

# COMISION FORESTAL DE AMERICA DEL NORTE.

XVII FIRE MANAGEMENT STUDY GROUP. FAO/NAFC



## BIBLIOTECA

SUBDIRECCION DE INCENDIOS FORESTALES

AUTOR: SARH ( COMISION FORESTAL DE AMERICA DEL NORTE )

TITULO: MEMORIA DE LA XVII REUNION DEL GRUPO DE ESTUDIO SOBRE MANEJO DE INCENDIOS FORESTALES FAO/NAFC

EDIT: SARH

AÑO: 1983

TEMA: INFORMACION GENERAL (MEMORIA)

NO. DE 5 ( 1 DE 5 )  
EJEMPLARES

ORY

5 - 9 December 1983.



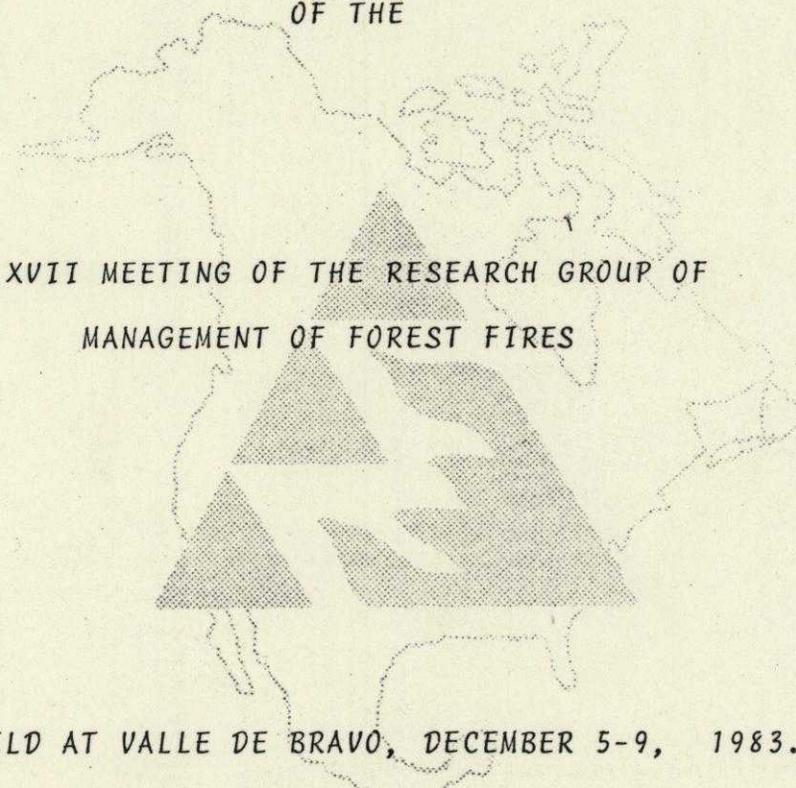
**SUBSECRETARIA FORESTAL  
MEXICO**

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

NORTH AMERICAN FORESTY COMMISSION

GENERAL INFORMATION

OF THE



XVII MEETING OF THE RESEARCH GROUP OF  
MANAGEMENT OF FOREST FIRES

HELD AT VALLE DE BRAVO, DECEMBER 5-9, 1983.

MAY 1984.



# SUBSECRETARIA FORESTAL MEXICO

## *XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

### TABLE OF CONTENTS

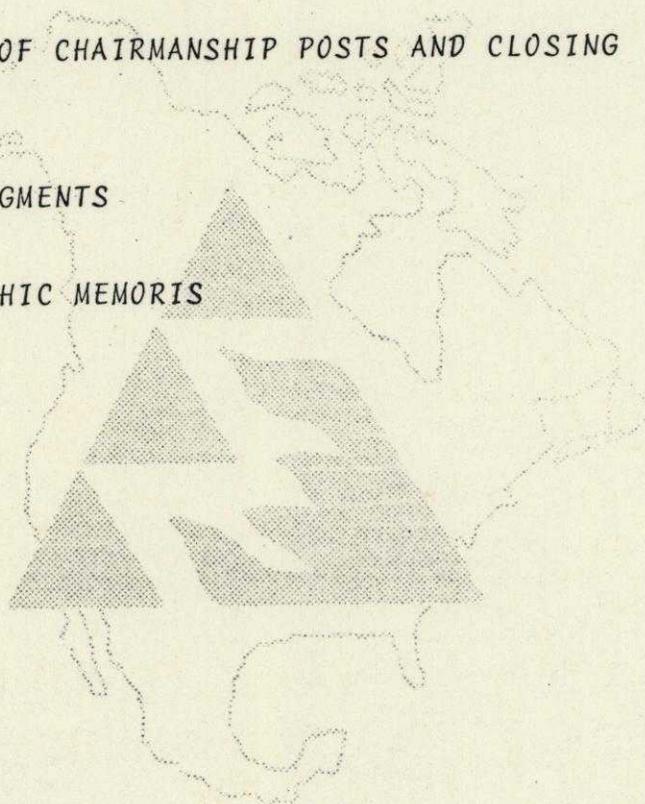
	<u>PAGE</u>
I.- INTRODUCTION AND PROCEEDINGS	1
II.- MEMBERS OF THE GROUPS OF THE ASSISTANT COUNTRIES, OBSERVERS AND ATTENDANT <u>LA</u> <u>DIES</u> .	3
III.- BEGINNING OF THE MEETING	9
IV.- WORK AGENDA	12
V.- PRESENTATION OF AGREEMENTS AND RECOMMENDATIONS OF THE MEETINGS AT PORTLAND, OREGON, BY DR. LAWRENCE AMICARELLA.	16
VI.- GENERAL INFORMATION OF EACH COUNTRY	18
- CANADA	19
- UNITED STATES OF AMERICA	29
- MEXICO	52
VII.- FOREST SERVICE DIRECTORIES ON PREVENTION AREAS AND COMBAT OF FOREST FIRES	78
- CANADA	79
- UNITED STATES OF AMERICA	83
- MEXICO	94
VIII.- SUMMARY OF THE MOST OUTSTANDING ASPECTS OF THE REPORT ON PREVENTION, TECHNOLOGY AND COMBAT OF FOREST FIRES, AS WELL AS THE CONTRIBUTIONS OF THE THREE COUNTRIES.	103



**SUBSECRETARIA FORESTAL  
MEXICO**

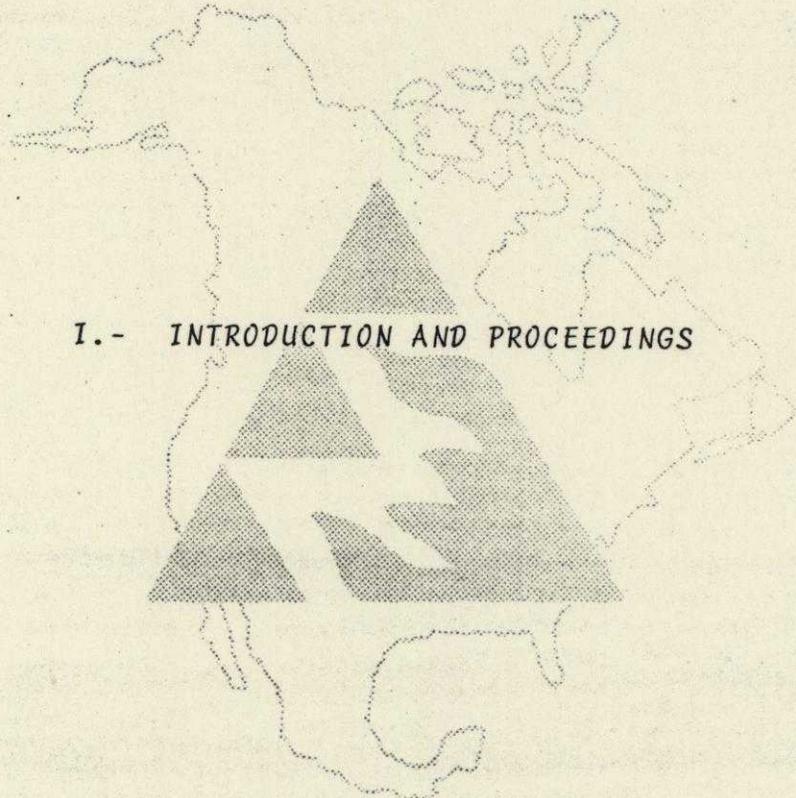
*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

	<u>PAGE</u>
IX.- RECOMMENDATIONS OF THE XVII MEETING	110
X.- GENERAL INFORMATION	115
XI.- EXCHANGE OF CHAIRMANSHIP POSTS AND CLOSING SESSION.	117
XII.- ACKNOWLEDGMENTS	119
XIII.- PHOTOGRAPHIC MEMORIS	121





*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



**I.- INTRODUCTION AND PROCEEDINGS**



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

I.- INTRODUCTION AND PROCEEDINGS.

All damages caused by forest fires and the prevention and combat of these fires have been a permanent concern of the forest public administrations of the countries of the world.

All actions have exceeded the individual efforts of each country-- as the exchange of experiences and technology through the mutual-- collaboration and performance of organized efforts constitute a so lid base to protect the forest resource from these sinisters.

At this point, for 22 years, the governments and forest technicians of Canada, United States of America and México made come true this aim through the North American Forest Commission by the Study --- Group on Management of Forest Fires, which last annual meeting -- was held at Valle de Bravo, State of México, December 5-9, 1983.

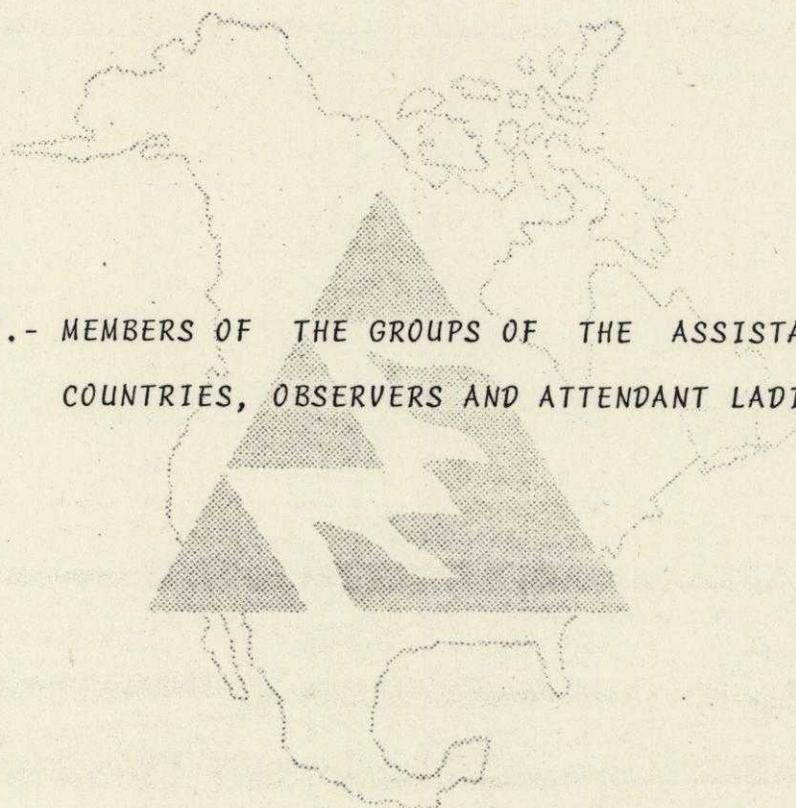
The results of the investigations and the attained advances on -- PROVENTION, TECHONOLOGY AND COMBAT of forest fires, from the last meeting held at Portland, Oregon, USA, in October 1982, to the -- meeting at Valle de Bravo, México, were dealt with at this time.

With exception to the XVI Meeting, México has attended to all --- meetings since the creation of the Study Group, and at this time-- has been host of the following sessions:

- II November 4-5, 1963, México, D.F.
- V November 4-7, 1968, Chihuahua, Chih.
- VIII June 19-22, 1973, Guadalajara, Jal.
- IX March 22-24, 1977, Tuxtla Gutiérrez, Chis.
- XIV October 20-24, 1980, Oaxaca, Oax.
- XVII December 5-9, 1983, Valle de Bravo, Méx.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



II.- MEMBERS OF THE GROUPS OF THE ASSISTANT  
COUNTRIES, OBSERVERS AND ATTENDANT LADIES



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

PARTICIPANTS

<u>COUNTRY</u>	<u>REPRESENTATIVES</u>	<u>LEVEL AND AREA</u>
Canadá	Mr. Hank G. Doerkson	Director of Forest Protection Ministry of Forest Victoria, British Columbia.
	Mr. Brian Stocks President of the Group of Canada	Forest Research Centre of the Great Lakes, Canada Forest Service, Sault Ste. Marie, Ontario.
United States of America	Mr. Lawrence Amicarella President of the Group of the U.S.A.	Director - Cooperative Fire Protection - USDA Forest Service Washington, D.C.
	Dr. Charles W. Philpot	Director - Research Center of Forest Fires and Atmospheric Sciences, USDA Forest Service, Washington, D.C.
	Mr. John Birch	Chief, Division of Fire and Aviation Management, Bureau of Land Management, Washington, D.C.
	Mr. Harold L. Mikell	Statal Forest Assistant, Division of Forest, Tallahassee, Florida.
	Mr. John Hafterson	USDA Forest Service



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

<u>COUNTRY</u>	<u>REPRESENTATIVES</u>	<u>LEVEL AND AREA</u>
México	Ing. Jesús B. Cardeña R. President of the Group of México.	General Manager of Forest Control and Vigilance.
	Dr. Miguel Caballero Deloya Alternate Representative of Mexico in the North American Forestry Commission	General Manager of the - Instituto Nacional de In- vestigaciones Forestales.
	Ing. Eduardo Azuara Salas	General Representative of the Secretaría de Agricul- tura y Recursos Hidráulicos in the State of México Representative of the --- Constitutional Governor - of the State of México.
	Lic. Leopoldo Borrás Sánchez	General Director of Technical Support, Undersecretary of Forestry.
	Ing. Salvador Juárez Castillo. Executive Coordinator, Substitute Responsible of the Area of Prevention.	Head of the Forest Program in Guadalajara, Jal.
	Ing. Oscar Cedeño Sánchez	Head of the Forest Program in the Federal District.
	Ing. Mario A. Mozqueda V. Responsible of the Area of Fire Combat.	Head of the Forest Program in the State of Oaxaca.
	Ing. Rodolfo Rodríguez Velez Responsible of the Area of Fire Technology.	Head of the Forest Program in the State of México.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

<u>COUNTRY</u>	<u>REPRESENTATIVES</u>	<u>LEVEL AND AREA</u>
	Lic. Pedro E. Del Castillo Cueva.	General Director of Information and forest Systems.
	Ing. Lázaro Mejía Fernández Coordinator of the Meeting	Chief of the Department of Control and Statistics Management of Control and Forest Vigilance.
<u>OBSERVERS FROM MEXICO</u>		
	Ing. Bernardino Ortega Carrillo.	Chief of the Forest Sub-Program in the State of Durango.
	Ing. Víctor E. Sosa Cedillo	Chief of the Forest Program in the State of Guerrero
	Ing. Higinio Padilla García	Chief of the Forest Program in the State of Chiapas
	Ing. Rafael Alvarez Reyes	Chief of the Forest Program in the State of Tlaxcala.
	Ing. Eduardo Hernández Ruíz and Ing. Paulino Manríquez Ramírez.	Chief of the Forest Program in the State of Guanajuato, and Chief of the Sub-program of Forest Protection.
	Ing. Marconi N. Méndez Molina.	Chief of the Forest Program of the State of Puebla.
	Ing. Jorge Cuanalo de la Cerda.	Technical Director of the Industrial Unity of Forest Use San Rafael, México.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

<u>COUNTRY</u>	<u>REPRESENTATIVES</u>	<u>LEVEL AND AREA</u>
	Ing. J. José A. Reyes	Assistant Director of Protection, Management of Control and Forest Vigilance.
	Lic. José del Río Moreno	Technical Support Unity
	Lic. Basme G. López Flores	Technical Support Unity
	Lic. Juan Arvizu Arrijoja	Technical Support Unity
	Lic. Beatriz Morales Calderón.	Technical Support Unity
	Lic. Ma. Elena Sierra -- Valdéz.	Technical Support Unity
	C. Consuelo Martínez Villarreal.	Instituto Nacional de Investigaciones Forestales.
	Ing. Rafael Moreno Sánchez	Instituto Nacional de Investigaciones Forestales.
	Biol. Roberto Villaseñor Rojas.	Instituto Nacional de Investigaciones Forestales.
	Biol. Jesús Sánchez Córdoba	Instituto Nacional de Investigaciones Forestales.
	Ing. Juan Manuel Díaz Calero	Technical Director Protection and Industrialization of Forests.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

COUNTRY

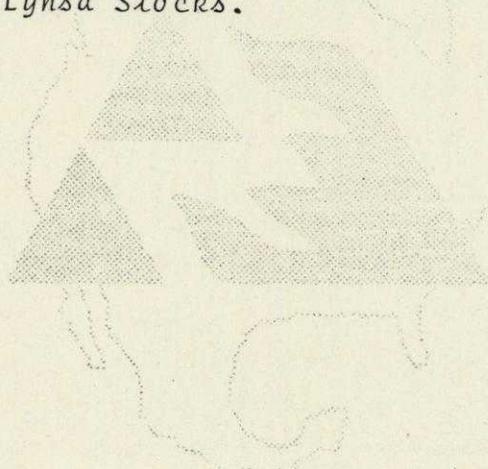
REPRESENTATIVES

LEVEL AND AREA

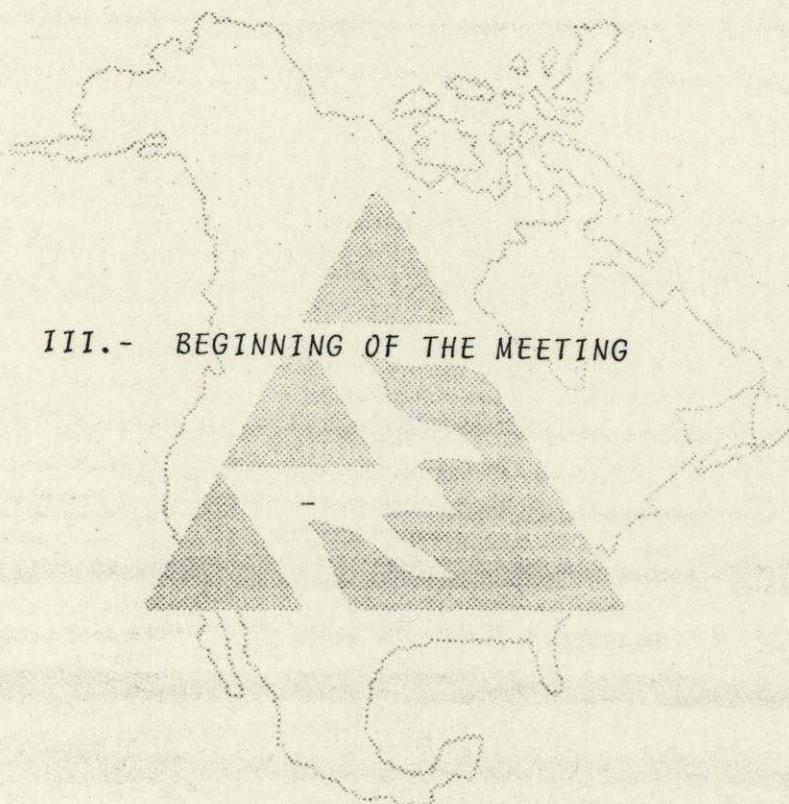
Ing. J. Luis Rivadeneyra F.      Technician Protection  
and Industrialization-  
of Forests.

ATTENDANT LADIES

Mrs. Carmen Amicarella	Mrs. Cecilia de Cardeña
Mrs. Janet Hafterson	Mrs. Julieta de Caballero
Mrs. Jeannie Birch.	Mrs. Julieta de Juárez
Mrs. Mona Doerkson	Mrs. Elsa Ma. de Cedeño
Mrs. Lynsa Stocks.	



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*





*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

BEGINNING OF THE XVII MEETING.

WELCOME.

Ing. Jesús B. Cardaña Rodríguez, President of the Group of México, transmitted to all the attendants of the Meeting the most cordial-welcome by the name of Ing. León Jorge Castaños Martínez, Head of the Forest Service of México, and expressed good wishes for the Meeting, and for their stay at Valle de Bravo, Méx.

Likewise, he pointed out that the Mexican Group acknowledges the value and significance of this event, and that he was very pleased that México was the host of such an important Meeting, at this -- time.

On the other had, he noted that the results of the Meeting, joined to the decisions and objects of the Mexican Forest Service, to reorientate all works for protection of the resources, will permit the country to strengthen all the programs for prevention and --- combat of forest fires.

ALTERNATE MEMBER OF MEXICO IN CFAN.

Dr. Miguel Caballero Deloya as Alternate Member of México in the North American Forest Commission, expressed to all the attendants to the XVII Meeting of the Research Group of Management of Forest-Fires his cordial greetings, pointing out the importance of this type of Meetings, in which it is possible to analize and focus the problema that affect all forest resources. At the same time, he expressed his good wishes for this meetings to continue, and that-

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

the present meeting would be carried out successfully.

INAUGURATION OF THE EVENT.

Ing. Eduardo Azuara Salas, as Representative of the Governor of the Entity, proceeded to give a message to the Meeting, setting in ---- operation all the works, expressing good wishes for the obtention - of some appropriate solutions for the incidence of forest fires in - the State of México, as well as in the whole country.

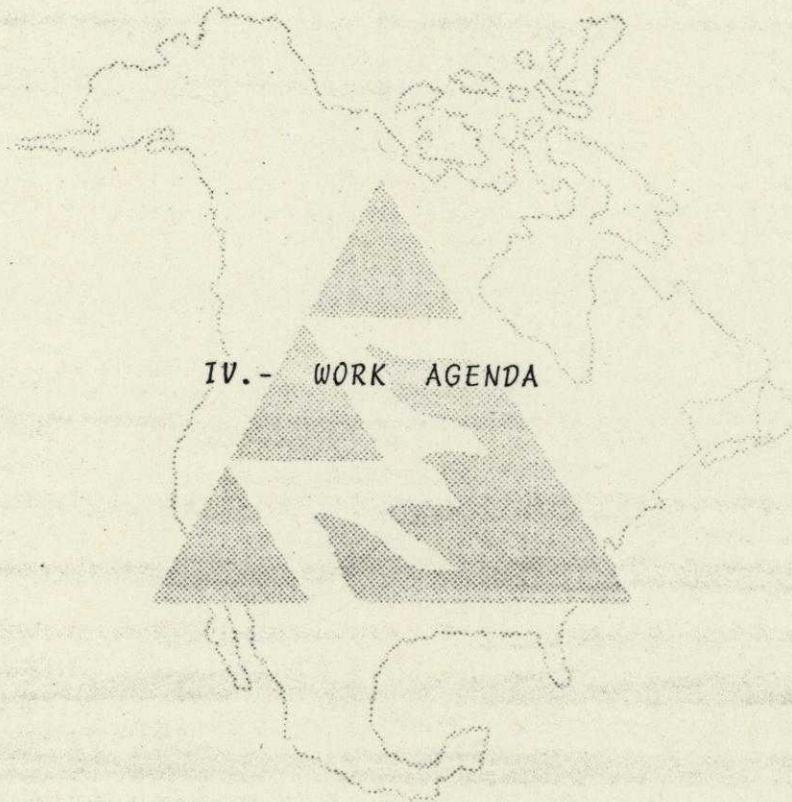
BEGINNING OF THE WORKS.

After the recess, the attendants began to work under the direction - of Dr. Lawrence Amicarella, President, who proceeded to exchange the post to Ing. Jesús B. Cardaña Rodríguez, who assumed the honorable - Chairmanship. It is necessary to note that the absence of the ---- Mexican Group to the XVI Meeting at Portland, Oregon, U.S.A., due - to the national problems of the country in 1982, impeded to receive the presidency.

Afterwards, the Work Agenda was submitted to vote, and once it was - approved, all the rules for the development of the meeting were ---- fixed, deciding that all deliberations were going to be taken in -- joined action, without the separation of the work committees, - - - pretending that all attendants, as well as the members and the - -- observers, - would be active parts of the discussions to enhance all - the recommendations and conclusions of every one of the activities.

Likewise, it was informed that all the ladies who had attended the - Meeting would have had a special program during the days of the --- event, this would included tourist trips to the more beautiful place of the State of México.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

WORK AGENDA

MONDAY 5th.	12:00 - 15:00	RECEPTION OF THE ATTENDANTS OF U.S.A. AND CANADA AT THE AIRPORT OF MEXICO CITY, --- THEIR MOVING TO VALLE DE BRAVO AND THEIR LODGING AT THE HOTEL.
	17:00 - 19:00	REGISTRATION OF ATTENDANTS.
	19:00 - 20:30	WELCOME COCTAIL.
TURSDAY 6th.	7:15 - 8:15	BREAKFAST.
	8:30 - 9:00	REGISTRATION OF DELEGATES, GUESTS AND OBSERVERS.
	9:00 - 9:20	INAUGURATION BY ING. EDUARDO AZUARA SALAS, GENERAL REPRESENTATIVE OF THE SECRETARIA-DE AGRICULTURA Y RECURSOS HIDRAULICOS IN THE STATE OF MEXICO, AND REPRESENTATIVE OF THE GOVERNOR OF THE STATE.
	9:20 - 9:30	RECESS.
	9:30 - 10:45	PRESENTATION OF NEW MEMBERS-BY COUNTRY. LECTURE OF THE-PRECEDING MINUTE AND INFORMATION OF THE XVI MEETING, By-L.A. AMICARELLA.
	10:45 - 12:15	DEBATE ON THE RECOMMENDATIONS OF THE XVI MEETING AND INTEGRATION OF SUB-COMMITTEES, - AND KEYS FOR THE WORK OF THE XVII MEETING.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

	12:15 - 13:45	DINNER.
TUESDAY 6 <i>th.</i>	14:00 - 17:00	GENERAL SESSION OF THE RESEARCH GROUP (INFORMATION BY COUNTRIES THROUGH THE SUB-COMMITTEES).
	19:00	SUPPER, OFFERED BY THE MEXICAN FOREST SERVICE.
WEDNESDAY 7 <i>th.</i>	8:30	TRIP BY HIGHWAY AND HELICOPTER TO THE WORK AREA IN A FOREST-ZONE.
	9:30 - 12:00	TRIP AND OBSERVATION OF FIRE-LIES. DEMONSTRATION OF THE USE OF TOOLS IN FIRE COMBAT, - - - CONTROL BURNS AND PREVENTION - WORK.
	12:00 - 12:30	MOVING TO THE DINNER PLACE.
	12:30 - 13:30	DINNER, OFFERED BY THE HEAD - QUARTERS OF THE FOREST PROGRAM IN THE STATE OF MEXICO.
	14:00 - 17:00	VISIT TO THE INSTALLATIONS OF CUTZAMALA RIVER.
THURSDAY 8 <i>th.</i>	8:30 - 10:30	CONTINUATION OF THE MEETING - OF THE SUB-COMMITTEES AND -- ANALYSIS OF WORK INFORMATION- AND PROPOSALS.
	10:30 - 10:45	RECESS.
	10:45 - 12:15	DISCUSSION OF THE PRELIMINARY REPORT OF THE XVII MEETING. RECOMMENDATIONS OF THE SUB-- COMMITTEES AND OF THE GROUP.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

THUESDAY 8<sup>th</sup>.            12:15 - 12:30            CLOSIGN SESSION OF THE WORKS  
OF THE XVII MEETING BY ING.  
JESUS B. CARDENA RODRIGUEZ, -  
PRESIDENT OF THE MEXICAN --  
GROUP.

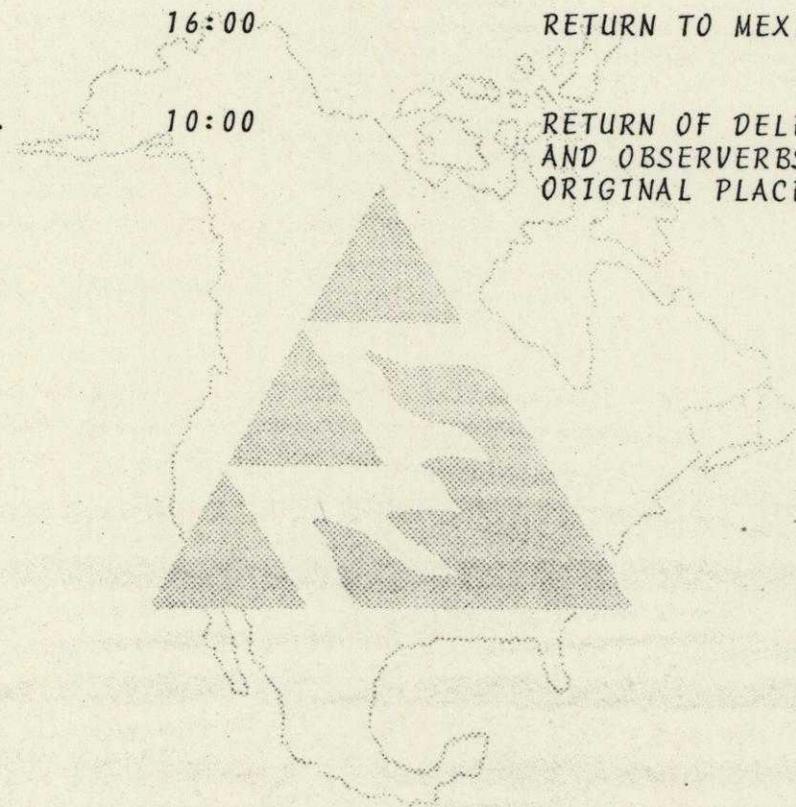
12:30 - 13:45            DINNER.

16:00                    RETURN TO MEXICO CITY.

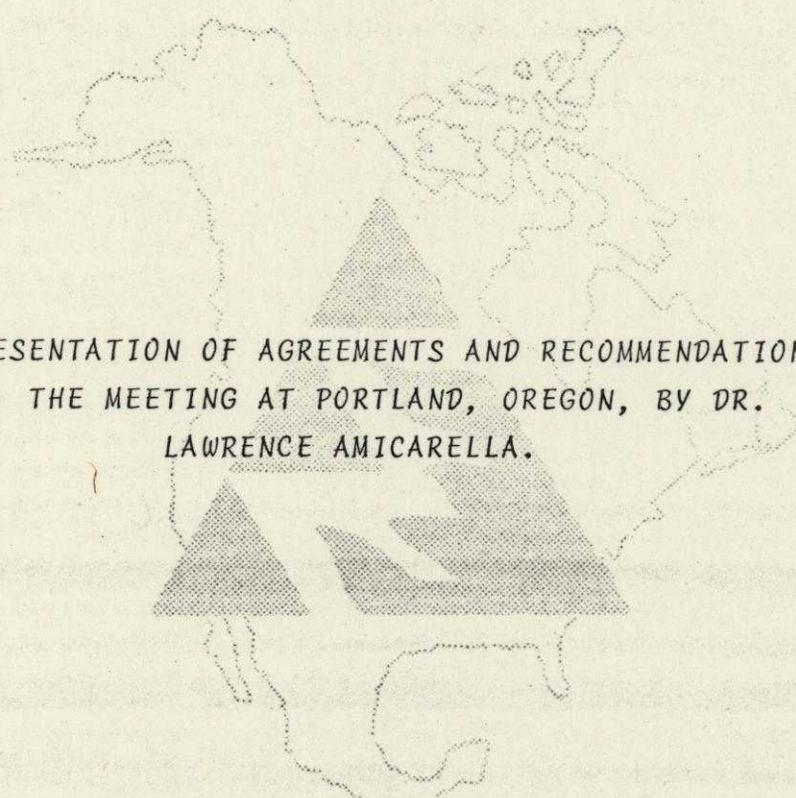
FRIDAY 9<sup>th</sup>.

10:00

RETURN OF DELEGATES, GUESTS  
AND OBSERVERBS TO THEIR --  
ORIGINAL PLACES.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



V. - PRESENTATION OF AGREEMENTS AND RECOMMENDATIONS OF  
THE MEETING AT PORTLAND, OREGON, BY DR.  
LAWRENCE AMICARELLA.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

PRESENTATION OF AGREEMENTS AND RECOMMENDATIONS OF THE XVI MEETING AT PORTLAND, OREGON, U.S.A.

At first instance, all the agreements and recommendations of the XVI Meeting were reviewed, as well as all pending agreements of the preceding meetings. Of these it was noted the compromise of México to present at the XVII Meeting some posters to prevent -- forest fires, that could be used into the three official languages of the attendant countries. At this respect, the Mexican Group presented eight posters, which remained on exposition to be --- selected on vote. Of these, three posters were selected wich -- would have the following legends:

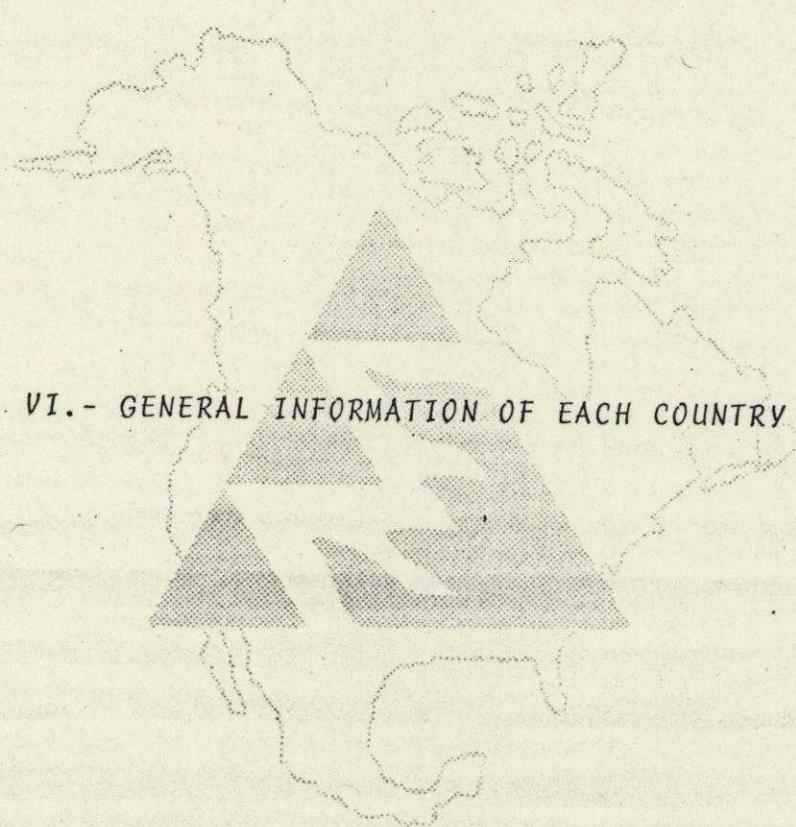
- EVITE INCENDIOS FORESTALES
- PREVENT FOREST FIRES
- EVITÉ LE FEU FORESTIERS

The main recommendations were the colaboration between the United States of America and Canada to install on frontier lines the - "Automatic Lightning Detection System" (ALDS), and the "Remote - Automatic Weather Station" (RAWS), which have been performed --- adequately through these agreements.

The United States of America would send to Canada and México the catalogs of the training courses of the "National Advanced - - - Resource Technology Center" (NARTC). This point was completed - in the case of México, as 10 technicians were sent to such center in October 23th. to November 10th., 1983.



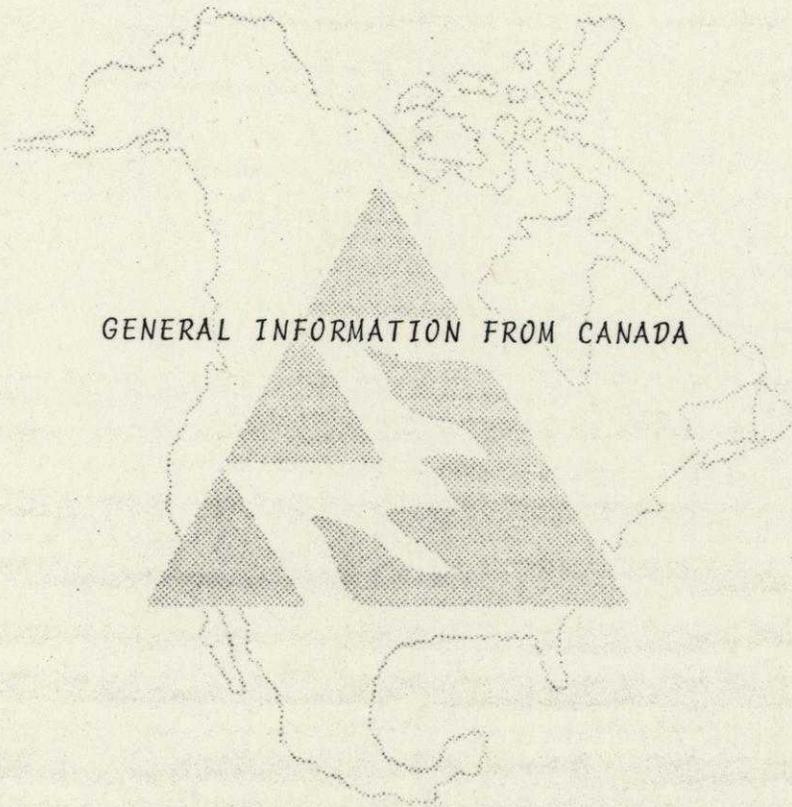
*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



VI.- GENERAL INFORMATION OF EACH COUNTRY



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



GENERAL INFORMATION FROM CANADA

MR. BRIAN STOCHS

PRESIDENT OF THE GROUP OF  
CANADA.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

SEVENTEENTH MEETING  
FIRE MANAGEMENT STUDY GROUP N.A.F.C.

CANADA REPORT ON RESEARCH AND DEVELOPMENT.

Although various universities across the country are involved in some fire research activity the major effort in forest fire research in Canada is undertaken by the Canadian Forestry Service (CFS) at the Petawawa National Forestry Institute (Chalk River, Ontario) and at three regional establishments located in -- Sault Ste. Marie, Ontario (Great Lakes Forest Research Centre), -- Edmonton, Alberta (Northern Forest Research Centre), and Victoria, British Columbia (Pacific Forest Research Centre). At the present time the CFS has no fire research personnel at the three regional establishments east of Ottawa. The CFS fire research group is small (24 professionals, 16 technicians) but close-knit, and cooperative fire research projects are common. Expressions of an increased emphasis on forestry by the Canadian government, coupled with numerous severe forest fire losses nationally, have raised the hope of an expanded fire research capability within the CFS, but this has yet to materialize. At the present time a position paper on the current status of the CFS fire research effort is being prepared for the government by C.E. Van Wagner.

The following is a summary of fire research activity within the CFS during the past year.

Pacific Forest Research Centre (PFRC)

The PFRC fire research group lost the direct services of ecologist Dr. Auclair in 1983 as he accepted a research management position.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

However, Dr. Auclair concluded his work on a prescribed fire effects problem analysis for British Columbia which will be used by the -- PFRC fire research staff as background to a restructured prescribed fire program. A strategic plan for prescribed fire research in BC- is being prepared, in cooperation with the BC Ministry of Forests.- Hopefully, this plan will assist with coordination of fire research activities and goals among the various agencies and universities -- involved in prescribed fire research.

A one-week intensive professional fire management training course - was planned and instructed by Mr. Lawson and Mr. Hawkes, along --- with a number of other instructors from BC Ministry of Forests, -- UBC and private industry. The PFRC portion of the course dealt -- with fire behavior prediction, the Canadian Forest Fire Danger -- Rating System, and the use of prescribed fire planning and decision aids. The course was attended by Ministry of Forest protection -- and silvicultural staff primarily, who are studying for profession- al forester accreditation under the auspices of the Association of BC Professional Foresters.

PFRC work with Prairie Region, Parks Canada, concluded in 1983- with the submission of a final report on fire history, ecology and management implications for Kluane National Park, Yukon. A paper- summarizing the findings of this work was presented at a Boreal --- Forest Ecosystems Symposium in 1982 and will be published in 1983. A presentation of the work will be made at the November 1983 - - - Wilderness Fire Management Symposium in Missoula, Montana, sponsored by the United States National Wildfire Coordinating Group.

PFREC developmental work on the PFRC Aerial Ignition System (AID) has concluded with the successful completion, under a government - assistance program to industry, of an automatic hopper to improve-

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

the feed characteristics of the spherical incendiaries through the machine. PFRC fire technician Mr. Lait provided technical advice and other support to this development and a new version of the system, called **PREMO MARK III Aerial Ignition Device** is now being marketed around North America by the manufacturer.

Work continued during 1983 on the updated and extended version of the Canadian Forest Fire Danger Rating System, with all regional work being coordinated by a National Fire Danger Working Group. New Fire Behavior Indices, including one for boreal black spruce-lichen wood land based on 1982 experimental fire data, will be issued in 1984, along with new revised Fire Weather Index Tables and new interpretive material.

Northern Forest Research Centre (NoFRC)

The NoFRC fire research group continued close cooperation with Parks Canada by initiating a fuels description study in Jasper National Park, assisting in grassland prescribed burns in Elk Island National Park, and developing area-seen maps and detection guidelines for Riding Mountain National Park.

Historical fire weather data were compiled for the province of Saskatchewan for the purpose of calibrating the performance of the Canadian Forest Fire Weather Index in that province. In addition, twenty Saskatchewan weather stations were assessed to determine if they met acceptable standards for recording fire weather information.

A laboratory fire retardant application device and combustion table were developed for use in assessing retardant effectiveness



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

under controlled conditions. The research officer responsible for fire suppression/retardant research at NoFRC was transferred in -- late 1983 and his position will be refilled in 1984.

M. E. Alexander continued as an active participant in the CFS Fire-Danger Working Group which is currently revising and updating the Canadian Forest Fire Danger Rating System.

A large proportion of the NoFRC fire group's time in 1983 was -- devoted to data analysis and publication production. Planning and organizing the 1983 Intermountain Fire Research Council Meeting in Banff, Alberta, took up a great deal of time as did technology -- transfer, consultation, guest lectures and committee participation.

Great Lakes Forest Research Centre (GLFRC)

The experimental burning program at GLFRC continued in 1983 with -- three successful experimental fires in mature jack pine in Wawa -- District, completing the burning program (12 fires) in this fuel -- type. These data, in conjunction with those gathered on eighteen -- experimental fires in immature jack pine, are in the analysis --- stage and will be published in 1984. These data will also be made available to US Forest Service Fire researchers as a part of a --- cooperative agreement on crown fire modelling signed between GLFRC and the USFS Intermountain Forest and Range Experiment Station.

Ten experimental burning plots were established in immature jack -- pine in 1983 for the purpose of studying fire growth rates from a point-source ignition -- burning will be carried out in 1984.

With the 1982 completion of the experimental burning program in -- spruce budworm-killed balsam fir, emphasis is now being placed on-



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*the large-scale use of prescribed fire in tramped balsam fir as an economical means of converting productive sites to more budworm -- resistant species. A number of operational burns in this fuel type were monitored and documented in 1983.*

*A five-year investigation into the use of prescribed fire in the -- boreal mixedwood claybel area of northern Ontario was completed in 1983 with nine successful experimental burns. Research results -- are being analyzed for publication in 1984.*

*A contract study (3 years) to evaluate the effect of prescribed --- fire and alternate forms of site preparation on planting stock - -- survival and growth in northern Ontario will be completed early in 1984.*

*A detailed investigation into the historical role of fire in the - Sachigo Hills area of northwestern Ontario was initiated in 1983. - addition, fire ecology/effects work on regeneration and vegetative- succession was continued in 1983 on all GLFRC experimental fires -- and selected, well-documented wildfires.*

*T.J. Lynham is currently completing his M.Sc.F. studies at the --- University of Toronto and, in cooperation with Dr. D.L. Martell, is carrying out a detailed analysis of person-caused fire occurrence- in Ontario.*

*B.J. Stocks is actively involved in the current revision of the --- Canadian Forest Fire Danger Rating System being undertaken by the -- CFS Fire Danger Working Group.*



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Petawawa National Forestry Institute (PNFI)

Research activity continued in 1983 in four major fire research project areas at PNFI: Decision Support Systems, Fire Suppression Systems: Meteorological Research and Support, and Fire Behaviour - and Effects. In August 1983, J.D. Walker joined PNFI as Program -- Manager of Fire Research and Remote Sensing.

An extension of the Canadian Forest Fire Danger Rating System which includes additional fuel moisture codes for several types of fire fuels and logging slash and also includes means of predicting actual spread rates and intensities in a number of forest and slash fuel types is nearing completion.

A computer model which simulates the effect of forest fire on - long-term annual timber supply has been developed.

Field tests and data analysis on the use of the M-18 Dromader - air tanker in New Brunswick were undertaken. Proposals for aircraft deployment possibilities have been put forth.

Operational application of computer-based decision support --- systems continues in the Societe de Conservation de l'Outaouais --- (Quebec), and such application is also being supported in northern Ontario. Components of the system include lightning location, fire occurrence prediction, detection planning, fire growth modelling. - Experiments to use radio links for data transmission are underway.

Research is being conducted on wind speed and direction within- and above forest stands in areas of rough topography. Analysis of area burned and wather data for Canada over a 28-year period was -- completed.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Research continues on extracting forestry information from -  
digitally remote sensed data. Progress to date includes forest -  
fuels mapping, and cut and burned-area mapping. Investigations -  
are on-going in the areas of budworm defoliation detection and in  
use of remote sensing techniques for assessing forest regeneration.

RECENT CFS FIRE RESEARCH PUBLICATIONS

- Alexander, M.E. 1982. Diurnal adjustment table for the Fine-Fuel Moisture Code. Can. For. Serv., Nor. For. Res. -- Cent., For. Manage. Note 17.
- Alexander, M.E. 1982. Fire behavior in aspen slash fuels as - related to the Canadian Fire Weather Index. Can. J. -- For. Res. 12(4):1028-1029.
- Alexander, M.E. 1983. Tables for determining spring drought - code starting values in west-central and northern Canada. Can. For. Serv., Nor. For. Res. Cent., For. Manage. Note 19.
- Alexander, M.E. and D.E. Dube. 1983. Fire management in ----- wilderness areas, parks, and nature reserves. IN: The Role of Fire in Northern Circumpolar Ecosystems. Ed. R.W. --- Wein and D.A. MacLean, SCOPE 18, Chap. 15:273-297.
- Alexander, M.E., B. Janz, and D. Quintilio. 1983. Analysis - of extreme wildfire behavior in east-central Alberta: A - case study. IN: Seventh Conference on Fire and Forest -- Meteorology, Ft. Collins, Colorado: 38-46.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

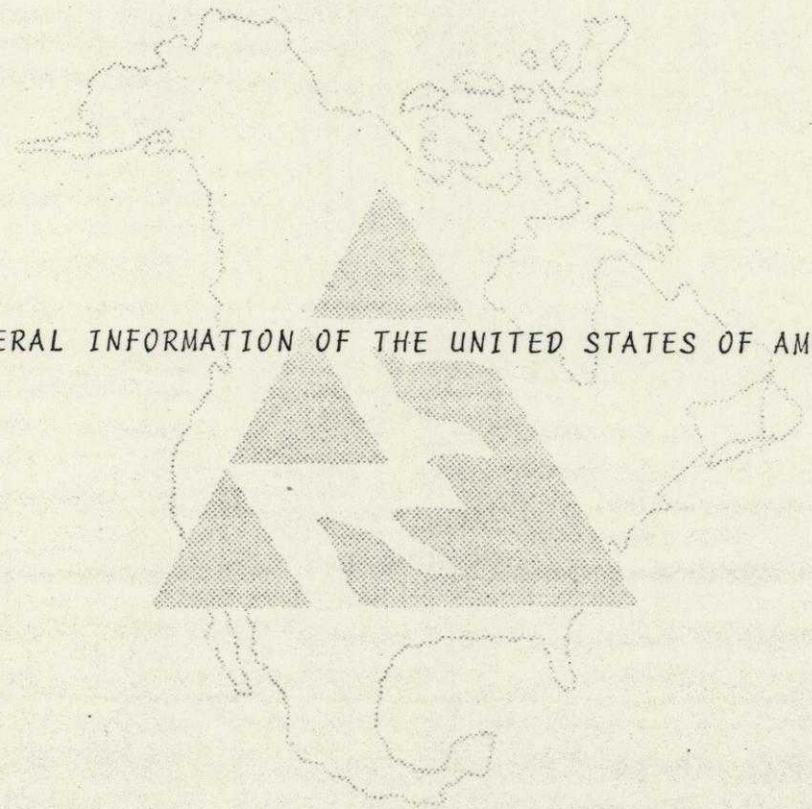
- Alexander, M.E. 1983. Prescribed fire behavior and impact in - an eastern spruce-fir slash fuel complex. Can. For. Serv., Res. Notes (in press).
- Alexander, M.E. and D.J. McRae. 1983. Bibliography supplement to CFS Prescribed Burn Handbook. Ont. Min. Nat. Res., Fire Mgt. Bull. 88.
- Auclair, A.N.D. and A.N. Rencz. 1982. Concentration, mass, and - distribution of nutrients in a subarctic Picea mariana --- Cladonia alpestris ecosystem. Can. J. For. Res. 12:947-968.
- Cayfor, J.H. and D.J. McRae. 1983. The ecological role of fire - in jack pine forests. IN: The Role of Fire in Northern - Circumpolar Ecosystems. Ed. R.W. Wein and D.A. MacLean, - SCOPE 18, Chap. 10:183-199.
- Chrosciewicz, Z. 1983. Jack pine regeneration following postcut - burning and seeding in southeastern Manitoba. Can. For. - Serv., Nor. For. Res. Cent., Inform. Rep. NOR-X-252.
- Chrosciewicz, Z. 1983. Jack pine regeneration following postcut - burning and seeding in central Saskatchewan. Can. For. - Serv., Nor. For. Res. Cent., Inform. Rep. NOR-X-253.
- Clark, W.R. 1983. Forest depletion by wildland fire in Canada, - 1977-1981. Pet. Nat. For. Inst., Infor. Rep. PI-X-21.
- Fuglem, P., B.D. Lawson and B.C. Hawkes. 1983. Fire protection - guidelines for juvenile spacing projects. B.C. Min. For., Prot. Br. Rep., Victoria, B.C., 25 p.
- Harrington, J.B. 1982. A statistical study of area burned by --- wildfire in Canada 1953-1980. Can. For. Serv., Pet. Nat. - For. Inst., Infor. Rep. PI-X-16.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

- Hawkes, B.C. 1983. Fire history and ecology of forest ecosystems in Kluane National Park - fire management implications. IN: Proc. Boreal Forest Ecosystems, Conf., Aug. 1982, Thunder Bay, Ontario (in press).
- Hodgson, M.J. and R.G. Newstead. 1983. Location-allocation --- models for control of forest fires by air tankers. Can. -- Geographer, Vol. XXVII (2).
- McMinn, R.G. 1983. Impact of prescribed fire on the productivity of interior forests. IN: Prescribed Fire-Forest Soils --- Symposium Proceedings, March 2-3, 1982, Smithers, B.C. -- B.C. Min. of For., Land Management Rep. No. 16. p. 37-47.
- Newstead, R.G. and D. Quintilio. 1983. Development and application of a forest fire initial attack planning model (in --- press).
- Ogilvie, C. 1983. Construction and use of NoFRC portable fire finder (in press).
- Ramsey, G.S., and D.G. Higgins. 1982. Canadian Forest Fire --- Statistics 1980. Pet. Nat. For. Inst. Infor. Rep. PI-X-17.
- Stocks, B.J. 1983. The 1980 forest fire season: its impact in -- west central Canada. IN: Seventh Conference on Fire and Forest Meteorology, Ft. Collins, Colorado: 67-70.
- Van Wagner, C.E. 1982. Graphical estimation of quadratic mean - diameters in the line intersect method. For. Sci. 28(4): - 852-855.
- Van Wagner, C.E. 1983. Simulating the effect of forest fire on - long term annual timber supply. Can. J. For. Res. 13(3): - 451-457.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



GENERAL INFORMATION OF THE UNITED STATES OF AMERICA

DR. LAWRENCE AMICARELLA

PRESIDENT OF THE GROUP



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

UNITED STATES REPORT

1983 FIRE SEASON

National Forests. Fiscal year 1983 weather patterns and fire statistics greatly resembled our 1982 experience. Heavy snows -- and rains fell throughout the fall, winter and spring seasons in most of the western United States. The above average precipitation resulted in extensive flooding in the West and especially in the State of Utah. Although forest fuels in the western United States began drying out, soil moisture content never did reach -- critically low levels. Lower elevation grasslands in the West -- burned readily by late June and early July. Upper elevation brush and timber lands never reached critical fuel moisture stages that support free running wildfires. The eastern half of the United States experienced a severe drought resulting in an unusual ---- amount of wildfire activity.

Arizona, New Mexico and the northeastern States all lost more acres to wildfire in 1983 than they normally do when compared to their 5-year averages. Nationally, however, fewer lightning caused fires, human caused fires, and acres burned by wildfires occurred in 1983 than at any time in the last decade.

The following chart show BIFC fire support services for all agencies for the past three years:

# .....



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Agency	Number of fires supported by BIFC			Number of fire orders processed by BIFC		
	1981	1982	1983	1981	1982	1983
Bureau of Land Management, USDI	177	145	240	1,122	596	1,094
National Park Service, USDI	32	11	7	108	52	109
Bureau of Indian Affairs, USDI	29	35	45	64	124	39
Fish and Wildlife Service, USDI	<u>1</u>	<u>1</u>	7	50	30	39
Forest Service, USDA	220	74	84	1,119	279	374
Other	42	23	23	150	89	82

1/ Included in Other for 1981 and 1982.

Department of the Interior. The 1983 fire season was atypical. Although the number of fires and acres burned were approximately average, the distribution and location of the fires were not normal. The greater majority of areas burned on land of the four bureaus in the Department were in extreme low elevations (below 6,000 feet). Also, the majority of areas burned were on bureau of Land Management (BLM) lands in the lower 11 western States. The amount of interior lands burned in Alaska was far below normal. Larger fires burned in the States of Utah, Idaho and Oregon. For example, one fire in Utah burned over 200,000 acres early in the summer making it one of the largest fires to occur outside of Alaska in a number of years. Most of the extreme burning conditions were confined to three fairly brief burning periods--each lasting 3 to 4 days. These conditions resulted from the warm wet spring which created a heavy-grass cover and sequences of severe dry lightning storms. A large-



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

volume of light dry fuels lay over most of the western United States. The higher country never dried out due to the heavy snowpacks resulting from the severe late winter storms.

FIRE RESEARCH UPDATE

For 1984 we expect a reduction of from 15 to 24 percent in --- budgeted forest fire and atmospheric sciences research funding compares with 1983 levels. This will probably result in terminating --- two or three additional projects and discontinuing a number of studies in other projects.

Some highlights of the current fire and atmospheric sciences --- research program are as follows.

Historical Fire Intervals' Southwest Mixed Conifer

The recent discovery that fire has played a prominent historical role in the development of mixed conifer stands in the southwestern United States opens up new prospects for using fire as a management tool in this productive ecosystem. Prescribed fire is commonly used to reduce fuels and alter plant succession in ponderosa-pine forests, but is not widely used in the protection and management of mixed conifer. Fire history information developed by Rocky-Mountain Stations scientists on a 460-acre watershed in the White --- Mountains of Arizona now shows that prescribed fire can also be --- used in the management of the mixed conifer type.

Cross sections from 35 trees were analyzed by standard dendro-chronological methods to date fire scars. The resulting composite-history indicated that major fire burned over the area at roughly 22 year intervals for the 200 year period prior to 1900. Frequent ---



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

small fires apparently burned on parts of the area between the major fire years. This knowledge allows land managers to take a more objective look at the potential for using fire in the protection -- and management of mixed conifer.

Predicting Fire Behavior

A publication, "How to Predict the Spread and Intensity of Forest and Range Fires", was issued this year by the Intermountain --- Station. The publication is the culmination of many years of fundamental and applied research on fuels, weather and fire behavior, and several year of developing quick and efficient field techniques. -- The publication includes methods of assessing the mayor factors influencing fires, simplified methods of calculating rate of spread, -- fire intensity, fire size, spotting distance and guides for interpreting and informing others about the expected fire behavior. It includes maps of fire growth.

Prepublication drafts have been used for training fire beha--- vior officers in all of the Nation's land management agencies inclu--- ding many States. Supplemental copies have been distributed to all Forest Service Regions and the National Advanced Resource Technology Center in Marana, Arizona.

After the Fire is Out

Measuring the economic impact of a wildland fire is essential to developing cost-effective fire management budgets. Fires, however, have different impacts on each product and amenity provided by wildlands. North Central Station scientists, in cooperation with -- Michigan State University and the Wisconsin Department of Natural --



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Resources, have developed a wildfire effects appraisal system for private land that strikes a balance between theory and ease of use.

The system incorporates positive as well as negative economic-impacts of fires on timber, wildlife, recreation, ornamental trees, crops and equipment and improvements. In addition, aesthetic and environmental values are rated on a relative scale. Although the system incorporates many variables, only a few field measurements are required. Many complex factors such as stumpage prices, wildlife loss or benefit factors and recreation values are precalculated for each county. Thus, although the system is comprehensive, less than 30 minutes are needed to complete the appraisal for an average fire.

Lightning Location and Fire Forecasting

A computer system (LLAFFES) developed by the Intermountain --- Station is now available for indicating the probable location of --- fires started by lightning. The system works in real time, sorting data from thousands of lightning strikes and the condition of fo--- rest fuels in the path of the storm. Results are displayed on a --- computer printout. With the printout and a transparent map over--- lay, fire dispatchers can determine areas where fires are most li--- kely to start. The system will save considerable money by narro--- wing the search zone for fires after a lightning storm.

LLAFFS has been tested by the Forest Service and the Bureau --- of Land Management. The Weather Service is currently using the --- concept by dial-up communications from their Salt Lake City, Utah, office.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Determining the Economic Costs of Fire Management Programs

Researchers at the Fire Planning and Economics Unit at the Pacific Southwest Station have developed a procedure for estimating the economic "opportunity cost" of fire management programs. -- The procedure aggregates both direct and indirect costs for standardized fire management inputs and converts these to per hour --- costs for various levels of deployment. The procedure is a major improvement over earlier attempts at cost estimation in that it incorporates costs that are not typically included in accounting data and that it is flexible enough to be applied by different fire-control organizations in their fire planning activities. The procedure is computerized and has been used to evaluate costs in three Forest Service Regions and three State fire control agencies.

The cost procedure groups costs into five basic fire management activities that comprise a fire management program: fire prevention, detection, fuel treatment, initial attack, and suppression. So far the procedure has been applied only to initial attack and suppression costs, but it is being developed for the other three functional categories. Within each of the two categories now developed, 12 fire management inputs (FMI's) make up the basic cost allocation units. These FMI's include six types of hand crews and --- three sizes each of fully manned water and dozer units. For each FMI, per hour rates are estimated for four levels of deployment: - availability, travel, small fire suppression, and large fire su--- pression. Each set of FMI costs results from grouping nine component costs including pay, supplies, supervision, subsistence, general and specialized training, over head, equipment and facilities.

The cost compilation procedure has been computerized and a -



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

questionnaire has been developed as a format for data collection within the organization. Data collection and analysis can be --- achieved in one person-week of work. The cost procedure can be -- used in long-term planning or to guide short-term operational deci- sions. It is described in a Forest Service research note to be -- published soon. The research note will be available from the Ri- verside Fire Laboratory on request.

RURAL FIRE PREVENTION AND CONTROL

The Rural Fire Prevention and Control program provides finan- cial and technical assistance to States to help them achieve fire protection efficiency through activities of national interest on - non-Federal wildlands. Fire protection is enhanced by improvement in the economic efficiency of fire programs commensurate with the value of resources, products, and property protected; the efficien- cy of equipment and personnel; and effective intra-and inter-State coordination. Primary consideration is to protect resources and - services of national interest.

In 1983 a national analysis of fire protection efficiency on - non-Federal rural lands was completed and will be used as a refe- rence point for Federal financial and technical assistance to Sta- tes until individual State analyses are completed. A study on the role of private individuals, firms, States, and the Federal Govern- ment in the protection of State and private lands from the hazards of wildfire was also consumated. This study, completed in coopera- tion with the National Association of State Foresters, indicated a strong national interest and Federal role in assisting the States- to achieve efficiency on these lands.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

The State of New Mexico has already completed an interagency efficiency analysis which demonstrates the feasibility of the -- analysis in a multiagency fire protection situation. The conclusion was that through interagency cooperation a potential of --- over \$ 1 million could be saved in reduction of resources lost - and protection costs. Two States have completed their analyses - and 29 States are currently involved in analysis activities. A number of specialized analyses on fire prevention are scheduled - this year.

PROCESS FOR DISTRIBUTION OF FEDERAL FINANCIAL AND TECHNICAL ASSISTANCE.

A new process for distribution of Federal financial and technical assistance to the States has been developed and will be implemented during fiscal years 1984 and 1985. This system was -- completed by a Task Force comprised of State and Federal repre-- sentatives and in consultation with the National Association of State Forester's Fire Committee. The assistance is based on State activities that provide national benefits and lead toward a more efficient State and/or regional fire protection program.

NATIONAL INTERAGENCY INCIDENT MANAGEMENT SYSTEM.

The Forest Service in cooperation with other Federal and -- State wildland fire protection agencies is providing the natio-- nal leadership in NIIMS implementation. The focus has been on - providing information, guidance and training for implementation - of the system.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

A Variety of materials have been developed and is available to support the implementation process. Information currently available includes:

- ° NIIMS Information and Guides. All of this information has been developed as informational material to help guide implementation.
- ° Operational System Description. Describes the Incident Command System.
- ° Field Operations Guide. Contains a checklist of duties for each ICS position.
- ° Position Descriptions. A detailed description of each ICS position.
- ° Forms Guide and Forms. The system is supported by a series of forms and a forms manual.
- ° General Instruction Guide. General instructions for supervisors covered in this guide.
- ° Evaluation Guide. A guide for managing to review how well the system is functioning.
- ° Brochure "NIIMS Teamwork in Emergency Management". A general summary of the system suitable as a handout for interagency.
- ° Videotape "NIIMS In Action". A thirteen minute program --- outlining NIIMS concepts and how it can be used in an interagency environment.

In addition to these information and procedures guides, training packages for each position are under development and are expected to be on line within the year.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

NIIMS implementation is proceeding rapidly in various parts of the country. State forestry agencies have taken the initiative -- and are leading the implementation process on an interagency basis. To date all of the Federal wildland fire protection agencies and -- twelve to thirteen States Are well along with their implementation. The management concepts and principles associated with NIIMS are -- applicable to any type emergency. As a result of the interest --- shown by wildland protection agencies, many other emergency service agencies have elected to participate in the system.

RURAL COMMUNITY FIRE PROTECTION.

The Rural Community Fire Protection program provides technical and financial assistance to train, organize, and equip rural fire-departments. In fiscal year 1983, 3,065 applications were appro-- ved and funded from more than 30,000 submitted by rural mommuni--- ties.

FEDERAL EXCESS PERSONAL PROPERTY

The United States has a program that has been very helpful in our rural fire protection program. Used Federal equipment, or excess property, is loaned to cooperating State and local fire organizations for fire protection. Property of all types-aircraft, ve hicles, pumps, handtools, and office machines-is placed on perma-- nent loan. Annually, excess property originally costing over \$ 30 million is made available to State fire protection organizations.

FIRE PREVENTION

The Cooperative Forest Fire Protection (CFFP) program has been



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

working to create and maintain a public awareness of forest fire - prevention since 1942. In 1942 over 10 million acres of wildlands burned. This program has produced public service advertising and other materials that will continue this effort. Plans are being - created for national, State and local agencies to celebrate Smokey Bear's 40th Birthday in 1984. This coming event will increase the awareness of the fire prevention program and the use of Smokey --- Bear licensed items.

On August 9, 1984, the U.S. Postal Service will honor Smokey - Bear with a Commemorative Stamp. First Day of Issue Ceremonies -- will be held in the Patio of the United States Department of Agriculture's Administration Building in Washington, D.C. On January 2, 1984, the Tournament of Roses Parade in Pasadena, California, will feature a float honoring Smokey's 40th Birthday. The float is cosponsored by the Forest Service and the Square Dancers of America.

There will be many regional and local activities honoring Smokey across the Nation. Four major league baseball teams will --- have Smokey Bear Day and honor Smokey by having him throw out the first ball of a home game. There will also be baseball player/ - Smokey Bear trading cards handed out at the games.

The Forest Service implemented the use of symbolic posters -- for fire prevention nationally in 1983. This effort included several posters recommended by the Prevention Committee of the Fire Management Study Group. These symbolic posters are shown in the enclosure.

INTERNATIONAL FIRE MANAGEMENT COOPERATION

The U.S. Fish and Wildlife Service requested Canadian assis--



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

lance for a fire in the Seny National Wildlife Refuge on the Upper Peninsula of Michigan. Two air tankers and ground pumps were sent in support of F&WS forces on the fire.

In 1983 we sent three groups of specialists to Portugal to assist them in improving their use of handtools and aircraft in fire suppression and their ability to determine fire causes.

During the spring of 1983 a fire specialist was sent to the Dominican Republic to advise them on the control, mop-up and rehabilitation of a 6,000-acre wildfire burning in high value Dominican-Pine.

Most recently and as a followup to the Dominican Republic visit, the Forest Service, working closely with the Office of Foreign Disaster Assistance, Agency for International Development, conducted a three-week advanced wildland fire training course for 61 personnel from 20 Spanish-speaking countries.

This course was unique. It was specifically designed for international Spanish-speaking fire personnel. All materials were printed in Spanish and the course was taught in Spanish with Forest Service and cooperative Spanish-speaking instructors. The training was designed, developed and conducted at the Forest Service's National Advanced Resource Technology Center in Marana, Arizona.

To illustrate the importance the students placed on this international exchange of technology and how it is appreciated, a declaration written by the students is enclosed.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

FOREST SERVICE INTERNATIONAL AVIATION COOPERATION

For the second time in the past two years we have had a Modular Airbourne Firefighting System (MAFFS) and two aviation management personnel in Victoria, Australia, during their fire season. This past summer, we also trained members of the Hellenic and Portuguese Air Force in the use of MAFFS in Boise, Idaho. At the completion of their training, we loaned the Hellenic Republic a MAFFS unit for use in Greece this past fire season. In August of this year, we had a urgent request from the Director of AID-Office of Foreign Assistance for two Forest Service aviation MAFFS liaison personnel, two C-130 aircraft, and two MAFFS-units to work a number of forest fires in the Pisa area of Italy and on the Island of Sardinia.

The remaining international aviation cooperation involved -- our neighbors to the north-Canada-where at least once each fire-season we have sent one or two infrared aircraft from our interagency facility at Boise, Idaho, to help them map fires.

NATIONAL FIRE MANAGEMENT ANALYSIS SYSTEM

Increasing costs and limited budgets over the past several-years have made it more important than ever that the fire management programs in the Forest Service be efficient. To accomplish this, we have developed a National Fire Management Analysis System. This system provides an estimate of the economic efficiency of a proposed fire program, as measured by its total cost plus the expected net change in resource values due to fire. This process is now used by the National Forests as the basic for their fire programs and is a primary tool for budget de



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

velopment and analysis. It is also being used to evaluate the efficiency of State and Cooperative fire programs on non-Federal wildlands. In both applications it is providing valuable, if not essential, information to help administrators support budget requests and allocate program funds.

FIRE MANAGEMENT IN NATIONAL FOREST WILDERNESS AREAS

Wilderness managers are working with fire managers on policy direction which will permit the use of scheduled planned ignitions in wilderness. We will use these ignitions only where they are obviously needed to properly manage the wilderness resource by allowing fire to safely redeem its natural role within wilderness or, in those cases where there is no other way, to prevent damage to private property and resources outside of wilderness. Scheduled planned ignitions may be used on a case-by-case basis to reduce increasing amounts of forest fuels which have accumulated through years of aggressive fire suppression.

INITIAL ATTACK MANAGEMENT SYSTEM (IAMS)

Analysis of fire history records has shown that 65 percent of all wildfires in the western United States are started by lightning to ground strikes. Seventy percent of all public lands burned in the western United States are the result of lightning caused fires. Suppression costs average \$ 55,000 for fires over 10 acres and \$ 10,000 for fires less than 10 acres. In order to reduce suppression costs a method to detect and display ground lightning strikes, ALDS, was developed. With an ALDS, lightning strikes, ALDS, was developed. With an ALDS, lightning fires can be attacked earlier and held to smaller sizes, thus saving subs-



## *XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*stantial suppression costs.*

*ALDS provides fire managers with information they can use to reduce fire suppression costs by directing firefighters to highest fire probability areas based on lightning activity. Even greater savings can be obtained if the fire managers are provided with a system which allows them to better manage their initial actions on fires by providing real-time weather conditions, fuel information and fire behavior predictions in areas of lightning activity. This combined data provides the fire manager with the facts to respond to areas of highest fire risk first.*

*The Initial Attack Management System is a program to provide fire managers this type of factual real-time information in a single concise package. It represents the integration of many newly developed and existing high technology fire management programs. - These programs include:*

*Automatic Lightning Detection System (ALDS)*

*Remote Automatic Wather Station (RAWS)*

*LANDSAT vegetation data collection*

*Fuel moisture models*

*Fire probability models*

*Fire-behavior models*

*National Fire Danger Rating System models*

*Utilizing intelligent computer graphics terminals, the local fire manager will have at his fingertips, in real-time, concise fire related information never before possible.*



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Phase I of IAMS will be completed this year. It consists of the acquisition of the computer and graphics terminals. Additional fuels mapping and placing of RAWS will continue during the upcoming years-with additional mapping planned in the next four-outyears.

ACROSS THE BORDER COORDINATION OF ALDS AND RAWS

Subcommittees have been set up for the United States and Canadian coordination of Lightning Location Systems and Automatic-Weather Systems as follows:

Lightning Location Systems

Bernie Mroske, Canadian Forestry Service

Dave Gilbert, British Columbia Forest Service

Joe Niederleitner, Alberta Forest Service

Arlan Smith, U.S. Department of the Interior, Bureau of Land Management, Washington, D.C.

Dale Vance, U.S. Department of the Interior, Bureau of Land Management, Alaska.

Lonnie Brown, U.S. Department of the Interior, Bureau of --- Land Management, Boise Interagency Fire Center, Idaho.

Remote Automatic Weather Stations

Dave Gilbert, British Columbia Forest Service

Peter Kourtz, Canadian Forestry Service

Gerry Drysdale, Ontario Ministry of Natural Resources

Arlan Smith, U.S. Department of the Interior, Bureau of Land Management, Washington, D.C.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Walt Shopfer, U.S. Department of the Interior, Bureau of Land Management, Montana

Phil Sielaff, U.S. Department of the Interior, Bureau of Land Management, Boise Interagency Fire Center, Idaho.

Messrs. Gilbert and Smith will be the coordinators from the United States and Canadian sides, respectively.

**ALASKA FIRE SERVICE PROGRESS REPORT**

BLM provides fire suppression on all Department of the Interior administered lands and Native Corporation lands in Alaska. This suppression is done in accordance with approved fire management plans and mutually agreed upon standards. The Department of the Interior and its individual land management agencies are presently developing long-term funding relationship arrangements to carry out this suppression mission. Other arrangements provide for cooperative arrangements with the State of Alaska, the only other significant fire suppression agency in Alaska.

The Alaska Fire Service (AFS) was established last year to perform this suppression work. In 1983, the AFS completed its first full season of operation. Good success was achieved by AFS in initial attack on wildland fires. Out of 467 fires which were attacked by AFS forces, only four became project size. The other agency land managers feel they have an excellent relationship with the Alaska Fire Service.

**NEW SMOKEJUMPER "ALPHA" PARACHUTE SYSTEM**

BLM has been testing a new ram-air canopy parachute in Alaska. Training has been a priority in the ram-air program since --



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

1981. Saturation training provided by "parascension" enables the student to rapidly acquire the knowledge and experience necessary to fly a ram-air canopy during free descents without aircraft use and associated costs. Improved materials and manufacturing techniques during the test period have resulted in a larger canopy -- without significant increase in packing volume or weight. The -- ram-air has been proven superior to the round canopy in terms of performance in extreme wind conditions and elevations exceeding -- 10,000 feet MSL.

The Alpha parachute system was operationally incorporated into the BLM smokejumper program in Alaska and the Great Basin in 1983 with a high degree of success. Two hundred and fifty fire jumps were made on approximately 150 fires. Over 50 percent of the Alaska smokejumpers are currently qualified for the Alpha system with plans to expand the use in Alaska and to use the system exclusively in the Great Basin during 1984.

The Alpha system has generated substantial interest from the United States military services including the Army Special Forces, the Naval Weapons Center and the Air Force Pararescue Unit.

U.S. FISH AND WILDLIFE SERVICE FIRE MANAGEMENT

The Fish and Wildlife Service has become a full interagency partner in fire management by receiving fire management funding and personnel authorization through last years Congressional --- appropriations. Some \$ 3 million were received for fire equipment and to fund 24 positions. The Service also began using the De---partment of the Interior Secretary's budget authority for supplemental funding of fire presuppression and suppression.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

The 24 positions have been allocated to provide a professional fire management organization at all levels of management. Seven regional coordinators and 14 refuge fire management officers have been appointed. A headquarters office fire management staff of five positions to provide national guidance and leadership has been established.

NATIONAL WILDFIRE COORDINATING GROUP (NWCG)

NWCG is made up of representatives of the U.S. Departments of Agriculture and the Interior and the National Association of State Foresters. It was formed in 1974 for the purpose of coordinating the fire programs of the participating agencies to eliminate duplication. The goal of NWCG is to provide more effective execution of each agency's fire management programs.

NWCG met three times in 1983: January in Titusville, Florida; May in Washington, D.C.; and September in Santa Fe, New Mexico.

Activities of NWCG this past year included:

1. NWCG endorsed a wildfire fatality reporting form developed by the Forest Committee of the National Fire Protection Association (NFPA). Wildfire fatality statistics can be compiled annually on this form to be published by NFPA.

2. NWCG Working Teams prepared and printed publications, among which were the "Water Handling Equipment Guide" and Prescribed Fire Monitoring and Evaluation Guide". The Prescribed Fire and Fire Effects Working Team is preparing a smoke management guide.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

de for prescribed fire notebooks. The Water Handling Guide is available from the Boise Interagency Fire Center, 3905 Vista Avenue, - Boise, Idaho 83705.

3. NWCG accepted the Fire Operations Systems Working Team report which contains several recommendations to better coordinate - and improve various automated fire systems used by fire organizations and agencies in the United States and Canada.

4. With participation from users and from the retardant industry, the USDA Forest Service is developing a standard reference of retardant mix factors and characteristics. NWCG recognizes the interagency values of this Forest Service standard and encourages -- all wildland firefighting agencies which use such fire retardants - to adopt it as an authority for purposes of managing their fire retardant programs.

5. Actions were taken by NWCG through its working teams to enhance and promote transition to the National Interagency Incident-Management System (NIIMS). These transition courses are available through the USDA Forest Service, FIRETIP, Boise Interagency Fire-Center, 3905 Vista Avenue, Boise, Idaho 83705.

6. NWCG will ensure that safety considerations are an integral of par NIIMS:

a. NWCG will develop and oversee the incorporation of additional fire safety materials in training courses for both firefighters and overhead teams.

b. NWCG recommends that agencies consider hazards and overexposure to carbon monoxide in their safety recommendations for fire



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*fighters.*

PUBLICATIONS ENCLOSED.

1. CSU Report on Efficiency (25 copies)
2. CSU Report on National Interest and Federal Role (25 copies)
3. Economic Analysis Report (25 copies)
4. NIIMS Publications (25 copies)
5. "Media for Wildfire Management". Developed by National Wildfire Coordinating Group and available through National Audiovisual Center. (5 copies)

TRANSLATION OF DECLARATION PREPARED BY SPANISH-SPEAKING PERSONNEL  
AT WILDLAND FIRE TRAINING COURSE

AT MARANA, ARIZONA, USA, ON NOVEMBER 10, 1983, WE THE MEN OF THE IBERIA PENINSULA AND THE COUNTRIES OF THE THREE AMERICAS, JOINED - IN THANKS TO THE FIRST INTERNATIONAL ADVANCED COURSE ON FOREST FIRE CONTROL, THAT WAS ORGANIZED BY THE US FOREST SERVICE, WITH THE COOPERATION OF THE AGENCY FOR INTERNATIONAL DEVELOPMENT, AND SUCCESSFULLY REALIZED BY THE NATIONAL ADVANCED RESOURCE TECHNOLOGY-CENTER.

D E C L A R E

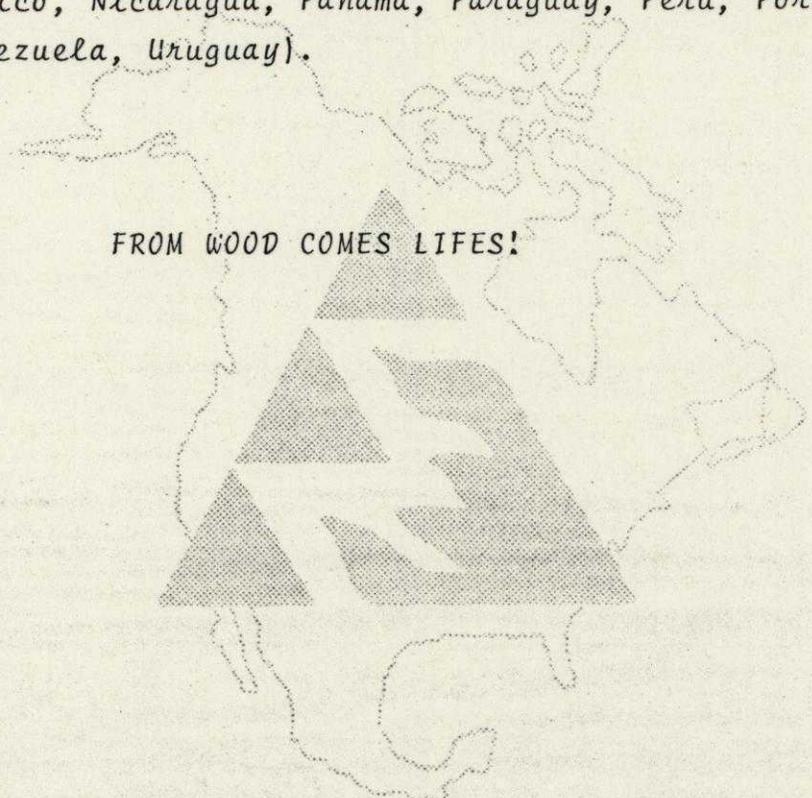
IN FRONT OF OUR CONSCIENCES AND THE WORLD, OUR UNCONDITIONAL PLEDGE IN JOINING EFFORTS FOR THE COMMON DEFENSE OF THE NATURAL RESOURCES, IN GENERAL, AND THE FOREST RESOURCES IN PARTICULAR, IN BENEFIT OF ALL HUMANITY AND THE FUTURE GENERATIONS OF OUR COUNTRIES.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*(This declaration was signed by representatives from every country attending the session. The countries represented were:*

*Argentina, Bolivia, Brazil, Chile, Columbia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, México, Nicaragua, Panamá, Paraguay, Perú, Portugal, Spain, Venezuela, Uruguay).*

FROM WOOD COMES LIFES!



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

GENERAL INFORMATION OF MEXICO

ING. JESUS B. CARDENA RODRIGUEZ  
PRESIDENT OF THE GROUP.

INFORMATION ON PREVENTION.

ING. SALVADOR JUAREZ CASTILLO

INFORMATION ON TECHNOLOGY

ING. RODOLFO RODRIGUEZ VELEZ

INFORMATION ON COMBATE

ING. MARIO A. MOZQUEDA VAZQUEZ



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

DISTINGUISHED INTEGRANTS OF THE RESEARCH GROUP OF MANAGEMENT OF FOREST FIRES OF THE NORTHAMERICAN FOREST COMMITTEE.

ATTENDANTS AND GUESTS ON THIS EVENT.

LADIES AND GENTLEMEN.

The Mexican Forest Service gives all of you the most cordial welcome, wishing that your stay in our country will be pleasant, and that this event will result in a great benefit to our countries.

I would like to point out, that it is an honor that México, as integrant of the north american forest committee, on this occasion is being the headquarters of the meeting of the research group of management of forest fires, which has become outstanding to perform significant contributions to the forest activity. Likewise, we reiterate the wish to maintain the presence of México in this organization in an active way and communicate all of you that our country is now in a dynamic process of economical reorganization which has been created in a number of measures as the national plan of development, which has established as priority policies: attention of forests, jungles and arid zones, with four major objectives:

1. Protection and fomentation of silvicultural resources, as well as its contribution to the alimentary productivity, preservation to the alimentary productivity, preservation of soils and water, and to the ecological equilibrium.

2. A significant contribution to the socio-economic welfare of all the inhabitants of the silvicultural regions, through the organized incorporation and self-sufficiency of owners and holders



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*in all protection, fomentation, exploitation and industrialization activities.*

3. *Promotion of the constant and sufficient supply of timber and untimber yielding goods of high-grade and adequate prices for the wide, integral and long lasting exploitation of forests, as -- well as the optimum utilization of roads, organizations and financing.*

4. *Promotion of savings and generation of foreign currency -- through the substitution of importations and exportation of forest products.*

*Special attention is given to all protection and fomentation tasks, which have been reflected in the reorganization of the Subsecretaría Forestal, The National Forest Subsecretary, as part of the Secretaría de Agricultura y Recursos Hidráulicos, The National Secretary of agriculture and Hydraulic Engeneering, which attends all forest protection works. A General Direction for the Protection and Fomentation of Forest Resources has been integrated. Also, emphasis is given to the assignation of resources for its organization and action.*

*We have great interest that all works for prevention and control of fires would be strenghtehened through the introduction of appropriate structures, organization and technology to the conditions in our environment.*

*In other situations, it has been pointed out, that in México-Forest fires have a socio-economic origin, as 90% of fires that -- are registered annually, are provoked by the inhabitants of forest areas, that sum more than 10 million persons.*



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*This situation is due because we are an agricultural an cattle country, and that 35 to 40% of population live in rural areas, --- that precisely depends on the agricultural, cattle and forest production.*

*In that respect, we have admitted that as part of the new strategy of the country, it is required the organized incorporation of all owners and holders of forests, jungles and arid zones, to all-tasks which go from the protection to the production and industria-  
lization of forests, and when the forest resource represents incomes and employment, it could be guaranteed its protection, a greater index of welfare for the population, as well as the reduction-  
of fires and damages that they provoke actually, many efforts are being performed in this sense. The State of México is one of the -  
entities where all tasks of production, protection and fomentation are being attended, including efforts from the federal and estatal-  
governments, so we are pleased that this meeting is being conduc-  
ted in this entity.*

*In our country, there are two regions that are classified as--  
criticals, in regard to fires; one of them is the central region, -  
which has a large population density, and all rural necessities --  
are fused with the space demands and recreation of the urban popu-  
lation; the other region is the tropical area, in which control fi-  
re is used as a tool to open cultivation land. On this fact, it -  
has been recognized that the problem of lack of armonic develop-  
ment of Agriculture and cattle and industry is being attacked.*

*This year of 1983, has been specifically critical in regard -  
to forest fires, and the principal reasons were:*

- The prolonged drought season, registred in the country since --  
1982 and part of 1983.*



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

- The increasing pressure of the rural population, to perform changes in the use of soil in forest areas due to the economical situation of the country, which reduced the employment possibilities as well as the reincorporation of many people to the rural areas.
- To this previous fact, strong restrictions were added to the public costs, during the last years.

On this year 5,500 fires were registered which affected in low or great extent 250,250 hectares, 6% of increment on forest fires - and 83% of affected surface, in relation with the previous year, as damages are only comparable with those of 1975 and 1976.

More incidence of these sinisters, precisely arises on the central region of the country and markedly appear on the Valley of Mexico. Those facts obliged to establish and emergent plan to combat fire, on march.

Experience and results of this campaign on 1983, had permitted us to analyze and become aware of the necessity to reintroduce, reorientate and modernize all tasks on prevention and combat.

At the same time, we have recognized that in accordance with our social and economical reality, tasks on planning, organization and assessment should be integrated to solve and improve our administrative culture.

On the other hand, we are convinced that the organization and support to the forest farmer sector cannot be postponed, as well as the spreading and creation of a better forestry culture. For this reason we have assess the important roll of all broadcasting means, as Radio, T.V. and press.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Recently, on press, a course on forestry journalism was imparted by the Secretaría de Agricultura y Recursos Hidráulicos, with the basic goal to secure an opportunal information to the public and a wider understanding of the forestry problematic.

We have started a linking process between the rural and urban populations, by means of their organized incorporation to the prevention and combat activities, through forestry civic groups and corporations against fires, without disregarding all support on training and advising aspects.

Likewise, we have considered the necessity to incorporate and develop adequate technology, equipment and tools for combat of fires, attention on uniforms and wardrobe, nourishment, radio communication systems, etc.

We search for the strengthening and expansion of the substructure, specialized equipment and human resources, to secure a wider covering on forest areas and their prompt attention and resources, and the Establishment of Regional Systems for Detection, Control and Combat, as well as the evaluation on short and long term that will permit to increase the efficiency and results of these activities.

To give an adequate orientation to all mentioned actions and taking up the courtesy of the Canadian government, on last August, technical personnel of the Mexican forest service had the opportunity to know the structure, organization and technology that are used at Quebec. Thanks to the kind invitation and support of the American Government, ten Mexican technicians recently attended an international course on training of instructors for prevention -



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

and control of forest fires.

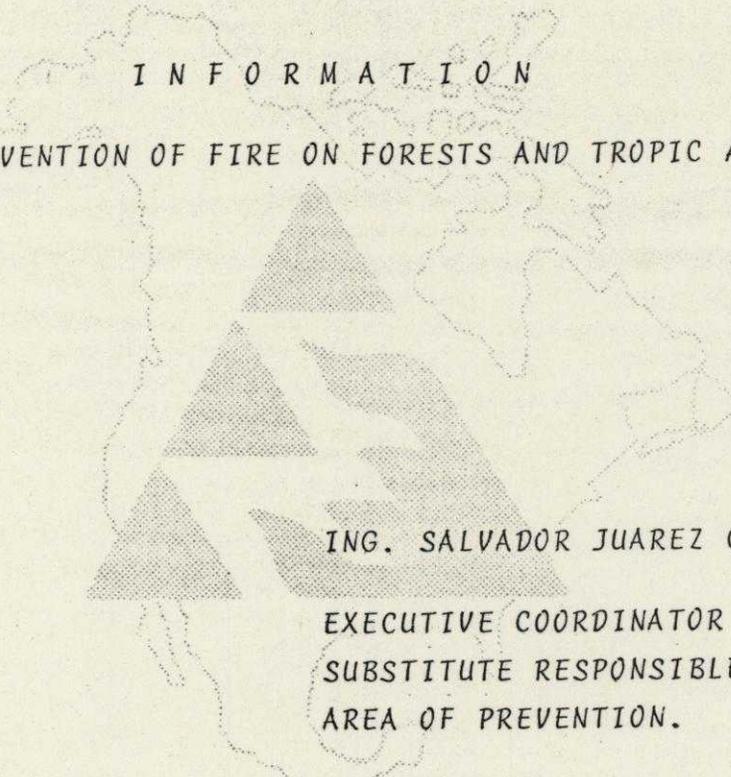
We would like to show evidence of the great interest that we have on strengthening the international relations on this field, and for this the *Secretaría de Agricultura y Recursos Hidráulicos* gives these activities its total support.

On this occasion, we would like to express our gratitude to all our forestry mates, whose participation, perseverance and --- technical contributions have made the northamerican forestry committee and important organization for the forestry activity, especially for the countries which integrate it.

Finally, I would like to inform you that the President of the Mexican Republic, Lic. Miguel de la Madrid Hurtado, in regards to the Preservation of the fores resource, has said that those who - should have the benefits of it are not only the present but the - future generations.

Thank you, very much.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



I N F O R M A T I O N  
ON PREVENTION OF FIRE ON FORESTS AND TROPIC AREAS

ING. SALVADOR JUAREZ CASTILLO  
EXECUTIVE COORDINATOR  
SUBSTITUTE RESPONSIBLE OF THE  
AREA OF PREVENTION.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

PREVENTION AGAINST FIRE ON FORESTS AND JUNGLES

BACKGROUND:

The activities for preventing forest fires have been continued in spite of the substantial reduction to the assigned budget.

The Secretaría de Agricultura y Recursos Hidráulicos, through the Subsecretaría Forestal, has traditionally supported the spreading actions, considering them as prioritararians on forest- and jungle protection.

DEVELOPED ACTIVITIES

*Divulgation.*

During the year of 1982, the spreading actions were continued making use of the most suitable publicitary media, according to the characteristics of each region or zone. It must be pointed out, in a special way, the south region adjoining the City of México, which receives the constant impact of a great human concentration, but at the same time, counts with all the massive communication media and with the biggest resources to prevent and combat fires that could be present.

The most utilized materials for spreading actions are forest text guide, leaflets, and printed matters, making easy the teaching to volunteers and contracted personnel for the fire program. Conferences are also dictated, allusive films are exhibited, and the spreading brigades organize didactical trips for

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

the visitors of wooded-zones. The messages by radio and television are being broadly utilized at the beginning of the broadcasting program.

Civic groups and defense corporations against fire - forest program header ships; regional delegations and the technical directions of the industrial units of forest organization -- and administration, organize groups of volunteers in the cities and little towns, and defense cooperations against fires in common lands and communities embedded in the forests and jungles.

The organization and active participation in the production of the owners and holders of the woods, in the fundamental aspect of these actions which results will have to be positive, because each time, they are becoming convinced that their resource is giving them direct benefits.

FORESTRY ACTIONS.

In some regions of the country, works have been performed on extraction of residues of forest development, to be utilized as firewood, or wood for rural construction workhand, in other domestic uses, eliminating with this activity the combustible material accumulated on the ground, so reducing the risk of sudden fires.

Groups of rural people are being orientated and trained as a preventive measure on those regions with high population density, so with appropriated technics controlled fires can be undertaken specially pasture lands, that even though are light combustible, are abundant in the woods, so it is necessary to construct firelines, cleaning the already existent, giving special attention to areas where forestation works have been done.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

OPERATIVE ACTIONS.

*In the present administration, there is the pretension of generalize, at National level, the following actions:*

- 1.- To analyze statistics of fires occurred during the last years to plan production activities with reliable data.*
- 2.- To elaborate maps in which signals at praedial level could be done of incidence of sinisters to delimitate more conflictive areas and concentrate on them resources and actions.*
- 3.- To perform a complete revision of equipment and tools, as well as vehicles, repairing them at the end of each fire season, to have them in good condition at the beginning of the next season; at the same time, the existence of human resources and material supports will be investigated to rationalize will be investigated through rationalize their distribution and to be in conditions of improving all corresponding activities.*

TRAINNING.

*Actually, the training of personnel is considered prioritarian so we must look for the mechanisms for training professional and operative personnel on the programs in short or long term so that in rather short time they are capable to develop theoretical and practical aspects.*

*To achieve these actions, ten technicians attended a course of forest fires that took place from October 24 to November the 10th., at the National Advice Resource Technological Center, at -*

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*Pinal Air Park, Marana, Arizona, USA.*

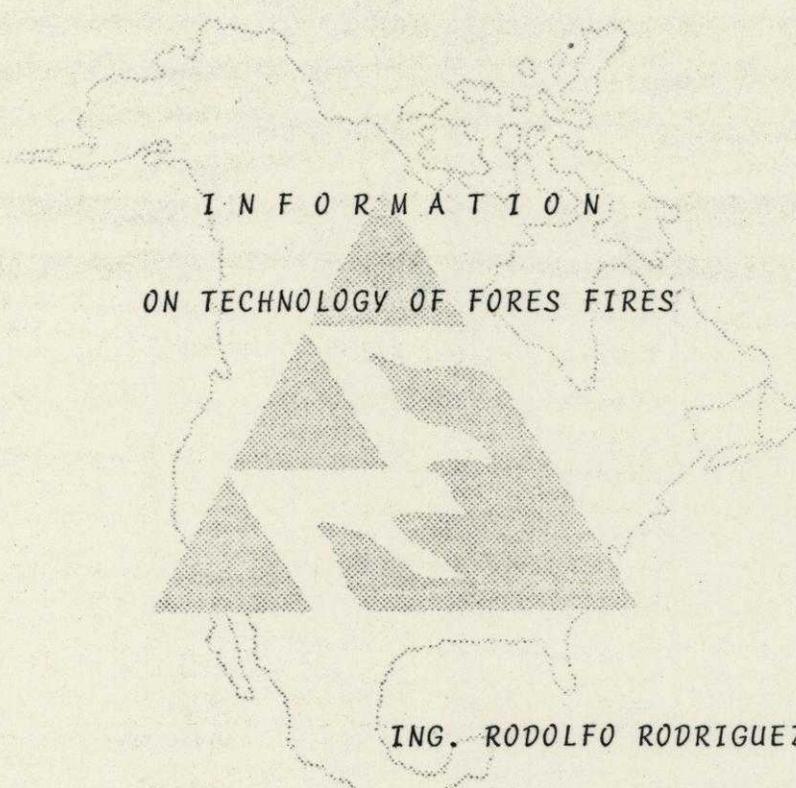
*It is also important to mention that qualified technicians - assisted to a study trip on "Organization on Prevention Supre--ssion Forest Fires", which was imparted on august at the society of conservation on the northern coast at Quebec, Canada.*

*These activities were to prepare instructors that will teach regate managers and operative personnel in short term. It is also important that they will teach civil organizations and production associations to perform results with special focus on rural and urban areas.*

*Finally, we must point out on the activities of prevention, - that there are different groups that participate, such as, the - Mexican Army Schools and Civil Associations that with great interest with will help the forest authorities in the conservation - of the forest resources.*



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



**I N F O R M A T I O N  
O N T E C H N O L O G Y O F F O R E S T F I R E S**

**ING. RODOLFO RODRIGUEZ VELEZ**

**RESPONSIBLE OF THE TECHNOLOGICAL  
AREA OF FOREST FIRES.**

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

XVII MEETING OF THE RESEARCH GROUP OF MANAGEMENT OF FOREST FIRES FAO/CFAN.

REPORT OF INVESTIGATION AND TECHNOLOGY OF FOREST FIRES.

MEXICO, 1983.

I. - Three publications on Forest Fires, have been edited by the Instituto Nacional de Investigaciones Forestales, the National Institute of Forest Research, on this year.

- 1) ZERECERO LEAL, C. 1983, "INCENDIOS FORESTALES EN MEXICO", S.A.R.H., S.F., I.N.I.F., CIFONOR, NOTA DIV. No. 4, 11 p. MEXICO.

Most relevant aspects on forest fires, as legal pints, - causes of origin; substructure and actions for prevention detection and combat, as well as some considerations on damage evaluation, controlled fire, international cooperation and forestry civic groups.

- 2) GARCIA VILLAFAN, F. 1983, "CHIHUAHUA Y LOS INCENDIOS FORESTALES", S.A.R.H., S.F., I.N.I.F., CIFONOR, NOTA TEC. - No. 4 10 p. MEXICO.

Information on forest fires, based on the analysis of -- statistic from 1957 to 1978, with some considerations of the environment, main affected municipalities and causes that provoked them.

- 3) SANCHEZ, C.J. AND ZERECERO, L.C. 1983 "QUEMAS CONTROLADAS", S.A.R.H., S.F., I.N.I.F., CIFONOR, NOTA DIV. No.5,

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

14 p. MEXICO.

*It includes basic information on what factores should be known and analized to plan, execute and evaluate a fire; the more common techniques are described here, and some-examples are given from its publication.*

II.- *An interesting work was concluded on the "HISTORY OF FOREST-FIRES IN SIERRA DE LOS AJOS", Sonora, in coordination with - the Subsede de Cananea of the Instituto Nacional de Investi-gaciones Forestales, the Ring Development Research Laborato-ry of the University of Arizona and the Rocky Mountain Expe-rimental Station.*

*Of the more outstanding conclusions, it is concluded that in this forest site, a fire has been produced every four years-as an average, since 1778, principally due by rays. This -- work was presented by JOHN H. DIETERICH, and actually is on press.*

III.- *On January 1982, the coordination between the Instituto Na-- cional de Investigaciones Forestales and the Rocky Mountain-Experimental Station was performed; represented by: Mr. Je-- sús Sánchez Córdova and Mr. John H. Dieterich, respectively. A research project on "THE EFFECT OF CONTROL FIRES", was --- aproved, which comprehends several treatment in the forests in the State of Chihuahua.*

*The first of them was initiated on October, 1982, on "Plata-forma de San Juan", Municipality of Madera, which has the fo-llowing information:*

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

- EXPERIMENT            *Control fires in a forest of Pinus durangensis*
- OBJETIVE            a) *Decrease of fuel amount.*  
                          b) *Effects on regeneration.*  
                          c) *Effects on soil nutrients levels.*
- DESIGN                *Control fire on fall, control fire on winter, and control.*
- MEASUREMENTS      a) *Before control fire: Fuel inventory throughout transects; humidity in fuels through moisture meters (Fuel moisture stickes); vegetation -- through sampling lines, specially on regeneration: of soil carrying out agricultural type-samplings and the profile of adjacent lots.*  
                          b) *On control fire, every hour temperature is taken, as well as relative moisture, dominant - wind, its direction and speed.*  
                          c) *After the control fire - the same first parameters during two years, with six months intervals.*
- ADVANCES. -        *Man made fire was performed on fall, on November-17, 1982, as well as in February 24, 1983; All measurements before and after the man made fire were carried out, and the results of the first control fire were obtained in the last days of August, -- 1983, Actually, the information analysis is being concluded and the preliminary report is being pre*

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*pared.*

*It is pretended to establish similar experiments in the regions of Guachochi; Guadalupe and Calvo Chihuahua, at the end of the present year.*

*IV.- The publication of a methodological application of man made-fires is being worked out, for the inventory of wood fuels - and dead leaves.*

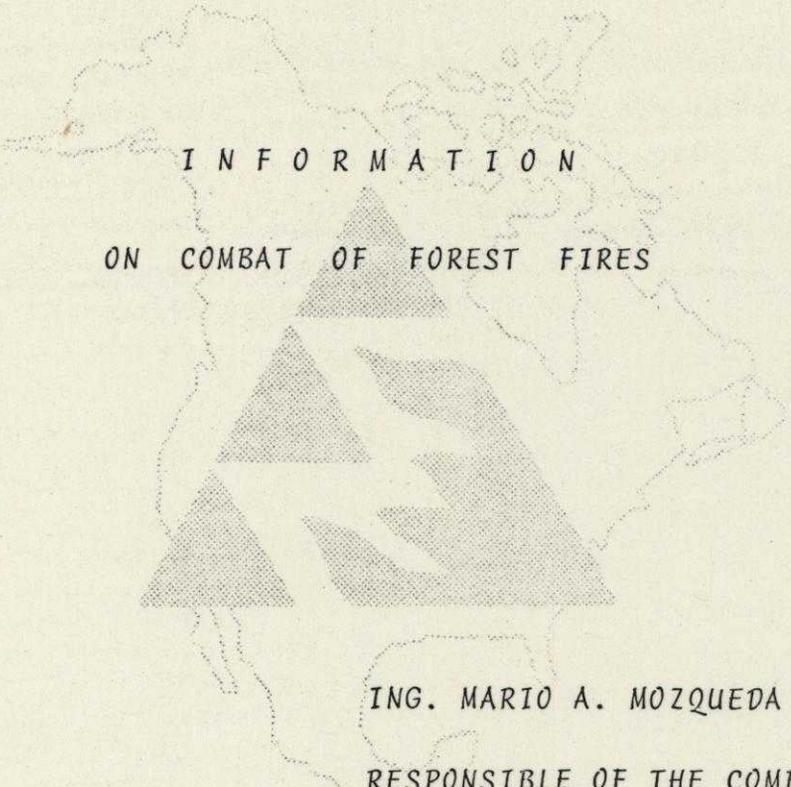
*As a support for the determination of this methodology, some samples ere carried out in the regions of Guachochi and Mara, Chihuahua.*

*V.- Proposals for the Study Group of Management of Forest Fires, to perform technological research works in México:*

- 1) Advising is being set foruth for the practical management of the "Index of Danger" in the mexican forests.*
- 2) Prepare tables of "Quantification of Forest Damages", in a preliminary level of practical use, to be applied by - regions and types of forest in México.*
- 3) To elaborate tables of "History of Fire" in the mexican-forest, it is asked for technological and advising assistance, (sampling, ring readings and analysis of results).*



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



I N F O R M A T I O N  
O N C O M B A T O F F O R E S T F I R E S

ING. MARIO A. MOZQUEDA VAZQUEZ  
RESPONSIBLE OF THE COMBAT AREA  
OF FOREST FIRES.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

FOREST FIRES COMBAT

PRESENCE OF THE NEW ADMINISTRATION.

Forest fires have been and keep on being agents that cause serious damages on forests and wildlife, as well as unmendable losses in the economy of the country. Therefore, the present administration is worried about the opportunely combat of fires, by means of an adequate equipment and necessary resources for a well-trained combat service. The established policy is to develop a change, mainly orientated to the search of a wide participation of forest owners and holders, and in a short or medium time to introduce combat strategies, control and scheduling of actions that will help to give an effective protection.

MODERNIZATION AND ORGANIZATION OF ACTIONS.

The combat of forest fires has been deficient, and up to date no one has develop a precise technique to perform modern works with great efficiency, since always forest fires have been attacked by means of practices orientated to the direct action. For the previous reason, a substancial reorganization is performed throughout a reorganized strategical projection, defining contemplative actions in a five-year plan that serveas a base for a long time prevention.

TOOLS, EQUIPMENT AND TRANSPORTATION.

TOOLS

- Axes
- Larges heavy knives with cases
- Iron gates

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

- Straight shovels
- Mattocks
- Curved shovels
- Files
- Wire brooms
- Swing saws
- Handsaws
- Bags

(ESCALAS)

- (Cuadrángulos) - Quadrangles
- (Cuadrante) - Quadrant

Scale: It depends on the scale of the plane used.

Towers

Central tower

EQUIPMENT.

- Vehicles
- Radio - stationary, mobile and portable communication
- Field glasses
- Hand lamps or hand reflectors
- Casks
- Extinguishers
- Sawn machines
- Water bottles
- Complete uniforms with shoes
- Fire bombs.
- Half masks
- Medical kit with medicaments
- Recipients with water

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

TRANSPORTATION

- A Pick-up truck, preferred with doble traction
- A post type truck
- A 5-15 places helicopter for transportation of personnel, tools, food, for fire detection, spreading of information, etc.

DETECTION AND LOCATION FORMS.

DETECTION

- Observation or watchtowers
- Trips on terrestrial vehicles
- Air transportation
- Passers-by in the forest
- Commercial, private and/or other air lines
- Fire detectors

LOCATION

- Grid and coordinate structured maps, in which quadrants the grids called "quadrangles" will be place; this location will be made - in agreement with the orientation of the sinister and knowledge of the terrain, as well as the location of every watchtower and the direction that every one of them indicates of the infered si tuación of the fire.

ORGANIZATION

- Forest fire patrols
  - ° S.F. officials
  - ° Private companies



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

- ° Forestry regulation unities
  - ° Forestry administration unities
  - ° ~~Forestry exploitation industrial unities~~
  - ° Decentralized public organisms
- 
- Forestry civic groups
  - Forest fire corporations
  - Civil associations (Clubs)

*It is worth to note the assistance of official and private -- groups in the combat of these fires, as well as the intitutional-limitations, syndicalism, and lack of encouragement of the personnel, and little participation of owners and holders. Since in -- the critic zones of forest fires, the density of roads is low, -- there are no forest exploitations. For this, all peasants do not receive incomes nor benefits from the forest, and give no impor-- tance to the sinister when it is present. For these previous --- facts, the social-human intervention is of vital interest in the extensive livestock zones.*

*Likewise, the scarce truckdriver substructure on forest areas make deficient the logistical support to improve the effectiveness of fires combat.*

RESOURCES AT NATIONAL LEVEL.

FOREST SERVICE

*104 patrols integrated by 15 practical elements each, with 5-permanent elements and 10 temporary persons; that is to say that they are hired for five or six months every year, on fire season.*



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*Of the five permanent elements, one of them is assigned Patrol Manager and four are guards.*

*72 camps with watchtowers and stationary radio communication-equipment.*

*Every patrol has a vehicle equipped with radio-communication - as well as the minimum necessary tools for the operation.*

*Three helicopters for the Subsecretaría Forestal, the National Forest Subsecretary; eventhough, these vehicles do not depend directly from this institution, but to the Departamento de Transportes Aéreos (Department of Air Transportation), of S.A.R.H., -- from which little support has been received.*

**BASIC MISSION OF THE FOREST SERVICE IN THE FOREST FIRES COMBAT.**

**IN THE PAST:**

*It was counted on the personnel of the Forest Fires Patrols, - organized by the Forest Service, and with little participation of other dependences, owners and holders.*

**IN THE PRESENT:**

*It continues the traditional way, although with greater participation of owners and holders, corporations and personnel of --- other dependences.*



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

STRATEGICAL PROJECTION

To combat forest fires efficiently, it is try to involve owners and holders in a total participation, since they are responsible of the origin and propagation of fire, as well as being the more affected ones from the damages that these disasters bring with them.

PARTICIPATION OF OTHER DEPENDENCES.

HOW THIS HAS BEEN DEVELOPED

The Subsecretaría Forestal, the National Forest Subsecretary, has sent an especial invitation to the Secretaría de Educación Pública, the National Secretary of Public Education, Secretaría de Comunicaciones y Transportes, the National Secretary of Communication and Transportation, Secretaría de la Reforma Agraria, the National Secretary of Agrarian Reform, Instituto Nacional Indigenista, the National Institute of Indian Population, Caminos y Puentes Federales, Federal Roads and Bridges, Ferrocarriles Nacionales, National Railways and Air Lines. However, these dependences have participated to little, receiving greater cooperation from the Government of the States and from the Secretaría de la Defensa Nacional, the National Secretary of National Defense.

HOW IS PARTICIPATION PRETENDED TO BE IN THE FUTURE

First, it is required the decided cooperation of the Secretaría de Educación Pública, orientated to the basic and medium education with allusive themes to protect and fomentate all forest resources, specifically to prevent and combat forest fires through the integration of educative programs.

**XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN**

INSTITUTO NACIONAL INDIGENISTA. (The National Institute of Indian Population) - Throughout the labor that this dependence develops on margined areas, it is pretended to include programs for prevention and combat of fires, in those communities where work is --- going to be realized.

THE PRESS, RADIO AND T.V.- A greater participation is needed --- spreading programs which raise the responsibility sense of all citizens, in the protection of this resource.

GOVERNMENT OF THE STATE- To find out the means, so all statal dependences and voluntarial groups became unified on every one of the activites that would be developed for the prevention and combat of forest fires, participating in a more effective way in its protection.

NEEDS OF TRAINING

## 1.- Instructors Training.

A well trained personnel is required with wide knowledge of this matter. For this, a 10 element group was organized to attend a course of Forest fires in Marana, Arizona, U.S.A. Six of these persons were selected by the Dirección General de Control y Vigilancia Forestal, the National General Board of Forest Control and Vigilance, and the remaining four elements were designated by the Comisión Coordinadora para el Desarrollo Agropecuario del Departamento del D.F., the National Coordinate Comission for Farming and Animal Husbandry of D.F. Department.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

*2.- Implantation of Regional Courses.*

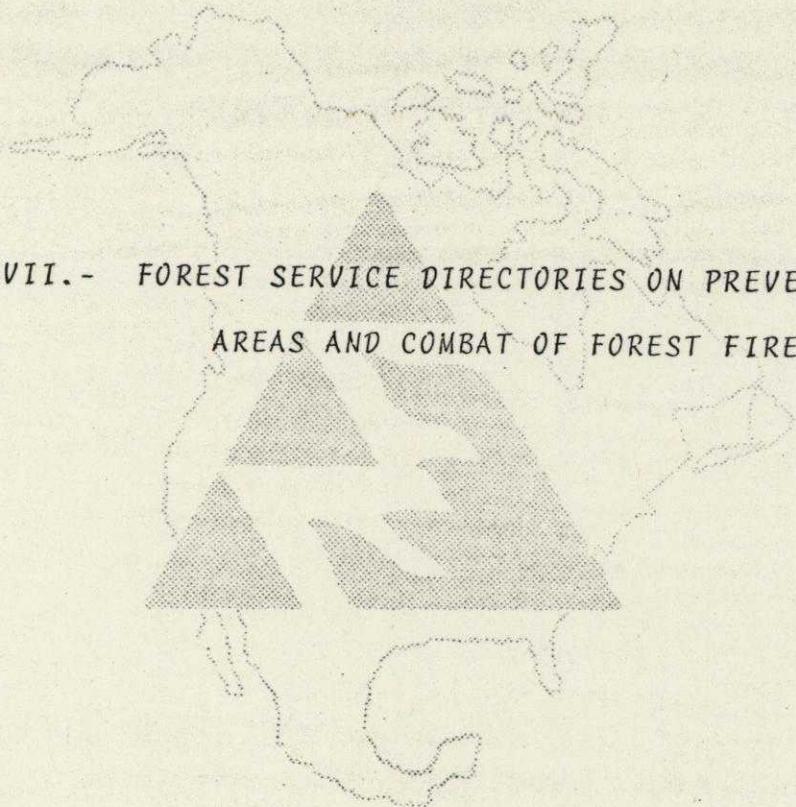
*This group becomes to be an instructor, which is going to im-  
plant regional courses to Patrol Managers and Fireguards, per-  
sonnel of the Servicio de Control y Vigilancia Forestales, --  
corporations, civic and voluntary groups, for prevention and  
combat of fires.*

PROPOSALS

*México proposes to the study group of management of forest fi-  
res, that the technological exchange be incremented through speci-  
fical agreements for the establishment of training and practical-  
sites, and in the other hand, to establish actions that become to  
be travels to the United States of America and Canada. Furthermo-  
re, a thoughtful invitation is extended to these countries to vi-  
sit us during the next fire season, that will begin in January --  
1st, 1984, and will know our organization and way to combat fo-  
rest fires.*



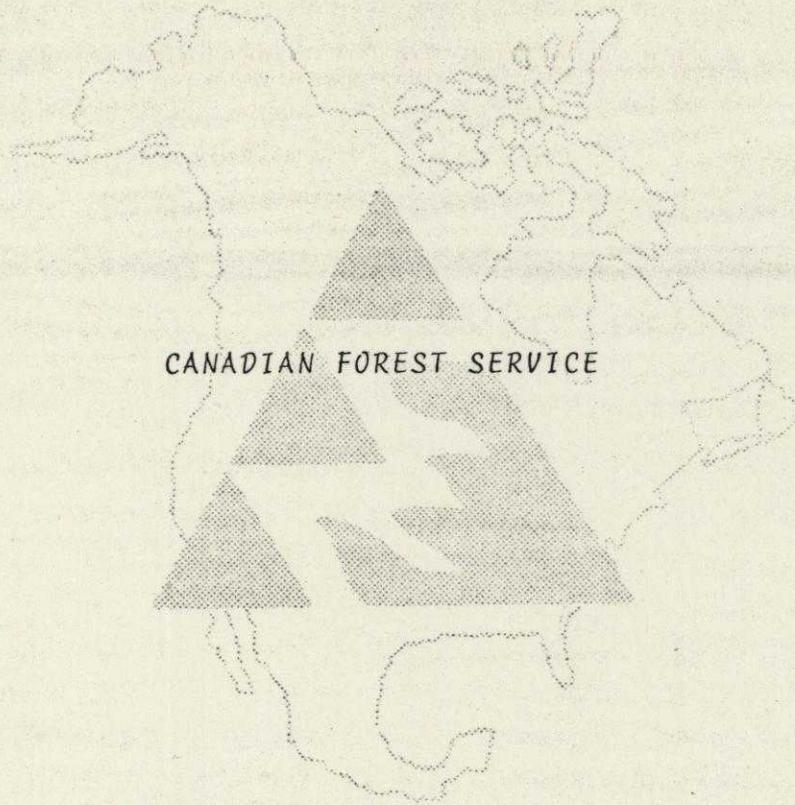
*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



VII.- FOREST SERVICE DIRECTORIES ON PREVENTION  
AREAS AND COMBAT OF FOREST FIRES



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



CANADIAN FOREST SERVICE



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

CANADA

FEDERAL GOVERNMENT

Department of the Environment

Canadian Forestry Service

Reed, F.L.C.  
Assistant Deputy  
Minister.

Canadian Forestry Service  
Department of the Environment  
Ottawa, Ontario K1A 1G5

819-997-1454  
Telex 053-3799

Winget, Carl  
Director General

Research and Technical Services  
Directorate  
Canadian Forestry Service  
Department of the Environment

819-997-2269  
Telex 053-3799

Williams, Dave E.  
Manager, Fire Research  
Remote Sensing Program

Petawawa National Forestry  
Institute  
Canadian Forestry Service  
Department of the Environment  
Chalk River, Ontario K0J 1J0

613-589-2880  
Telex 053-34557

Parks Canada

Lohnes, Dave M.  
Chief

Natural Resources Division  
Parks Canada  
National Parks Branch  
Ottawa, Ontario K1A 0H4

819-994-3244  
Telex 053-3711

Department of Indian Affairs and Northern Development

W.S. Moore  
Chief, Forestry  
Resources Division

Northern Renewable Resources Br.  
Department of Indian Affairs  
and Northern Development  
Ottawa, Ontario K1A 0H4

819-997-0048  
Telex 053-3515



XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN

PROVINCES

Alberta

Smith, C.B. (Cliff)  
Director

Forest Protection Branch  
Alberta Forest Service  
Box 7040, Postal Station M  
Edmonton, Alberta T5E 5S9

403-427-6807  
Telex 037-3507

British Columbia

Doerksen, H.G. (Hank)  
Director

Forest Protection Branch  
B.C. Forest Service  
Victoria, B.C. V8W 3E7

604-387-5965  
Telex 049-7263

Manitoba

Briggs, Art  
Chief of Forest  
Protection

Department of Mines, Natural  
Resources & Environment  
Box 10, 1495 St. James St.  
Winnipeg, Manitoba R3H 0W9

204-786-9176  
Telex 075-87740

New Brunswick

Barr, Keith G.  
Forester

Forest Protection Branch  
Department of Natural Resources  
498 York St.  
Fredericton, N.B. E3B 3P7

506-454-3782  
Telex 014-46280

Newfoundland

Doyle, Joe A.  
Director, Forest  
Protection

Newfoundland Forest Service  
Building 810, Pleasantville  
St. John's, Nfld. A1A 1P9

709-737-3752  
Telex 016-3154

Nova Scotia

Graham, Dan J.  
Manager, Forest  
Protection (Fire)

Fire Central H.Q.  
Department of Lands and Forests  
Shubenacadie, N.S. B0N 2H0

902-758-2232  
Telex 019-34545



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Ontario

Goodman, John F.  
Director

Aviation and Fire Management  
Centre  
Ministry of Natural Resources  
55 Church St., P.O. Box 310  
Sault Ste. Marie, Ont. P6A 5L8

705-942-1800  
Telex 067-77166

Prince Edward Island

Matheson, Frank R.  
Director of  
Forestry

Department of Agriculture and  
Forestry  
P.O. Box 2000  
Charlottetown, P.E.I. CIA 7N8

902-892-4101  
Telex 014-44154

Quebec

Guay, Adrien  
Director

Forest Protection Service  
Department of Lands and Forests  
175 rue St. Jean  
Quebec, P.Q. GIR 1N4

418-643-7735  
TWX 610-571-5712

Saskatchewan

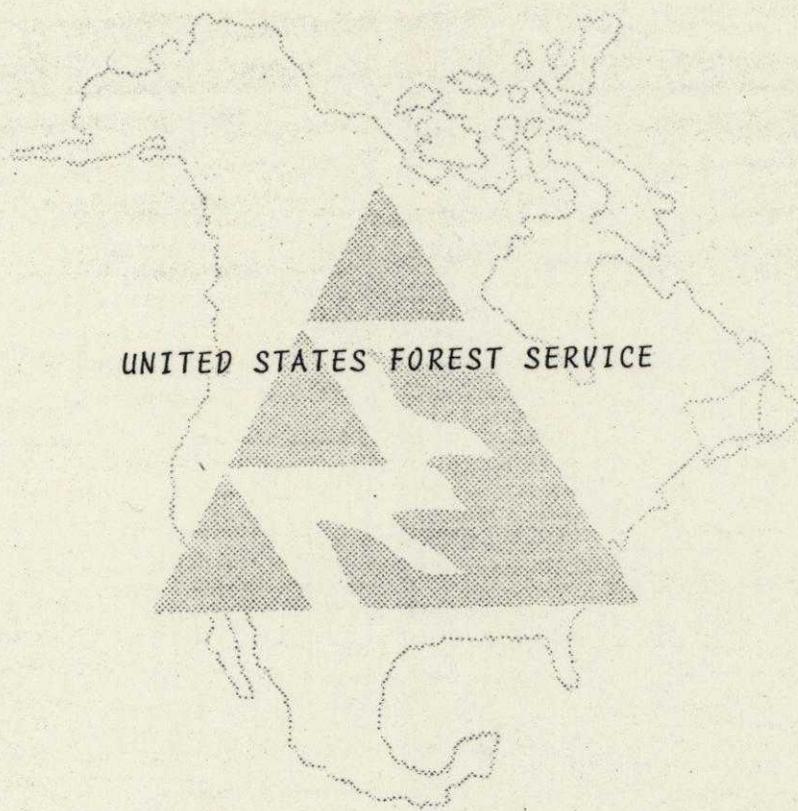
MacQuley, A.J. (Gus)  
Director

Forest Protection Division  
Department of Northern  
Saskatchewan  
48 - 12th St. E.  
Prince Albert, Sask. S6V 1B2

308-764-6848  
Telex 074-29126



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*





*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

UNITED STATES  
FEDERAL GOVERNMENT

Department of Agriculture

Forest Service

Amicarella, L. A. Director	Cooperative Fire Protection Forest Service, USDA P. O. Box 2417 Washington, DC 20013	703-235-8039
Philpot, Charles W. Director	Forest Fire and Atmospheric Sciences Research Forest Service, USDA P. O. Box 2417 Washington, DC 20013	703-235-8195
Hafterson, John A. Acting Director	Aviation and Fire Management Forest Service, USDA P. O. Box 2417 Washington, DC 20013	703-235-8666
Forest Service Director	Boise Interagency Fire Center Forest Service, USDA 3905 Vista Avenue Boise, Idaho 83705	208-344-9805

Department of the Interior

Bureau of Land Management

Birch, John E. Director	Division of Fire and Aviation Management Bureau of Land Management (740) U. S. Department of the Interior Washington, DC 20240	202-653-8800
Mauk, Gerald S. Fire Management Program Manager	Division of Fire and Aviation Management Bureau of Land Management (740) U. S. Department of the Interior Washington, DC 20240	202-653-8800
Ashmon, Clifford Aviation Management Program Manager	Division of Fire and Aviation Management Bureau of Land Management (740) U. S. Department of the Interior Washington, DC 20240	202-653-8800



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Boise Interagency Fire Center

Bureau of Land Management

Wilson, Jack F.  
BLM Director

Boise Interagency Fire Center  
3905 Vista Avenue  
Boise, Idaho 83705

208-344-9421

Percival, Roy M.  
BLM Associate  
Director

Boise Interagency Fire Center  
3905 Vista Avenue  
Boise, Idaho 83705

208-344-9426

Bureau of Indian Affairs

Tandy, Charles  
BIA Director

Boise Interagency Fire Center  
3905 Vista Avenue  
Boise, Idaho 83705

208-344-1700

National Park Service

Butts, David B.  
NPS Director

Boise Interagency Fire Center  
3905 Vista Avenue  
Boise, Idaho 83705

208-344-9453

Fish and Wildlife Service

Belcher, Arthur  
F&WS Director

Boise Interagency Fire Center  
3905 Vista Avenue  
Boise, Idaho 83705

208-344-9520



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

STATES

Alabama

Mobley, Hugh  
Director

Forest Resource Protection Division  
Alabama Forestry Commission  
513 Madison Avenue  
Montgomery, Alabama 36130

205-832-6587

Alaska

Settles, Ray  
Fire Management  
Forester

Division of Lands  
323 East Fourth Avenue  
Anchorage, Alaska 99501

907-279-5577

Arizona

Behrens, Dave  
Chief

Protection Section  
State Land Department  
1624 West Adams  
Phoenix, Arizona 85007

602-271-4059

Arkansas

McFarland, Robert  
Protection Forester

Arkansas Forestry Commission  
P. O. Box 4523, Asher Station  
Little Rock, Arkansas 72214

501-371-1734

California

Letson, Jerry  
Chief of Fire  
Protection

Department of Forestry  
Resources Building  
1416 Ninth Street, Room 1505  
Sacramento, California 95814

916-445-3976

Colorado

Zeleny, Ron  
Staff Forester

Fire Protection  
Colorado State Forest Service  
Colorado State University  
Fort Collins, Colorado 80523

303-482-8185



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Connecticut

Babcock, Pete  
Fire Control Officer

Dept. of Environmental Protection  
Forestry Unit  
165 Capitol Avenue  
Hartford, Connecticut 06115

203-566-5348

Delaware

Kaden, Tim  
Fire Control  
Supervisor

Delaware Forest Service  
Drawer D  
Dover, Delaware 19901

302-678-4820

Florida

Long, Mike  
Chief of Fire  
Control Bureau

Division of Forestry  
3125 Conner Blvd.  
Tallahassee, Florida 32301

904-488-4274

Georgia

Westmoreland, Dave  
Chief, Forest  
Protection

Georgia Forestry Commission  
P. O. Box 819  
Macon, Georgia 31202

914-744-3087

Guam

Withrow, Robert  
Fire Control Officer

Forestry & Soil Resource Division  
Government of Guam  
Agana, Guam 96910

Hawaii

Sager, Bill  
Protection Forester

Division of Forestry  
1151 Punchbowl Street  
Honolulu, Hawaii 96813

808-548-2861

Idaho

Crumb, John  
Chief

Bureau of Forest Fire Protection  
Idaho Department of Lands  
P. O. Box 670  
Coeur d'Alene, Idaho 83814

208-664-2171



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Illinois

Gillespie, Dave  
Staff Forester

Division of Forestry  
Northwest Office Plaza  
600 North Grand Avenue West  
Springfield, Illinois 62707

217-782-2361

Indiana

Creech, Steve  
Fire Coordinator

Division of Forestry  
Department of Natural Resources  
613 State Office Building  
Indianapolis, Indiana 46204

317-633-6517

Iowa

Hatcher, Roy

Iowa Conservation Commission  
2404 South Duff Avenue  
Ames, Iowa. 50010

515-294-4622

Kansas

Biswell, Randy  
Assistant State  
Forester

Department of Forestry  
2610 Claflin Road  
Manhattan, Kansas 66502

913-532-5752

Kentucky

Prather, Charlie  
Chief of Fire  
Control

Division of Forestry  
627 Comanche Trail  
Frankfort, Kentucky 40601

502-564-4496

Louisiana

Griffen, Ben  
Chief of Forest  
Protection

Office of Forestry  
5150 Florida Blvd.  
Baton Rouge, Louisiana 70821

504-389-7361

Maine

Baurassa, George  
Staff Fire Officer

Bureau of Forestry  
State Office Building  
Augusta, Maine 04333

207-695-2791

Maryland

Roberts, James  
Chief of Forest  
Protection

Maryland Forest Service  
Tawes State Office Building  
580 Taylor Avenue  
Annapolis, Maryland 21401

301-269-3775



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Massachusetts

Castro, Antonio  
Chief Fire Warden

Division of Forests and Parks  
100 Cambridge Street  
Boston, Massachusetts 02202

617-727-3180

Michigan

Grant, Don  
Forest Fire  
Supervisor

Department of Natural Resources  
Stevens T. Mason Building  
Box 30028  
Lansing, Michigan 48909

517-373-1218

Minnesota

Gardner, Dennis  
Supervisor

Division of Forestry  
Centennial Office Building  
Box 44  
St. Paul, Minnesota 55155

612-296-5971

Mississippi

Hardage, Tom

Division of Fire Control  
Mississippi Forestry Commission  
908 Robert E. Lee Building  
Jackson, Mississippi 39201

601-354-7124

Missouri

Kullman, John  
Assistant State  
Forester

Department of Conservation  
P. O. Box 180  
Jefferson City, Missouri 65101

314-751-4115

Montana

Sandman, Robert  
Chief

Fire Management Bureau  
Division of Forestry  
2705 Spurgin Road  
Missoula, Montana 59801

406-728-4300

Nebraska

Westover, Don  
Fire Coordinator

Dept. of Forestry, Fisheries & Wildlife  
Institute of Agriculture &  
Natural Resources  
201 Miller Hall, East Campus  
Lincoln, Nebraska 68503

402-474-2944



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Nevada

Amodei, Don  
Assistant State  
Forester

Nevada Division of Forestry  
201 South Fall Street  
Carson City, Nevada 89710

702-885-4350

New Hampshire

Sargent, Jack  
Fire Control  
Supervisor

Division of Forests and Lands  
Box 856, Prescott Park  
105 Loudon Road  
Concord, New Hampshire 03301

603-271-2218

New Jersey

Harrison, Dave  
Fire Control Officer

Bureau of Forestry  
P. O. Box 2808  
Trenton, New Jersey 08625

609-292-2977

New Mexico

Polasky, Ray  
Chief of Fire  
Management

Department of State Forestry  
P. O. Box 2167  
Santa Fe, New Mexico 87503

505-827-3182

New York

Lord, Jim  
Superintendent

Forest Fire Control  
Dept. of Environmental Conservation  
50 Wolf Road  
Albany, New York 12233

518-457-5740

North Carolina

Roten, Dane  
Senior Staff  
Forester

Division of Forest Resources  
P. O. Box 27687  
Raleigh, North Carolina 27611

919-733-2781

North Dakota

Van Ells, John

North Dakota State University  
Bottineau Branch  
Bottineau, North Dakota 58318

702-228-2277

Ohio

Parmer, Ed  
Staff Forester

Division of Forestry  
Fountain Square  
Columbus, Ohio 43224

614-466-7842



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Oklahoma

Burmell, John  
Chief of Resources

Forestry Division  
2800 North Lincoln  
Oklahoma City, Oklahoma 73105

405-521-3886

Oregon

Smith, Ronald  
Assistant State  
Forester

Department of Forestry  
1600 State Street  
Salem, Oregon 97310

503-378-2307

Pennsylvania

McNamara, Eugene F.  
Chief

Forest Fire Protection  
Bureau of Forestry  
109 Evangelical Press Building  
Harrisburg, Pennsylvania 17120

717-787-2925

Puerto Rico

Schmidt, Ralph  
Chief

Forest Service  
Department of Natural Resources  
P. O. Box 5887, Puerto de Tierra  
San Juan, Puerto Rico 00906

809-724-3647

Rhode Island

Newman, George  
Fire Supervisor

Division of Forest Environment  
RFD #2, Box 851  
North Scituate, Rhode Island 02857

401-647-3367

South Carolina

Brown, Gilbert  
Assistant State  
Forester

South Carolina Forestry Commission  
P. O. Box 21707  
Columbia, South Carolina 29221

803-758-2261

South Dakota

Terrell, Ken  
Fire Management  
Specialist

Division of Forestry  
Sigurd Anderson Building  
Pierre, South Dakota 57501

605-773-3623

Tennessee

Connelly, John  
Assistant State  
Forester

Division of Forestry  
701 Broadway  
Nashville, Tennessee 37203

615-741-3326



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Texas

Ebarb, Patrick  
Head

Forest Fire Control Department  
Texas Forest Service  
College Station, Texas 77843

713-845-2641

Utah

Cornell, Gary  
Fire Management  
Officer

Division of State Lands and Forests  
231 East Fourth Street, Room 440  
Salt Lake City, Utah 84111

801-533-5439

Vermont

Teillon, Grant

Forest Fire Control  
Department of Forests, Parks  
and Recreation  
State Office Building  
Montpelier, Vermont 05602

802-828-3471

Virginia

Pennock, Calvin  
Chief

Forest Fire Control  
Division of Forestry  
Box 3758  
Charlottesville, Virginia 22903

804-977-6555

Virgin Islands

Bough, Eric  
Director

Virgin Islands Forest Service  
P. O. Box U  
Kingshill, St. Croix  
U. S. Virgin Islands 00850

809-772-1506

Washington

Pless, Don  
Supervisor

Division of Fire Control  
Department of Natural Resources  
Mail Stop QW-21  
Olympia, Washington 98504

206-753-5350

West Virginia

Glover, Ralph  
Assistant State  
Forester

Department of Natural Resources  
Division of Forestry  
1800 Washington Street, East  
Charleston, West Virginia 25305

304-348-2788



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Wisconsin

Lamphier, Gordon  
Fire Control  
Supervisor

Department of Natural Resources  
P. O. Box 7921  
Madison, Wisconsin 53707

608-266-1993

Wyoming

Gagen, Mike  
Staff Forester,  
Fire Management

Wyoming State Forestry Division  
110 West 22nd Street  
Cheyenne, Wyoming 82002

307-777-7586



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales **FAO/CFAN***





*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

**MEXICO  
FEDERAL GOVERNMENT**

ING. LEON JORGE CASTANOS MARTINEZ  
UNDERSECRETARY OF FORESTRY

SUBSECRETARIA FORESTAL  
S.A.R.H.  
AV. INSURGENTES SUR No. 478  
12° PISO  
MEXICO, D.F.

PHONE:

ING. JESUS B. CARDENA RODRIGUEZ  
GENERAL DIRECTOR

DIRECCION GENERAL DE CONTROL  
Y VIGILANCIA FORESTAL  
NETZAHUALCOYOTL 109 6° PISO  
MEXICO, D.F.

PHONE: 510-96-92

ING. J. GUILLERMO MATHUS MORALES  
RESPONSIBLE OF THE AREA OF  
PROTECTION.

DIRECCION DE PROTECCION  
FORESTAL.  
NETZAHUALCOYOTL 109 6° PISO  
MEXICO, D.F.

PHONE: 512-12-68

G.T.F. MAX JULIO ALMONTE NORIEGA  
ASSISTANT DIRECTOR ON PREVENTION  
AND COMBAT OF FOREST FIRES

SUBDIRECCION DE PREVENCION  
Y COMBATE DE INCENDIOS  
FORESTALES  
NETZAHUALCOYOTL 109 6° PISO  
MEXICO, D.F.

PHONE: 518-58-19

ING. DAVID HERNANDEZ GOMEZ  
CHIEF OF THE DEPARTMENT

DEPARTAMENTO DE COMBATE DE  
INCENDIOS FORESTALES  
NETZAHUALCOYOTL 109 6° PISO  
MEXICO, D.F.

PHONE: 518-33-73

ING. ROBERTO MARTINEZ DOMINGUEZ  
CHIEF OF THE DEPARTMENT

DEPARTAMENTO DE TECNICAS DE  
PREVENCION Y COMBATE DE  
INCENDIOS.  
NETZAHUALCOYOTL 109 6° PISO  
MEXICO, D.F.

PHONE: 518-33-73



XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN

DIRECTORY OF THE PERSONS RESPONSIBLE OF PREVENTION AND  
COMBAT OF FOREST FIRES IN THE MEXICAN REPUBLIC

AGUASCALIENTES.

ING. AMBROSIO MAYORGA ZERON  
Head of the Forest Program  
Valparaíso No. 101-2º Piso  
Esq. Av. las Américas,  
C.P. 20230

PHONE: (491) 578-16

BAJA CALIFORNIA NORTE

ING. CARLOS S. VILLAR ROMERO  
Head of the Forest Program  
Centro Cívico  
Pasaje Pátzcuaro 551-B  
C.P. 21000, Mexicalli, B.C.

PHONE: (656) 743-85  
743-86

BAJA CALIFORNIA SUR

ING. MANUEL LAYSECA TORRES  
Head of the Forest Program  
Calle Agricultura, entre  
México y Durango  
C.P. 23070, La Paz, B.C.S.

PHONE: (682) 226-04

CAMPECHE

ING. GUILLERMO DAVALOS MEJIA  
Head of the Forest Program  
Calle 8 No. 175, P.B.  
Col. Guadalupe  
C.P. 24019, Campeche, Camp.

PHONE: (981) 664-31,  
Ext. 26

COAHUILA

ING. ELEAZAR RINCON CEBALLOS  
Head of the Forest Program  
Blvd. V. Carranza 2145  
Col. República  
C.P. 25289, Saltillo, Coah.

PHONE: (841) 399-43  
399-55



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

**DIRECTORY OF THE PERSONS RESPONSIBLE OF PREVENTION AND  
COMBAT OF FOREST FIRES IN THE MEXICAN REPUBLIC**

**AGUASCALIENTES.**

**ING. AMBRÓSIO MAYORGA ZERÓN**  
Head of the Forest Program  
Valparaíso No. 101-2º Piso  
Esq. Av. las Américas,  
C.P. 20230

PHONE: (491) 578-16

**BAJA CALIFORNIA NORTE**

**ING. CARLOS S. VILLAR ROMERO**  
Head of the Forest Program  
Centro Cívico  
Pasaje Pátzcuaro 551-B  
C.P. 21000, Mexicalli, B.C.

PHONE: (656) 743-85  
743-86

**BAJA CALIFORNIA SUR**

**ING. MANUEL LAYSECA TORRES**  
Head of the Forest Program  
Calle Agricultura, entre  
México y Durango  
C.P. 23070, La Paz, B.C.S.

PHONE: (682) 226-04

**CAMPECHE**

**ING. GUILLERMO DAVALOS MEJIA**  
Head of the Forest Program  
Calle 8 No. 175, P.B.  
Col. Guadalupe  
C.P. 24019, Campeche, Camp.

PHONE: (981) 664-31,  
Ext. 26

**COAHUILA**

**ING. ELEAZAR RINCON CEBALLOS**  
Head of the Forest Program  
Blvd. V. Carranza 2145  
Col. República  
C.P. 25289, Saltillo, Coah.

PHONE: (841) 399-43  
399-55



XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN

COLIMA

ING. FRANCISCO CHAMERY MENDEZ  
Head of the Forest Program  
Medellín y Basilio Badillo s/n  
C.P. 28000, Colima, Col.

PHONE: (331) 226-76  
232-41

CHIHUAHUA

ING. JAIME GONZALEZ HERNANDEZ  
Head of the Forest Program  
Calle Aldama No. 315  
C.P. 31000, Chihuahua, Chih.

PHONE: (141) 272-66  
547-81  
567-23

CHIAPAS

ING. HIGINIO PADILLA GARCIA  
Head of the Forest Program  
Fracc. Los Laguitos  
Carretera a Chicoasen  
C.P. 29020, Tuxtla Gutiérrez, Chis.

PHONE: (961) 313-73  
320-20 Ext. 60

DURANGO

ING. J. GUILLERMO CARDOSA NEVAREZ  
Head of the Forest Program  
Blvd. Francisco Villa  
Carretera a Cd. Lerdo, Km. 5  
C.P. 34000, Durango, Dgo.

PHONE: (181) 145-15  
149-65

CD. LERDO

ING. FELIPE AGUILAR GARCIA  
Head of the Forest Program  
C/ego. Vivero Lerdo  
Blvd. Miguel Alemán s/n  
C.P. 46217 Durango, Dgo.

PHONE: (171) 378-73  
403-04  
441-00



XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN

FEDERAL DISTRICT.

ING. OSCAR CEDENO SANCHEZ  
Head of the Forest Program  
Pino No. 38  
C.P. 17600, Xochimilco, D.F.

PHONE: (5) 676-83-27

GUANAJUATO

ING. EDUARDO HERNANDEZ RUIZ  
Head of the Forest Program  
Paseos de la Presa No. 35  
C.P. 36000, Celaya, Gto.

PHONE: (473) 292-09

GUERRERO

ING. VICTOR SOSA CEDILLO  
Head of the Forest Program  
Av. Rufo Fígueroa s/n  
Col. Burocrata  
C.P. 39090, Chilpancingo, Gro.

PHONE: (747) 220-35  
242-13

HIDALGO

ING. JESUS ZARATE MANCHA  
Head of the Forest Program  
Allende No. 109  
C.P. 42000, Pachuca, Hgo.

PHONE: (771) 216-36  
256-43  
203-88

JALISCO

ING. SALVADOR JUAREZ CASTILLO  
Head of the Forest Program  
Glorieta del Alamo s/n  
Carretera a Chapala  
Guadalajara, Jal.

PHONE: (36) 34-74-54, Ext.153  
35-11-40

MEXICO

ING. RODOLFO RODRIGUEZ VELEZ  
Head of the Forest Program  
Conjunto CODAGEM  
C.P. 52140, Metepec, Edo. de Méx.

PHONE: (721) 642-56  
642-78



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

MICHOACAN

ING. EMILIO AMARO JARAMILLO  
Jead of the Forest Program  
Av. Ventura Puente No. 359  
C.P. 58000, Morelia, Mich.

PHONE: (451) 457-80  
439-40  
Ext. 152

MORELOS

ING. JESUS VELAZQUEZ PEREZ  
Head of the Forest Program  
Av. Universidad No. 5  
Edif. La Curva  
Col. Buenavista  
C.P. 62508, Cuernavaca, Mor.

PHONE: (731) 372-71  
712-44  
Ext. 146

NUEVO LEON

ING. IDELFONSO GARCES HERNANDEZ  
Head of Forest Program  
Pino Suárez No. 808 Nte.  
Zona Centro  
C.P. 64000, Monterrey, N.L.

PHONE: (83) 74-71-54  
72-42-77

NAYARIT

ING. RAMIRO GARCIA PEREZ  
Head of the Forest Program  
Av. Insurgentes No. 1050 Ote.  
Col. Menchaca  
C.P. 63150, Tepic, Nay.

PHONE: (321) 313-30

OAXACA

ING. MARIO A. MOSQUEDA VAZQUEZ  
Head of the Forest Program  
Reforma No. 905  
C.P. 68000, Oaxaca, Oax.

PHONE: (951) 510-87



XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN

PUEBLA

ING. MARCONI NOEL MENDEZ MOLINA  
Head of the Forest Program  
26 Norte No. 1202, P.B.  
C.P. 72379 Puebla, Pue.

PHONE: (22) 35-47-64  
35-33-99  
Ext. 72  
35-38-31

QUERETARO

ING. MARTIN GUZMAN GUZMAN  
Head of the Forest Program  
Av. Constituyentes No. 10, Ote.  
C.P. 76000 Querétaro, Qro.

PHONE: (463) 250-69

QUINTANA ROO

ING. ALBERTO MIGUEL ACEVEDO M.  
Head of the Forest Program  
Km. 3 Carretera Chetumal-Mérida  
Vivero Los Mangos  
Chetumal, Q.Roo.

PHONE: (983) 224-21

SAN LUIS POTOSI

ING. IGNACIO AVILA MUJICA  
Head of the Forest Program  
V. Carranza No. 980 5º Piso  
C.P. 78230 San Luis Potosí, S.L.P.

PHONE: (481) 261-52  
243-18

SINALOA

ING. LEOPOLDO A. GUTIERREZ ARROYO  
Head of the Forest Program  
Presa Derivada s/n  
Apartado Postal 582  
C.P. 80000 Culiacán, Sin.

PHONE: (671) 273-04  
214-37  
275-51  
275-52  
275-53 Ext. 140



**XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN**

SONORA

ING. J. ALBERTO VALENZUELA GARCIA  
Head of Forest Program  
Garmendía 69 - 13 Norte  
C.P. 83190 Hermosillo, Son.

PHONE: (621) 520-37  
214-88  
207-76 Ext. 32

TABASCO

ING. JULIO JORGE PEREZ FITZ  
Head of the Forest Program  
José Martí No. 104, 2º Piso  
Fracc. Lidia Esther  
C.P. 86040 Villahermosa, Tab.

PHONE: (931) 203-20  
248-19

TAMAULIPAS

ING. ARMANDO ZARATE SALINAS  
Head of the Forest Program  
8 Bravo No. 925  
C.P. 87000 Cd. Victoria, Tamps.

PHONE: (131) 206-20  
276-78

ING. CONSTANTINO CASTILLO H.  
Head of the Forest Program  
Brecha 102 Carr. Reynosa-Río Bravo  
Zona Norte.

PHONE: (892) 305-10

ING. RICARDO CAZAR GOMEZ  
Head of the Forest Program  
Isauro Alfaro No. 104 Nte. 3er. Piso  
C.P. 89000 Tampico, Tamps. (Zona Sur)

PHONE: (121) 210-26  
205-62

TLAXCALA

ING. RAFAEL ALVAREZ REYES  
Head of the Forest Program  
Xochiquetzalli No. 1  
C.P. 90000 Tlaxcala, Tlax.

PHONE: (246) 201-23 y 292-11



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

VERACRUZ

ING. CLISERIO AGUIRRE BRAVO  
Head of the Forest Program  
Avila Camacho No.195  
C.P. 91000, Jalapa, Ver.

PHONE: (281) 514-90  
516-21

YUCATAN

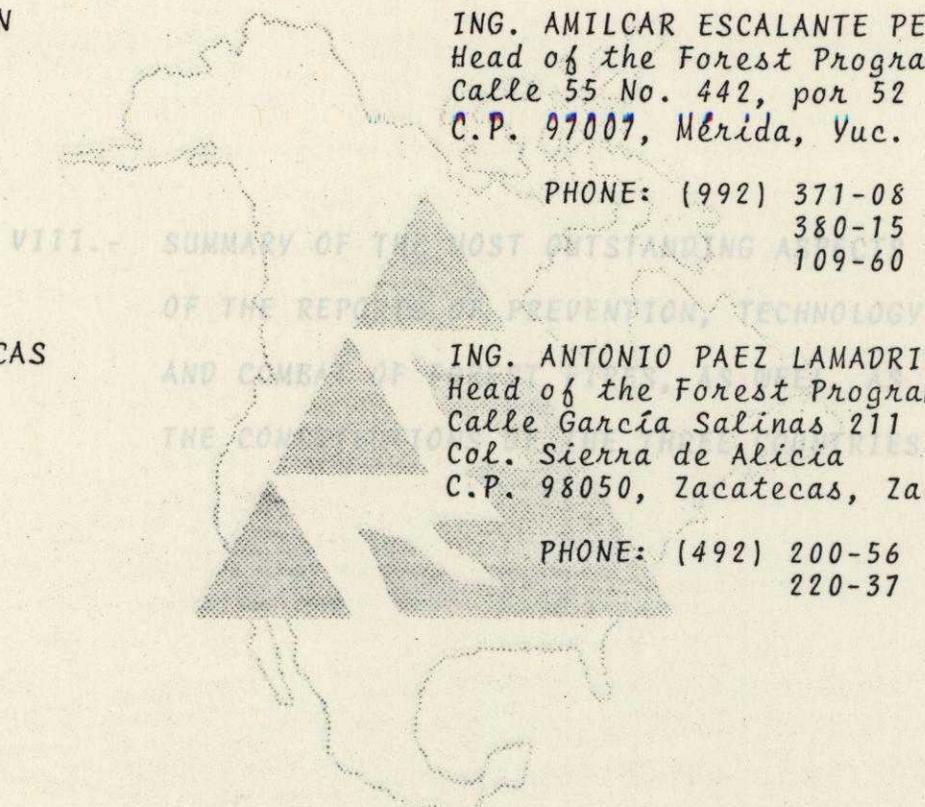
ING. AMILCAR ESCALANTE PENICHE  
Head of the Forest Program  
Calle 55 No. 442, por 52  
C.P. 97007, Mérida, Yuc.

PHONE: (992) 371-08  
380-15  
109-60

ZACATECAS

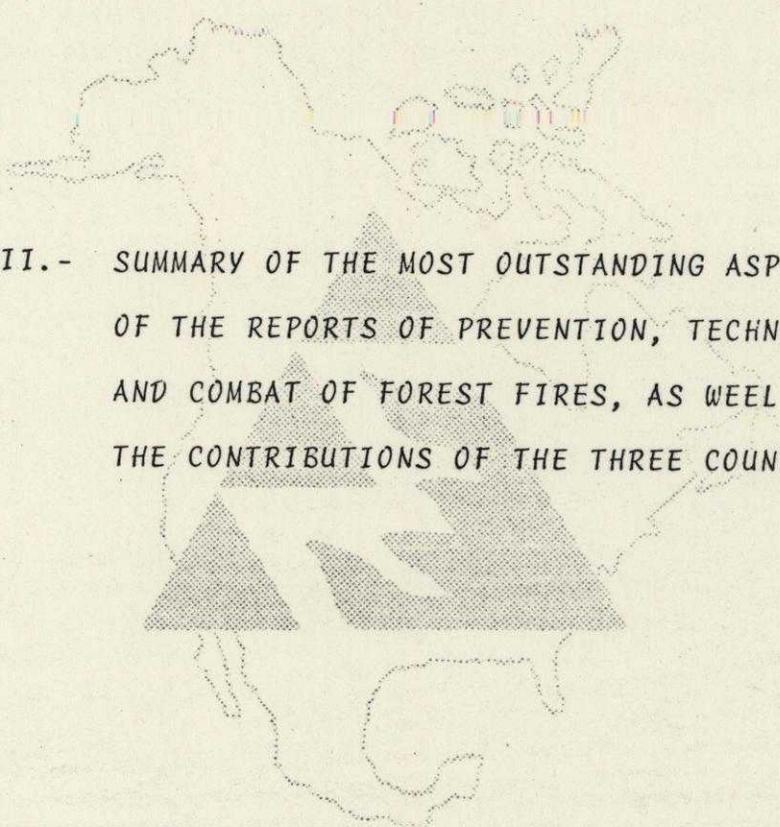
ING. ANTONIO PAEZ LAMADRID  
Head of the Forest Program  
Calle García Salinas 211  
Col. Sierra de Alicia  
C.P. 98050, Zacatecas, Zac.

PHONE: (492) 200-56  
220-37





*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



VIII.- SUMMARY OF THE MOST OUTSTANDING ASPECTS  
OF THE REPORTS OF PREVENTION, TECHNOLOGY  
AND COMBAT OF FOREST FIRES, AS WEEL AS  
THE CONTRIBUTIONS OF THE THREE COUNTRIES.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

SUMMARY OF THE MOST OUTSTANDING ASPECTS OF THE REPORTS ON PREVENTION, TECHNOLOGY AND COMBAT OF FOREST FIRES.

On the Canadian Group report there were emphasized all joined programs with the United States of America on Automatic Lightning Detection, which are highly important, as 50-60% of total fires in Canada are caused by this natural phenomenon.

Also, there were underlined all the research activities, as Canada has four federal centres, as well as universities. Likewise, it was known the organization of the Bureau of Departmental-Research in Alberta, and it was informed that all main research aspects have been focused on fuel types and prediction of atmospheric conditions, through the LANSAT Satellite, as well as through remote sensors, which also give information on trees defoliation and wind velocity and direction.

It was informed the use of retardants in all research activities and the history of fires in base of data of 20 years of observation on affected forests.

Special interest has been focused on control burns, mentioning that on this last year, this system has been applied on 60,000 -- hectares to improve silviculture, flora and wildlife, as well as agricultural production. To carry out this burns, it was necessary to interview and speak with all farmers and cattlemen, who perform this burns annually as a normal activity. It was informed that this situation is present on the South region of Canada, and considering the similarity with México, it was offered to give more information on the experiences obtained.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

On the preceding comments, it was of great interest the financial aspect to carry out their investigations. The Group from Canada informed that their main financial aid is the Federal Government, Provinces Government and the private sector which use the forest resource, and for this a special fee was fixed.

In some provinces, the collaboration of the Federal Government and of the Province Government has the same magnitude. For example, in the concrete case of acquisitions of airplanes for fire combat, for each unit which the Province Government gives, the Federal Government grants another with the same characteristics; -- nowadays, they have 29 airplanes.

On this process of exchange and support on control burns, it was offered to send literature to the country which would ask for it.

UNITED STATES OF AMERICA.

It was informed that the forest fire season was similar to -- the seasons of 1981 and 1982, with few fires of great dimensions and damages, which reflects the attention given to the control of these sinisters, as a result of those programs on detection -- though the use of remote sensors and the Automatic Lightning Detection Systems, in a joined effort with Canada, mainly on the -- frontier line. In this report, it was mentioned the importance -- on the Automatic Lightning Detection Systems, as, in both coun-- tries, almost 60% of fires have their origin on this natural phenomenon.

On thier main activities, they emphasized the support given -- through the International Agency of Development and of the Dissas ters Aid Office to countries such as Italy, Portugal, Australia, --



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Dominican Republic and México. On this last country, a course was taught on control of forest fires, which was attended by ten Mexican technicians, on a 61 Spaniard group. This course was taught in the National Advanced Resource Technology Center (NARTC), at Pinal Air Park, in Marana, Arizona.

Another program is being performed on a estatal level with the federal participation on prevention and control of fires in the rural area. This includes the technical and financial support in base of the protected surface, which permits to analyze the costs produce to the State and to the Federal Government, which are --- applied to all king of properties. Among these programs, the United States of America deals with works on protection of the rural community and with the private property, both are financed with federal funds authorized by the Congress. In the first case, --- towns below 10,000 inhabitants are attended, and in 1983 30,000 communities were attended. In the case of the property protection program, this cost 30 million dollars and is supported with army equipment such as tankers, vehicles and tools, which were do nate to the Forest Service.

On the prevention programs, it was underlined the importance of Smokey Bear on different public events, such as foot-ball and base-ball games, parades, etc., which during 40 years has contituted the symbol used on posters and other types of advertisements that promote the importance of the protection of the forest resource.

It he technological area, it was mentioned that there are 20 research programs with the participation of 80 technicians, with the financial support of the Federal Government; of these, one of the most important programs is the one carried out at the Experi-



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

ment Station of the Rocky Mountains, in Arizona and New Mexico, on Control burns. Other important program is the use with silvicultural management, which has the participation of forest technicians and ecologists. The results of this program could be of great importance to México, mainly on the forest of the North region of the country; a third program deals with the analization of fires, mainly on rangelands, wildlands, woodland areas, recreational areas and zones with water surfaces. On all these programs it is of vital importance to calculate the damages or benefits caused to the natural resources.

The prevention and combat of forest fires have been attended in a coordinate effort, with the following dependences:

- Bureau of Land Management
- National Park Service
- Department of Indian Affairs
- Fish and Wildlife Service
- Forest Service

All these agencies work actively under the coordination of -- the Forest Service.

Among the main activities, it was emphasized the National Fire Management Analysis System, which formulates programs to obtain adequate budgets, trying to reduce the costs of the control, as nowadays it costs 55 thousand dollars to control a fire larger than 10 acres, and 10 thousand dollars a fire smaller than 10 acres.

It was also informed that the United States of America have the Initial Attack Management System, which permits the fire ma-



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

nagers to have computerized information, which includes:

- Automatic Lightning Detection System (ALDS)
- Remote Automatic Weather Station (RAWS)
- LANDSAT vegetation data collection
- Fuel moisture models
- Fire probability models
- Fire behavior models
- National Fire Danger Rating System Models

With the information obtained in the computer graphics terminals the local fire manager will have information of the fire --- which will allow him to combat it opportunely and minimize dama-- ges.

MEXICO

Among the activities on prevention and control of fires, being performed in México, there were emphasized the following steps:

- Special attention is given to the information of this - problem to the population, making use of the T.V. and - Radio, with appropriate messages to the different social sectors. Likewise, the Mexican group is making use of - printed material, such as reports on organization of -- control, brochures, posters and panels.
- All training of personeel is being promoted on the diffe - rent operative activities with events, such as the atten



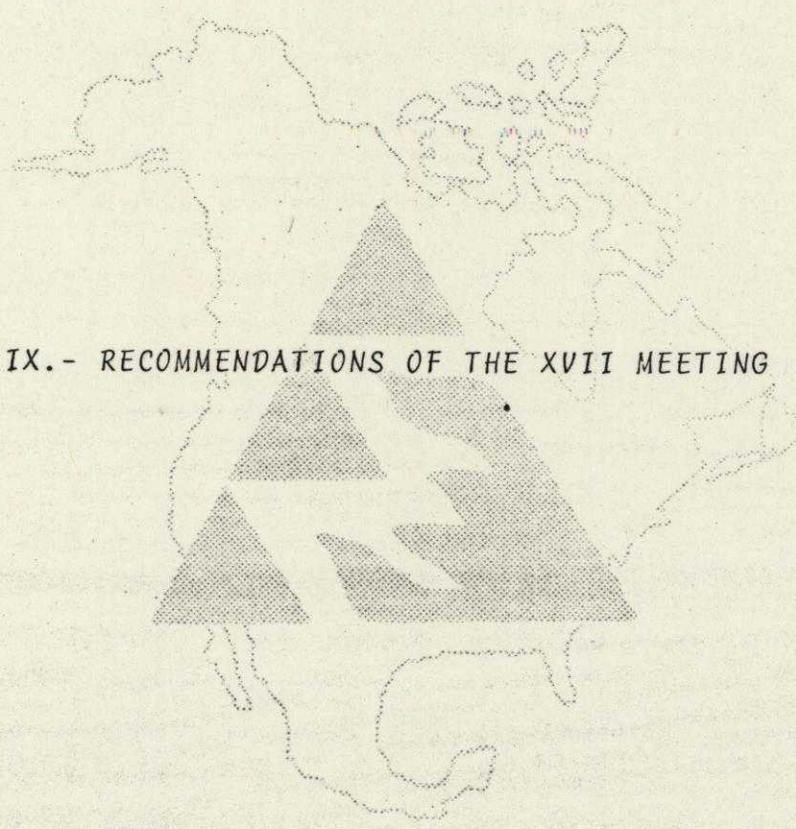
*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

dance to the Advanced Course on Provention and Combat of Forest Fires, taught in the National Advanced Resources-Technology Center, in Marana, Arizona. At this respect, a permanent program was begun to train combat fire crews

- It was initiated a process on concentration of actions - between the Oficial Dependences of the Public Administration of the country.
- All research activities on control burns on grazing forests are being strengthened.
- Of special interest in the modernization and technicalization of those works on prevention and combat mainly on the aerial equipment, simple technological manual equipment, etc.
- Through meetings with farmers, cattlemend and groups, it is promoted the citizen organization and participation, specially on the rural sector.
- Special attention is given to the improvement of the --- equipment and cloths of the personeel, and in general to improve those conditions in which they develop their activities.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



IX.- RECOMMENDATIONS OF THE XVII MEETING

XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN

RECOMMENDATIONS

In accordance to the methodology of the meeting, these are the conclusions and recommendations of the discussions of the members of the Groups of the three countries. They are divided by their areas: Prevention, Technology and Control.

PREVENTION.

Responsible:

Ing. Salvador Juárez Castillo (Méx)

1. - Participation:

Mr. Hank G. Doerkson - Canada

Ing. Jesús B. Cardeña Rodríguez - Méx.

Mr. Brian Stocks - Canada

Mr. Lawrence Amicarella - U.S.A.

Ing. Oscar Cedeño Sánchez - México

Dr. Charles E. Philpot - U.S.A.

Ing. Salvador Juárez C. - México

2. - Recommendations

- That all programs on prevention and control of forest fires, of each country, stand out "Prevention" as a prioritarian action.

- To adopt an international symbol for forest fire prevention.

- To exchange between the three countries some diffusion programs for farmers and cattlemen to prevent forest fires.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

- To use all services on training on prevention and control of forest fires areas, that are offered by the National Advanced Resource Technology Center of Pinal Air Park, at Marana, Arizona, U.S.A.

TECHNOLOGY

Responsible:

Ing. Rodolfo Rodríguez Velez - Méx.

1.- Participation:

Mr. Hank Doerkson - Canada

Mr. Brian Stocks - Canada

Mr. Jonh Hafterson - U.S.A.

Ing. Jesús B. Cardaña R. - México

Ing. Oscar Cedeño Sánchez - México

Dr. Charles W. Philpot - U.S.A.

Mr. Lawrence Amicarella - U.S.A.

2.- Recommendations:

- To perform, between the three countries, exchanges of technicians - of different educative levels, taking into consideration those aspects on the language of the visited country.
- The Canadian and the U.S. Groups - will give México those technologies on the use of simple hand tools.
- Canada and the U.S.A. will send literature on the use of water con--

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

tainers to supply helicopters, and also will send literature on the use of aerial equipment.

- The National Program on Prevention and Control of Forest Fires of México will be analyze by the three-groups.

- Some technical studies on fires -- will be carried out to define which fires should be control, and which should not, as there exist some beneficial fires for the vegetation.

- The U.S. Group will send to México an educative package of literature to teach and make conscious, in a forestry way, all children and -- adults in the country.

- To make an exposition of equipment and tools for prevention and control of forest fires in the following meeting, to be held at Canada.

CONTROL

Responsible:

Ing. Mario A. Mozqueda Vázquez - México

1.- Participation:

Ing. Jesús B. Cardena R. - México

Mr. John Hafterson - U.S.A.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

Mr. Harold L. Mikell - U.S.A.

Mr. Hank G. Doerkson - Canada

2. *Recommendations*

- That the exchange of technicians ~~to see those control actions~~ --- would be accomplished during the forest fire seasons.

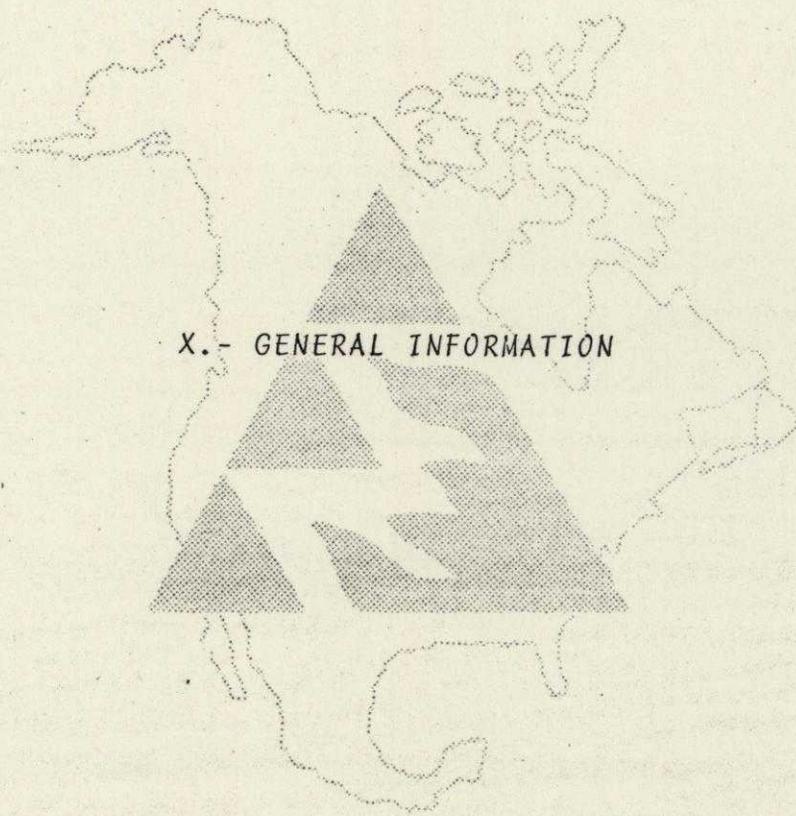
- Those frontier rules between the U.S.A. and Canada on Control and prevention of forest fires will be send to México.

- The U.S. Group will send to Méxi co information on those training courses imparted by the Forest - Service.

- Some advice will be given on the design of tools, equipment and - special cloths to the operative- personeel of México.



*XVII Reunion del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



X.- GENERAL INFORMATION



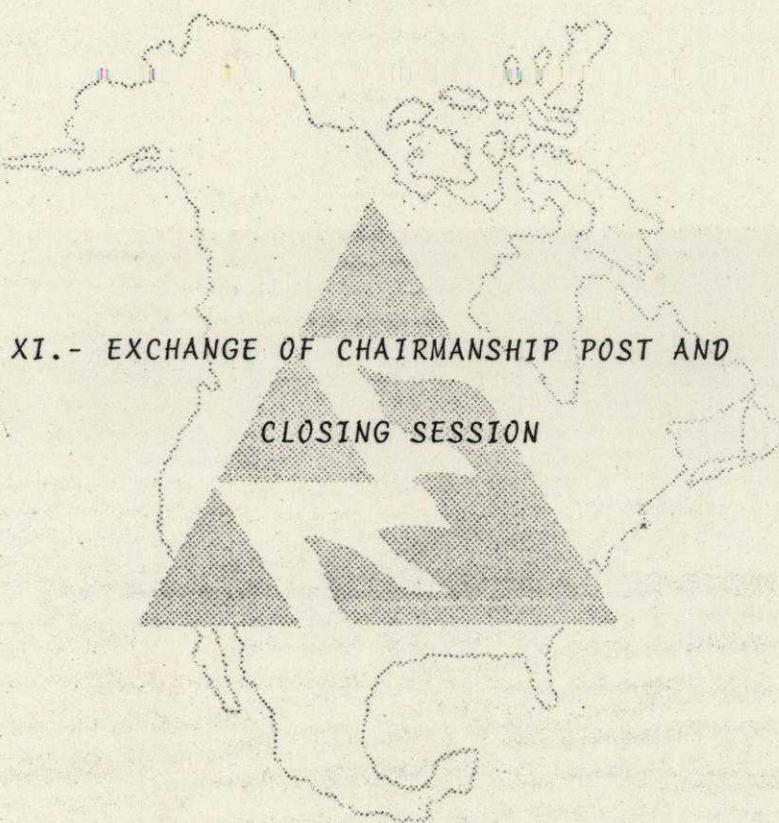
*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

GENERAL INFORMATION

- After two days of exposition, three of the eight posters on forest fires, designed by the Group of México, were selected on vote. These posters will be sent to the Presidents of the Groups for their propagation with the following legend: "Prevent Forest Fires", in the respective language of the country.
- The North American delegation made an invitation to all the members of the groups to visit their country during the forest fire season, to attain a better exchange of experiences. The Presidents of the Groups from Canada and México made the same cordial invitation.
- It was agreed to make exchange of several materials on diffusion to select the most feasible one to be reproduced in the receiver country.
- It was known that the Forest Fire News journal continues on publication, under the direction of Mr. Charles W. Philpot. All the participants were invited to send reports for their publication.
- The members of the Group of the U.S.A. send a commemorative plate of the XVII Meeting to the Ing. León Jorge Castaños -- Martínez, Undersecretary of Forestry, by means of Ing. Jesús B. Cardena Rodríguez.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*





*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

EXCHANGE OF CHAIRMANSHIP POSTS

In accordance to the conclusion of the meeting, the Presidency of the Group was exchanged. The responsibility laid on the country encharged of the organization of the following meeting. Mr. Brian Stocks, from Canada, received the post from -- Ing. Jesús B. Cardena Rodríguez.

The new president send an optimistic message and expressed his good wishes for the next meeting to be performed in the same way as the preceding ones, full of camaraderie and friendship, and send an invitation to all attendants to assist to the XVIII Meeting, which will be held in the West coast of Canada, and that opportunely they would let us know the definite date and place.

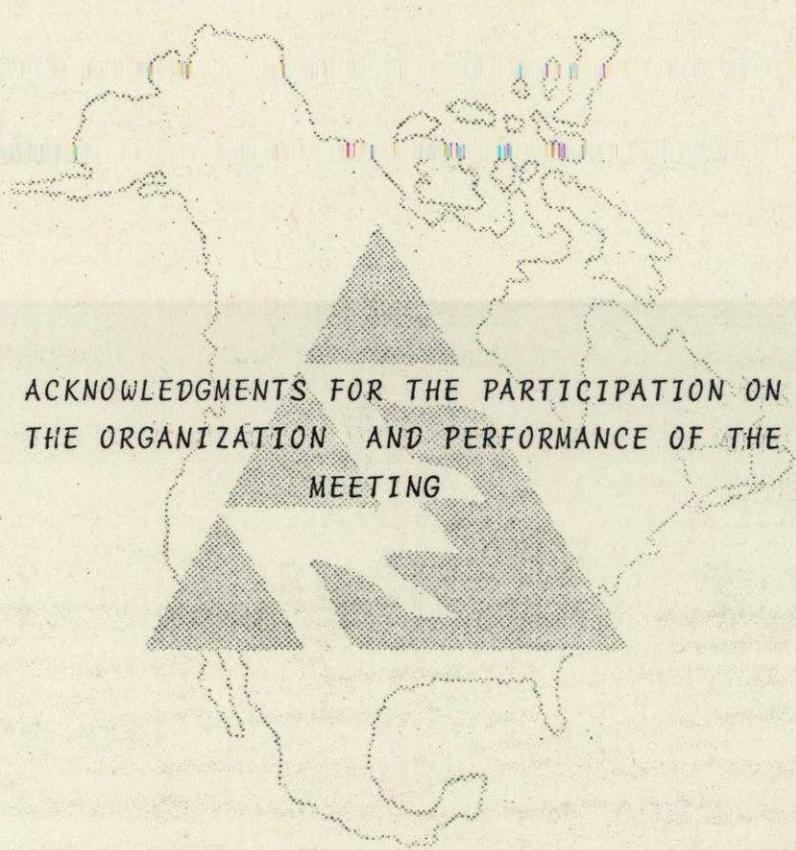
CLOSING SESSION

Ing. Jesús B. Cardena Rodríguez, in representation of the Undersecretary of Forestry proceeded to close the works of the XVII Meeting of the Research Group on Management of Forest Fires, making a synthesis of the meeting that served as an exchange of experiences of the technicians of the three countries: México, U.S.A. and Canada.

After, he expressed his good wishes for a fortunate return of all the attendants to their original countries.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



XII.- ACKNOWLEDGMENTS FOR THE PARTICIPATION ON  
THE ORGANIZATION AND PERFORMANCE OF THE  
MEETING



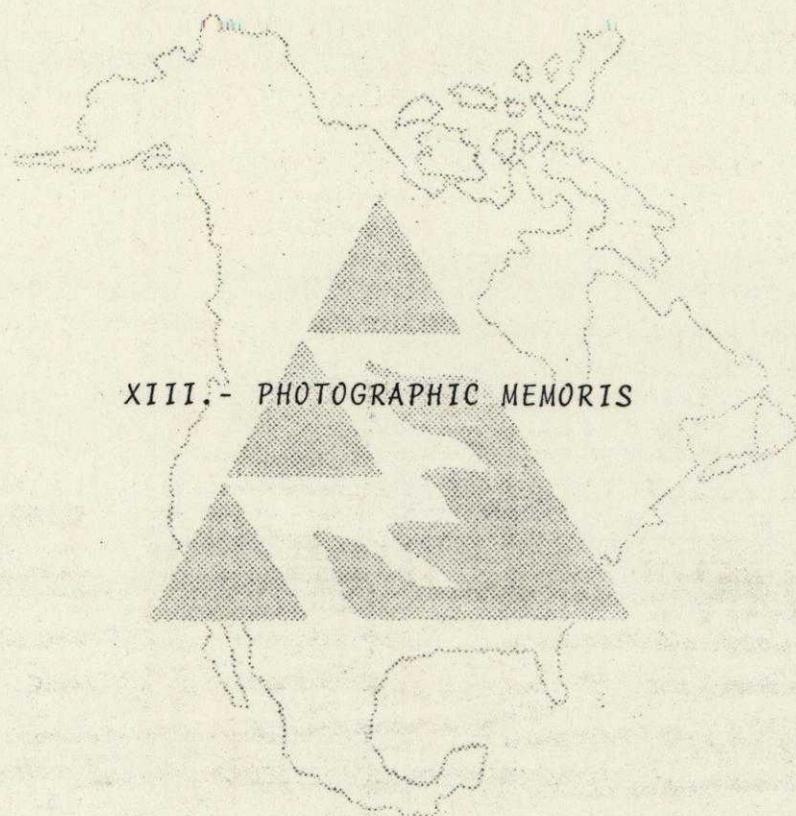
*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

ACKNOWLEDGMENTS FOR THE PARTICIPATION ON THE ORGANIZATION AND  
PERFORMANCE OF THE MEETING.

- Ing. Lázaro Mejía Fernández  
Ing. Jesús Rosales y Urtiz  
C. Víctor Martínez Rodríguez  
C. Gloria Luz Paz Esquivel  
Lic. Lucia García Rendon  
C. José Luis Melendez  
C. Consuelo Martínez V. (Translate Spanish-English)  
Lic. Alejandro Barbajoza  
C. Alma Rosa Tovar  
C. Dinorah Grand Jeant  
C. Gilde Franco  
C. Vanessa Franco  
C. Ramón Padilla  
C. Tomás Quiroz  
C. Lorena Mireles Genner  
C. Rafael Moreno Sánchez  
C. Reyna Lilia Flores (Type writer)

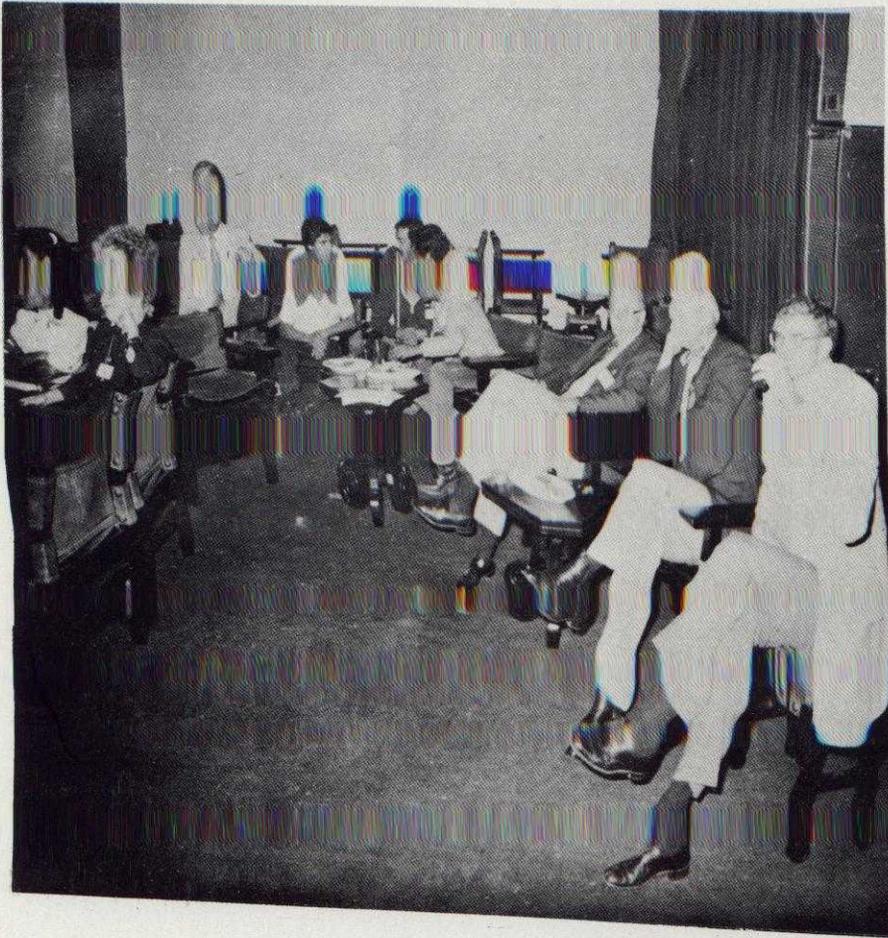


*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



XIII.- PHOTOGRAPHIC MEMORIS

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



THE ATTENDANTS BEGAN  
TO HAVE A PLEASANT -  
ATMOSPHERE.

MR. AND MRS. JOHN-  
HAFTERSON, MR. AND-  
MRS. LAWRENCE AMICA  
RELLA AND MR. AND -  
MRS. JUAREZ CASTILLO



XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN



OPENING SESSION

DR. MIGUEL CABALLERO DELOYA  
SEND A CORDIAL GREETING TO-  
ALL THE MEMBERS OF C.F.A.N.

ING. EDUARDO AZUARA SALAS  
REPRESENTATIVE OF SECRETARIA DE AGRICULTURA Y RECURSOS HIDRAULICOS, AND REPRESENTATIVE OF THE GOVERNOR OF THE STATE, IN THE OPENING SESSION OF THE MEETING.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



IN THE OPENING SE  
SSION: DR. MIGUEL  
CABALLERO DELOYA-

MR. BRIAN STOCKS,  
ING. JESUS GARDE-

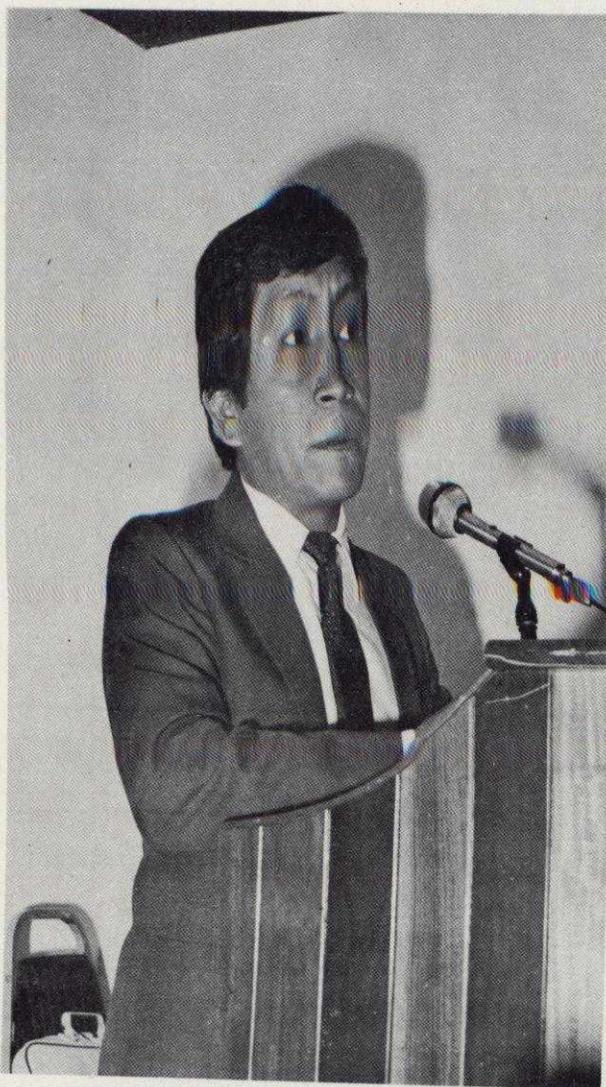
NA RODRIGUEZ AND  
DR. LAWRENCE AMI-  
CARELLA.

(LEFT TO RIGHT).

WELCOME TO ALL THE  
ATTENDANTS OF THE-  
MEETING.



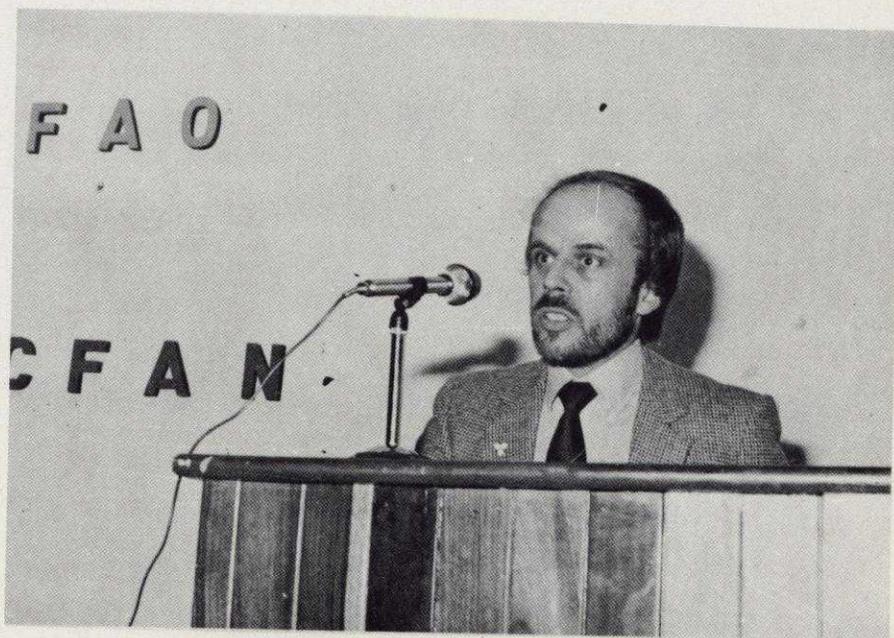
*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



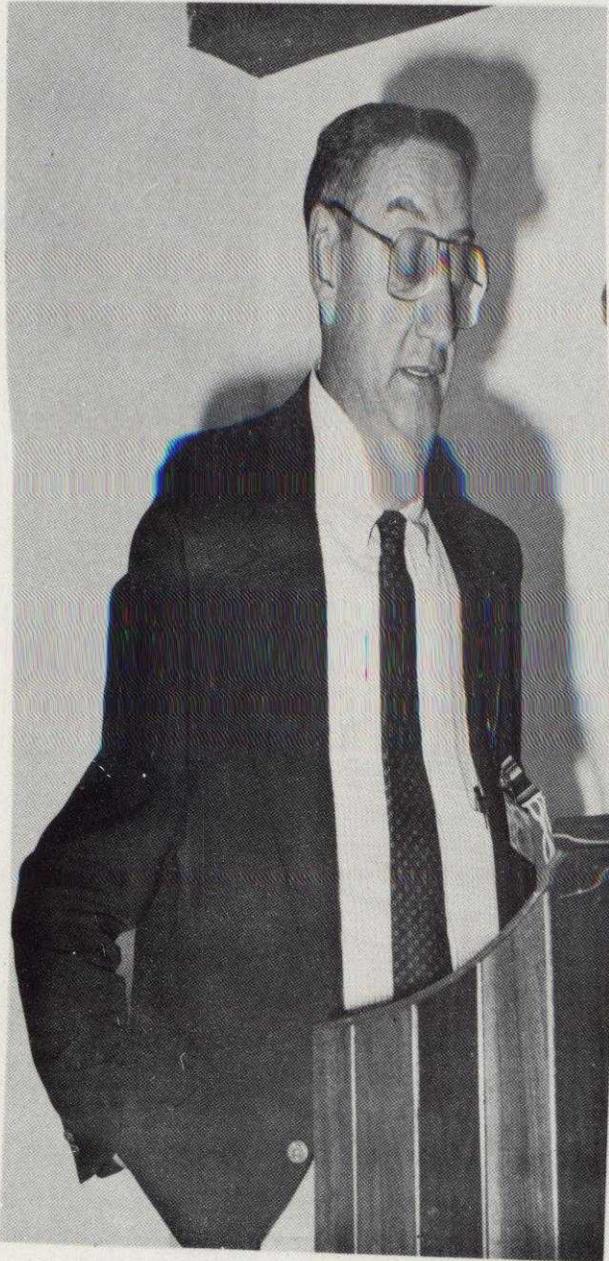
REPORTS BY COUNTRIES

ING. JESUS B. CARDENA RODRIGUEZ  
OF THE MEXICAN GROUP, REPORTS -  
THE ACTIVITIES OF HIS COUNTRY.

DR. BRIAN STOCKS REPORTS  
THE ACTIVITIES OF THE CA  
NADIAN GROUP.

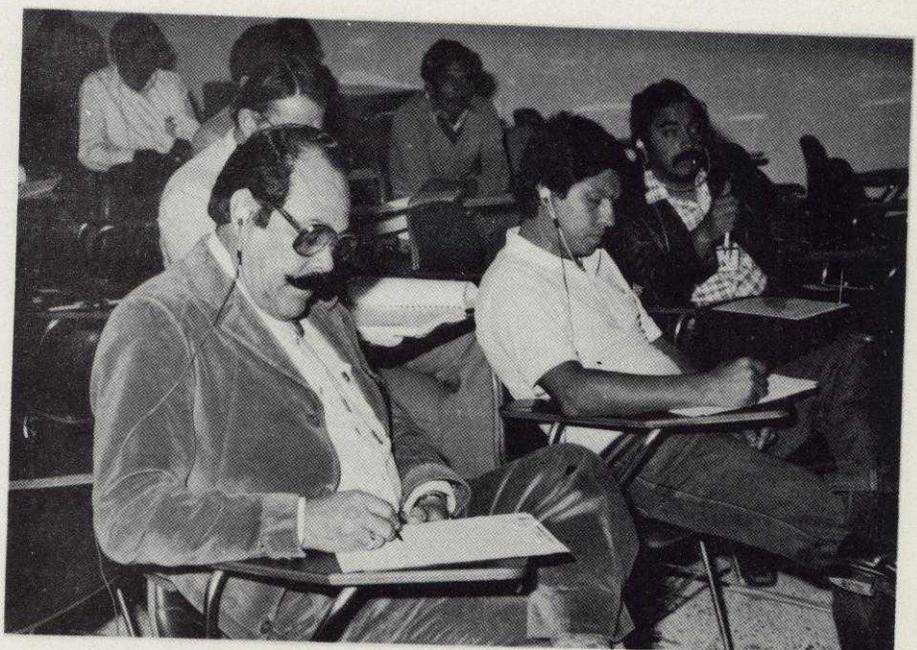


*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

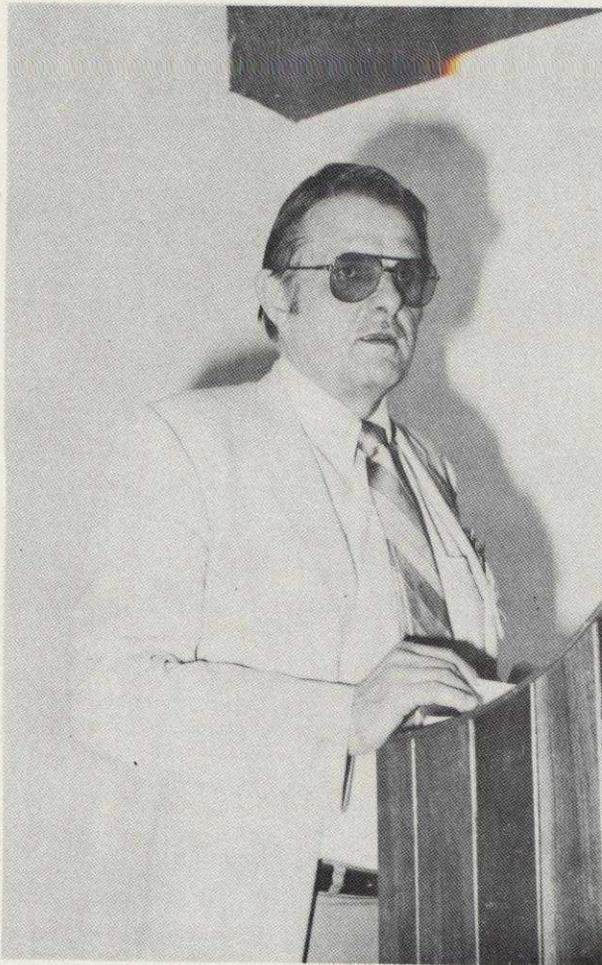


DR. LAWRENCE AMICARELLA  
IN HIS REPORT FROM THE  
U.S.A. ACTIVITIES.

THE SIMULTANEOUS TRANS  
LATION KEPT THE INTE-  
REST OF THE OBSERVERS.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



MR. JOHN HAFTERSON IN HIS  
REPORT ON PREVENTION IN -  
THE UNITED STATES OF AME-  
RICA.

MR. CHARLES W. PHILPOT INFORMS  
THE TECHNOLOGICAL ASPECT OF --  
THE GROUP OF THE UNITED STATES.



POSTERS PRESENTADOS



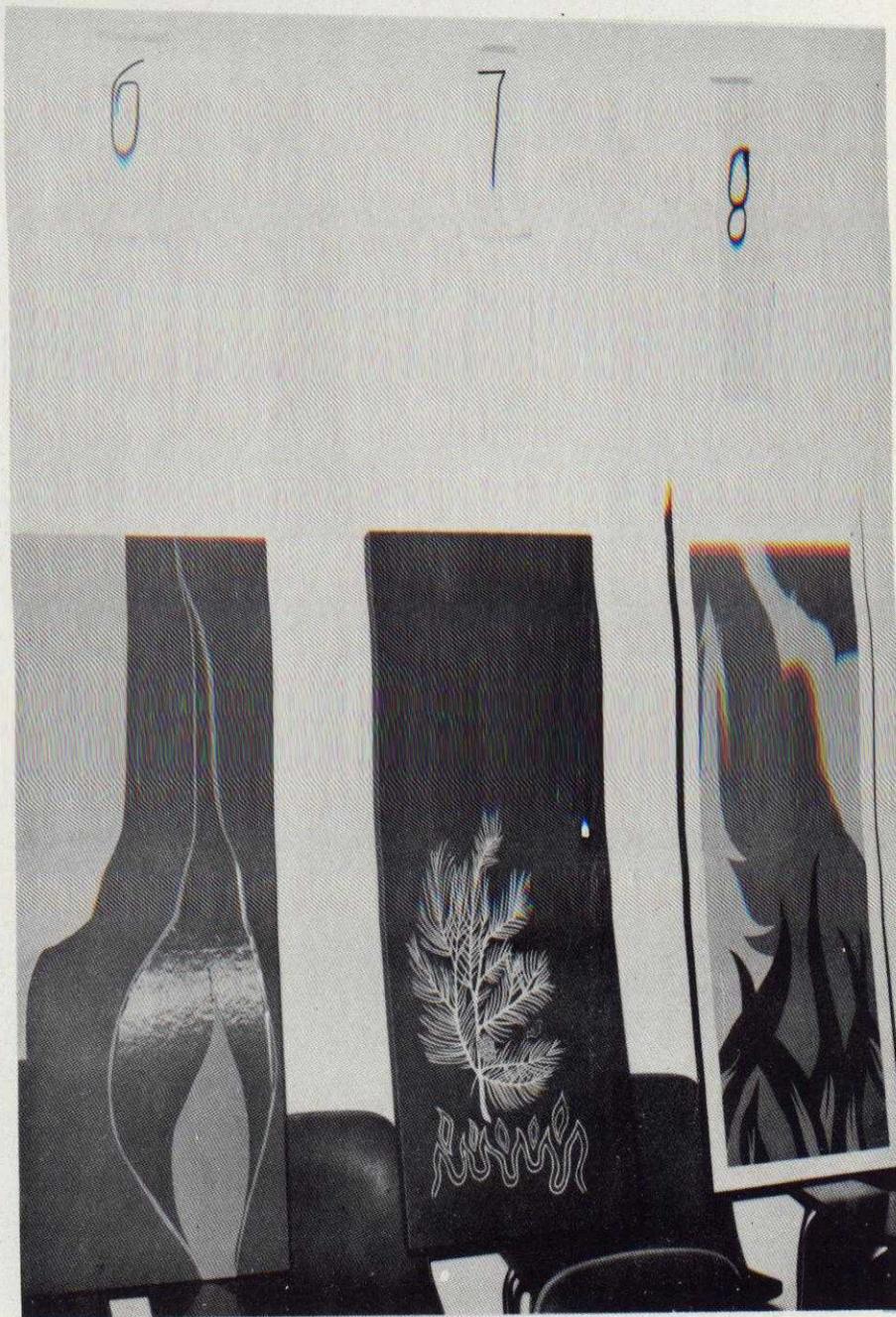
POSTERS ON FOREST FI  
RES TO BE PUBLISHED-  
AND SPREAED IN THE  
THREE COUNTRIES ON -  
THEIR RESPECTIVE LAN  
GUAGES.

POSTER No. 6 WAS ACCEP

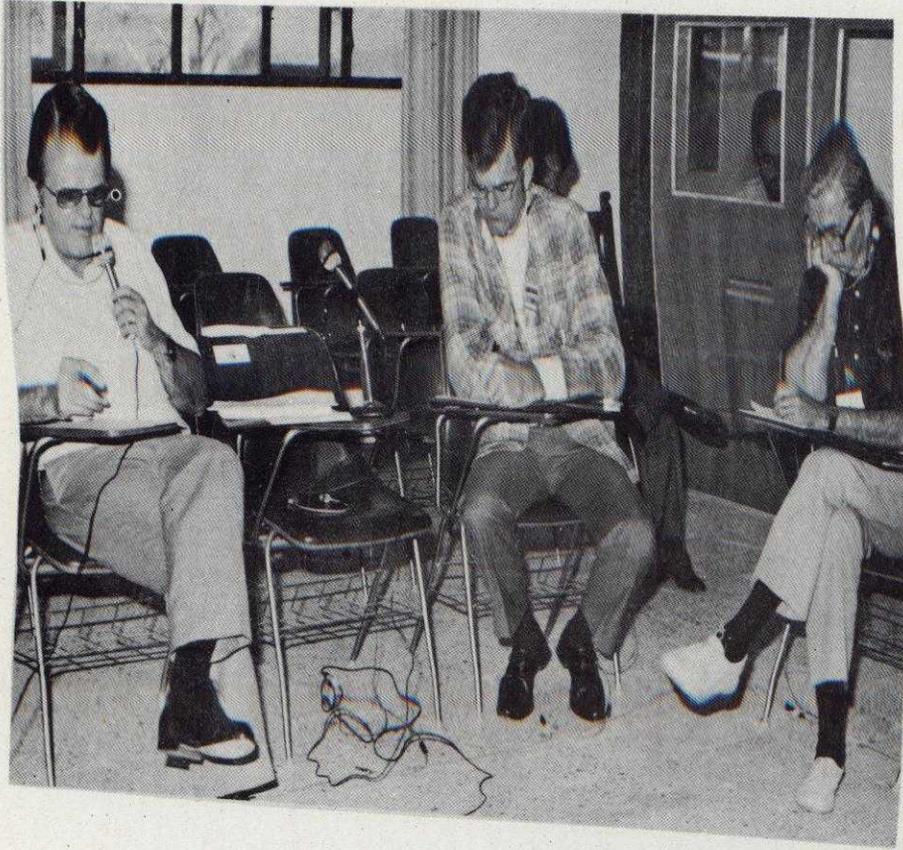
TED IN FIRST PLACE, 

POSTER No. 8 IN SECOND

PLACE. THEIR PRINTING  
WILL BE CARRIED OUT TO  
MAKE USE OF THEM IN --  
THE THREE COUNTRIES.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

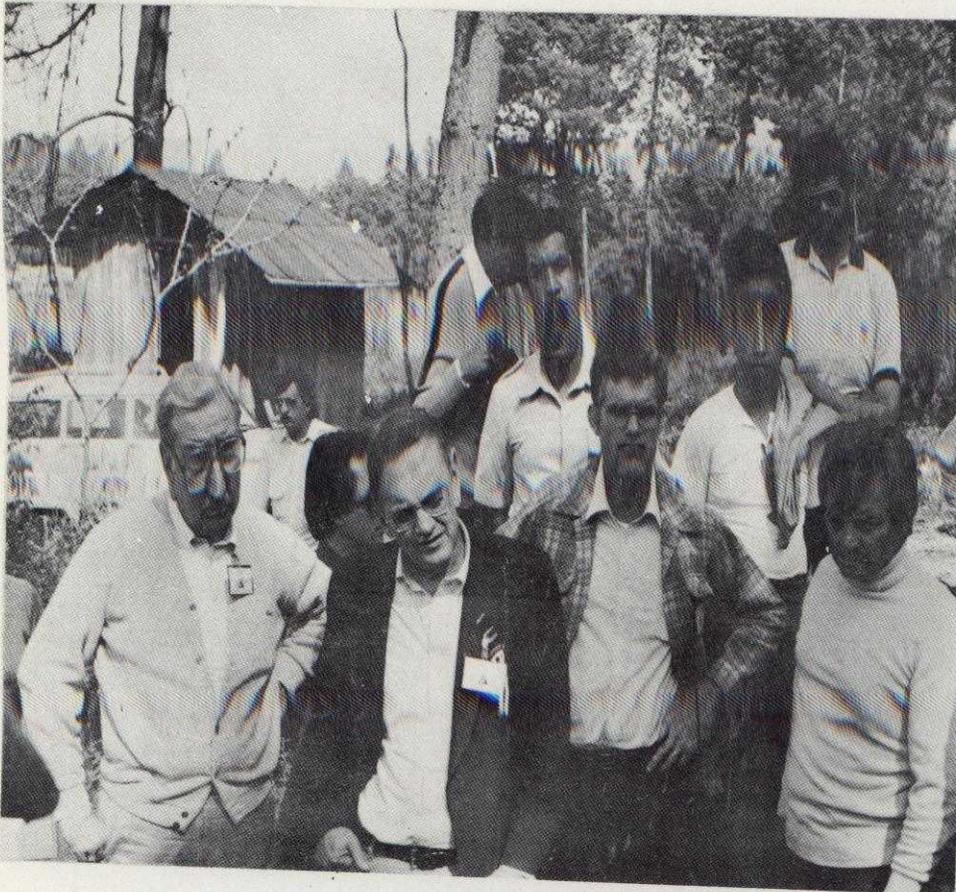


PARTICIPATION OF THE  
DELEGATION OF THE --  
UNITED STATES IN THE  
DEVELOPMENT OF THE -  
MEETING.



THE MEETING BECAME AN  
OPEN DIALOGUE BETWEEN  
THE ATTENDANTS AND --  
THE OBSERVERS.

*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*

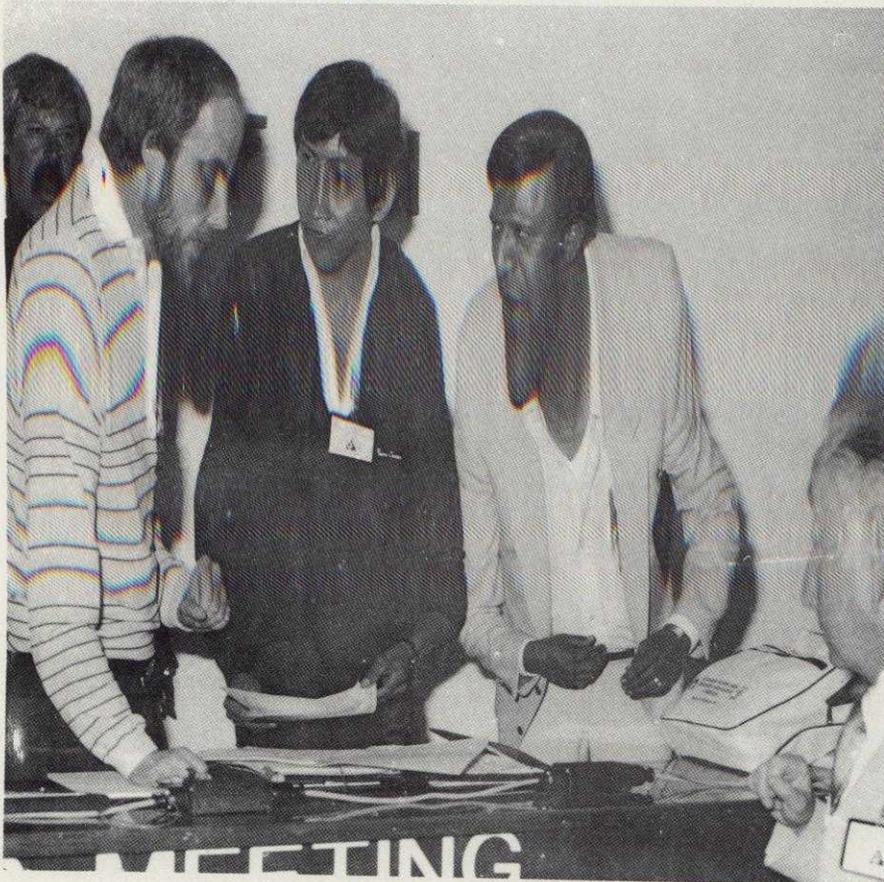


THE CORRECT USE OF  
THE FOREST HAS THE  
OBJECT OF NOT LEA-  
VING FUEL MATERIAL  
IN THE FOREST.

WHILE WE WERE VISI-  
TING THE FIELD, WE  
SAW MANY INTERES-  
TING ASPECTS ON --  
THE INTEGRAL USE -  
OF THE FOREST.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



DR. BRIAN STOCKS RECEI  
VES FROM ING. JESUS B.  
CARDEÑA RODRIGUEZ THE-

PRESIDENCY POST, WITH-  
THE PROMISE TO SEE US  
NEXT YEAR IN CANADA AT  
THE XVIII MEETING, TES  
TIFYING ING. LAZARO ME  
JIA FERNANDEZ.

SURRENDER OF THE COMMEMO  
RATIVE PLATE OF THE MEE  
TING FROM THE UNITED STA  
TES DELEGATION TO ING. -  
LEON JORGE CASTAÑOS MAR  
TINEZ. IN HIS REPRESENTA  
TION ING. JESUS B. CARDE  
ÑA RODRIGUEZ RECEIVED IT.

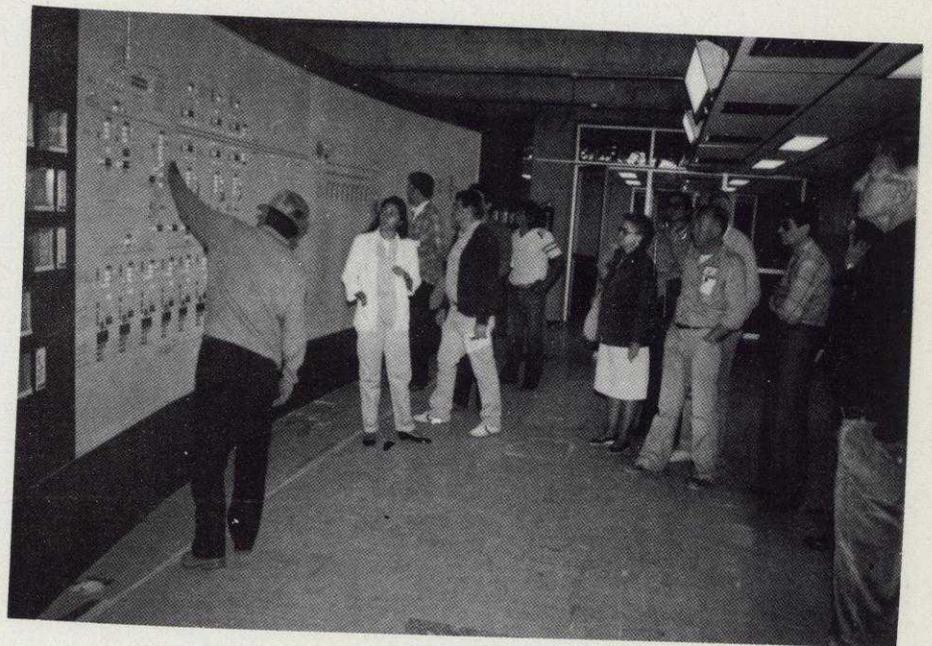


*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



MR. JOHN BIRCH GIVES  
HIS APPROVAL TO THE-  
PURIFIED WATER.

AFTER THE TRIP FIELD, WE VISITED THE PURIFIER WATER PLANT OF THE CUTZAMA LA RIVER. THIS PLANTS - SUPPLIES MEXICO CITY, FEDERAL DISTRICT. WITH WATER.



*XVII Reunión del Grupo de Estudio Sobre Manejo de Incendios Forestales FAO/CFAN*



IN THE CLOSING SUPPER  
WE PAID ATTENTION TO-  
THE FOLKLORIC DANCES.

YOUTH AND BEAUTY IN THE  
INTEGRANTS OF THE FOL-  
KLORIC BALLET OF THE -  
STATE OF MEXICO WHO MA-  
DE CHARMING THE CLO---  
SING SUPPER.

