground supervisors are not able to talk directly to aircraft pilots working in their assigned area of the fire. As a result, the highest priority targets are often overlooked because the pilots are unaware of changing priorities as the fire moves in to new areas or flares up in previously quiet sectors.

Desired Situation 2.3

A dedicated air to ground frequency is needed for all tactical combat operations. Direct communication between fire ground tactical supervisors and helicopters is valuable for last minute changes in target priorities in a quickly evolving wildfire combat environment.

Recommendation 2.3

Allocate a separate radio frequency for air to ground tactical communications.

Topic 3: Wildfire Combat Assets

Observation 3.1

Bombeiros are well trained and equipped to combat structure fires and for protecting infrastructure assets from wildfire. However, they do not have all assets needed to effectively and efficiently combat wildfires.

There are few organized, trained, and equipped handcrew resources available. As a result, many rekindles occur because remote fire perimeters are not effectively extinguished. Even though some Fire Brigade helicopter crews can perform this function, the vast majority of Fire Brigades are not equipped, trained or supervised for this tactical assignment.

Desired Situation 3.1

A balanced wildfire combat organization includes a balanced mix of the following combat assets:

- Light and heavy water handling equipment and personnel (GPIs and GRRs).
- Aerial attack assets (helicopters, air tankers).
- Heavy fireline construction equipment (dozers, tractors w/plows or discs) for gentle slopes.
- Specialized hand crews for fireline construction, burn-out, mop-up and patrol on steep slopes and in remote areas.

Recommendation 3.1

We recommend that the equivalent of 2 each 10-person hand crews be trained, equipped and available in each of the 18 Districts during the peak of the wildland fire season from July 1 through August 31. It would be prudent to have some of these crews on during the historical length of fire season (April-September).

There are many avenues for providing these crews. The Boticas Fire Brigade in Northern Portugal has implemented an experimental program using 2 each 10-person hand crews provided by the local military base. They are available to respond within a 20 km radius of the base. These crews have been used on 50 fires with great success. This program should be expanded with an eye for national implementation where military bases are positioned close to fire prone areas.

The Sapadores Florestais program may be able to partially meet this need. Also, in many states in America, organized crews of low-risk prisoners are also used (200 17-person crews are available in California alone).

Topic 4: Perimeter Control Strategy and Tactics

Observation 4.1

The use of perimeter control methods common to other countries with significant wildfire problems (USA, Spain, Australia, Canada, etc.) varies considerably throughout Portugal's 18 Districts. While several Districts that experienced large fires in 2003 understand the value of using perimeter control methods, other Districts use only point control methods choosing to fully extinguish the fire only near houses and along roads that provide convenient access. Without a perimeter control strategy, the fire continues to grow even though high priority targets (homes, industry) are protected. As the perimeter grows it becomes a threat to additional high priority targets, requiring even more fire combat assets to take defensive rather than offensive actions.

The National Bombeiros Training Center in Lousa has recently added some instruction in perimeter control methods but fire brigades have been slow in adapting them as standard practice. This could be due to a scarcity of assets specifically trained, organized and equipped for this purpose (Observation 3.1). Even more so, using offensive fire combat methods that don't rely on water may also be a significant cultural change for many Fire Brigades as this is a diversion from long standing traditional practices.

Desired Situation 4.1

Fire Brigade Commanders are trained, equipped, and experienced in developing strategies and in planning and implementing tactics associated with perimeter control, including burning out fuels as part of fireline construction and backfiring to stop the forward front of a large fire. All firefighters used on wildland portions of fires (Fire Brigades, Sapadores Florestais, and private company firefighters) are properly equipped and trained in fireline construction and perimeter control tactics and methods.

Recommendation 4.1

Develop and implement a supplemental training program for perimeter control strategy and tactics that builds on existing training. Training should address at least 3 skill levels including commander, tactical fire supervisor, and firefighter and be required by all personnel involved in wildland fire combat. A course outline is attached.

It is critical that other improvements in the wildfire combat program be completed before using the perimeter control tactics of backfire. It is essential that an effective command structure and communications network be in place and to assure that the proper planning and coordination have occurred, otherwise dangerous consequences could result.

Observation 4.2

Rekindles from remote sections of fire perimeter are occurring on a more frequent basis. So far this year, about 400 fires are rekindles of fires thought to have been extinguished. In some cases the same fire rekindled up to several times before finally being extinguished. In 2003, a 10 sq. meter fire rekindled and burned 3,000 hectares. In America, and most other mechanized countries, this record would not be acceptable.

Desired Situation 4.2

Reduce the rate of rekindled fires from 4% to less than 1%. Ensure all fire perimeters are lined and cold before abandoning the fire or declaring it extinguished.

Recommendation 4.2

Require that all hotspots and visible smokes along wildland fire perimeters be worked with handtools until cold before designating the fire as "extinguished".

Topic 5: Balanced Wildland Fire Management Program.

Observation 5.1

Vast landscapes of continuous fuels are developing as previously cultivated lands in the interior are abandoned or are converted to forests without further management, and also from corporate forest practices that encourage landscape scale, even-aged monoculture stands of pine or eucalyptus.

Desired Situation 5.1

Landscape fuel breaks between forest areas historically provided by cultivation agriculture and native species diversity must now be provided by strategic forest management practices. Forests that are managed in 30-60 hectare stands creating a mosaic of age class and species diversity will limit the extent of fire spread and damage across vast landscapes and reverse the trend for increasing dependency on combat forces for fire protection.

Recommendation 5.1

Encourage forest landowners to engage in a long-term forest management strategy that increases resilience to fire and reduces dependency of the forest on fire combat forces for protection. This can be accomplished by establishing a harvest schedule that creates a mosaic quilt on the landscape of 20-60 hectare stands of different age classes.

Encourage small forest landowners to treat grass and brush before fire season using farm tractors with plows or discs between rows of trees on flatter slopes and using Sapadores Florestais teams with brush cutters on steeper slopes.

Encourage prescribed burning in pine and oak stands when the trees are tall enough to survive scorch (an average of 20 years old). Stands on more productive sites may need mechanical treatment prior to burning to reduce fuel height of brush and grass.

Topic 6: Comprehensive Wildland Fire Management Training Program

Observation 6.1

We observed many knowledge and experience deficiencies that could be resolved through training in both theory and practical application. For example, the concept of planning and implementing a perimeter control strategy on large fires was not widely practiced. The need for all personnel to organize in a single, unified command structure is not recognized nor adhered to. Few firefighters were experienced in techniques to extinguish fire when water is not available. These deficiencies are all correctable through training.

Desired Situation 6.1

Portugal needs a comprehensive wildland fire management training program that addresses identified gaps in knowledge and skills. The basis for this program was initiated during our visit by a team of specialists from the Portuguese Forest Service, Forest Associations, and others. A matrix was developed that addressed training needs for strategic planning, vegetation treatments, fire prevention education and awareness, patrolling and enforcement, detection, initial attack, extended attack fire combat, mop-up and recovery. The matrix also identified training objectives, skill needs, and pre-requisite knowledge for a wide range of target audiences.

Recommendation 6.1

A strong national wildland fire management program relies on having a comprehensive training program capable of addressing all knowledge and skill deficiencies from new recruit fire fighters, to fire brigade commanders, to municipal planners and community leaders. With further development, the training matrix mentioned above can form the framework for building a sound national wildfire management training program. As an example, we used information from the matrix to build the attached outline for a course in perimeter control strategy and tactics targeted at fire brigade commanders.

Perimeter Control Strategy and Tactics
Course Outline
80 hours

I. Introduction (1hour)
1. Why perimeter control?
2. Offensive versus defensive strategies
3. Reducing rekindles

II. Perimeter Control Strategy Overview (3 hour)
1. Direct fireline
2. Indirect fireline
3. Attack strategies
    a. Head
    b. Flanking from rear
4. Burnout
5. Backfire

III. Basic Map Reading Skills (6 hours)
1. Interpreting topographic features
2. Planning fireline location
3. Understanding legends
4. Determining scale and distance on the ground
5. Field mapping exercise

IV. Fireline Construction Using Handcrews, Dozers, Tractor-plows (12 hours)
1. What is a handline?
2. Determining optimal fireline location
3. Determining width based on fire behavior and fuels
4. When to use dozers versus handcrews
5. Selecting hand tool mix based on fuel and ground condition
6. Trenching to prevent rolling material
7. Using natural barriers and roads
8. Crew formation
9. Map interpretation, determining best location
10. Safe anchor points
11. Direct fireline tactics and burnout
12. Indirect fireline tactics and backfire

V. Fire Behavior (12 hours)
1. Environmental factors- wind/temp/RH/etc.
2. Topographic influences
3. Fuel types
4. Effects of diurnal cycles

5. Obtaining current and forecasted weather
6. Ground fire considerations
7. Crown fire considerations
8. Spotting potential and considerations
9. Estimating spread rate and intensity

VI. Planning for Perimeter Control Operations (16 hours)

1. Identifying the Organization
   a. Establishing a command structure
   b. Determining tactical supervision/skill needs
   c. Determining lighting forces needed
   d. Determining holding forces needed
   e. Establishing lookouts
2. Determining Equipment Needs
   a. Water-handling
   b. Aerial support
   c. Ignition devices
      1. drip torch
      2. fusee
      3. aerial ignition devices
      4. propelled pyrotechnics
   d. Heavy equipment
   e. Tools
3. Establishing coordination with other divisions/ crews
4. Safety
   a. downhill line construction
   b. spotting
   c. rolling material
   d. snags
   e. rolling rocks
   f. dehydration
   g. disengagement
   h. fire shelter
   i. safety zones
   j. escape routes
   k. lookouts
5. Ignition and holding plan
6. Ignition patterns
   a. head
   b. strip head
   c. flanking
   d. chevron
   e. point source
7. Timing Firing Operations

VII. Conducting Burnout Operations (4 hours)

1. Tactical supervisor decision
2. Used with direct line
3. Anchoring and burning

VIII. Conducting Backfire Operations (12 hours)

1. Incident Commander decision
2. Coordination with adjoining forces
3. Used with indirect line
4. Advanced firing operations
    a. using effects of slope, wind, fuel types
    b. plume dominated vs. wind driven fire behavior
    c. long range spotting
5. Contingency planning

IX. Patrol and Mop-up (6 hours)

1. Mop-up standards
2. Establishing a patrol schedule
3. Cold trailing
4. Infra-red heat detection

X. Field exercise (8 hours)

APPENDIX—MISSION AND P**ROGRAM OF TRAVEL**

TEAM:

US FOREST SERVICES – FIRE AND AVIATION MANAGEMENT: **MARK BEIGHLEY**
US FOREST SERVICES – OPERATION SECTION CHIEF: **MICHAEL QUISENBERRY**
SECRETARY OF FORESTS: DEPUTY OF THE SECRETARY: **TIAGO OLIVEIRA**
PORTUGUESE FOREST SERVICE: **MIGUEL GALANTE/JOSÉ GARDETE**
NATIONAL SERVICE FOR FIRE & CIVIL PROTECTION: **VAZ PINTO / FRANCISCO FERNANDES**
AFOCELCA (2º WEEK): **MANUEL RAINHA**

SUPPORT ORGANIZATION:

SEF: SECRETARY OF FORESTS;
FLAD: LUSO AMERICAN FUNDATION FOR DEVELOPMENT;
APIF: AGENCY FOR FOREST FIRE PREVENTION;
FORESTIS: PRIVATE FOREST OWNERS ASSOCIATION;
FPPF – PRIVATE FOREST OWNERS ASSOCIATION;
AFOCELCA: PRIVATE FIREFIGHTER ORGANIZATION;
DGRF: PORTUGUESE PUBLIC FOREST SERVICES;
SNBPC: NATIONAL SERVICE FOR FIRE AND CIVIL PROTECTION;
PORTUCEL GROUP: FOREST, PULP AND PAPER COMPANY

MISSION:

Project team mission is to contribute for a diagnosis of the situation, the human resource capabilities/requirements for the forest fire prevention system (DFCI), to produce a training proposal and support the decision in large fire events

OBJECTIVES

1. Evaluation of the forest fire protection system
2. Analysis of the situation and assessment training requirements
3. Proposal for a training program
4. Support to suppression and post fire operations

TARGET GROUPS

1. Coordinators of Prevention and Detections Centers
2. District Coordinators of National of Protection Agency
3. Foresters of Forests Owners associations
4. Forest firefighter crews leaders (Ministry of Agriculture)
5. First intervention commanders (Ministry of Internal Affairs),

EXPECTED RESULTS

1. Evaluation report
2. Training Proposal
3. Tactics such as the use of burnout and backfires.
4. Others to discuss

FIRST WEEK

Sunday – 18 July

14.35 – Arrival Pick-up at airport	
Overnight at AMAZÓNIA LISBOA HOTEL - LISBOA	

Monday – 19 July	Comments
09.00 – US embassy in Lisbon	
11.00 – Welcome Operational meeting at Direcção Geral dos Recursos Florestais	
12.30 – Lunch	
14.00 – Portuguese Forest overview Forest Institutions and Changes made since 2003 Strategies for forest fire risk reduction	
16.30 – National Service for Fire and Civil Protection Fire Fighting Strategy	
Overnight at AMAZÓNIA LISBOA HOTEL – LISBOA	

Tuesday – 20 July

08.30 – Transfer to South – Arrábida Natural Park	
09.30 – Visit to Setúbal CPD17 - Operations Center	
10.30 - Arrábida 2004 Fire – 200ha - Lessons from fire	
12.30 – Lunch	
14.00 – Visit to Video Detection System and Arrabida Forest	
16.00 – AFLOPS	
18.00 – Alcácer do Sal Fire Brigades	
19.00 – Transfer to South –Faro	
Overnight at Patacao – Faro	

Wednesday – 21 July

09.00 – Visit Faro - CPD19 - Operations Center	
11.30 – Visit to Tavira County	
12.30 – Lunch	
14.00 – Tavira 2004 Fire 5270 ha – Lessons from fire	
16.30 – Visit Terra da Ordem National Forest – Castro Marim	
18.00 – Visit to Loulé Fire Brigades and Helibase station	
20.00 – Free time	
Overnight at Patacao – Faro	

Thursday – 22 July

07.00 – Transfer to Sevilha	

10.30 – Visit to INFOCA – Sistema de prevenção e combate a fogos da Andaluzia	
12.30 – Lunch	
15.30 – Transfer to Reguengos	
17.00 – Fire Activity in Spain	
20.00 – transfer to Reguengos	
Overnight at Reguengos	

Friday – 23 July

09.30 – Visit Évora – CPD23 - Operations Center	
11.00 – Transfer to Redondo Serra d´Óssa Forest	
17.00 –Transfer to Abrantes	
Overnight at Herdade da Caniceira – Abrantes	

Saturday – 24 July

09.00 – Visit to Afocelca	
12.30 – Lunch	
14.00 – Visit Tomar – CPD15 - Operations Center	
17.00 - Ferreira do Zêzere – Logistic Base	
Overnight at Herdade da Caniceira – Abrantes	

SECOND WEEK

Sunday – 25 July

09.00 - Visit Tomar – CPD15 - Operations Center	
Fire activity – Torres Novas Fire	
Overnight at Herdade da Caniceira – Abrantes	

Monday – 26 July

09.00 – Fire activity at Arrábida Forest	
12.30 – Lunch	
16.00 – Visit to forest owners association firefighter teams – ACHAR	
18.00 – Fire activity at Raposa – Almeirim	
Overnight at Herdade da Caniceira – Abrantes	

Tuesday – 27 July

08.00 – Transfer to Mação Burned Area	
09.30 – Associação de Agricultores Abrantes, Sardoal e Mação	

11.30 – Mação County presentation	
12.30 – Lunch	
16.00 – Visit the burned area and county strategie	
Overnight at Herdade da Caniceira – Abrantes	

Wednesday – 28 July

08.00 – Transfer to Leiria	
09.00 – Visit to Leira CPD	
12.30 – Lunch	
14.30 – Visit to Mobile Detection Unit	
15.00 – Visit to Leira National Forest	
21.00 – Diner with Comunication Director of SNBPC	
Overnight at Forest Operation and training center – Lousã	

Thursday – 29 July

10.00 – Lousã National Fire fighter school	
13.00 – Fire Lab	
14.00 – Lunch	
15.00 – Visit CPD – Coimbra	
Overnight at Forest Operation and training center - Lousã	

Friday – 30 July

09.30 – Brainstorming meeting about Training	
13.00 – Lunch	
14.30 – Brainstorming meeting about Training	
18.00 – Visit Military Campground at Lousa	
Fire activity	
Overnight at Forest Operation and training center – Lousã	

Saturday – 31 July

09.00 – Reporting	
12.00 – Visit to Lousa Forest	
15:00 – Free time	
Overnight at Forest Operation and Training Center – Lousã	

THIRD WEEK

Sunday – 1 August

09.00 – Reporting activity	
12.00 – Firefighting in USA – Presentation at Military Campground	
17.00 – transfer to Lisbon	

Overnight at Lisbon	

Monday – 2 August

11.00 – Transfer to Albergaria	
13.00 – Lunch	
13.30 – Visit Abergaria forest Association	
17.00 – Visit to Forestis	
Overnight at Vairão	

Tuesday – 3 August

09.00 – Transfer Vila Real	
10.00 – Visit to Prescribe Burnt Areas at Marão	
12.00 - Alvão National Park	
15.00 – Visit to Vila Pouca de Aguiar Forest	
17.00 – Visit to Military Sapadores florestais at Boticas	
19.00 – Transfer to Vinhais	
Overnight at Natural Park Forest Ranger House	

Wednesday – 4 August

10.00 – Visit Natural Park Fire brigades	
Fire activity	
17.00 – transfer to Pinhão	
Overnight at Pinhão Quinta de la Rosa	

Thursday – 5 August

08.00 – Transfer to Lisbon	
13.00 – Lisboa	
14.00 – Reporting	
17.00 – Free Time	
Overnight at AMAZÓNIA LISBOA HOTEL - LISBOA	

Friday – 6 August

08.00 – De-brefing US Embassy	
14.00 – Lunch	
17.00 – Free time	
Overnight at AMAZÓNIA LISBOA HOTEL - LISBOA	

Saturday – 7 August

09.00 – Transfer to Airport	
11.20 – Departure	