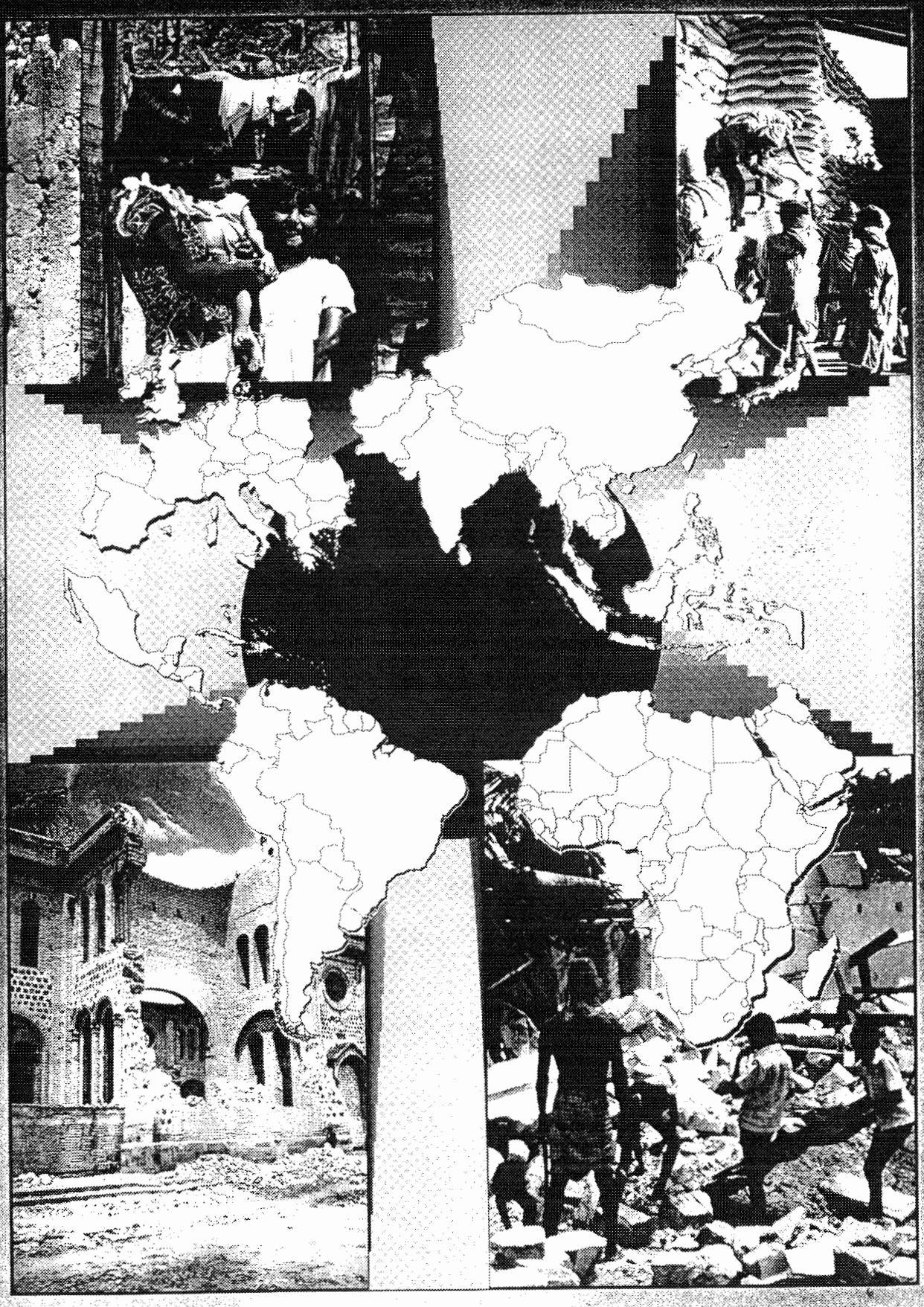
OFDA Annual Report FY 1987



Office of US Foreign Disaster Assistance

Agency for International Development

Washington, DC 20523

OFDA Annual Report FY 1987

The FY 1987 Annual Report of the Office of U.S. Foreign Disaster Assistance was researched, written, and produced by Cynthia Davis, Mark W. Hall, Faye Henderson, Waverly Jackson, Dennis King, Wesley Mossburg, Joseph O'Connor, Carol Skowron, Kimberly S. Caulfield Vásconez, and Beverly Youmans of Evaluation Technologies Incorporated, Arlington, Virginia, 22201, under contract number OTR-0000-C-00-3345-00.

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Acronyms Used in This Report

U.S. Private Voluntary Organizations (PVOs) and Private Groups

ADRA	Adventist Development and Relief Agency
ANRC	American National Red Cross
CARE	Cooperation for American Relief Everywhere
CRS	Catholic Relief Services
CWS	Church World Service
FHI	Food for the Hungry International
HKI	Helen Keller International
LWR	Lutheran World Relief
PVO	Private voluntary organization
SCF/US	Save the Children Federation/U.S.
SIM	Society of International Missionaries (formerly Sudan Interior Mission)
WVRO	World Vision Relief Organization
YMCA	Young Men's Christian Association

International Non-Governmental Organizations

CAFOD	Catholic Agencies for Overseas Development (U.K.)
SCF/UK	Save the Children Fund/U.K.
MSF	Medicins sans frontières (Doctors Without Borders)
NGO	Non-governmental organization
PRIFAS	Etudes du Programme de Recherches Interdisciplinaire Francais sur les Acridiens du Sahel, an entomological research organization in Montpellier, France
WUSC	World University Service of Canada

International Organizations

EEC	European Economic Community
ECLO	Emergency Center for Locust Operations (part of FAO)
ESCAP	U.N. Economic and Social Commission for Asia and the Pacific
FAO	U.N. Food and Agriculture Organization
ICRC	International Committee of the Red Cross
LRCS	League of Red Cross and Red Crescent Societies
LWF	Lutheran World Federation
PAHO	Pan American Health Organization
UNDP	U.N. Development Program
UNDRO	U.N. Office of the Disaster Relief Coordinator
UNHCR	U.N. High Commissioner for Refugees
UNICEF	U.N. Children's Fund
WCC	World Council of Churches
WFP	World Food Program
WHO	World Health Organization

U.S. Organizations

AFB	Air Force Base
AFR/OEO	Africa Bureau's Office of Emergency Operations (A.I.D.)
A.I.D.	Agency for International Development
CDC	Centers for Disease Control, Department of Health and Human Services
CINCPAC	Commander in Chief Pacific (DOD)
DOD	Department of Defense
FFP	Food for Peace Office, A.I.D.
FFW	Food-for-Work, A.I.D. program
FEWS	A.I.D.-sponsored Famine Early Warning System
OFDA	Office of U.S. Foreign Disaster Assistance, A.I.D.
REDSO	Regional Economic Development and Services Office, A.I.D.
RHUDO	Regional Housing and Urban Development Office, A.I.D.
SOUTHCOM	DOD U.S. Southern Command
USG	United States Government
USGS	U.S. Geological Survey, Department of the Interior
WASH	Water and Sanitation for Health

Food Acronyms

CSM	corn-soya milk
DSM	dry skim milk
ICSM	instant corn-soya milk
NFDM	non-fat dry milk
SFCM	soy-fortified corn meal
SFRO	soy-fortified rolled oats
SFSG	soy-fortified sorghum grits
VEGOIL	vegetable oil
WSB	wheat-soya blend

Other

ORS	oral rehydration salts (a sugar-salt combination used to treat diarrheal diseases)
TDY	temporary duty (assignment)

Message From The Director

The U.S. government has a history of providing humanitarian assistance to disaster victims in other countries. In 1812, Congress appropriated $50,000 for food and other supplies for victims of a huge earthquake in Venezuela. Subsequently, Congress appropriated $200,000 to help survivors of the 1902 Martinique volcanic eruption and $800,000 for victims of the 1908 Sicily earthquake. In 1964, the Agency for International Development established the first Office of the Disaster Relief Coordinator, which evolved into the current Office of U.S. Foreign Disaster Assistance. Today, the U.S. government is one of the larger donors of international disaster relief, and OFDA is responsible for providing and coordinating this aid.

Providing this assistance requires cooperation and coordination with the host government, voluntary agencies, and many international donors. Even in countries with limited resources, the government and domestic non-governmental organizations must take an active role in coordinating and channeling this assistance. OFDA has done much to promote disaster preparedness in other countries and has invested in improving the capabilities that can reduce damage and save lives. For example, OFDA and the government of Chile co-funded a pilot project to establish a tsunami warning system along the Chilean coast. Promoting national self-reliance is just one of the U.S. government's foreign policy goals that is achieved by OFDA's disaster preparedness activities.

OFDA is a small office within A.I.D. and therefore must work with other offices, agencies, and departments of the U.S. government. A.I.D.'s Office of Food for Peace administers the P.L. 480 Title II program, by which emergency food commodities are donated to needy people in other countries. OFDA works with A.I.D. missions and U.S. embassies overseas to identify emergency relief needs and manage the assistance that we provide. OFDA maintains close ties with the Department of Defense, which can transport emergency relief supplies from our six stockpiles around the world. We frequently use specialists from other U.S. government agencies, such as the Centers for Disease Control, U.S. Forest Service, and U.S. Geological Survey, to provide technical assistance in disaster relief and preparedness programs.

OFDA also maintains close relations with the other international organizations, governments, and private agencies that provide assistance to countries affected by disasters. This involves keeping each other apprised of what assistance we are providing, so that we do not duplicate efforts and services, but we make sure that all of the victims' emergency needs are met. We cooperate with several governments and international organizations to co-finance disaster preparedness projects in several countries. For example, we work very closely with the Pan American Health Organization, headquartered here in Washington, to sponsor disaster preparedness and training programs throughout Latin America and the Caribbean. OFDA currently is funding two projects in cooperation with UNDRO and UNDP to establish disaster preparedness training centers in Thailand and Indonesia.

In FY 1987, OFDA administered almost $30 million in assistance, which directly affected millions of people around the world. Of this, $25.7 million was allocated for emergency relief in response to 54 disasters and $4.15 million was obligated for various preparedness, mitigation, and early warning projects. It is extremely gratifying to see our contributions go toward saving lives, assisting survivors, and helping countries become better prepared for disasters. We are pleased to share this annual report with you.

Julia V. Taft
Director
Office of U.S. Foreign Disaster Assistance

Disaster Preparedness, Mitigation, and Training

One of OFDA's principal activities is promoting self-reliance so that countries are better able to anticipate, mitigate, and manage disasters. Contingency planning and preparedness have proved instrumental in achieving this goal. However, incremental increases in the worldwide demand for hazards analyses, contingency planning, preparedness, warning, and mitigation programs now force OFDA to set priorities and to seek partners in funding such programs.

Over the past several years, OFDA has become involved in promising disaster preparedness projects while USAID missions, particularly in Latin America, and other U.S. agencies have increased their financial input in OFDA-sponsored preparedness and mitigation programs. Their willingness to assist OFDA in training disaster professionals of developing nations indicates a growing awareness of the devastating impact disasters have on many A.I.D.-sponsored development programs in their respective host countries. Several of these joint projects are discussed below.

Regional Advisers

Shared funding continued during FY 1987 between the Costa Rican USAID Mission and OFDA to maintain a disaster response and preparedness team based in San José. Through this arrangement, USAID/San José donates local currency for all airline travel, half of the salary, and other costs to team leader Paul Bell, and provides office space for the group. Mr. Bell is contracted to devote half of his time to the Costa Rican government upgrading its disaster response capabilities and the other portion to OFDA. His colleagues, Alejandro James and Ricardo Bermudez, also work on the project.

In FY 1987, OFDA established a second Latin American regional preparedness office and appointed René Carrillo as the regional disaster preparedness adviser in Lima, Peru. The new OFDA disaster response adviser will supplement the activities of the OFDA/San José team. In addition to assessing and improving disaster preparedness in Peru, he will work with U.N. and PAHO officials in Peru, implement preparedness projects in other South American countries, and direct or participate in OFDA disaster relief operations in Peru and other South American countries under OFDA auspices. USAID/Lima is involved in the project and is increasing its part of Mr. Carrillo's funding in FY 1988.

Emergency Medical Training

Another example of a shared funding preparedness project is Project Hope in Costa Rica. Project Hope, in cooperation with the Costa Rican Ministry of Health, the Caja Costarricense de Seguro Social (CCSS), OFDA, and the USAID mission in San José, initiated an emergency medical services system to train physicians, nurses, paramedics, and medical technicians in the latest emergency medicine and critical care techniques. A School of Respiratory Therapy and a pulmonary critical care nurse's training program are being created to introduce the new technologies to the Costa Rican medical community. Costa Rican firefighters respond to an average of 6,000 calls for emergency services each year, yet there are only eight trained paramedics and one Advanced Cardiac Life Support unit in Costa Rica. With heart disease now one of the top killers among Costa Ricans, OFDA and the USAID Mission view emergency medical services and advanced cardiac training as essential to Costa Rica and have agreed to support Project Hope's program.

The three-year program will cost $1.5 million. The Costa Rican government has agreed to pay almost 50% (or $707,000), OFDA provided a one-time allotment of $100,000 during FY 1987, and the USAID mission in San José agreed to cover the rest. The Costa Rican contribution to the program includes the provision of basic life support equipment for 50 ambulances, radios, as well as stipends, donated classroom and office space, and subsidies for faculty members.

Rescue Unit for Structural Collapse

OFDA embarked upon a project in FY 1987 that involved the contribution and commitments of U.S. volunteers and organizations engaged in Search and Rescue (SAR). Since the use of U.S. SAR teams after the Mexico City and San Salvador earthquakes, OFDA has developed a Rescue Unit for Structural Collapse (RUSC), which will serve as a prototype team that responds to disasters involving collapsed buildings and trapped victims. The RUSC is available to U.S. missions abroad that declare disasters and determine a need for this response. The organization and

planning involved in the team's development would have been impossible without the volunteered time and expertise of SAR professionals and state governments.

In cooperation with the Fairfax County and Dade County fire and rescue departments, OFDA has agreed to contribute toward the purchase of specialized equipment needed by a RUSC when it is deployed to a disaster site. OFDA will split the costs of the two equipment caches with each department.

Volcano Early Warning and Disaster Assistance Program

The U.S. Geological Survey and OFDA combined forces and finances during FY 1987 in developing a Volcano Early Warning and Disaster Assistance Program (VDAP). The VDAP concept originated in the aftermath of the Mount St. Helens eruption in 1980, an event that reinforced the view that volcano early warning and evacuation is feasible. The USGS began building in 1981 a mobile cache of volcano monitoring equipment that could be readily deployed to potential trouble sites. The equipment has since been sent to the Marianas, Papua New Guinea, the Philippines, Colombia, Mexico, and Guatemala, where it has been in use since 1987. The USGS has also used the VDAP equipment to train Third World scientists in volcano-monitoring techniques.

Before August 1986, OFDA had funded VDAP mobilizations on a case-by-case basis. A five-year, joint-funding agreement between OFDA and the USGS was formalized in August 1986. During the first year of OFDA's formal buy-in, the USGS and OFDA split the salary, equipment, travel, overhead, and operating costs of the program, with the USGS spending $262,840 and OFDA $231,809.

This interagency agreement will permit a more comprehensive commitment to volcano hazards mitigation. Staff and equipment stocks will be expanded. More resources will be available to foreign volcanologists and disaster professionals attempting to upgrade their early warning and mitigation systems. Since the agreement, the VDAP has established direct relationships with volcano hazards and civil defense groups in Colombia, Ecuador, Costa Rica, and Guatemala.

Out of the VDAP arose a Volcano Crisis Assistance Team (VCAT), a group of highly qualified volcanologists and other specialists who interpret data provided by the VDAP, respond to potential volcanic activity, and train Third World nationals in volcano-monitoring practices. The VDAP equipment and the VCAT were deployed during FY 1987 to four Guatemalan volcanoes that were exhibiting signs of activity. The volcanoes being monitored include Tacana (on the Mexican/Guatemalan border), Santiaguito, Fuego, and Pacaya. These four volcanoes could affect tens of thousands of Guatemalans and Mexicans.

To tailor the VDAP to the needs of Guatemala's volcanic hazards, the USAID mission in Guatemala City agreed to fund several activities above and beyond the VDAP's scope of work. Under the agreement with the Guatemalan Mission, the VDAP is: (1) providing preliminary hazard maps of Fuego and Santiaguito volcanoes; (2) upgrading the surveillance of the four targeted volcanoes; (3) establishing capabilities in deformation monitoring; (4) providing a basic kit for geologic studies and a geometric kit to monitor hot springs, condensates, and health hazards of ash-contaminated surface waters; and (5) providing basic reference materials and hands-on training for Guatemalan nationals. Most signficantly, the USAID/Guatemala is purchasing and repairing equipment left on loan by the VCAT for the Guatemalan volcano monitoring organization, INSIVUMEH. Although these activities are not geared toward transferring total monitoring responsibilities to Guatemala's INSIVUMEH, the mission thinks that the first year's activities are leading the government of Guatemala toward improved hazard mitigation. In all, the mission is providing $337,940 from July 1, 1987, to Dec. 31, 1989.

Tsunami Hazards Reduction Utilizing Systems Technology (THRUST)

Funding for the Tsunami Hazards Reduction Utilizing Systems Technology (THRUST) project, originally provided by OFDA through the National Oceanic and Atmospheric Administration's (NOAA) Pacific Marine Environmental Laboratory (PMEL), continued through the end of FY 1987 at which time all equipment and operational responsibilities were turned over to the Chilean navy. During the six-year implementation of the

pilot project, three Chilean entities collaborated with PMEL, providing operational commitments and a combined total of $1,633,068 each year. The THRUST project was designed to provide warnings of near-shore tsunami hazards within minutes of detected earthquake events over an area of about 100 km in radius. The equipment is located in Valparaíso, Chile, which is highly vulnerable to seismic events. The donation of this equipment to the Chilean government represents the completion of a successful bilateral effort as well as a step toward Chilean self-sufficiency in disaster preparedness.

Costa Rican Volcanic and Seismic Hazards Mitigation

With the completion of the Costa Rican Seismic Network, an OFDA-sponsored project that included funding to the University of California-Santa Cruz and Costa Rican organizations, OFDA has now initiated a related seismic project that will be implemented during FY 1988. USAID and several Costa Rican public agencies signed a memorandum of understanding to develop a project, called by its Spanish acronym MIRVYS, that would mitigate volcanic and seismic hazards in Costa Rica. The USAID mission in San José has committed $100,000 in local currency toward the project, and OFDA plans to donate about $195,000 the first year (FY 1988) and additional support in the second year (FY 1989). The University of Costa Rica, the National University, and the Costa Rican Institute of Electricity also plan to contribute equipment toward the project.

OFDA grantee organizations not only train Third World nationals in disaster preparedness but support OFDA during disaster responses. Here, Metro Dade Fire & Rescue personnel assist in disaster operations after the San Salvador earthquake.

Ecuadorean Disaster Prevention and Preparedness Project

In FY 1987, OFDA continued its grant with UNDRO for an Ecuadorean Disaster Prevention and Preparedness Project. The USAID Mission in Quito supported this two-year program by contributing $100,000 toward the project, which is assessing and evaluating the hazards of high-risk volcanoes, establishing basic volcano monitoring systems, and implementing tsunami hazard zoning and preparedness.

Disaster Training Institute

During FY 1987, OFDA contributed money to a new project that will involve the USG, the U.S. and Brazilian private sectors, and the Brazilian government. The Disaster Mitigation Program is being implemented in Brazil and eventually will culminate in the Disaster Mitigation Training Center located in Florianopolis. As envisioned, the institute initially will instruct Brazilians in disaster relief and preparedness and will later become a regional center where other Latin Americans will receive training. It will be funded by OFDA, USAID/Brazil, Partners of the Americas, and the Brazilian private and public sectors. The ultimate goal is self-sufficiency of the institute, and OFDA's second-year input will be based upon an evaluation of the potential for eventual independence.

OFDA has agreed to provide $50,000 in FY 1988 for start-up costs and will consider $150,000 in FY 1989, based upon performance. During FY 1987, OFDA contributed $16,532 for three Brazilians involved in the center's development to tour four cities and to observe the operations of similar U.S. disaster mitigation centers. Under the auspices of FEMA, the Brazilians visited its Emergency Management Center in Emmitsburg, Maryland; the University of Wisconsin's Disaster Management Center; the Hazards Research Center in Boulder, Colorado; and the Tennessee Valley Authority.

Satellite Crop Monitoring

OFDA, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), and the Asian Institute of Technology (AIT) came to a funding arrangement for a new Satellite Crop Monitoring project that began December 1987 (FY 1988) and will continue for 1-1/2 years. OFDA will contribute $50,000, the UNDP will donate $200,000, and ESCAP will supply professional, administrative, and secretarial support. The participating countries—Indonesia, Malaysia, Philippines, and Thailand—are providing local expertise, manpower for satellite analysis, field verification visits, crop yield forecasting, and production of early warning bulletins. By using computer-assisted satellite imagery analysis for crop yield monitoring and existing drought early warning systems, governments will be better prepared to estimate drought-induced food shortages on a timely basis.

SPSSD/WS

OFDA continued funding the A.I.D./NASA South Pacific Severe Storm Detection and Warning System (SPSSD/WS) by providing $100,205 during FY 1987 for the first year of a two-year program. The SPSSD/WS comprises a satellite direct readout station at the Fiji Meteorological Service Headquarters and was designed and developed through OFDA funding to NOAA and NASA. The FY 1987 and FY 1988 funds will be used to enhance and upgrade existing equipment and provide additional training to Fijian nationals.

Asian Disaster Preparedness Center

In its second year of existence, the Asian Institute of Technology's Asian Disaster Preparedness Center (ADPC) served as a successful example of effective cost-sharing. OFDA contributes funding to the ADPC while Australia provides buildings and UNDRO donates money and technical assistance. The developers of the ADPC envisioned that the organization would perform regionally appropriate disaster-preparedness training programs. This training would provide increased awareness, institution building, technology transfer, and information dissemination throughout Asia and the South Pacific. In FY 1987, a few months after ADPC opened its doors, ADPC held two classes in disaster management. OFDA sponsored 36 participants to attend the Disaster Management courses.

Comparative Seismic and Tsunami Study

OFDA funding continued in FY 1987 in support of the Comparative Seismic and Tsunami Threat Study in the Circum-Pacific Region. Beginning in FY 1984 and projected to end in May 1988, the

Participants and instructors in the OFDA-sponsored Instructor Training Course held in Emmitsburg, Maryland

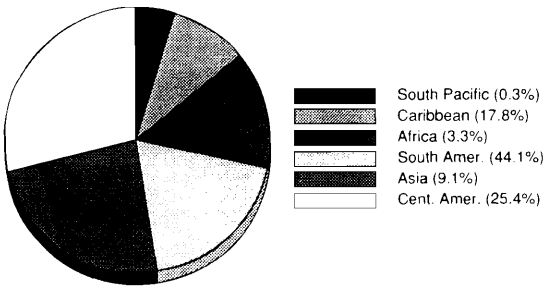
USGS, a co-funder of the project, is utilizing recent advances in seismology and tectonics to produce a probabilistic ranking of the zones most susceptible to damage in the next 10 to 20 years and a summary of recurrence for each major seismic gap in the circum-Pacific region. Data are expected to be completed in FY 1988 on the remainder of the west coast of South America, coastal regions of Alaska and the Aleutian arc, and Southeast Asia. The program has resulted in more than 14 published articles in professional journals. In FY 1987, systematic studies of comparative earthquake potential for the western coastal zones of Chile, southern Peru, and northern Mexico were completed. The USGS and OFDA shared the FY 1987 costs, each funding about $68,000.

Training

Through second-party grants and OFDA's own initiatives, an unprecedented number of Third World nationals were trained in disaster preparedness during FY 1987. OFDA sponsored 39 courses and 1,019 participants. The charts on the next pages provide data on the participants, location of the courses, and areas of training.

Reflecting OFDA's concentration on preparedness and mitigation programs in the Western Hemisphere, the majority of the OFDA-sponsored participants were from Latin America and the Caribbean. Ecuadoreans, Hondurans, and Peruvians alone represented 43.3% of all OFDA-sponsored participants during FY 1987.

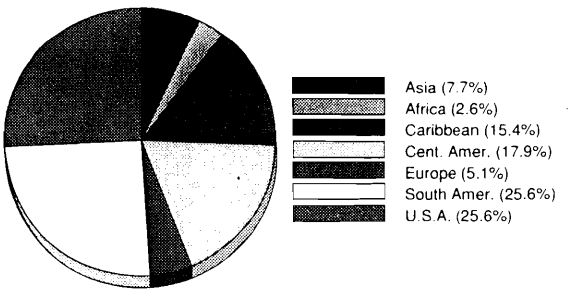
PARTICIPANTS' REGION OF ORIGIN



Most of OFDA's trainees participated in courses taught in their own countries. With courses outside of the United States, participation by nationals is maximized because transportation and living costs are minimized. In-country training also promotes the use of local resources and the adaptability of each program to the experiences of the country where it is taught.

Using OFDA money, most courses were designed and presented by OFDA grantees. PAHO held 14 courses during FY 1987 that dealt with disaster preparedness in the health sector. Principal beneficiaries of PAHO training included Costa Rican, Brazilian, Peruvian, Honduran, and Mexican participants as well as those from islands throughout the Caribbean. Urban fire preparedness courses were held through grants with the Dade County Fire and Rescue Department and the National Fire Protection Association (NFPA) while forest fire management was taught through an OFDA/USFS inter-departmental service support agreement. Partners of the Americas, the Organization for American States, and the Asian Institute of Technology's Asian Disaster Preparedness Center organized five courses during the fiscal year that trained participants in disaster management techniques. Of the grantees, NFPA and Partners of the Americas continued their cost-sharing relationships with OFDA through FY 1987.

LOCATION OF TRAINING SITES

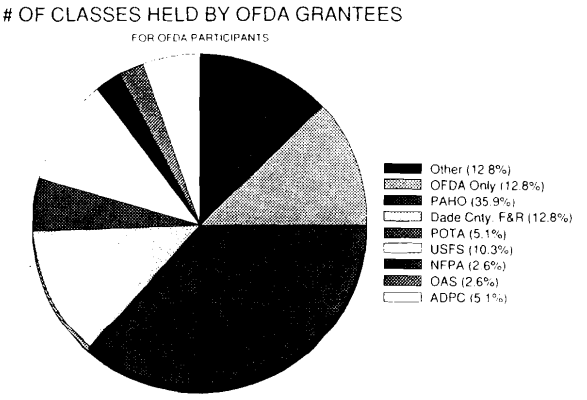


Participants also attended several disaster-specific programs. OFDA paid for the participation of 37 foreign nationals to U.S. conferences on earthquake risks, hurricane hazards, and search-and-rescue issues and techniques. And, in response to the insect infestation campaign waged by OFDA and A.I.D.'s Africa Bureau during fiscal years 1986 and 1987, OFDA presented a "Train-the-Trainer Grasshopper Control Workshop" in Banjul, The Gambia, where 26 Gambians learned insect control methods. Similar courses were

funded by the Africa Bureau in Khartoum and Dakar, using material partially supplied by OFDA. OFDA also sponsored two Nigerien pilots who learned aerial spraying methods in response to a need that arose during the Niger grasshopper/locust campaign.

As with an increasing proportion of preparedness activities, funding for a few training programs was leveraged. The USAID mission in Mexico agreed to sponsor two Mexicans to join the two OFDA-sponsored Mexicans attending the National Association of Search and Rescue annual conference. OFDA joined the Philippines Institute of Volcanology and Seismology (PHIVOLCS) in convening the first international seminar/workshop on lahars and landslides in Legaspi City, Philippines, on Dec. 8, 1986. OFDA sponsored five prominent scientists to participate in the workshop.

The third annual International Wildfire Suppression Course was held in Santiago, Chile, during FY 1987. OFDA sponsored the classes through its interagency agreement with the U.S. Forest Service. To generate more third-party support for the seminar, OFDA aims to reduce OFDA/USFS funding by holding the classes in developing countries most likely to benefit from the program. The Santiago course was the first held outside of the United States, and OFDA's support of these courses has dropped from 100% of the cost of participants and training materials in FY 1985 to 66% in FY 1986 to less than 50% in Santiago. OFDA projects that the FY 1988 course to be held in Mexico City will require only 33% funding by OFDA through the USFS. OFDA hopes that host countries will eventually pay 100% of the costs of the course.



Key

ADPC	Asian Disaster Preparedness Center
Dade Cnty. F&R	Dade County Fire and Rescue Dept.
NFPA	National Fire Protection Association
OAS	Organization of American States
OFDA only	Courses funded and implemented solely by OFDA
Other	OFDA sponsored attendees to conferences and seminars; OFDA did not pay for the design of the course
PAHO	Pan-American Health Organization/World Health Organization
POTA	Partners of the Americas
USFS	Department of Agriculture/U.S. Forest Service

OFDA-Administered Funds October 1, 1986 - September 30, 1987

U.S. Foreign Disaster Assistance FY 87

This chart includes all relief funds administered by OFDA in FY 1987: International Disaster Assistance Account funds, monies borrowed from A.I.D. development assistance accounts, disaster travel funds, and funds from pre-existing contracts used in emergency response. It does not include FY 1988 carry-over expenditures for FY 1987. For more details, please see the case reports of the individual disasters.

COUNTRY	DATE	DISASTER	DEAD	AFFECTED
Africa Regional*[1]	00/00/86	Insect Infestation	-	-
Africa Regional[1]	00/00/87	Insect Infestation	-	-
Argentina	01/30/87	Fire	-	152,000
Argentina	02/23/87	Storm	1	1,000
Bangladesh	08/18/87	Flood	2,055	29,700,000
Benin	03/20/87	Epidemic	24	56
Bermuda	09/25/87	Hurricane	0	-
Botswana	04/09/87	Drought	-	671,000
Burkina Faso	02/21/87	Insect Infestation	-	-
Burkina Faso*	11/27/84	Drought	-	-
Burkina Faso*	06/26/86	Insect Infestation	-	-
Cameroon*	08/25/86	Lethal Gas Eruption	-	-
Cameroon	03/24/87	Insect Infestation	-	-
Chad	02/12/87	Insect Infestation	-	-
Chad	06/30/87	Rat Infestation	-	-
Chad*	07/25/86	Insect Infestation	-	-
Chile	07/17/87	Flood	55	116,364
Chile*	03/05/85	Earthquake	-	-
China, P. Rep.	05/19/87	Fire	191	56,092
Cook Islands	01/03/87	Cyclone	0	2,000
Dominican Rep.[1]	00/00/87	Hurricane	-	-
Ecuador	03/8/87	Earthquake	300	150,000
El Salvador	10/10/86	Earthquake	1,100	500,000
Equatorial Guinea	03/06/87	Fire	0	313
Ethiopia	06/16/87	Drought	367	330,000
Ethiopia	07/28/87	Infect Infestation	-	-
Ethiopia	09/14/87	Drought	-	7,000,000
Ethiopia*	10/14/84	Drought	-	-
Ethiopia*[1]	00/00/85	Drought	-	-
Fiji	01/02/87	Cyclone	1	3,000
Gambia	10/14/86	Insect Infestation	-	-
Gambia	02/13/87	Insect Infestation	-	-
Greece*	09/16/86	Earthquake	-	-
Guinea-Bissau	05/28/87	Insect Infestation	-	-
Guinea-Bissau	08/27/87	Storm	1	3,700
Haiti	10/30/86	Flood	69	45,000
Haiti	07/04/87	Civil Strife	30	100
Indonesia	05/11/87	Landslid	131	51
Korea, Rep. of	07/20/87	Typhoon	253	56,000
Laos	07/31/87	Epidemic	63	2,000
Malaysia	02/04/87	Fire	0	1,000
Maldives	04/14/87	Flood	0	300

AMOUNT ($)	TYPE OF ASSISTANCE
40,542	TDYs of experts to review/plan control campaigns; travel costs
154,478	Assessment team; pesticide safety training experts
82,575	USFS assistance; local purchase of firefighting equipment
5,000	Grant to La Rioja Prov. for local relief program
1,558,421	Grants to BDG relief fund and for wheat seed procurement (includes funds from an A.I.D. development account)
13,050	Vaccines
9,000	Coast Guard airlift of 150 rolls of plastic sheeting
25,000	Donation to local relief program
421,732	Disaster Relief Coordinator; helicopter support; pesticides; entomologist
102,512	Additional funds for dam/spillway repairs
29,277	Repair and replacement of 12 water tanks to Leghorn stockpile
56,352	Topographic maps; final report; TDYs to investigate report of second Lake Nyos eruption; USGS support
10,000	Communications specialist
1,254,211	Technical assistance; procurement and transport of pesticide; contract for aircraft
23,515	Local support for control program; rodenticide
1,955	Meeting of experts to discuss locust control program
503,450	Blankets; grants for emergency shelter
12,319	Replacement of 5,999 water jugs to Panama and New Windsor stockpiles
90,000	Fire-resistant clothing and equipment
28,761	Local purchase of building materials and relief supplies; transport of tarps; travel of disaster officer
15,000	Pre-disaster assessment; DOD airlift of assessment team
2,619,691	DOD airlift of tents, blankets, and plastic; USGS specialist; bridges and related costs; replacement of blankets; travel of disaster officers
1,334,050	DOD airlifts of blankets, plastic, tents and water tanks from Panama stockpile and replacement costs; housing repair program; technical assistance
10,000	Donation to local voluntary agencies
50,000	Grant to LWF for emergency medical program in the Ogaden
380,516	Pesticides; protective gear; grant to FAO for logistical support
1,807,000	Grants to support U.N. logistics and coordination role
506,749	Grant to AJDC for agricultural rehabilitation program; grant to Friends of AICF for orphan reunification program
66,208	Truck evaluation and repair program for relief operations
25,000	Donation to GOF for purchase of health and sanitation equipment
568,091	Large-plane spraying operation; pesticides, fuel, and air freight
554,898	Technical assistance to develop plan for surveying and operations; pesticides; aerial support; radio equipment; spreaders
22,567	INTERTECT housing assessment
7,033	Technical assistance
25,000	Donation to GOGB for repair of schools
34,488	Local purchase of potable water equipment; water tanks; medical supplies
15,000	Local purchase of medicines
28,530	Contribution to GOI relief fund; technical assistance
25,000	Donation to Korean Red Cross
4,000	Grant to UNICEF
4,000	Contribution to GOM Fire Relief Fund
25,000	Donation to GOM Relief Fund

OFDA-Administered Funds
October 1, 1986 - September 30, 1987

U.S. Foreign Disaster Assistance FY 87

COUNTRY	DATE	DISASTER	DEAD	AFFECTED
Mali	02/12/87	Insect Infestation	-	-
Mali*	08/05/86	Insect Infestation	-	-
Mauritania	03/24/87	Insect Infestation	-	-
Mauritania*	09/27/86	Insect Infestation	-	-
Mauritania*	12/05/84	Drought	-	-
Mozambique	01/08/87	Civil Strife	80,000[2]	6,500,000
Nepal	08/21/87	Flood	6	-
Niger	03/13/87	Insect Infestation	-	-
Nigeria	05/12/87	Epidemic	1,000	1,200
Panama	10/16/86	Flood	2	3,500
Papua New Guinea	02/11/87	Earthquake	1	4,000
Philippines	08/17/87	Typhoon	85	971,500
Poland	05/13/87	Accident	183	-
St. Vincent*	09/26/86	Flood	-	-
Senegal	02/19/87	Insect Infestation	-	-
Senegal*	08/14/86	Insect Infestation	-	-
Senegal*	09/12/83	Drought	-	-
Solomon Islands*	05/20/86	Cyclone	-	-
Somalia*	03/31/85	Epidemic	-	-
Somalia	04/30/87	Drought	600	500,000
South Africa	01/30/87	Food Shortage	-	1,200,000
South Africa	09/29/87	Flood	400	50,000
Sri Lanka	04/24/87	Civil Strife	109	200
Sri Lanka	08/27/87	Displaced Persons	7,000[3]	500,000
Sudan	02/15/87	Insect Infestation	-	-
Sudan	06/30/87	Rat Infestation	-	-
Sudan*	08/26/86	Civil Strife	-	-
Tokelau	04/11/87	Storm	-	1,700
Tuvalu	03/12/87	Cyclone	-	-
Vanuatu	02/08/87	Cyclone	48	48,000
Venezuela	09/08/87	Landslide	96	15,000
Yemen Arab Rep.	04/16/87	Insect Infestation	-	-
16				
Total			**94,171**	**48,585,076**

74 Disasters
54 New declared disasters (44 Countries)
18 Carried over from previous year(s)
4 Undeclared (Africa Regional Insect Infestation FY 1986 and FY 1987, Ethiopia Drought, and DominicanRepublic)
17 Disaster types

* Carried over from previous year(s)
1 Undeclared
2 Official estimate of number of children who died in 1986
3 Approximate number killed over 4-year period

AMOUNT($)	TYPE OF ASSISTANCE
442,433	Mission staff support and logistics; procurement and transport of pesticides; helicopter support
454,840	Local support costs; pesticides; TDYs of experts to discuss control program
127,500	Face masks; radio equipment; support vehicles
170,000	Support of spraying operation
239,947	Internal transport of USG food commodities
4,138,769	Grants to UNICEF, CARE, Air Serv and WVRO for emergency programs
25,000	Grant to GON relief effort
303,419	Ambassador's Authority used for insect survey and grant to GON; helicopter support and fuel; radio equipment
64,850	Laboratory equipment and transport; technical assistance
25,000	Local purchase of food, mattresses, and other relief supplies
68,393	Donation to PNG National Disaster Committee; DOD airlift of tents and plastic; travel of disaster officer
241,461	Donation to GOP for relief program; housing rehabilitation program
25,000	DOD airlift of AFIP team
75,000	Local purchase of materials for housing repair program
1,923,752	Technical assistance; small-plane spraying operation; pesticides; helicopter support; local control program; travel of experts
773,056	Additional costs of large-plane spraying operation; technical assistance; TDYs of experts to discuss control program
96,000	Addition to food transport grant to GOS
19,496	Transport of 8 water tanks (3,000-gal. capacity) from Guam stockpile
2,453	Replacement of 2,010 water jugs from Leghorn stockpile
292,593	Food management and health experts; grant to UNICEF for emergency medical program; travel costs
125,000	Grant to Operation Hunger for continued support of feeding programs
25,000	Donation to South African Red Cross
25,000	Donation to local relief program
1,698,857	Grant to GSL for resettlement program and medical supplies (includes funds from an A.I.D. development account)
600,000	Grant to EEC for purchase of pesticides
233,819	Rodenticide; bags and dye for bait
432,649	Grant to WVRO for emergency feeding program in the south; grant to CRS for inland transport of food
10,000	Donation to the Tokelau Relief Fund
25,000	Donation to GOT for purchase of building supplies
291,826	Local purchase of relief supplies; DOD airlift of tents and plastic; travel of disaster officer
31,700	Donation to Venezuelan Red Cross; assessment TDY
135,598	Disaster assessment; generators; pesticides
$25,693,382	

Note: The numbers of dead and affected for disasters carried over from previous year(s) have been previously counted and are not included in this report; otherwise, a dash (-) indicates that information is currently unavailable.

U.S. Foreign Disaster Assistance Summary By Fiscal Year

FISCAL YEAR	NO. OF NEW DISASTERS	NO. OF COUNTRIES	NO. KILLED	NO. AFFECTED	CONTINGENCY IDA FUNDS	OTHER USG ASSISTANCE
FY 64	29	23	3,112	3,992,241	$2,928,499	$3,305,661
FY 65	46	32	46,943	14,504,499	$2,438,872	$18,722,703
FY 66	46	35	7,044	4,672,245	$652,458	$1,038,740
FY 67	57	40	17,441	106,415,973	$3,743,051	$8,567,586
FY 68	48	36	3,844	5,521,382	$1,355,888	$9,509,891
FY 69	36	32	1,018,534	31,311,680	$4,446,757	$24,822,542
FY 70	50	36	72,915	8,518,309	$6,263,804	$11,859,373
FY 71	51	40	522,183	74,289,081	$15,822,511	$21,930,000
FY 72	29	27	115,381	13,435,589	$1,452,783	$210,289,507
FY 73	30	27	111,619	217,776,063	$14,062,254	$158,631,843*
FY 74	20	19	101,608	12,819,240	$2,542,979	$31,827,590*
FY 75	25	23	61,233	46,310,336	$7,006,385	$121,265,640*
FY 76	25	23	78,262	38,375,279	$12,056,098	$123,410,000*
TQ	6	5	6,589	708,700	$5,479,245	$277,108
FY 77	25	22	8,568	7,932,836	$21,445,529	$13,394,451
FY 78	33	27	28,269	52,134,391	$24,452,367	$1,720,101
FY 79	41	33	34,514	11,049,072	$24,548,448	$24,559,600
FY 80	32	27	1,635	7,760,985	$12,898,071	$68,312,206*
FY 81	22	19	11,527	4,607,227	$6,613,724	$51,752,000*
FY 82	35	29	43,352	40,463,621	$10,742,757	$51,040,086
FY 83	45	36	4,775	43,980,670	$8,016,403	$83,219,912*
FY 84	47	39	3,463	34,233,123	$15,097,749	$51,378,416*
FY 85	47	39	427,388	30,474,549	$19,863,848	$105,002,195*
FY 86	47	38	26,311	8,313,429	$9,105,392	$79,218,769*
FY 87	56	45	94,171	48,585,076	$23,664,855	$132,666,233*
TOTAL	**928**		**2,850,681**	**868,185,596**	**$256,700,727**	**$1,407,722,153**

* Includes funds from other A.I.D. accounts and/or supplemental appropriations administered by OFDA

PL 480	TOTAL USG ASSISTANCE	US VOLAGS	INTL COMM	SELF HELP
$5,410,940	$11,645,100	$805,317	$533,790	-
$25,213,459	$46,375,034	$3,627,301	$3,518,773	-
$23,729,904	$25,421,102	$1,567,990	$9,476,353	$16,157,100
$69,045,881	$81,356,518	$12,220,053	$172,860,511	$2,964,667,000
$21,634,945	$32,500,724	$7,719,299	$15,943,626	$606,865,000
$73,349,178	$102,618,477	$12,971,207	$95,496,828	$130,974,000
$30,608,673	$48,731,850	$12,191,711	$59,515,671	$96,595,000
$119,839,732	$157,592,243	$16,676,273	$266,635,252	$744,839,000
$147,802,110	$359,544,400	$13,178,379	$610,660,963	$107,320,000
$114,230,970	$286,925,067	$29,251,411	$200,892,728	$631,705,000
$134,477,940	$168,848,509	$3,216,263	$90,252,901	$36,173,000
$86,808,619	$215,080,644	$16,079,881	$263,430,083	$39,043,100
$39,215,454	$174,681,552	$49,093,875	$338,820,728	$970,510,327
$602,876	$6,359,229	$1,139,554	$1,689,431	$198,900,000
$11,909,226	$46,749,206	$14,390,669	$59,541,298	$6,040,094
$42,021,193	$68,193,661	$6,224,223	$186,136,632	$276,946,722
$15,318,512	$64,426,560	$39,420,510	$661,374,390	$477,844,108
$57,814,655	$139,024,932	$1,533,448	$35,810,102	$11,847,900
$12,100,000	$70,465,724	$23,890,844	$211,844,949	$6,022,007,896
$29,000,100	$90,782,943	$27,258,957	$237,092,847	$141,901,880
$87,333,943	$178,570,258	$2,452,734	$203,946,587	$119,800,332
$102,891,700	$169,367,865	$5,999,463	$238,707,189	$198,095,040
$678,622,015	$803,488,058	$80,634,275	$961,557,220	$87,906,439
$209,052,740	$297,376,901	$6,541,512	$80,703,029	$105,376,068
$108,804,370	$265,135,458	$14,179,095	$526,447,730	$80,589,960
$2,246,839,135	**$3,911,262,015**	**$402,264,244**	**$5,532,889,611**	**$14,072,104,966**

Prior-Year and Non-Declared Disasters

OFDA Emergency Response

During FY 1987, OFDA contributed $3,271,400 to continue assistance to countries where disasters declared in previous years continued, and to fund activities in a number of areas where disasters occurred but were not officially declared. Almost half this amount went to complete initiatives begun during the FY 1986 insect infestation control campaign in Africa. The locust/grasshopper disasters declared that year and USG assistance (including FY 1987 carryovers) are described in detail in the **OFDA Annual Report FY 1986**. New insect infestation disasters were declared in many of the same countries in FY 1987 to permit new control campaigns to get under way. They are discussed in this volume under "FY 1987 Disasters." The obligations for prior-year and non-declared disasters are summarized briefly below.

Africa Regional - Insect Infestation (Non-Declared FY 1986)
In both FY 1986 and FY 1987, some of the technical assistance provided for the locust/grasshopper campaign benefited more than one country and was thus designated "Africa Regional."
To complete the FY 1986 campaign, OFDA funded the travel costs of three entomologists to be part of FAO evaluation teams to Senegal, the Gambia, Mali, Mauritania, Chad, Niger, and Burkina Faso to review the grasshopper control programs ($19,990); the travel expenses of five experts to attend an FAO locust control meeting in Rome in December 1986 ($15,772); and the travel of two OFDA representatives to the FAO meeting ($4,780 from OFDA's travel budget).

TOTAL $40,542

Africa Regional - Insect Infestation (Non-Declared FY 1987)
OFDA contracted six entomologists and other infestation specialists from the Consortium for International Crop Protection to be part of assessment teams in March and April. These teams helped draw up action plans in Senegal, the Gambia, and several other countries. The cost of the teams was $131,383. Another regional project involved a contract with two experts to assist with pesticide safety training programs, at a cost of $23,095.

Total FY 1987 ..... $154,478

From FY 1988 accounts, OFDA funded travel costs of a U.S. expert to participate in the FAO evaluation of the FY 1987 campaign in Senegal, Mauritania, Guinea Bissau, and the Gambia ($10,357). Other obligations covered additional expenses associated with the campaigns in Senegal and other Sahelian countries ($11,557) and the travel expenses of one entomologist ($4,858) and two OFDA representatives ($4,460 from OFDA's travel budget) to an FAO meeting on the 1987 campaign in Rome in December 1987.

Total FY 1988 ..... $31,232

TOTAL $185,710

Burkina Faso - Drought (FY 1985)
For a dam spillway repair project, OFDA provided an additional $102,512 to USAID/Ouagadougou to cover a shortfall caused by currency fluctuation.

TOTAL $102,512

Burkina Faso - Insect Infestation (FY 1986)
A total of $29,277 was obligated to replace 12 (3,000-gallon capacity) water tanks and spare parts to the Leghorn stockpile. Originally intended for the 1985-86 drought disaster, the water tanks were used in the grasshopper control effort.

TOTAL $29,277

Cameroon - Lethal Gas Eruption (FY 1986)
OFDA arranged with the Defense Mapping Agency to produce a topographic line map of the Lake Nyos area ($30,000); funded the administrative costs of several experts who collaborated on a final report ($5,943); funded an increase in the cost of USGS and other support ($6,414); and paid travel and related costs of two experts who investigated reports of a second Lake Nyos explosion ($13,995).

TOTAL $56,352

Chad - Insect Infestation (FY 1986)
OFDA paid the travel expenses of three experts to attend a Lessons Learned session in Washington, D.C.

TOTAL $1,955

Chile - Earthquake (FY 1985)
A total of $12,319 was obligated to replace 5,999 (5-gallon capacity) water jugs to the Panama and New Windsor stockpiles (includes shipping costs).

TOTAL $12,319

Dominican Republic - Hurricane (Non-Declared FY 1987)
Anticipating a likely disaster after Hurricane Emily, OFDA arranged with the U.S. Coast Guard to transport an assessment team to the Dominican Republic. The team got as far as southern Florida when information came that the storm was not as serious as feared.

TOTAL $15,000

Ethiopia - Drought (FY 1985)
OFDA provided a $450,000 grant to the American Joint Distribution Committee (AJDC) for an agricultural rehabilitation program in Gonder Province; also a grant of $56,749 to the American Friends of AICF (*Action International Contre la Faim*) for an orphan reunification program in Gonder.

TOTAL $506,749

Ethiopia - Drought (Non-Declared FY 1985)
OFDA funded contracts totaling $66,208 for a truck evaluation and maintenance program to assure continued transport of relief supplies.

TOTAL $66,208

Greece - Earthquake (FY 1986)
A three-person housing assessment team worked with a Greek anti-seismic planning and construction organization to define repair and reconstruction options for low- and middle-income housing in the earthquake-devastated area. The team's expenses, funded by OFDA from FY 1987 accounts, totaled $22,567.

TOTAL $22,567

Mali - Insect Infestation (FY 1986)
OFDA obligations for activities in Mali continuing from the FY 1986 grasshopper control campaign included local support costs for a small-plane operation ($104,000); a contract with American Cyanamid Corp. for 60,000 liters of malathion and air freight ($349,305); and the expenses of experts to attend a briefing in Washington, D.C. ($1,535).

TOTAL $454,840

Mauritania - Drought (FY 1984)
Through a mission allotment, OFDA committed $239,947 in FY 1987 for the internal transport of Section 416 food commodities. USAID/Nouakchott executed a grant to the government of Mauritania to complete this activity, which was a response to the logistical problems encountered in the 1984 drought.

TOTAL $239,947

Mauritania - Insect Infestation (FY 1986)
A total of $170,000 was obligated through USAID/Nouakchott for the local support of a small-plane spraying operation in southeastern Mauritania.

TOTAL $170,000

St. Vincent - Floods (FY 1986)
At the request of the A.I.D. Regional Development Office in the Caribbean, which had conducted a damage assessment after the 1986 floods, OFDA obligated $75,000 to purchase building materials locally for a housing repair program in St. Vincent.

TOTAL $75,000

Senegal - Drought (FY 1984)
A grant for $96,000 was provided to the Government of Senegal to complete an emergency food transport program. The grant was executed by USAID/ Dakar from a mission allotment.

TOTAL $96,000

Senegal - Insect Infestation (FY 1986)
To continue the activities begun during the FY 1986 insect control campaign, OFDA committed funds for the local support of a large-plane operation ($226,000); a contract with T and G Aviation to spray additional hectarage in Senegal, Mali, and Mauritania ($518,993); the purchase of aircraft fuel ($11,282); and the expenses of experts to assist in implementing the spraying program and to attend a meeting in Washington, D.C. ($16,781).

TOTAL $773,056

Solomon Islands - Cyclone (FY 1986)
OFDA donated eight (3,000-gallon capacity) water tanks from the Guam stockpile at a cost of $19,496. A.I.D.'s South Pacific Regional Development Office in Fiji contributed $100,000 in FY 1987 (as well as $100,000 in FY 1986) for support costs of a housing rehabilitation project.

Total OFDA $19,496
Total Other USG $100,000

TOTAL $119,496

Somalia - Epidemic (FY 1985)
OFDA replaced 2,010 (5-gallon capacity) water jugs to the Leghorn stockpile.

TOTAL $2,453

Sudan - Civil Strife (FY 1986)
A protracted civil war is being fought in southern Sudan between the Sudan People's Liberation Army (SPLA) and government troops. Hundreds of thousands of southern Sudanese have been put at risk of starvation as a result of tactics employed by both sides to deny the other access to food. The U.S. ambassador declared a disaster in August 1986. However, the general insecurity in the region severely hampered relief shipments, and USG assistance did not begin until FY 1987. OFDA provided a grant of $385,149 to WVRO in January as start-up money for food delivery near Wau. A grant to CWS for $47,500 was executed in June to permit transport of 500 MT of food from Kenya. The Office of Food for Peace approved a food swap with the government of Kenya to exchange 2,190 MT of U.S. PL 480 Title II wheat for 3,000 MT of maize for distribution by NGOs in southern Sudan. The wheat was valued at $1,906,000.

Total OFDA $432,649
Total FFP $1,906,000

TOTAL $2,338,649

FY 1987 Disasters

Asia and the Pacific

DISASTERS

Bangladesh Floods

China Fire

Cook Islands Cyclone

Fiji Cyclone

Indonesia Landslide

Korea, Rep. of, Typoon/Rains

Laos Epidemic

Malaysis Fire

Maldives Floods

Nepal Floods

Papua New Guinea Earthquake

Philippines Typhoon

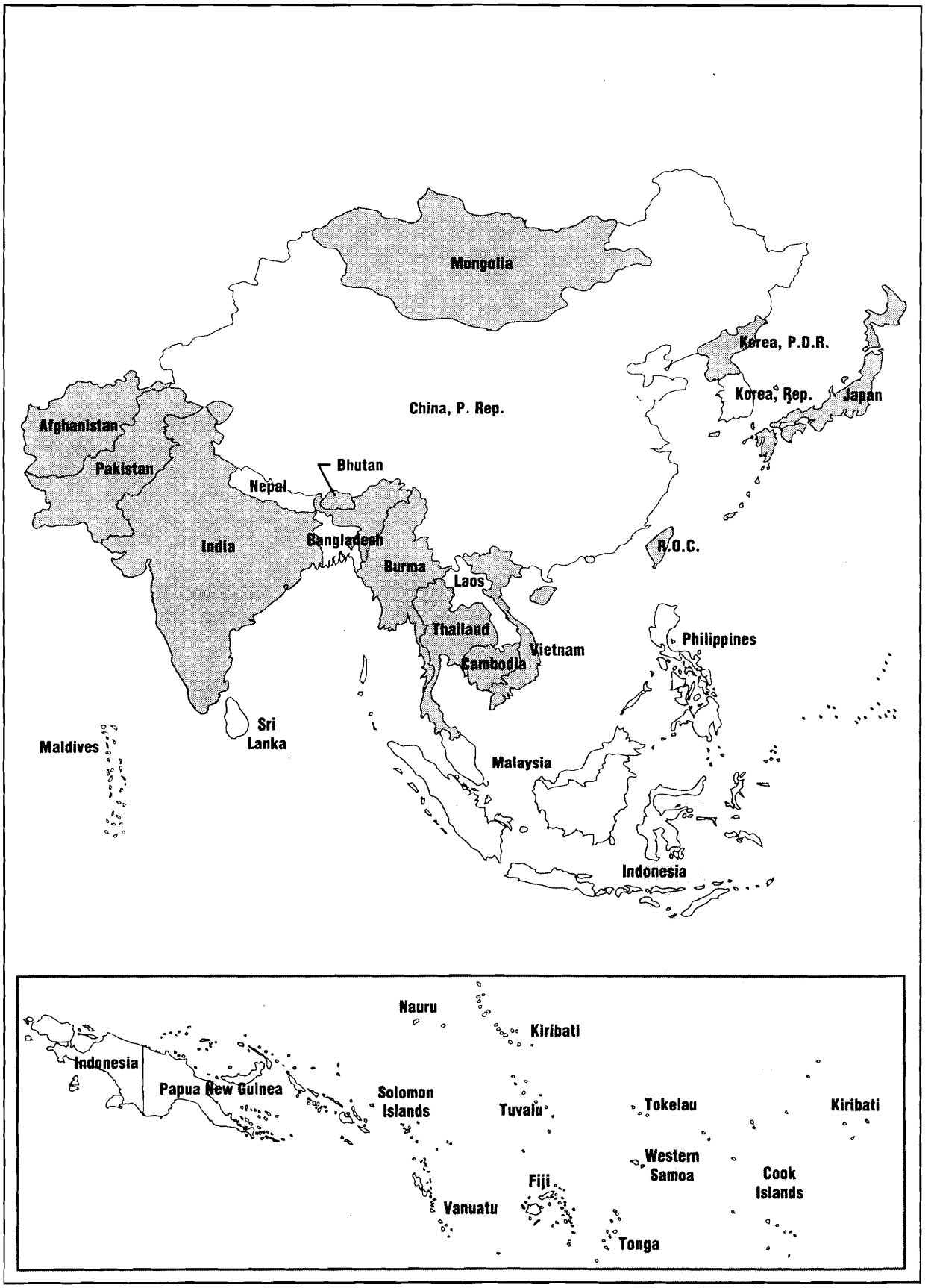
Sri Lanka Civil Strife

Sri Lanka Displaced Persons

Tokelau Storm

Tuvalu Cyclone

Vanuatu Cyclone



Floods Bangladesh

Date
July, August, September 1987
Location
The Ganges and Jamuna river basins
No. Dead
2,055
No. Affected
29,700,000
Damage
At least $330,000,000 in damage occurred to crops, property, and infrastructure, and 34,162 head of cattle were lost.

The Disaster

The river banks of the Ganges and Jamuna crested after unusually high rainfalls, flooding up to one-third of Bangladesh. The disaster began when continuous deluges in late July and early August soaked the northern part of the country. Because soil erosion from deforestation had already led to silt clogging, rivers throughout Bangladesh swelled over into neighboring farms and villages. Fifty of the country's 65 districts and 17 municipalities reported flooding. Waters did not fall below the danger level until Sept. 30.

By the early part of that month, the damage had been done. One million ha of cropland lay under water. A total of 2,055 people died, while 30 million of the country's 104 million were affected. Attacks of malaria and typhoid became widespread. The inundations destroyed 2.2 million MT of rice, 34,162 head of livestock and almost all wheat and rice seed stock. About 772,000 houses and more than 1,000 schools lay in ruins, with 1.5 million more houses damaged.

Action Taken by the Government of Bangladesh (BDG) and Non-Governmental Organizations

Recalling action taken during the flood of 1974, the BDG Ministry of Relief and Rehabilitation and the Ministry of Food began distributing government food stocks in August. Military helicopters and other vehicles helped in an evacuation of the affected areas and in transporting supplies. To coordinate its appeal for outside aid, the BDG set up an inter-ministerial unit attached to the president's Secretariat as well as a flood relief fund for donations. Medical teams from the Ministry of Health fanned out with ORS packs for diarrhea victims. Mobilizing 12,000 volunteers, the Bangladesh Red Cross distributed food, clothing, and medicine while the Ministry of Agriculture established a long-term $4 million rehabilitation program. On Sept. 20, the BDG announced increased taxation and lower government salaries to help pay for relief.

Assistance Provided by the U.S. Government

The deputy chief of mission, John S. Brims, determined that the situation constituted a disaster and, on Aug. 18, provided $25,000 to the flood relief fund. In addition, FFP supplied 90,000 MT of Title III rice to replenish government stocks.

At the BDG's request, the USG stepped in to assist flood- affected farmers with $1.5 million worth of wheat seed. While the amount went to the BDG as a grant, OFDA arranged for commodity procurement and transport. USG efforts to procure the INIA-66 and PAVON F-76 seed types originally desired by Bangladesh officials proved fruitless. Although used by local farmers, these were considered "old" varieties and, as such, hardly available in the donor countries. OFDA then investigated other options acceptable to the BDG and came up with the SERIE-M82, a more recently bred, higher-grade alternative.

OFDA arranged the seed's purchase from Transcontinental IMEX, Inc., in Mexico. USG consulate officials from Hermosillo, Mexico, supervised loading of the commodity at the port of Guaymas. The ship (M.V. Wadal) left on Oct. 3 for Sacramento, California, where it picked up the Title III rice donation on Oct. 7 and arrived in Chittagong, Bangladesh, on Nov. 8 to unload in time for winter planting.

Summary of USG Assistance

Ambassador's authority: $25,000 check to BDG Relief Fund $25,000

3,500 MT of wheat seed from Mexico.(shipping included) $1,533,421

90,000 MT of FFP Title III rice $15,000,000

Total OFDA $1,558,421
Total FFP $15,000,000

TOTAL $16,558,421

Assistance Provided by U.S. Voluntary Agencies

CRS - contributed $50,000 to Caritas.

CWS - donated $25,000 to the Christian Commission for Development in Bangladesh.

FHI - gave $40,000.

SCF/US - distributed emergency food rations and medicine to 12,000 affected people, valued at $11,630.

TOTAL $126,630

Assistance Provided by the International Community

International Organizations

Caritas Internationalis - donated $1,121,500 from its appeal.

EEC - donated $447,600 to the FRG Red Cross to buy relief materials and supplied 25,000 MT of food, valued at $3,580,800.

LRCS - collected contributions from governments and member societies for $510,650 to Bangladesh Red Cross.

UNDP - gave a cash grant of $50,000. UNDP resident representative coordinated international and U.N. agency donations.

UNDRO - at the request of the BDG, the UNDRO coordinator surveyed the disaster-affected areas and sent a team to assist the BDG and the UNDP resident representative in the assessment of damaged infrastructure and emergency needs. UNDRO also contributed $25,000.

WCC - contributed $50,000.

WFP - provided 21,345 MT of wheat (including Belgium's contribution) and 5,400 MT of rice.

WHO - donated water purification tablets, valued at $8,500.

Governments

Austria - donated $39,000.

Australia - provided $3,200 to the BDG Relief Fund, $107,900 to UNDRO, and $71,800 to Australian non-governmental organizations providing assistance in Bangladesh.

Belgium - furnished 13,000 MT of wheat through WFP and donated $79,260 for medical services and $264,200 for Red Cross.

Canada - contributed $151,500 for Health Care through LRCS; $40,000 for relief supplies through Canadian Lutheran World Relief; $227,300 for purchase of essential drugs; $12,000 through World Vision Canada; and 35,000 MT of wheat through WFP.

Denmark - donated $285,714 through the Danish Red Cross and $285,714 through Danish Church Aid.

Finland - gave $22,624 via the Finnish Free Mission.

Germany, Fed. Rep. - sent vehicles and rescue boats through the German Red Cross.

Hungary - furnished medical supplies worth $11,500.

Iraq - dispatched 5 helicopters and contributed food, clothing, and medicine.

Ireland - donated $108,540 to an Irish NGO.

Italy - sent 5,000 MT of rice through WFP.

Japan - shipped 50,000 MT of rice and 50,000 MT of wheat, and provided $1,000,000 to WFP.

Korea, Rep. of - provided $50,000 plus ambulances worth $100,000.

Netherlands - gave $975,610 worth of relief supplies plus 12,500 MT of rice through WFP.

Norway - contributed $503,432 to a Norwegian non-governmental organization.

New Zealand - donated $6,061 to the BDG Relief Fund and $12,093 to the UNDRO appeal.

Pakistan - sent $579,374.

Saudi Arabia - provided 25,000 MT of wheat through WFP and $10 million for emergency relief materials.

Sweden - supplied 30,000 MT of wheat through WFP.

Switzerland - gave $20,000 worth of services to the UNDRO emergency assessment mission, $60,000 to buy drugs and food and $137,031 for basic drugs and hospital services.

United Kingdom - donated $47,695 to U.K. NGO Concern for food supplies and housing repair and $10,000 to UNDRO.

Vatican - contributed $10,000.

Yugoslavia - provided relief materials worth $100,000.

Non-Governmental Organizations

ADRA/Australia - donated $25,000.

Diakonisches Werk/German, Fed. Rep. - contributed $432,400 to local church groups.

Help the Aged/U.K. - supplied $49,110 for relief goods.

LWC - donated $262,000.

Norwegian Church Aid - provided $89,500 for agriculture.

Oxfam/U.K. - gave $108,698 and seeds worth $18,493.

Wolf and Wolf Co./the Netherlands - supplied 50 MT of potato seed.

YMCA/Switzerland - contributed $10,000.

TOTAL $22,110,799

Fires China

Date
May 6 - June 3, 1987
Location
Daxingan Mountains of Heilongjiang Province in northeast China; northeastern Inner Mongolia
No. Dead
191
No. Affected
56,092 homeless; 221 seriously wounded
Damage
1,330,000 ha of land and 640,000 sq. m of building floor space were burned; bridges, railways, telecommunications facilities, and vehicles were damaged or destroyed; total estimated losses ranged between $110,000,000 and $135,000,000.

The Disaster

Fires erupted on May 6 in the forests of the Daxingan Mountain Range in Mohe County, Heilongjiang Province. The fire spread quickly under extremely dry and sometimes windy conditions. The lack of water on the hillsides and the rough terrain made the fire difficult to extinguish. As the fire burned into the second week, it appeared to be coming under control, but it then expanded further. A second fire in neighboring Tahe County eventually joined the fire in Mohe County. By May 22, the fire front stretched over 33 km and threatened to spread into virgin forest in Inner Mongolia. As firefighters worked to suppress the blazes, gale force winds rekindled the flames. The fire raged through several towns and villages, and destroyed at least three railway lines. Over 27,000 people were evacuated from the cities of Xilingji and Tuqiang.

After several failed attempts to induce rain by cloud-seeding, the Chinese successfully used this technique to help control the fires. On May 26, the Chinese press reported that the fire was contained, although it continued to smolder underground. Soon after this announcement, however, fires broke out again. On June 1, three fires flared up near the town of Tahe, requiring evacuation of local inhabitants. As the Heilongjiang fires were brought under control, firefighters battled fire in northeastern Inner Mongolia, 44 km southeast of Jagdaqi. By June 3, eight separate fires in this area were reported to be spreading rapidly towards the north and west. Fortunately, continuous and widespread rain soon arrived, which helped to extinguish all fires.

The losses from the fires were enormous. An estimated 1.33 million ha of land were scorched, of which 1.14 million ha were forested and the rest, scrub or grassland. Within the burnt area, 37.7 million cubic m of trees did not survive the fire and 613,000 sq. m of building space was burnt down. Moreover, 691 km of utility lines, 380 km of power lines, 15.5 km of railway and trucks, tractors, bulldozers and other pieces of equipment were damaged or destroyed.

Action Taken by the Government of the People's Republic of China (GPRC) and Non-Governmental Organizations

Firefighting operations were directed from the Jiagedaqi Command Center, about 200 km from the fire. Other smaller command centers were established closer to the fire scene. Soldiers, firefighters, and local citizens worked day and night on all fronts battling the blazes. As the fire continued to spread under the prevalent dry and windy conditions, reinforcements were brought in from other parts of the country. Forest rangers, equipped with 3,600 pneumatic extinguishers, were transported by helicopter to the front. After they had extinguished the blazes, soldiers and others followed to clear combustibles and watch for reignition. Over the course of the four-week operation, 42,000 firefighters and soldiers fought the fires and more than 700 km of firebreaks were cleared. Less traditional firefighting techniques, such as cloud seeding, also were attempted.

Vice Premier Li Peng visited the stricken areas to monitor firefighting and relief efforts. The GPRC transported 600 MT of grain, 400 MT of instant food, 70 prefabricated houses, 560 tents, and medicine into the area. Special trains carried firefighters, fire equipment, and relief supplies into the affected regions and moved people from the threatened area. More than 20 planes also were used to drop relief supplies to people stranded by the blazes. The GPRC established 11 reception centers for 60,000 evacuees. Other people stayed with friends and relatives or were housed in office buildings or schools.

The Chinese Red Cross Society sent 17 medical teams, 150 medical workers, and two staff members from provincial Red Cross divisions and from the Public Health Bureau to render services in the affected area. CRCS provided money from its emergency fund to the Heilongjiang Provincial Red Cross, and chapters throughout the country collected money and clothing. Red Cross members and volunteers assisted with firefighting, rescue operations, and relief activities.

After the fire, the Chinese faced resettlement of displaced people, the rebuilding of destroyed housing, and reforestation. The Insurance Company of China paid for damage to the most affected enterprises and households. The Planning Commission of the State Council coordinated rehabilitation efforts.

Assistance Provided by the U.S. Government

On May 19, Ambassador Winston Lord declared the fires to be a disaster and authorized a $25,000 grant for humanitarian assistance. The chargé, Peter Tomsen, presented a check for that amount to the Chinese Ministry of Forestry on May 26.

OFDA also gave firefighting equipment and clothing assistance. Five hundred sets of fire-resistant clothing and 200 backpack water pumps were sent from the USFS warehouse in Boise, Idaho. This equipment was transported on United Airlines in two shipments from Seattle to Hong Kong and then on CAAC, the airline of the People's Republic of China, to Beijing. Equipment dispatched from OFDA's Singapore stockpile via CAAC included 94 axes, 100 machetes, 20 chainsaw kits (containing hard hats, gloves, fuel cans, oil, and extra chains), nine felling saws, and 249 shovels.

Summary of USG Assistance

FY 1987

Ambassador's authority $25,000

500 sets of fire-resistant clothing purchased from the USFS, plus transport costs $45,000

200 backpack water pumps purchased from the USFS, plus transport costs $20,000

Total FY 1987 ..... $90,000

FY 1988

Equipment from Singapore stockpile: 94 axes, 100 machetes, 20 chainsaw kits, 9 felling saws, and 249 shovels (estimated replacement cost) $11,270

Transport (estimated) of items from Singapore aboard CAAC airlines $1,500

Total FY 1988 ..... $12,770

TOTAL $102,770

Assistance Provided by U.S. Voluntary Agencies

ANRC - channeled $3,000 through the LRCS.

CWS - gave $15,000 to the Amity Foundation, Nanjing, to assist with immediate emergency relief.

TOTAL $18,000

Assistance Provided by the International Community

International Organizations

An Inter-Agency Working Group (IAWG) was established under the chairmanship of the UNDRO/UNDP representative to coordinate information on the disaster. The group monitored agriculture and timber losses; shelter, clothing and water supply; food requirements; and health needs.

EEC - supplied $576,400 for the local purchase of tents, blankets, sheets, medicines, clothes, food, and kitchen utensils.

FAO - gave 5 jeeps, 40 walkie-talkies, and chainsaws for a total value of $150,000.

UNDP - contributed $30,000.

UNDRO - provided $30,000.

UNICEF - contributed $25,000.

WFP donated 10,000 MT of wheat to be used in a food for work program to construct 3,419 houses for displaced people in Tahe and Mohe. The cost, including transport, was $1,772,100.

WHO (Western Pacific Regional Office) - provided $10,000 for local purchase of medical supplies.

Governments
Australia - gave $70,400.

Canada - released stocks of firefighting equipment already in China at the Jiagedaqi Fire Command Center. This included chainsaws, axes, shovels, walkie-talkies, and 150 backpack extinguishers. A relief flight brought in 2,000 backpack extinguishers and 5,000 tools, for a total cost of $375,900. In addition, the Canadian Embassy contributed $37,600 through UNDRO for local purchase of relief supplies.

Germany, Fed. Rep. - contributed 400 chainsaws and 800 kg of bandages. Commodities plus transport were valued at $283,100.

Hong Kong - provided 7,500 blankets, 10,000 syringes, 2,600 kg of bleaching powder, 10 air mattresses, 30,000 vials of ampicillin, 1,500 MT of rice, 294 MT of canned meat, 11 MT of biscuits, for a total cost of $640,000.

Italy - supplied $308,900 for the local purchase of food in cooperation with WFP and contributed $225,000 through UNDRO for the local purchase of relief supplies.

Japan - gave medicine valued at $85,700; also contributed medicine, tents, and food valued at $357,100 through the Japanese Red Cross.

New Zealand - contributed $29,200 for 10 MT of milk powder from WFP in-country stocks.

United Kingdom - sent a charter aircraft carrying 400 tents, water containers, medical supplies for burns, influenza and dysentery, and Vitamins B1, B2, and C; these contributions totaled $159,300.

Non-Governmental Organizations
The League of Red Cross and Red Crescent Societies (LRCS) gave $20,270 to the Chinese Red Cross. In addition, the following contributions from national Red Cross Societies were made through LRCS:

Australia - $3,500
Austria - $7,000
Canada - $3,700
Finland - $11,400
France - $8,400
Germany, Fed. Rep - $15,000
Iceland - $3,400
Italy - $7,700
Japan - $14,300
Norway - $7,500
Sweden - $15,900
United Kingdom - $8,300

TOTAL $5,292,070

Cyclone Cook Islands

Date
Jan. 2-3, 1987
Location
Rarotonga
No. Dead
0
No. Affected
Approximately 2,000 homeless in a country population of about 18,000
Damage
Extensive damage occurred to homes, public buildings, ports, crops, and public utilities; preliminary estimates put total damage on Rarotonga at $25,000,000.

The Disaster

As Cyclone Raja followed a destructive course through the Fiji Island Group, the second major storm of the season in the South Pacific developed to the east. Cyclone Sally was first spotted as a tropical depression east of American Samoa on about Dec. 24. By the time Sally reached the Cook Islands on Jan. 2, the storm was a fully developed cyclone with wind speeds averaging 120 km per hour and gusting up to 190 km an hour. Hardest hit was the main island of Rarotonga, and especially Avarua, the country's waterfront administrative and commercial center. An unusually large storm surge, in combination with high spring tides, produced 12 m waves in the port area and carried boulders more than 100 m inland. Police said the port looked like a "war zone" in the storm's wake. The harbor was blocked by sunken craft, and large quantities of coral debris—one to two m deep—lay strewn about the wharf area. Up to 80% of the buildings in Avarua were destroyed or damaged, including schools, the government tourist center, and other public structures. At least 2,000 people were left homeless in Rarotonga, but because of sufficient early warning and the timely evacuation of low-lying areas, no deaths or serious injuries were reported.

Damage to navigational aids forced the closure of the Rarotonga airport until Jan. 4 when it reopened for daylight flights. Food and export crops were seriously damaged, and large numbers of livestock and poultry were killed or washed out to sea.

Two other islands in the Cook Islands chain, Aitutaki and Mangaia, were less seriously affected, although the entire banana crop was destroyed in Aitutaki, and several buildings lost their roofs or suffered other damage. A cargo shed and two other buildings were damaged in Mangaia.

Action Taken by the Cook Islands Government (CIG)

The Prime Minister of the Cook Islands, Sir Tom Davis, described the cyclone as one of the worst natural disasters ever to hit the country. As the extent of damage became evident, he called an emergency cabinet meeting and appointed a task force to coordinate relief activities. Emergency shelters were opened for those needing such assistance, although many of the homeless found refuge with family members or friends. Food supplies also were distributed from limited resources.

Cook Islands is a self-governing territory in free association with New Zealand, which provided the major part of the relief effort. Working with CIG officials, New Zealand military teams conducted aerial reconnaissance and on-ground surveys. A New Zealand Air Force C-130 arrived in Rarotonga on Jan. 5 carrying two teams of army engineers to conduct assessments; a second C-130 delivered emergency food supplies and technical support personnel. Much of the New Zealand relief effort focused on restoring electrical power and communications.

Although complete restoration of roads, harbors, and other infrastructure was expected to take several years, a major clean-up and repair operation was quickly undertaken. By Jan. 9, the airport was again fully operational, safe water supplies had been restored, and all major roads cleared of rubble. The telephone service was operational for most areas and electricity was back to 60% of capacity. With New Zealand and French assistance, all public utilities were available and functioning by the end of the month.

Assistance Provided by the U.S. Government

U.S. Ambassador Paul Cleveland, resident in Wellington, New Zealand, declared on Jan. 3 that a disaster existed in the Cook Islands as a result of the cyclone. The Embassy disaster relief officer called the Cook Islands prime minister to convey U.S. concern and to ask for suggestions on how a U.S. contribution could best be utilized. He also conferred with officials of the New Zealand government.

At Ambassador Cleveland's request, a USAID officer with SPRDO/Suva traveled to the Cook Islands to conduct a damage and needs assessment. Program Development Officer James Schill arrived in Rarotonga on Jan. 5, accompanied by Lt. Commander Robert Phillips of the Seabees (USCINCPAC). After an extensive tour of the damaged areas and consultations with CIG officials and the New Zealand assessment teams, the U.S. team suggested that ten large tarpaulins provided to Fiji from U.S. stocks in an earlier

disaster be transferred to the Cook Islands for emergency replacement of roofs on public buildings. The tarps arrived in the Cook Islands on Jan. 11 via Air New Zealand.

The team further recommended that the $25,000 from the Ambassador's Authority be used for the emergency repair and rehabilitation of schools and other public buildings. With CIG approval, the team arranged with USCINCPAC for a U.S. military construction team to undertake the necessary repairs. On Jan. 27, the USAID regional director presented a check to the Cook Islands prime minister for the purchase of materials for the rehabilitation of the Titikaulaa secondary school and the Ngatangiia primary school. The building supplies were procured in Wellington and shipped to Rarotonga. In addition, USAID provided a grant of $5,000 to finance the purchase of a PEB (pre-engineered building) to serve as a replacement for the badly damaged government tourist center. The building components were transported from Hickam Air Force Base in Hawaii on Feb. 4 by a U.S. military C-141, which also carried a 15-man Air Force construction team. In a USCINCPAC disaster relief training program, the Air Force "Prime Beef" team completed work on both schools and the tourist center within seven weeks.

Summary of USG Assistance

Ambassador's authority used for school repair $25,000

Transport of tarpaulins from Fiji to the Cook Islands $1,761

Travel and administrative expenses of USAID officer (OFDA travel account) $2,000

USAID grant for prefabricated building $5,000

Total OFDA $28,761
Total Other USG $5,000

TOTAL $33,761

Assistance Provided by U.S. Voluntary Agencies and Other Private Groups

Hawaii/Cook Islands Hurricane Relief Fund - donated 1 MT of clothing, linens, and canned goods, transported to the Cook Islands on a space available basis by the U.S. Air Force.

WVRO - provided seeds worth $2,597 as part of an agricultural rehabilitation program; also, gave $2,078 to the Cook Islands Christian Church to purchase basic household utensils for 50 of the neediest families.

TOTAL $4,675

Assistance Provided by the International Community

International Organizations

UNDRO - gave $50,000.

Governments

Australia - donated $65,104.

France - provided heavy equipment (front-loaders, graders, and trucks) and a 40-man military team to assist in the clean-up operations.

Japan - sent a 4-person team of coastline conservation experts to conduct an evaluation; also donated $100,000.

New Zealand - provided aircraft for aerial survey and 2 teams of army engineers to conduct damage assessments on Rarotonga and the outlying islands; technicians and equipment to restore electric power and communications; and emergency food supplies.

United Kingdom - contributed $357,041.

TOTAL $572,145

Cyclone Fiji

Date
Dec. 22-30, 1986
Location
Rotuma, northern Vanua Levu, Taveuni, and the Lau Group
No. Dead
1
No. Affected
About 260,000 resided in affected areas; 3,000 evacuees
Damage
A preliminary estimate of damage to infrastructure, homes, crops, and livestock has been assessed at $20,000,000.

The Disaster

After battering the island of Rotuma on Dec. 22-24 and the French territory of Futuna on Dec. 25-27, Cyclone Raja, the first storm of the season in the South Pacific, appeared headed for a direct hit on Fiji's main islands of Viti Levu and Vanua Levu. On Dec. 29, however, just before midnight, the cyclone changed direction and began moving south-southeast, sparing Viti Levu but striking the eastern islands with destructive force. Heavy rains and winds up to 100 knots at the center caused extensive damage in northern Vanua Levu, Taveuni, and the Lau Group. Labasa reported the worst floods in living memory as a result of prolonged torrential rains. The severe flooding that resulted from the coincidence of the storm and extremely high tides was expected to create food shortages and health and sanitation problems. Although heavy crop and livestock losses were reported, and infrastructure (roads, bridges, jetties, and public utilities) was seriously affected, the damage to homes was less severe than in earlier cyclones. Commenting on this fact to the press, the Minister for Home Affairs noted that better constructed homes had replaced those destroyed by previous storms.

Action Taken by the Government of Fiji (GOF)

The GOF Weather Bureau tracked the cyclone throughout its course and mounted an effective early warning effort. Using real-time data provided by the AID/OFDA-funded satellite storm tracking station in Nadi, the Fiji Meteorological Service was able to broadcast frequent alerts as the storm approached. Public and private broadcasting companies cooperated to permit spot radio announcements.

The National Emergency Services Committee (EMSEC) mobilized on Dec. 27 to begin damage assessments. The difficult task of assessing storm damage on the more remote islands was assisted by the New Zealand Air Force. Aerial surveys were conducted on Jan. 1-2.

EMSEC held periodic briefings for the chiefs of missions and at the Jan. 2 meeting announced that the GOF was willing to accept donor assistance to help alleviate the suffering of Raja's victims. A relief program was already under way, however. Forty-one emergency centers, with food distribution and other services, were opened for 3,000 evacuees in the Northern Division of Vanua Levu. Several vessels were dispatched to the outer islands on Jan. 1 carrying food and other supplies to the affected inhabitants.

Assistance Provided by the U.S. Government

U.S. Ambassador C. Edward Dillery convened an embassy watch committee as Cyclone Raja approached and, with other heads of missions, attended EMSEC briefings throughout the emergency phase. After the Jan. 2 briefing, when initial estimates indicated that relief assistance from outside sources would be needed, Ambassador Dillery exercised his disaster assistance authority to donate $25,000 to the GOF. The money was forwarded to the Ministry of Rural Development to purchase chainsaws for distribution to families whose property had been destroyed or damaged, to the Ministry of Health for sanitation equipment, and to the Office of the Governor-General for agricultural tools and equipment.

In a radio interview on Dec. 31, the Fiji Meteorology Service Director praised the satellite tracking system, funded earlier by a grant from AID/OFDA, and the technicians who interpreted the satellite imagery, stating that the system helped to save lives and prevent greater property loss than might otherwise have occurred.

TOTAL $25,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Japan - provided $50,000.

New Zealand - provided aircraft for aerial surveys.

UNDRO - donated $20,000 for the local purchase of relief supplies.

TOTAL $70,000

Landslide Indonesia

Date
May 4, 1987
Location
Padang Panjang in West Sumatra Province
No. Dead
131
No. Affected
51 injured
Damage
59 houses were destroyed. Total damage was estimated at 1,500,000,000 rupiahs (almost US $1,000,000).

The Disaster

On the evening of May 4, a huge landslide buried a village near the town of Padang Panjang in the province of West Sumatra. The landslide occurred just after dusk, when many Moslem villagers had just returned home to prepare for the Ramadan evening meal. Fifty-nine houses were engulfed in an avalanche of mud and rocks, and 131 people were buried alive. Many of the victims worked at the limestone quarry on the hill above the village.

Initially there was speculation that the landslide was caused by aftershocks from a strong earthquake that hit North Sumatra the previous week. That earthquake, registering 6.6 on the Richter Scale, occurred near the town of Tarutung and damaged schools, churches, and the town's water system. Residents of Padang Panjang reported at least four tremors in the days before the landslide. However, a post-disaster evaluation team suggested that several days of heavy rain and ongoing limestone excavation may have been the more likely cause of the avalanche.

Action Taken by the Government of Indonesia (GOI) and Non-Governmental Organizations

Volunteers, police, and government troops pulled bodies from the mud and debris, and more than 50 people were taken to a nearby hospital. A provincial government command post was established to coordinate rescue efforts and collect donations for a disaster relief fund. On May 9, the West Sumatra Provincial Government officially called off the search for victims buried in the debris. However, local residents continued searching and uncovered 17 additional bodies on May 10.

President Suharto ordered a team of geological experts and disaster relief officials to investigate the cause of the landslide and make a needs assessment. The GOI Department of Social Affairs (DEPSOS) assumed responsibility for the coordination of relief and rehabilitation activities. As of May 14, more than 278 million rupiah ($170,000) had been donated by the government and private groups to the disaster relief fund.

Assistance Provided by the U.S. Government

On May 11, Ambassador Paul Wolfowitz met with the GOI Minister of the DEPSOS and contributed $25,000 for relief and rehabilitation programs under way at the sites of the landslide and earthquake disasters. DEPSOS used the grant for immediate repair of potable water supply systems, dwellings, and public buildings.

OFDA supports two disaster preparedness projects in Indonesia, one providing funding to the Indonesia Disaster Management Center and the other providing technical assistance to the Volcanological Survey of Indonesia. Following the Padang Panjang landslide, OFDA offered to send a USGS landslide expert to meet with staff from both of these projects and to recommend ways of monitoring landslide activity. USGS geologist Randall Jibson visited Indonesia in June and OFDA provided $3,530 toward his air fare and per diem.

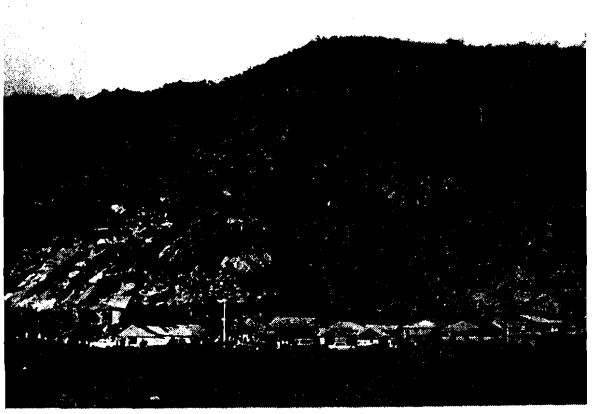
TOTAL $28,530

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

None reported



Village in the vicinity of Padang Panjang, West Sumatra, after the landslide

Typhoon/Rains Republic of Korea

Date
July 16, 1987 (Typhoon Thelma) and July 22-23, 1987 (rains)
Location
Southern and central South Korea
No. Dead
253
No. Affected
56,000 homeless and more than 230 reported missing
Damage
Property damage totaled $325,000,000.

The Disaster

Two successive storms pummeled South Korea over a fortnight period in July, leaving a combined total of 253 dead, more than 230 missing, 56,000 homeless, and $325 million in property damage. Packing winds of 130 km per hour, Typhoon Thelma wreaked havoc along South Korea's southern coast on July 16. Gargantuan waves smashed thousands of fishing boats while floods decimated farmland and ruptured transport and communication links. One family of seven near Kwangju lay crushed after a wall of their house collapsed on them.

Hardly had Typhoon Thelma spent its wrath, when a similar calamity occurred on July 22-23. Twenty-four hours of non-stop, torrential rains drenched Seoul and surrounding Kyonggi, Chungchong, and Kwangwon provinces, provoking landslides and river inundations. The flooding drove thousands from their homes while damaging the region's rice crop, a major staple in South Korean diet. Heavy downpours on July 26-27 and Aug. 16 claimed at least an additional 82 lives.

Action Taken by the Republic of Korea Government (ROKG)

Following a televised appeal, hundreds of people responded with donations of relief goods and cash. More than 150,000 soldiers, students, and volunteer workers mobilized by the government took part in a clean-up effort expected to last two months. President Chun Doo-hwan toured the stricken area, ordered all government workers on special-duty status, and set up a supplementary budget for flood victims.

Assistance Provided by the U.S. Government

Following his declaration on July 20 that the situation constituted a disaster, Ambassador James R. Lilley presented $25,000 to the Korean National Red Cross (KNRC). Kim Syang-hup, KNRC's president, received the gift during a July 27 ceremony and indicated it would go toward the purchase of food and blankets for flood victims.

TOTAL $25,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Japan - donated $200,000 in emergency aid.

TOTAL $200,000

Epidemic Laos

Date
March - October 1987
Location
Vientiane and the provinces of Savannakhet, Champassak, and Luang Prabang
No. Dead
63 (official figures for June and July)
No. Affected
2,000 (estimated)

The Disaster

Hemorrhagic dengue fever claimed its first victim in Vientiane in March. The deadly scourge lasted through the rainy season until October, spreading southward to Savannakhet and Champassak provinces and north to Luang Prabang Province. Official figures listed 63 casualties, most under the age of 15, during June and July alone. This total did not include those who died at home. Considered worse than its 1985 predecessor, the malady was estimated at having afflicted more than 2,000 persons.

Action Taken by the Government of the Lao People's Democratic Republic (GLPDR)

The GLPDR responded to the disaster in several ways. Spraying against disease-carrying mosquitoes took place twice in the four central districts of Vientiane. Organized teams of doctors and medical students fanned out to homes and hospitals, providing diagnostic services. The GLPDR also launched a public campaign on prevention and treatment aimed especially at informing parents.

Assistance Provided by the U.S. Government

Responding to the emergency, U.S. Chargé Harriet Isom declared a state of disaster on July 31 and requested that A.I.D./Washington procure a pesticide called malathion. Because of the procedural delays required for such a request, OFDA responded instead with a grant of $4,000 to UNICEF for medical supplies.

TOTAL $4,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Australia - donated $56,400.

Germany, Fed. Rep. - gave $10,000.

SCF/UK - furnished hospital-related supplies.

UNDP - gave $10,000.

UNICEF - contributed $7,000.

WHO - provided consultants to help draw up a medium-control plan.

TOTAL $83,400

Fire Malaysia

Date
Feb. 2, 1987
Location
Kampung Datuk Keramat area of Kuala Lumpur
No. Dead
0
No. Affected
About 1,000 homeless
Damage
150 houses were destroyed; damage was estimated at $863,000.

The Disaster

On Feb. 2, a major fire broke out in the predominantly Malay residential area of Kampung Datuk Keramat in Kuala Lumpur. The fire apparently started in the cooking area of one of the houses and, because of the traditional Malay wooden construction and the proximity of the houses to one another, spread quickly throughout the squatter community. Efforts of 65 firemen and nine engines to contain the blaze were reportedly hampered by inadequate water pressure. About 150 houses were destroyed before the fire burned out, leaving almost 1,000 people homeless. A second conflagration in the same area two days later leveled 15 other houses.

Action Taken by the Government of Malaysia (GOM) and Non-Governmental Organizations

A Kampung Datuk Keramat Fire Relief Committee was quickly formed to coordinate the response of various government departments and voluntary agencies. The Federal Territories Welfare Services Department (part of the Ministry of Social Welfare) was the primary action agency, providing food for the displaced and a cash donation ($196) to each family to meet immediate needs. The estimated 775 homeless people who sought government assistance were housed initially in a community center close to the fire site and served meals by the Federal Territories Red Crescent Society from government provisions. The Fire Relief Committee supervised the distribution of donated clothing, household items, and school supplies. The St. John's Ambulance Society, the Kuala Lumpur Lions Club, and other voluntary agencies also participated in the relief effort. A total of 135 fire victims who did not register with the authorities apparently were illegal aliens who feared being detained and deported.

By Feb. 14, the government had resettled 62 families in city-owned public housing at reduced rents. The Fire Relief Committee hoped to raise sufficient money to subsidize rental fees for up to two years. Because city housing was located some distance from the Datuk Keramat area where many of the fire victims worked, others chose instead to move in with relatives or find accommodations closer to their old neighborhood.

The Fire Relief Fund had received $138,000 in contributions as of Feb. 22, mainly from private Malaysians. The two largest donations ($20,000 each) came from the state governments of Selangor and Tregganu.

Assistance Provided by the U.S. Government

U.S. Ambassador Thomas P. Shoesmith determined on Feb. 4 that the fire at Datuk Keramat was of a magnitude to warrant USG assistance. He visited the relief center on Feb. 13 and was briefed by the Fire Relief Committee chairman. From his disaster assistance authority, Ambassador Shoesmith presented a check for $4,000 to the Relief Committee fund.

TOTAL $4,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Germany, Fed. Rep. - donated $769 through its embassy to the Fire Relief Committee.

Indonesia - contributed cash and food.

TOTAL $769

Floods (High Tides) Maldives

Date
Apr. 11-12, 1987
Location
13 of the country's 19 atolls affected, Male most seriously
No. Dead
0
No. Affected
300 people displaced
Damage
Serious damage occurred to harbor facilities, retaining walls, coastal roads, international airport, and a number of houses; rehabilitation costs are estimated at $6,000,000.

The Disaster

Abnormally high tides on Apr. 11-12 caused flooding on all but six of the 19 atolls which comprise the Maldives archipelago. Damage was most severe in the capital city of Male where the international airport was inundated, coastal roads cut, and jetties and retaining walls damaged. Some 300 people were moved from their flooded homes, but no lives were lost.

The cause of the unusual tides was not determined. Scientists speculated, however, that lowered barometric pressure associated with an early monsoon may have generated a storm surge that combined with astronomical high tides normally experienced at that time of year.

Action Taken by the Government of Maldives (GOM) and Non-Governmental Organizations

The GOM established a committee to assess damage and initiate cleanup operations. Action was quickly undertaken to begin repairs on the airport and coastal defenses. Food, clothing, and shelter were provided to the displaced people who were eventually resettled at government expense. Of particular concern was the matter of sanitation. The Department of Public Health alerted the public to the possibility of an outbreak of disease and dispatched teams to chlorinate wells.

Through UNDRO, the GOM issued an appeal for international assistance for relief and rehabilitation activities. The GOM also requested technical assistance to repair the airport and to prepare a long-term plan to protect the islands from such natural calamities in the future.

The Maldives-Libyan Brotherhood Society provided a cash grant of unreported value for the relief effort.

Assistance Provided by the U.S. Government

When notified by the GOM of the serious damage caused by high tides in Male, U.S. Ambassador James W. Spain, resident in Colombo, offered the services of the U.S. Consular Agent in the Maldives to assist with a damage survey. On Apr. 14, Ambassador Spain exercised his disaster assistance authority to commit $25,000 to the relief effort. The cash contribution to the GOM was used for the local purchase of medicine and laboratory supplies.

TOTAL $25,000

Assistance Provided by U.S. Voluntary Agencies

SCF/US - gave $5,000 for immediate relief and to help families in Male rebuild their homes.

TOTAL $5,000

Assistance Provided by the International Community

International Organizations

UNDRO - approved an emergency grant of $10,000.

WMO - provided meteorological replacement parts and supplies, valued at $8,000.

Governments

Bhutan - gave $50,000.

China, People's Rep. - contributed $10,000.

Cuba - provided the services of a doctor and an engineer.

Germany, Fed. Rep. - donated medicines valued at $13,800.

Japan - provided consultants, medicine and medical teams, and a cash grant; all valued at $74,000.

Nepal - gave $90,000.

Netherlands - provided technical assistance.

New Zealand - donated $5,000.

Singapore - sent medical supplies.

Soviet Union - gave unspecified assistance.

Sri Lanka - gave unspecified assistance.

United Kingdom - provided technical assistance and a cash grant of $250,000.

Non-Governmental Organizations

Islamic Call Society - provided a cash grant, value not reported.

Redd Barna/Norway - gave $5,000 through UNDRO.

TOTAL $515,800

Floods Nepal

Date
July - August 1987
Location
Nationwide; especially the Terai and Central Hill regions
No. Dead
At least 6
No. Affected
Several hundred families displaced in the Mustang area, according to district reports; no reliable figures on number of people affected nationwide
Damage
Extensive damage occurred to transport infrastructure (roads, trails, bridges, airports), housing, power plants, and agricultural land.

The Disaster

Exceptionally heavy monsoon rains in July and August and consequent flooding and landslides caused widespread damage in the eastern Terai and Central Hill regions of Nepal. Especially hard hit was the transportation infrastructure. Most of the country's few overland routes were disrupted, including the eastern part of the East-West highway in the Terai. The trail and suspension bridge network, which provides the only overland access to many isolated communities, was seriously affected in the hill districts. The Sunkosi River overflowed its banks in early July, destroying 18 km of the Arniko highway connecting Nepal and Tibet and damaging 36 km. Flooding in the Kali Gandaki on July 31 swept away several bridges and damaged others in the Mustang, Baglung, and Myagdi districts. This halted most overland traffic to at least six districts. Air traffic also was curtailed as five airports were reported out of service in mid-August because of flooding.

Preliminary reports cited destruction of housing as well, including instances of whole villages submerged. Six deaths were attributed to the flooding, and at least several hundred families were rendered homeless. Damage to power installations also was reported. The Sunkosi and Trisuli power plants serving Kathmandu were among those affected. Widespread inundation of the Terai resulted in significant agricultural losses. By GON estimates, some 50,000 ha of crops (mainly rice) were damaged or destroyed, representing 2% of cultivated land.

Action Taken by the Government of Nepal (GON)

The GON Home Ministry (Under Secretary for Disaster Relief) issued a preliminary report on flooding in the Kali Gandaki in early August. On Aug. 13, the finance minister, serving as liaison with foreign embassies, convened the Chiefs of Mission and heads of donor agencies to brief them on recent events. He described the existing flood situation as "unprecedented" but said that a formal request for assistance would come only after a further assessment of damage and needs. Of highest priority to the GON was the restoration of roads, trails, and power plants.

A Natural Calamity Central Relief Committee was established to coordinate relief assistance. After receiving a report from the Committee on Aug. 25, Nepal's king issued a number of royal directives for government assistance to affected areas. As of Sept. 16, cash relief to flood- ravaged districts amounted to $125,000. In addition, 100 MT of rice were distributed through GON relief operations to districts especially hard hit.

District and local officials acted quickly to assess damage and begin making repairs. In some cases damaged trails and a lack of bridges doubled the distance to remote villages, creating food distribution problems. The temporary bridges hastily constructed to reopen critical transportation links will have to be replaced at a later date with sturdier, more permanent structures.

Assistance Provided by the U.S. Government

After hearing preliminary GON reports on the severity of the flooding, U.S. Ambassador Leon J. Weil determined that a disaster existed of such magnitude that it was beyond the ability of the host government to respond adequately without outside help. Exercising his disaster assistance authority, Ambassador Weil forwarded a letter to the Minister of Finance on Aug. 21, informing him of a $25,000 cash contribution to the Natural Calamity Central Relief Fund.

In a field visit to the Mustang District in late August, Mission staff confirmed the initial reports of extensive damage to infrastructure from the Kali Gandaki flooding. USAID/Nepal planned to reprogram about $200,000 in local support money to the rebuilding of infrastructure (mainly trails) in the districts of Myagdi and Mustang.

Total OFDA	$25,000
Total Other USG	$200,000
TOTAL	**$225,000**

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

None reported

Earthquake Papua New Guinea

Date
Feb. 9, 1987
Location
Morobe Province - Umboi Island and adjacent islands Malai and Siassi; the Finschhafen area of the Huon Peninsula
No. Dead
1
No. Affected
4,000 on Umboi, more on the mainland
Damage
826 houses on Umboi and adjacent islands, and 225 houses on the Huon Peninsula were destroyed; widespread disruption of water supplies occurred; landslides blocked roads and covered gardens; total damage is estimated at $2,625,000.

The Disaster

Early on the morning of Feb. 9, Morobe Province was shaken by a major earthquake. The quake measured 7.4 on the Richter Scale according to the USGS and 7.1 according to the Rabaul Volcanological Center in East New Britain. The epicenter was located under the Vitiaz Strait between Umboi Island and Huon Peninsula.

On Umboi Island and adjacent smaller islands, 4,000 of the total population of 12,000 people were seriously affected and at least 846 houses were destroyed. Most damaged homes were made of local materials and simply collapsed under the stress of the tremors. In some areas houses built on stilts over water were damaged by the quake and a subsequent one to two meter tidal wave caused further destruction. Even concrete structures in the hardest hit areas twisted and fragmented. The Siassi District Headquarters in the town of Semo was destroyed, with the exception of a new health center. Owing to the all-wood construction, the health center flexed with the quake and the building remained intact. The government wharf at Gizerum was destroyed and landslides closed off roads. Water sources were destroyed or contaminated in several locations.

On the mainland, the Finschhafen Area of the Huon Penninsula also suffered damage. Several villages were obliterated by landslides, and 225 houses were destroyed.

Action Taken by the Government of Papua New Guinea (GPNG) and Non- Governmental Organizations

The Morobe Provincial Government declared Umboi Island a disaster area and mounted a 24-hour relief operation. Members of the National Disaster Committee and Armed Forces Observers were sent to assess damages. Closed roads in the affected area and broken communication lines created difficult conditions for the assessment team. A government volcanological team was tasked with checking Mount Tarave Volcano to determine if there was a threat of volcanic activity.

Immediate relief operations to Umboi were staged mainly by helicopter from the airstrip at Lab Lab. A ship with food and medicine departed Lae for Semo on Feb. 12. The GPNG also released several hundred tents from supplies stockpiled in East New Britain under the Rabaul Volcano Disaster Preparedness Plan. The PNG Red Cross contributed by distributing supplies, including 15 dozen towels, 20 dozen mugs, 200 shirts, and 20 cartons of clothing material.

The GPNG provided 20,000 kina ($20,877) for food and transport and the National Disaster Committee and the Morobe Provincial Government allocated an additional 105,000 kina ($109,600) for disaster relief and reconstruction.

Assistance Provided by the U.S. Government

The U.S. Embassy in Port Moresby immediately began monitoring damage reports to determine if the U.S. could be of assistance. When it became clear that the extensive damage would severely tax the ability of provincial and national authorities to provide relief, Ambassador Everett E. Bierman declared a disaster on Feb. 11 and donated $25,000. This money was turned over to the PNG National Disaster Committee to meet needs for materials for rebuilding homes and water systems, and to provide food relief in areas where landslides destroyed food gardens.

When more information from the scattered settlements became available, it was clear that more people were homeless than had originally been estimated. The chairman of the National Disaster Committee officially requested U.S. assistance in providing tents to shelter the homeless.

OFDA complied with the request by supplying 229 tents and 246 tent flies from the OFDA stockpile in Singapore. DOD transported the tents aboard a C-141 to Port Moresby and then shuttled the tents to Lae, closer to the disaster site, aboard a C-130 aircraft.

The USAID/Suva Project Development Officer James Schill, who had been on TDY to a disaster in Vanuatu, traveled to PNG to assist in the delivery and distribution of the tents. Mr. Schill instructed provincial relief workers on how to assemble and maintain the tents.

Summary of USG Assistance

FY 1987

Ambassador's authority $25,000

DOD transport of tents and tent flies $41,393

Travel expenses for James Schill (OFDA travel account) $2,000

Total FY 1987 ..... $68,393

FY 1988

229 tents and 246 tent flies (estimated replacement value) $96,180

Total FY 1988 ..... $96,180

TOTAL $164,573

Assistance Provided by U.S. Voluntary Agencies

WVRO - sent an assessment delegate.

Assistance Provided by the International Community

Australia - airlifted 150 tents and plastic sheeting sufficient to house 200 families and 1,100 2-liter water containers requested by the GPNG.

Australia Red Cross - donated $3,550 to relief operations.

New Zealand - contributed cash for purchase of tools and small generators.

TOTAL $3,550

Typhoon Philippines

Date
Aug. 12-13, 1987
Location
Bicol and Southern Tagalog regions
No. Dead
85
No. Affected
971,500 (194,000 families), including 297,900 homeless (59,590 families)
Damage
Typhoon Betty caused extensive damage—either through strong winds or flooding—to housing, farms, and infrastructure, for an estimated loss of $98,600,000.

The Disaster

Typhoon Betty (Philippine code name "Herming") hit the Philippines on Aug. 12-13, leaving considerable damage in its wake. The storm entered the country at Sorsogon Province on Aug. 12 and followed a northwesterly course through the Bicol and Southern Tagalog regions. Central winds reached a staggering 216 km/hour while the storm moved at a rate of 19 km/hour across the landscape. Hardly had Betty swung into the South China Sea on Aug. 13, when a second, less severe, typhoon called Cary (Philippine code name "Ising") struck the Cagayan area five days later. After crossing mountainous central Luzon, Cary degenerated into a tropical storm that entered the South China Sea early on the morning of Aug. 19.

Betty, the strongest typhoon to hit the Philippines since Typhoon Ike in 1984, had its biggest impact on the rural areas south of Manila. Whipping winds damaged farmland and crops, knocked down power lines, and flattened buildings. About 60,000 families lost their houses, making homelessness an urgent priority. In one case, all 95 thatched structures of a village collapsed. Eighty-five persons died from the storm—mostly from flying debris—with over five times that number injured. In contrast, Typhoon Cary caused only minor damage through flooding of low-lying areas in central Luzon.

Action Taken by the Government of Philippines (GOP) and Non-Governmental Organizations

On Aug. 17, President Aquino declared a state of calamity for the 14 provinces of central Philippines affected by Betty. She later included the island of Mindoro in her decree. The Department of Social Welfare and Development (DSWD) led the relief effort, shipping food and used clothing to the stricken area, with the Department of Health sending medicine. Two DSWD officials visited Lubang Island and concluded that newspaper reports of mass starvation were unfounded.

A private group, Philippine Business for Social Progress (PBSP), sponsored a program to repair 2,500 dwellings in Sorsogon Province, one of the hardest hit regions. Using locally available materials and volunteer labor, the area Catholic Diocese implemented the project.

Assistance Provided by the U.S. Government

On Aug. 17, U.S. Chargé Phillip Kaplan determined the need great enough to exercise his disaster assistance authority. Accordingly, he presented President Aquino with a $25,000 check for immediate relief. The GOP's Department of Social Services used the gift to partially reimburse the National Food Authority for rice given to disaster victims. OFDA granted $216,461 to PBSP's rehabilitation project in Sorsogon Province.

Summary of USG Assistance

Ambassador's authority: check to the GOP	$25,000
Grant to PBSP for housing repair	$216,461
TOTAL	**$241,461**

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Australia - disbursed $30,000 for rehabilitation of private dwellings in northern Samar.

TOTAL $30,000

Civil Strife Sri Lanka

Date
Apr. 21, 1987
Location
Colombo
No. Dead
109
No. Affected
200 injured
Damage
A number of buildings were damaged and several vehicles were destroyed.

The Disaster

Ethnic tensions between the Sinhalese majority in Sri Lanka and the smaller Tamil population have erupted in sporadic violence since independence. Relations have deteriorated even more during the last four years, however, with increasingly frequent and intense clashes.

In one such incident on Apr. 21, 1987, a bomb blast outside Colombo's main bus terminal killed at least 109 people and injured 200. The bomb was believed to have been planted by terrorist members of a Tamil separatist group. Several nearby buildings were damaged and cars and trucks in the vicinity destroyed.

Action Taken by the Government of Sri Lanka (GSL)

The GSL immediately issued a public call for calm and imposed a curfew for several days in an attempt to reduce the chance of further violence. An appeal was made to the diplomatic community for donations of blood and medical supplies to treat victims of the attack. The GSL agreed to pay the funeral expenses of the dead and medical expenses of the injured.

Assistance Provided by the U.S. Government

In response to the GSL's appeal and following an assessment by the Mission Disaster Relief Officer, U.S. Ambassador James W. Spain determined on Apr. 24 that the bombing incident constituted a disaster situation warranting USG assistance. His donation of $25,000 in disaster funds was to be used to meet immediate requirements such as medical supplies, food, clothing, and transport.

TOTAL $25,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Canada - donated $8,770.

TOTAL $8,770

Displaced Persons — Sri Lanka

Date
August - September 1987
Location
Northern and eastern Sri Lanka
No. Dead
About 7,000 people killed over a 4-year period
No. Affected
500,000
Damage
Bridges, highways, railroads, police stations, and at least 80,000 homes were damaged; agricultural and fishing industry was disrupted and equipment was destroyed. Damage to infrastructure is estimated at about $700,000,000.

The Disaster

Sri Lanka, home to 16 million people, has been the scene of periodic communal violence stemming from historic animosity between the Tamil minority and the Sinhalese majority. Increased tension in recent years led to violence which tore the nation apart. Thousands lost their lives and thousands more fled their homes for safety elsewhere in the country or overseas. Throughout the north and east, schools, hospitals, police stations, bridges, and roads were totally destroyed. Businesses and government services were closed down. On July 29, a peace accord between the government of Sri Lanka (GSL) and the government of India was signed, paving the way for resettlement of displaced persons and a return to normalcy.

After the signing of the peace accord, the GSL was faced with enormous resettlement and reconstruction tasks. An assessment team from the World Bank estimated that 100,000 families in the north and east had been displaced by the fighting, which is over 20% of the population in that area. More than 150,000 people sought refuge in displaced persons camps, 200,000 fled the country, and thousands more took shelter with relatives, friends, or in squatter settlements.

In many cases homes were damaged beyond repair, and all salvagable materials looted. The World Bank assessment estimated that 30,000 houses were damaged, and 69,400 were destroyed. Losses extended to essential tools and infrastructure as well. Many fisherman, for example, lost boats and equipment along with their homes. Irrigation systems were rendered inoperable and farm implements had been destroyed.

For shattered communities to become viable again, houses, schools, and hospitals had to be rebuilt. Few people, however, had the resources to rebuild homes or recoup losses. At least 70% of the total number of displaced were from rural farm families or fishing communities.

A complicating factor was a severe drought that struck the north particularly hard, the same area already disturbed by fighting. Reservoirs ran completely dry and crops shriveled for lack of water.

Plans for rehabilitation and reconstruction were halted when fighting broke out again two months after the peace accord was signed. Indian peacekeeping forces were brought in to assist the GSL restore peace and implement the accord. Completion of the resettlement awaits a resolution to the conflict. Until the violence is brought under control, the fighting will continue to create more displaced people and cause additional damage to homes.

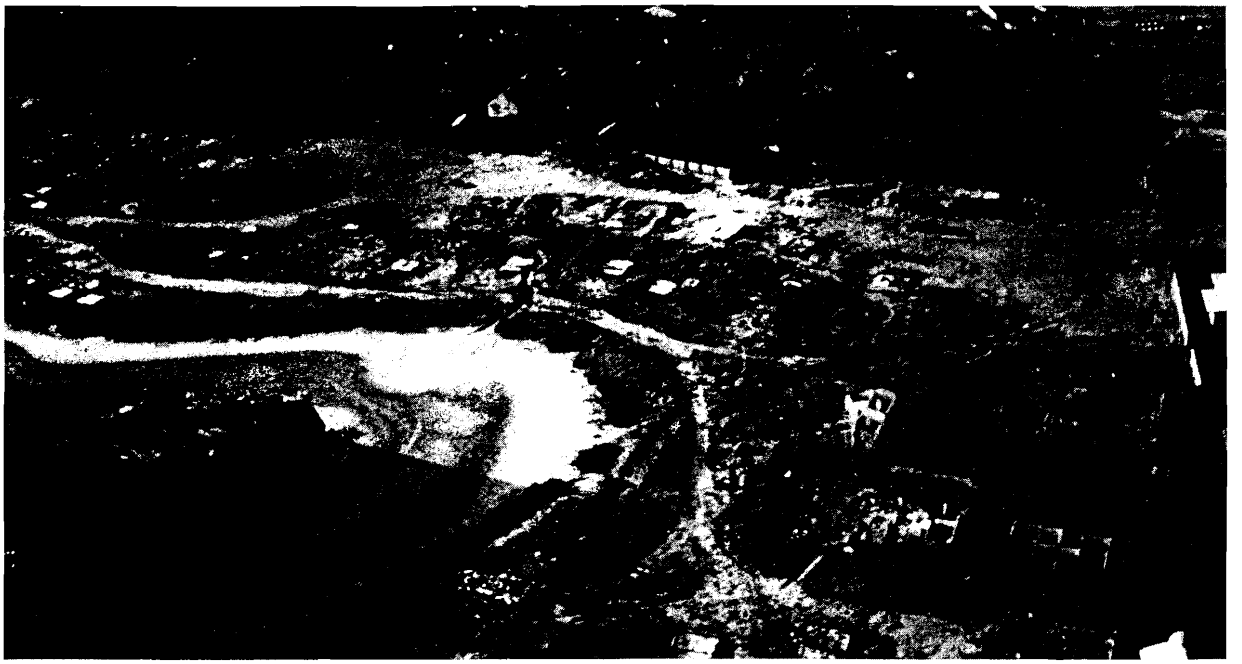
Action Taken by the Government of Sri Lanka (GSL)

With the signing of the peace accord, the government of Sri Lanka (GSL) began preparations for resettling displaced persons and restoring services to affected regions. The GSL Ministry of Rehabilitation served as the coordinating body for relief and resettlement activities.

After an initial assessment of damage and restoration requirements, the Ministry outlined a resettlement program consisting of economic and shelter assistance. Under this program, families residing in welfare centers will be entitled to free passage home for themselves and their belongings. Once a family returns to their home district, each family will get assistance totaling 10,000 rupees. This will include a "settling" allowance of 1,000 rupees from the government; 3,000 rupees in cash or in kind from NGOs for housing reconstruction; 1,500 rupees in a self-employment rehabilitation allowance; and 1,500 rupees for a two-month supply of dry rations (rice, sugar, flour). The housing assistance is sufficient to enable people to build a one-room, 25-sq.-m structure of brick or block with a cement floor. NGOs cooperating in the program agreed to provide assistance in procuring housing materials and organizing construction activities. In addition to this resettlement program, existing government programs which provide low-interest loans for housing repairs and rebuilding are also available.

Other government programs were established to rehabilitate agriculture and fisheries industries; rebuild damaged infrastructure; restore water supply, power, public transportation, and communications; and rebuild hospitals, schools, and public buildings. Both the resettlement and

Land adjoining roads was cleared of all buildings and vegetation.



reconstruction programs were interrupted by the resumption of fighting, however, and will be implemented only when the security situation improves.

The GSL supplied relief food to those affected by the food shortage created by the drought and civil strife. During August, the government released 1,849 MT of flour in Vavuniya, Mullaitivu, Trincomalee, and Mannar. In September, 2,846 MT were distributed in these four districts and in Ampara and Kilinochchi. Due to a shortage of flour in certain areas, a mixture of flour and rice was issued. The GSL Cabinet of Ministers authorized relief assistance to 2,680,585 people in 15 of the 25 districts in the country.

Assistance Provided by the U.S. Government

Three people from the U.S. mission joined representatives from Britain, Canada, and Australia on a visit to northern Sri Lanka in August 1987 to assess the magnitude of the reconstruction task. The joint delegation observed the extensive damage and supported the GSL's plans to move quickly to resettle displaced people.

On Aug. 27, Ambassador James W. Spain responded to a GSL request for assistance by exercising his disaster relief authority to commit $25,000. The funds were given to the GSL for emergency equipment, medical supplies, and building repairs of the Jaffna General Hospital so that it could provide urgently needed medical assistance. Before work could begin, however, hostilities flared once again and the hospital was temporarily closed.

OFDA contributed an additional $153,000 to help meet the acute need for medical supplies in the northern and eastern part of the country. The GSL purchased supplies for the main hospitals in Trincomalee, Mannar, Vavuniya, Point Pedro, Batticaloa, and Anuradhapura with the funds. Items included expendable medical supplies (bandages, gauze, cotton wool, catheters, syringes); linens, surgical gowns, and masks; sterilization equipment; air conditioners for operating theaters; and standby generators. All items were procured locally. OFDA also contributed $1,502,000 toward two resettlement projects. The first project will serve an estimated 2,100 Tamil and Sinhalese families living in Trincomalee given priority for immediate resettlement by the GSL. The second is designed to help move 3,000 families to the following areas:

Kilinochchi - 400 families
Mannar - 500 families
Vavuniya - 400 families
Mullaitivu - 700 families
Ampara - 1,000 families

Entire villages were demolished.

The programs consist of economic and shelter assistance in accordance with guidelines established by the Ministry of Rehabilitation (see Action Taken by the Government of Sri Lanka). Execution of these programs, like other resettlement programs in the country, was delayed due to the poor security situation.

The World Bank team which went to Sri Lanka in September to assess damages and make recommendations for reconstruction included a reconstruction and housing expert funded by OFDA. Frederick Cuny of INTERTECT spent three weeks in September visiting what had been the conflict areas. His report identified the number of houses damaged and destroyed in eight districts and estimated support costs for reconstruction. He also addressed issues in housing reconstruction and offered advice on reconstruction strategy. Civil strife combined with drought conditions in the north created a serious food shortage. In June 1987 the USG approved 20,000 MT of wheat under a Title II Section 202 program to help ameliorate the effects of the drought emergency. In August 1987 an additional 40,000 MT of Title I wheat was approved. The food arrived in Trincomalee at the end of 1987. Distribution to the affected farmers was hampered by transport difficulties due to continued fighting.

A.I.D.'s Asia and Near East Bureau (AID/ANE) gave a Sri Lankan NGO, Lanka Jathika Sarvodaya Sharamadana Sangamaya (SARVODAYA), a grant of $525,452 for coordinated water, sanitation, and nutrition activities. The project will cover 200 villages in each of the districts of Mullaitivu, Kilinochchi, Jaffna, and Vavuniya in the Northern Province, and Batticaloa and Amparai in the Eastern Province. AID/ANE also contributed another $1 million under the PVO co-financing project for the enhancement of PVO activities in the north and the east. The initiation of the program was delayed in some areas by renewed fighting.

In December 1987, AID/ANE pledged $75 million to aid in reconstruction. These funds, to be disbursed over a period of approximately three years, will be used along with money contributed by other donors to fund specific reconstruction projects that were identified in the World Bank report.

The administration of national resettlement programs was a very large and difficult task. The GSL requested the assistance of an adviser to work with the Secretary to the Ministry of Rehabilitation until a National Reconstruction Steering Committee (NRSC) could be formed. In response to this request, OFDA obtained the services of Frederick Cuny of INTERTECT to serve as a temporary adviser. He arrived in February 1988 to assist with follow-up damage and needs assessments subsequent to the second wave of violence, and also to help prepare an overall reconstruction strategy and a donor coordination plan.

Summary of USG Assistance

FY 1987

Ambassador's authority for Jaffna Hospital $25,000

Economic and shelter assistance for two resettlement projects $1,502,000

Grant to the GSL for medical supplies and equipment for 6 hospitals $153,000

Travel and expenses for INTERTECT housing expert Fred Cuny $18,857

Value of 20,000 MT of Title II wheat and ocean transport $3,800,000

Value of 40,000 MT of Title I wheat $7,000,000

Returning residents salvaged building materials from the rubble.

Grant to SARVODAYA, a local NGO, for village rehabilitation (AID/ANE Bureau funds) $525,452

Grant to PVOs (AID/ANE Bureau funds) $1,000,000

Total OFDA $1,698,857
Total FFP $10,800,000
Total Other USG $1,525,452

Total FY 1987 ..... $14,024,309

FY 1988

Cost of adviser to NRSC $26,826

Contribution to reconstruction program (3-year program) (AID/ANE Bureau funds) $75,000,000

Total OFDA $26,826
Total Other USG $75,000,000

Total FY 1988 ..... $75,026,826

TOTAL $89,051,135

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

WCC - sent a fact-finding team to Sri Lanka, and issued an appeal. The WCC plans to channel assistance through churches, the YMCA/YWCA, and other organizations.

World Bank - formed a reconstruction assessment mission to determine rehabilitation requirements for the conflict-affected areas in the north and northeast. This mission also developed recommendations for a longer-term donor strategy for comprehensive assistance in support of the recent peace agreement.

The following countries and international organizations pledged assistance in the form of grants to finance a reconstruction program based on recommendations outlined in the World Bank report:

Australia - $2,160,000
Canada - $9,160,000
Denmark - $38,940,000
EEC - $12,500,000
Finland - $450,000
Germany, Fed. Rep. - $7,640,000
India - $19,100,000
Italy - $3,000,000
Japan - $8,000,000
Netherlands - $16,300,000

Norway - $15,650,000
Switzerland - $7,460,000
UNDP - $6,500,000
UNHCR - $12,000,000
United Kingdom - $36,370,000

An additional $197,900,000 was pledged for reconstruction programs by donor nations and international organizations in the form of loans (not included in total).

TOTAL $195,230,000

The shell of a business destroyed in the conflict

Storm Tokelau

Date
Feb. 27-28, 1987
Location
Nationwide
No. Dead
Not reported
No. Affected
All of the country's 1,700 inhabitants; 30 to 40 made homeless
Damage
Most food-bearing trees on the 3 major atolls were destroyed; 11 commercial or public buildings and 7 residences either washed to sea or suffered structural damage; water storage tanks, power cables, and telecommunications equipment required extensive repairs; livestock — particularly chickens— died; and the Atafu Atoll reef channel filled with coral. Damage attributed to the storm and Cyclone Tusi, which struck Tokelau one month earlier, amounted to $500,000.

The Disaster

Still recovering from Cyclone Tusi, which swept over its low-lying atolls in mid-January, Tokelau was battered by one of the worst storms in its history. Torrential rains and violent winds, classified as neither a tsunami nor a cyclone, forced sizable waves over the three main atolls on Feb. 27 and 28. Widespread destruction was left in the storm's wake. Because much of the country's telecommunications equipment washed to sea, the world did not learn of the remote country's ordeal for four days following the event.

Of the three major atolls constituting the country of Tokelau, Fakaofo suffered the greatest losses from the combined attacks of Cyclone Tusi and the February storm. Most food-bearing trees on the island were destroyed or irreversibly damaged by salt water that pelted them during the assault. Huge waves flattened all seawalls protecting the atoll's sole village, destroyed a reclaimed area on which the bulk store was built, caused serious erosion, and washed away the administration building which housed the island's telecommunications equipment. Three commercial buildings collapsed and the only school on the atoll suffered structural damage. Finally, chickens and other livestock perished in the storm.

On Nukunonu Atoll, three public and commercial buildings and the island's school were either damaged or destroyed. The storm caused severe erosion that damaged the waterway separating the two inhabited sections of the island. A final accounting of damage to Nukunonu also included trees, the water supply system, and a radio beacon.

Like the Fakaofo and Nukunonu atolls, Atafu lost its breadfruit and coconut trees, which died from the effects of salt water. The reef channel also was damaged and required dredging. Finally, two stores and seven residences on the tiny island were devastated or seriously damaged.

Because breadfruit and coconuts are indigenous dietary staples, destruction of trees on all three atolls critically reduced the availability of food for the country's 1,700 inhabitants. The loss of chickens and other livestock further depleted national food sources. As a result, the Tokelau people suffered serious food shortages after the storm. Other damage common to all three islands included water storage tanks, power cables, and meteorological equipment. The government of New Zealand (GNZ), which administers the Tokelau atolls, determined that total losses attributed to both Cyclone Tusi and the storm amounted to $500,000.

Action Taken by the Government of New Zealand (GNZ) and Non-Governmental Organizations

Soon after the GNZ dispersed $40,000 to the Tokelau village councils to purchase food and material essentials for the victims of Cyclone Tusi, the GNZ was again called upon to assist Tokelau in relief efforts following the devastating February storm. GNZ officials organized an air drop of 15.5 MT of emergency food supplies within one week of the disaster. A Mar. 13 GNZ grant of $120,000 was used to purchase additional food as well as tools and equipment needed for immediate repairs.

Because Tokelau was incommunicado with the outside world and could be reached only by boat from Western Samoa, attempts to assess damage were impeded. The GNZ reached the atolls one month after the event occurred and evaluated the extent of destruction. Assessment officials determined that international assistance was imperative. Soon after the assessment was conducted, the GNZ released an appeal to UNDP offices in Western Samoa and New York for emergency relief funds. The GNZ Ministry of Foreign Affairs established and administered a Tokelau Relief Fund which pooled donor contributions. By mid-April, relief efforts had ended and reconstruction was the overriding concern. Initiating rehabilitation efforts, the GNZ dispersed a second $120,000 allotment for reconstruction projects soon after the assessment revealed the extent and nature of damage.

The New Zealand people reacted with compassion and concern. Many New Zealand private voluntary agencies and schools collected an undetermined quantity of food parcels, equipment, and educational materials destined for the Tokelau people. A Wellington University appeal raised $1,150 for the Tokelau relief effort.

Assistance Provided by the U.S. Government

On Apr. 11, 1987, U.S. Ambassador Paul M. Cleveland, who is accredited to Tokelau and resides in Wellington, New Zealand, determined that damage to the Tokelau atolls warranted USG assistance. A disaster declaration was delayed until the GNZ assessment, performed one month after the incident, was released. Through his disaster assistance authority, Ambassador Cleveland presented a check to New Zealand Prime Minister David Lange for $10,000 on Apr. 21, 1987.

The U.S. donation augmented the Tokelau Relief Fund, created in response to incoming international assistance. Although the U.S. contribution went toward a general pool, the GNZ Minister of Foreign Affairs agreed to a U.S. request that earmarked U.S. assistance for rehabilitating the wood work and home economics classroom building at the only school on the Nukunonu Atoll.

TOTAL $10,000

Assistance Provided by U.S. Voluntary Agencies

Pan Pacific and Southeast Asian Women's Association - contributed an unspecified amount of money; the USG Mission in Wellington estimated the sum to be $12,000.

TOTAL $12,000

Assistance Provided by the International Community

Committee of 24 (a subgroup of the U.N. General Assembly's Fourth Committee on decolonization issues) - issued an appeal to member nations and multilateral organizations for contributions toward a general relief fund; the amount of assistance generated by the appeal has not been reported.

UNDP - gave a $50,000 grant from its emergency relief fund on Mar. 12 to purchase interim communications equipment and emergency food stocks. An additional $150,000 from the UNDP's special program resources allocation was appropriated in the following manner: (1) $30,000 to repair and reconstruct Nukunonu school buildings; (2) $30,000 to replace tools for the public works sector; (3) $50,000 for replanting and the purchase of livestock—particularly chickens—and tools used in agriculture and fisheries; (4) $20,000 to obtain emergency food supplies; and (5) $20,000 for village reconstruction activities.

Western Samoa Business Community - donated $5,700.

TOTAL $205,700

Cyclone Tuvalu

Date
Feb. 22, 1987
Location
Primarily the islands of Funafuti and Vaitupu
No. Dead
Not reported
No. Affected
Not reported
Damage
Damage occurred to sea wall on Funafuti, government facilities, private homes, schools, and churches; some agricultural crops and fish farms were destroyed.

The Disaster

On Feb. 22, a cyclone hit Tuvalu, a group of tiny islands (population about 8,000) in the South Pacific. Several of the islands suffered rooftop damage to homes, schools, churches, and government facilities. Some agricultural crops and fish farms were destroyed. Funafuti and Vaitupu were hit particularly hard, resulting in demolished rooftops and destroyed agricultural crops. The sea wall on the island of Funafuti also was severely damaged.

Action Taken by the Government of Tuvalu (GOT)

Recognizing that the lack of rehabilitation materials and other equipment was hindering its relief response, the GOT requested USG assistance. Subsequently, reconstruction of an agriculture station building on Vaitupu, repair of the sea wall in Funafuti, and other repair work on buildings throughout the islands were conducted by the GOT.

Assistance Provided by the U.S. Government

The U.S. Ambassador to Fiji is also accredited to Tuvalu and on Mar. 12 Chief of Mission Edric Sherman, in the absence of the ambassador, declared the cyclone a disaster. He donated the $25,000 ambassador's authority to the GOT for immediate relief efforts. The GOT used the money to purchase construction materials for the restoration of schools, private homes, government buildings, and other facilities.

TOTAL $25,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

None reported

Cyclone Vanuatu

Date
Feb. 7, 1987
Location
Efaté Island, including the capital Port Vila, and offshore islands Moso, Nguna, and Lelepa; Erromango, Tanna, and Aniwa islands.
No. Dead
48
No. Affected
48,000, of whom 28,000 were severely affected
Damage
Power, telephone, and water services were disrupted; roofs lifted off buildings in Port Vila and houses were damaged on Efaté, Tanna, and Erromango; and wind and flooding severely damaged crops on Tanna and Aniwa. Damage totaled approximately $25,000,000.

The Disaster

A tropical depression which formed on Feb. 5, 1987, to the northwest of the island of Espiritu Santo developed into the most destructive cyclone to batter Vanuatu in decades. As Cyclone Uma gathered force and headed south-southeast, it passed over the island of Efaté and by all of Vanuatu's southern islands - Erromango, Tanna and Aniwa.

The cyclone reached Efaté on the evening of Feb. 7, where it hovered for almost eight hours. Winds averaging 90 knots and gusting to 120 knots battered western Efaté, including the capital city of Port Vila. On Feb. 8, as the cyclone continued to move south-southeast, Erromango, Tanna and Aniwa experienced high winds and heavy rainfall. More than 250 mm of rain fell in a three-hour period on the island of Tanna. The saturated volcanic ash soils gave way to landslides that formed temporary natural dams in places. When these fragile dams broke, torrents of water, trees and mud surged down the valleys. Flooding was widespread. White Sands, Isalla, and Sameria were the most severely affected areas of Tanna. On Erromango, Dillions Bay suffered the most damage.

The government of Vanuatu (GOV) estimated that 48,000 people (34% of the total population) were directly affected by Cyclone Uma; of them 28,000 were severely affected. Forty-eight people died, including 35 crew members of three ships that sank.

Damage was extensive. In Port Vila, more than 30 government buildings were severely damaged. Approximately 84% of the Port Vila commercial establishments were affected; half suffered severe structural damage or total loss of premises, equipment, and stocks. Hardwood trees, hundreds of telephone poles, and at least half of the city's coconut trees were blown down. Power supply to most of the city was cut and the water supply was interrupted for 24 to 48 hours. Outside Port Vila, commercial plantations were battered by the cyclone and buildings, fences, equipment, and stockyards were damaged.

On the islands south of Efaté high winds, landslides, and flooding took their toll on both subsistence and cash crops. On Tanna, about 750 of the traditional style houses were destroyed and water supply to 5,000 people was disrupted by landslides between water sources and storage tanks. Damage to agriculture was worst in eastern and southeastern parts of the island, where more than 80% of the subsistence gardens of taro, yams, manioc, bananas, sweet potato and other crops were lost. Widespread losses among poultry and pigs were also reported. On Aniwa, cassava and banana crops were decimated and orange and coconut crops were badly damaged.

The cyclone severely disrupted transport and communications throughout the affected islands. Five out of seven bridges on Tanna were destroyed, stream crossings were eroded, and roads blocked by landslides. Although the Port Vila airport suffered minor damage, it was able to function with the use of emergency generators to operate runway lights. In the Port Vila Harbor, 30 of 38 local boats were put out of service including commercial boats and touring vessels. The wharf, quay, jetty and sea wall were damaged. Communications installations on Port Vila and Tanna were damaged, severing contact with Tanna and Aniwa islands. In addition, the meteorology service in Nadi, Fiji, reported that the Vanuatu Meteorology Service facilities were destroyed.

Action Taken by the Government of Vanuatu (GOV) and Non-Governmental Organizations

Shortly after the cyclone passed over the islands, acting Prime Minister Sethy Regenvanu declared Port Vila a disaster. A National Disaster Coordinating Committee (NDCC) was established under the direction of Godwin Ligo, permanent secretary of the Ministry of Home Affairs. An NDCC subgroup made up of officials from the departments of Public Works, Public Health, Civil Aviation, Ports and Marine, and Police met daily at the National Police Headquarters to coordinate relief activities.

After a preliminary assessment, the GOV held a donor coordination meeting and appealed for assistance in providing shelter and other relief materials. When donated relief items arrived in Port Vila, they were quickly distributed. The GOV provided personnel and army trucks to transport supplies and made 60 containers available for emergency storage of relief items. Planes were unable to land on Tanna, so the GOV dispatched a ship to deliver goods to that island.

The Vanuatu Red Cross participated in the relief activities by distributing clothing and cooking utensils.

In Port Vila, relief and rehabilitation activities began at once. The GOV established evacuation centers for 5,000 people and allocated two million vatu ($18,181) for emergency food distribution. The GOV worked with cooperating donors to restore electrical and telephone service in the city. Teams of 10 to 15 people from the Public Works Department were deployed to saw the fallen trees and collect the debris. Local citizens pitched in to help with the cleanup. Before this task could be completed, the weather worsened and a week of steady rains hampered cleanup and rehabilitation activities.

Immediately following the cyclone, casualties were treated at hospitals and health centers. The Health Department monitored health and sanitation. In the following weeks a rise in the incidence of malaria and infectious diseases was met through widespread use of antibiotics and antimalarial treatment. A successful preventive program, which included mosquito spraying, health education, toilet construction, and water testing, was conducted.

The GOV assisted small farmers to bring their gardens back into production. The Ministry of Agriculture, Fisheries, and Forestry distributed seed and root crop planting material and helped counter pest attacks. The GOV estimated that food supplements would be required until the gardens began producing in July - September.

Assistance Provided by the U.S. Government

On Feb. 11, just after Cyclone Uma had passed and the destruction in its wake was evident, U.S. Ambassador Everett E. Bierman (resident in Papua New Guinea), declared that a state of emergency existed in Vanuatu. He then donated the $25,000 Ambassador's Authority toward the local purchase of relief supplies. The ambassador also recommended that USAID/SPRDO send an officer to assess the situation and help determine U.S. relief response. OFDA agreed to fund James Schill, the USAID/Suva project development officer, to visit the disaster site. Mr. Schill arrived in Port Vila on Feb. 10.

Widespread damage to homes and other structures created an immediate need for emergency shelter materials. In response to a GOV request, OFDA dispatched 360 rolls of plastic sheeting from OFDA's Singapore stockpile and 500 tents from OFDA's Guam stockpile. DOD transported the tents and plastic sheeting from the stockpiles to Port Moresby, Papua New Guinea, aboard C-141 aircraft and then used C-130s to shuttle the shelter material to Port Vila. The first C-130 arrived on Feb. 13 and the sixth and final shipment on Feb. 17. The C-130s also were diverted to conduct search operations for boats lost in the waters surrounding Vanuatu.

After the initial shipment of shelter material arrived and the GOV was able to further assess shelter needs, the GOV requested additional plastic sheeting. OFDA dispatched 80 more rolls of plastic sheeting from the Singapore stockpile aboard DOD aircraft.

The majority of the tents were sent to Tanna and Erromango, where the damage to housing was the most severe. The sheeting was distributed on Efaté, with 379 rolls going toward shelter for individual households and 61 to cover government buildings providing essential services.

A special training exercise was mounted by the Seabees, construction battalions for the U.S. Navy, to help rebuild damaged buildings. A 24-person team arrived in Vanuatu on Dec. 7, 1987, and over the next two months rebuilt two schools and rehabilitated a third. The Mele Primary School in the town of Mele and the central Primary kindergarten in Port Vila were entirely rebuilt. The roof of the Ecole Publique in Port Vila was also redesigned and rebuilt. The team brought a minimum of supplies with them; most materials were purchased locally. The A.I.D. regional office in Suva contributed $25,000 for required construction materials, which was matched by $25,120 by the Vanuatu government out of donations collected for disaster relief. The cost of the airlift of the team and materials plus living costs for personnel, provided by DOD, was $300,000.

Summary of USG Assistance

FY 1987

Ambassador's authority for the local purchase of relief supplies $25,000

DOD airlift of 500 tents from Guam and 360 rolls of plastic sheeting from Singapore $227,232

DOD airlift of 80 rolls of plastic sheeting from Singapore $30,392

Ocean freight for replacement of plastic sheeting $7,900

Travel and administrative expenses of James Schill (OFDA travel account) $1,302

Total FY 1987 ..... $291,826

FY 1988

500 tents from the Guam stockpile (estimated value) $210,000

440 rolls of plastic sheeting from the Singapore stockpile (estimated value) $119,680

Funds supplied by the A.I.D. Mission in Suva for construction materials $25,000

Support costs for 24-person Seabee team $300,000

Total OFDA $329,680
Total Other USG $325,000

Total FY 1988 ..... $654,680

TOTAL $946,506

Assistance Provided by U.S. Voluntary Agencies

ADRA - contributed clothing, blankets, lanterns, and sutures, valued at $13,245.

SCF/US - donated $5,000 from private sources to Save the Children/Australia for relief assistance.

WVRO - supplied cooking utensils, emergency rations and medical supplies, valued at $20,000.

TOTAL $38,245

Assistance Provided by the International Community

International Organizations

EEC - funded 600 MT of white rice and 330,000 MT of meat which was distributed on Tanna, Erromango, and rural Efaté.

ESCAP - sent 2 engineers.

UNDP - gave an emergency cash grant of $50,000; offered up to $1,000,000 in project assistance for rehabilitation projects.

UNDRO - supplied an emergency cash grant of $50,000.

WFP - donated $50,000.

WHO - contributed $5,000.

Governments

Australia - sent 2 helicopters, an emergency broadcasting station, plastic sheeting, tarpaulins, tents, rope, tie downs, food, medicine, communications equipment, water containers, generators; and also deployed crews to help restore electricity and radio communication.

Fiji - sent a cargo ship with 270 bags of biscuits, 7 boxes of tinned fish, 5 boxes of margarine, skim milk, and other items.

France - provided 2 doctors, a nurse, and a medical technician; sent 5 hospital tents and food; deployed aircraft for inter-island transportation; and transported food, medicine and building materials from Noumea.

Germany, Fed. Rep. - donated $28,000 for regional purchase of shelter and pharmaceuticals.

Japan - dispatched an assessment team and relief items including 7 water purifiers, 1 generator, 3 tents, 4 radios, and medicine, valued at $50,000; and contributed $150,000.

Nauru - contributed $6,623.

Netherlands - donated $120,000.

United Kingdom - contributed $423,728 for the local purchase of food and clothing; sent 600 tents; supplied chain saws and spare parts; and sent a 28-person team from an army construction battalion in Hong Kong.

Non-Governmental Organizations

Australia Red Cross - gave $13,245.

China, People's Rep., Red Cross - gave $15,000.

Japan Red Cross - donated $13,333.

SCF/Australia - provided tarpaulins, clothes, blankets and food.

Soviet Union Red Cross - sent blankets, sheets, first aid kits, and 100 tarpaulins.

United Kingdom Red Cross - contributed $7,704 through the Vanuatu Red Cross.

TOTAL $2,382,633

Europe

DISASTER

Poland Accident

Accident Poland

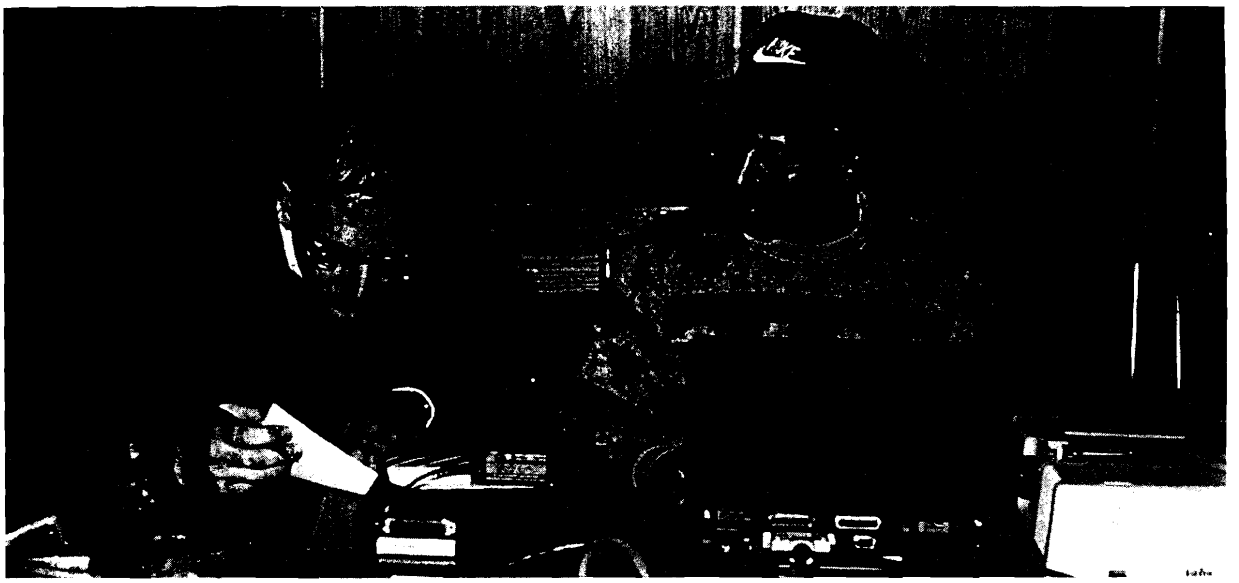
Date
May 9, 1987
Location
Warsaw
No. Dead
183
No. Affected
Not reported
Damage
A Polish LOT Airliner and about 4 ha of forest were destroyed.

The Disaster

On Saturday, May 9, a Polish LOT airliner crashed in a wooded area about 270 m from the village of Dabrowka, not far from Warsaw. The New York-bound plane, Flight 5055, left the Okecie Airport in Warsaw at 10:18 a.m., local time. About 30 minutes later, close to the city of Grudziadz, the pilot reported an engine fire and started heading back toward Warsaw for an emergency landing. As he neared the airport, he allegedly jettisoned 188 of the plane's 220 tons of fuel. Shortly thereafter, he maneuvered the faltering aircraft toward the small Kabaty forest, the only uninhabited spot in the area. The plane crashed into the grove, tearing through a line of trees, and then exploded. The explosion left the aircraft, passengers and surrounding woods in flames.

The crash killed all 183 passengers and crew on board. Charred wreckage and human remains were strewn over four ha of scarred forest. The impact of the explosion and subsequent fire was so severe that most of the victims could be identified only by scientific evaluation.

Pathologists recording postmortum data on the crash victims



Action Taken by the Government of Poland (GOP)

The GOP dispatched firemen and military emergency teams to the crash site to douse the flames and check for survivors. Five army trucks arrived to pick up bodies, but four left empty as they could not find whole bodies. Police cordoned off the area, which lay about 1.5 km from a major road. The GOP formed a commission to investigate the causes of the crash.

The Polish Ministry of Foreign Affairs helped with the initial process of ascertaining who had been on board LOT Flight 5055. Authorities coordinated efforts to collect and organize human remains. They transported all the body parts in caskets to a central mortuary in Warsaw. A total of 596 body bags were marked and then sequenced into groups A, B, and C, according to their contents. All remains categorized in the A group were considered by the recovery teams to be "identifiable"; remains placed in the B group were labeled "identification possible"; and the C group was considered "unidentifiable".

A Polish institution organized the funeral of the foreigners killed in the crash. LOT covered all funeral costs and compensated family members with the amount of $75,000 for each victim. LOT also offered immediate family members living in the United States free New York-Warsaw, round-trip tickets. In New York, Polish consular officials issued emergency visas to relatives of the victims

the day after the crash. They eliminated the normal one-week processing and waived the $18 visa fee.

Assistance Provided by the U.S. Government
Immediately following the accident of LOT Flight 5055, President Reagan offered U.S. assistance in his letter of condolence to Premier Jaruzelski. The GOP realized the severe problem of recognizing the remains of the victims and requested USG assistance. On May 13, U.S. Chargé John R. Davis, Jr. declared a disaster and obligated $25,000 to assist in identification. In addition, the FBI immediately sent a team of fingerprint experts to Warsaw.

OFDA worked with the State Department and DOD to mobilize and dispatch a team of pathologists from the Armed Forces Institute of Pathology (AFIP). The team of technical experts in forensic identification, comprising six dental officers, three forensic pathologists, and three medical photographers, arrived in Warsaw on May 13. The team divided up responsibilities and completed 14 reconstructed antemortem records, 140 postmortem examinations, and 672 radiographs during the course of the mission. The team returned to the United States on May 19. They were only able to identify six of the victims. The dental team experienced great difficulty in obtaining antemortem dental records for both Polish and American citizens in the time allotted for the mission, which might account for the small number of actual identifications confirmed.

TOTAL $25,000

Assistance Provided by U.S. Voluntary Agencies
None reported

Assistance Provided by the International Community
None reported

FY 1987 Disasters

Latin America and the Caribbean

DISASTERS

Argentina Forest Fires

Argentina Storm

Bermuda Hurricane

Chile Floods

Ecuador Earthquake

El Salvador Earthquake

Haiti Civil Strife

Haiti Floods

Panama Floods

Venezuela Landslide

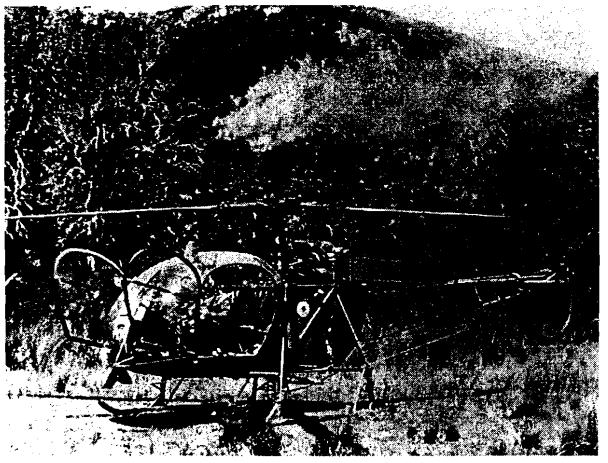
Forest Fires Argentina

Date
January - March 1987
Location
The Andean-Patagonia region, particularly the provinces of Neuquén, Río Negro and Chubut
No. Dead
Not reported
No. Affected
152,000 out of a total population of 200,000 in the affected region; 2 injured, 750 homeless, and about 300 evacuated
Damage
35,000 ha of valuable timberland, wildlife, and national parks were lost. Sawmills and 150 homes were destroyed; livestock was killed. Property losses amounted to $100,000,000.

The Disaster

Since November 1986, pervasive drought conditions in southern Argentina had parched the Andean-Patagonia region, making it ripe for forest fires. Poachers in Lanïn National Park, Neuquen Province, started the first blaze on Jan. 2, 1987. An abandoned campfire in Lago Puelo, 5 km south of El Bolsón on the border of Río Negro and Chubut provinces, was responsible for the second regional fire on Jan. 11. High temperatures, low humidity, and strong, erratic winds fueled the two major fires and caused several new starts. The direction of the wind and the proximity of the fires to the Chilean border concerned government officials in Chile as well as Argentina.

Hundreds of firefighters fought both blazes until the fires were controlled in mid-March. An assessment of the situation in late January indicated that the Lago Puelo fires were 25% to 35% contained while Lanín was 40% controlled. Expected containment dates were Feb. 10 for Lago Puelo and Feb. 20 for Lanín. The Lago Puelo fires caused the most concern because firefighters were battling several active fronts and the fires were more intense than those in Lanín. The report cited the lack of trained personnel, fatigue, and inadequate equipment as the principal problems hampering both operations. Nevertheless, firefighters felt that both situations were stable.



Helicopters were used by the Argentine government to observe the fire lines and for water dropping operations.

By Feb. 6, the temperature had dropped and the humidity had increased, fueling confidence that the fires would soon be contained. Firefighters thought the ordeal would be over within two weeks. However, weather conditions deteriorated causing new starts to ignite and previously contained fires to again become unmanageable.

News reports in early February claimed that the "ecological disaster"— as it was being called by Argentine officials—had consumed 8,500 ha of forests. However, by the time all fire activity was extinguished in mid-March, 35,000 ha of timberland were lost in Trevelin, Lago Puelo, San Carlos de Bariloche, Canadon Huemul, Lanín National Park, and Lago Hermosa. The fires destroyed 1,000-year-old trees, killed wildlife, damaged national parks, and disrupted the regional ecosystem. Human and property costs were also considerable. More than 75% of the area's 200,000 residents were affected, including 300 who were moved during the 2-1/2-month operations and 750 who lost their homes. Sawmills, livestock, and 150 homes were burned. Property damage amounted to $100 million.

Action Taken by the Government of Argentina (GOA) and Non-Governmental Organizations

The battle against the blazes was a huge effort involving many facets of Argentine society. The GOA formed an ad-hoc group comprising representatives of the Argentine Civil Defense, National Parks Administration, and National Fire Institute (IFONA) and gave it a mandate to organize resources and operations. Firefighters and equipment came from many sources, including Civil Defense; National Parks; IFONA; individual forestry directorates of Río Negro, Chubut, and Neuquén provinces; the Development Corporation of Chubut; the various branches of the Armed Forces; and the municipalities of Lago Puelo, Hoyo de Epoyen, El Bolsón, Esquel, Trevelin, and San Carlos de Bariloche. Volunteer firefighters also came from Misiones, Buenos Aires, and Cordoba provinces. A contingent from Santiago, Chile, was eventually sent to assist the Argentines.

Contrary to expert recommendations, local politicians proceeded with fire control measures that featured aerial attacks. Aircraft used in the effort included a Lama helicopter, a Bell 205 M, an Alouette II SA, a PUMA, a Beechcraft Baron, and two Piper Arrows. The GOA submitted an international appeal for aircraft and Chile agreed to contract a fire-retardant airplane to Argentine officials.

Hundreds of volunteers and professionals worked side by side to extinguish the numerous fires. San

Carlos de Bariloche, 250 km south of the Lanín fire and 100 km north of the blazes in Lago Puelo, served as the incident management center. Most operations were reactionary as a multi-fire plan of attack was never developed or implemented.

Aerolineas Argentina, the GOA airline, contributed to the national emergency effort by transporting U.S.-donated equipment free of charge to Buenos Aires where it was immediately deployed to Bariloche for distribution.

Assistance Provided by the U.S. Government

By Jan. 21, the GOA acknowledged that the fires were burning out of control and that the situation was deteriorating. The IFONA approached the USG requesting fire-retardant aircraft. Because USG officials were not convinced that planes were warranted, the U.S. Embassy suggested that a U.S. Forest Service (USFS) team first assess the condition and threat of the blaze. The GOA Ministry of Foreign Affairs cleared the proposal.

In Washington, OFDA arranged to send a two-person USFS technical assistance team to Buenos Aires on Jan. 25. After visiting operations in Lanín, El Bolsón, Lago Puelo, and Bariloche, the specialists presented their report to the U.S. Deputy Chief of Mission (DCM) and the Mission Disaster Relief Officer (MDRO) on Jan. 29.

U. S. Forest Service wildfire assessment team

On the basis of information provided by the MDRO, GOA officials, and the USFS team, Ambassador Theodore E. Gildred determined that the fires proved life-threatening and destructive to property. On Jan. 30, the ambassador declared that an emergency existed. He released $5,000, which was used for the local purchase of fire-retardant clothing.

In addition to the IFONA appeal, requests for equipment came from the Defense and Foreign Affairs ministries, Argentina National Parks, and the government of Río Negro Province. The USFS team analyzed the proposals and compiled a list of supplies needed to effectively fight the uncontained infernos. The USFS list was relayed to OFDA, which purchased the following items:

250 Pulaski (hand tools)
15,000' 1.5" cotton hose
50 McLeod (hand tools)
15,000' 1" cotton hose
100 shovels, size 1
12 1.5" grated wyes (hose fittings)
250 electric head lamps
1,152 D-cell batteries
24 reducers
15 Mark III pumps
12 nozzles, combo
15 Mark III pump kits
20 pack sack hose bags
150 backpack pumps

The OFDA-donated material arrived in Argentina on Feb. 2 and was distributed between IFONA and Argentina National Parks. Based on logistical difficulties and associated high costs, the USFS team discouraged the provision of fire-retardant aircraft as originally requested by the IFONA.

Summary of USG Assistance

Ambassador's authority for the local purchase of fire retardant clothing $5,000

Travel expenses for two technical assistance specialists: Jay Perkins and Gary Benavidez (USFS) $5,860

Equipment donated to the GOA (see list above) $71,715

TOTAL $82,575

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Chile - donated the services of 58 forest firefighters who assisted in control efforts in Trevelin and contracted fire-retardant aircraft to the GOA for use in the southern provinces.

Storm Argentina

Date
December 1986 - January 1987
Location
La Rioja Province, including the capital and Felipe Varela, Castro Barros, and Famatina departments.
No. Dead
1
No. Affected
1,000
Damage
15 buildings were destroyed and 470 buildings were damaged; utility networks were damaged; water, sewer, telephone, and electric systems were disrupted.

The Disaster

A series of tornadoes and rain storms hit Argentina's northwestern province of La Rioja during the months of December 1986 and January 1987, causing considerable damage to property and livestock.

On Dec. 8, tornadoes and heavy rains struck the city of Villa Unión Cabecera in the department of Felipe. This first storm caused a power outage, disrupted the local water works system, damaged crops, and destroyed 15 houses.

A heavy rain covered the provincial capital, La Rioja, on Dec. 16, severely damaging some houses and leaving streets impaired. Strong winds on the night of Dec. 24 caused additional damage and left the city without electricity.

The final series of tornadoes hit the capital and its surrounding suburbs in January. Houses were destroyed and damaged by fallen trees, leaving many families without shelter. Electricity and telephone utilities were interrupted throughout the city and suburbs were flooded. The rains caused the Ancho River to overflow on Jan. 20, inundating the town of Anjullen.

Action Taken by the Government of Argentina (GOA) and Non-Governmental Organizations

The Civil Defense coordinated with the governor of La Rioja province to provide shelter and other urgent necessities, such as beds, mattresses, clothes, shoes, and non-perishable food, to evacuees and homeless people. In cooperation with the Provincial Highway Directorate and military volunteer groups, the Civil Defense removed fallen trees from city streets. Local firemen and the Directorate of Renewable Natural Resources assisted Civil Defense personnel in fighting a fire that started at Camp El Quemado. The telephone, water, and electric companies helped in making urgent utility repairs. The Ministry of Social Action provided 50 mattresses, 100 blankets, and 400 sq. m of tarred cardboard for housing repairs. The Argentine Red Cross supplemented the GOA's donation by supplying an additional 70 sq. m of tarred cardboard for housing repairs.

Assistance Provided by the U.S. Government

After the GOA's official request for assistance, Ambassador Theodore E. Gildred declared a disaster on Feb. 26. He contributed $5,000 to the La Rioja provincial authorities for the provision of temporary shelter and clothing for the victims of the disaster. This grant was used to purchase 1,000 sq. m of zinc sheeting for the repairs of 67 damaged houses.

TOTAL $5,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

None reported

Hurricane Bermuda

Date
Sept. 25, 1987
Location
The entire island
No. Dead
0
No. Affected
40 injured
Damage
Houses, hotels, and other buildings were damaged; high-velocity winds tore roofs away; telephone and electric poles were pulled down.

The Disaster

Hurricane Emily hit Bermuda with full force on the morning of Sept. 25, inflicting severe damage to the island. About 5% to 10% of private homes suffered roof and other damage. The hurricane also ripped roofs off luxury hotels, commercial establishments, and other buildings. The storm toppled half of the tall trees on the island, blocking roads and pulling down telephone and electric lines and a large number of telephone poles. Damage to equipment forced the local television station and six radio stations off the air. A cruise ship slammed into a pier, causing millions of dollars of damage. Although only 40 people were injured by Hurricane Emily, a great many home and business owners suffered considerable property losses. U.S. Navy personnel stationed on Bermuda reported no serious injuries, but some Navy facilities and living quarters were severely hit by the storm.

Action Taken by the Government of Bermuda (GOB)

The government of Bermuda responded promptly and efficiently after Hurricane Emily struck. Premier Swan chaired an emergency response committee to oversee relief actions. Within 24 hours, the GOB managed to clear the major roads, reopen the airport, and restore power and services to Hamilton, the capital, and to all but one of the 10 largest hotels.

On Sept. 26, the GOB requested USG assistance in the form of 150 rolls of plastic sheeting. The GOB will reimburse OFDA $40,752 for the cost of the sheeting.

Assistance Provided by the U.S. Government

In view of the extensive damage caused by Hurricane Emily, the U.S. Consul General James Medas declared the situation to be a disaster on Sept. 25. OFDA provided $9,000 for the U.S. Coast Guard to airlift 150 rolls of plastic sheeting from OFDA's New Windsor, Maryland, stockpile. The shipment arrived on Sept. 27. OFDA paid the transport costs for the shipment of the replacement plastic sheeting to the New Windsor stockpile, which totaled $5,698.

The U.S. Navy greatly aided relief efforts by providing chainsaws and generators, a rig and crew to drill holes for telephone poles, and several clean-up crews.

Summary of USG Assistance

FY 1987

Airlift by U.S. Coast Guard of plastic sheeting	$9,000
Total FY 1987	$9,000

FY 1988

Shipment of plastic sheeting to New Windsor stockpile	$5,698
Total FY 1988	$5,698
TOTAL	**$14,698**

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

None reported

Floods Chile

Date
July 17, 1987
Location
Predominantly central Chile, from the Atacama desert in the north to the region of De La Araucanía, south of Concepción.
No. Dead
55
No. Affected
116,364; 18 reported missing
Damage
More than 2,000 houses were destroyed and 21,000 damaged. Sections of the Pan American Highway and several other roads suffered damage and bridges were destroyed.

The Disaster

Beginning on July 10, a weather front brought strong winds and heavy rains to Chile's central zone, drenching the landscape and feeding rivers that then raged out of control. The resulting floods caused extensive damage in an area still recovering from the 1985 earthquake and 1986 flooding, disasters which resulted in severe human and economic losses in the region. A second front brought frigid temperatures and additional stormy weather on July 23, aggravating the plight of those already hurt by the floods.

The floods that resulted from these first two weather fronts damaged 21,470 houses and destroyed 2,521. Shantytown dwellings in Santiago and environs (Colina, Lampa, Batuco, Melipilla) as well as in La Calera, Los Nogales, San Fernando, and San Vicente suffered severe damage, and the inhabitants of these poor areas lost most of their belongings in the floods. Relief efforts were complicated by a shortage of emergency shelter, roofing material, and blankets.

Flood waters destroyed more than 100 homes in poorer areas of San Fernando, a city of about 60,000 inhabitants south of Santiago. Although some commercial establishments and residences located in the center of town were hit by the floods, they suffered no significant structural damage. In Colina, a city north of Santiago, an irrigation channel broke inundating vast areas of the town. Flood waters damaged 450 dwellings in Población O'Higgins and destroyed about 20 houses located near the irrigation ditch. On July 28, a merchant vessel sank off the San Vicente Bay. In the same region, water inundated small mines, resulting in many deaths and injuries.

The heavy rains impaired several sections of the Pan American Highway, the country's sole north-south artery. The thoroughfare near La Serena, 500 km north of Santiago, was closed because of damage. About 100 km north of Santiago, in La Calera, the highway also was closed for a time but was later reopened with a 40-ton weight restriction. In Santiago, the Mapocho River overflowed and seriously damaged a newly constructed highway. In San Fernando, a bridge over the Río Tinguiririca collapsed from the violent current of the river, causing that part of the Pan American Highway to close down for several days until a temporary bridge was installed. The same bridge had also been rebuilt after collapsing in the 1986 flood. Waters flooded urban areas and their connecting roads, leaving 165 roads inaccessible and 125 towns isolated. Only one of the five roads connecting Colina to other cities was passable. In Santiago waters streamed into the city's major water purification plant, causing government officials to fear the possible contamination of rural water supplies outside of Santiago.

On Aug. 11, central Chile was hit again with rainstorms that produced about 24 cm of rain within a 24-hour period. Since the ground was still wet from the previous flooding in July, the heavy August rainfall led to flash flooding, which damaged and destroyed additional houses and infrastructure and caused more deaths. The Pan American Highway north and south of Santiago was damaged, and additional towns and roads were flooded. Waters reached almost two m deep in the resort town of Viña del Mar. In the nearby port of Valparaíso, landslips and falling trees injured people and cut road links to Santiago. Vital road connections from Santiago to the port city of San Antonio also were inaccessible. The August rainfall significantly affected rural areas around Santiago as farmland remained under water for sometime. Farmers had difficulty in harvesting winter crops and in transporting their products to market.

Action Taken by the Government of Chile (GOC) and Non-Governmental Organizations

The Chilean Air Force assisted in evacuating people from isolated areas and transported food to remote areas of the affected regions. Local television stations and businesses organized food and clothing collection drives to benefit flood victims.

The National Emergency Office of the Ministry of the Interior (ONEMI) carried out its role as emergency relief coordinator. ONEMI issued regular reports detailing the number of people dead and affected, areas damaged and urgent needs of the victims. Instead of declaring a disaster, the GOC directed the ministries of Public Works, Housing and City Planning, and Health to readjust their current budgets to accommodate flood damages. The Ministry of Housing offered emergency shelters and reorganized the regular subsidy housing program to supply basic housing

units to flood victims. The GOC also provided construction materials for repair of damaged houses. The Ministry of Public Works, on the other hand, concentrated its efforts on repairing damaged infrastructure, mainly bridges and roads.

The Chilean Red Cross (CRC) mobilized 3,500 volunteers to lend aid to their fellow citizens. Thirty-four CRC branches assisted 34 villages. The CRC opened 87 shelters, gave first-aid treatment to 26,100 flood victims and distributed clothing, shoes, blankets, and food. By Aug. 20, Caritas Chile had collected a total of $694,000. With this money, Caritas mounted a $314,000 emergency housing program to provide 314 dwellings. The remaining money went for the purchase of blankets, food, and medicine.

Two indigenous NGOs, Caritas Chile and OFASA, the Chilean branch of ADRA, began working to meet the needs of the disaster victims, distributing food and clothing to people in emergency shelters. When ONEMI had depleted its inventory of blankets (13,000) and almost all supplies of the local market were exhausted, Caritas was able to supply some blankets.

The GOC and NGOs were able to meet the short-term needs of the flood victims. However, they did not have enough combined resources to meet emergency shelter needs and thus turned to the USG for assistance to launch urgently needed housing projects.

Assistance Provided by the U.S. Government

On July 17, Deputy Chief of Mission George F. Jones determined that the needs of the disaster victims outweighed the GOC's capacity to respond. The chargé declared the situation a disaster warranting USG assistance and exercised the Ambassador's disaster relief authority providing a total of $25,000 to Caritas Chile and ADRA/OFASA for immediate relief assistance. Caritas received $15,000 toward an emergency shelter program in shantytowns. The balance of $10,000 was donated to ADRA/OFASA for the provision of food, clothing and emergency shelter in Colina.

The mission disaster relief officer and other Embassy staff surveyed the affected areas near Santiago to evaluate the extent of the damage and the need for further USG aid. The Embassy's assessment showed that the situation was worse than expected and that floods exceeded those of 1986 in severity. The critical shortage of bedding alarmed the team. OFDA sent 9,000 wool blankets from its stockpile New Windsor, Maryland, to help ease the blanket shortage. The blankets were transported aboard a DOD C-5A cargo plane from Dover AFB in Delaware to Howard AFB in Panama. From Panama, a DOD C-141 aircraft carried the blankets to Santiago, arriving on Aug. 5. OFDA also dispatched regional preparedness advisers Paul Bell and Ricardo Bermudez from San José, Costa Rica, to assess the situation and make recommendations for further USG assistance. They arrived in Santiago on July 29.

In addition to the blanket shortage, there was a serious need for additional emergency shelter. On Aug. 10, OFDA approved an emergency shelter program designed to assist 2,500 Chileans. Caritas and the Institute for Agricultural Promotion (INPROA) implemented the program that included the delivery of construction materials for the repair of damaged dwellings and the assembly of emergency shelter units on non-vulnerable sites.

The additional flood damage resulting from the heavy rainfall in mid-August prompted USAID/Santiago to propose that OFDA fund another emergency shelter project. OFDA concurred with the mission's proposal and authorized an initial grant to the Miguel Kast Foundation to build 100 temporary houses just outside Melipilla and construct stream banks and drainage canals to protect the site.

Summary of USG Assistance

Ambassador's authority of $25,000:
- Grant to Caritas Chile $15,000
- Grant to ADRA/OFASA $10,000

DOD C-141 transport of 9,000 wool blankets $68,000

Replacement of 9,000 wool blankets to the New Windsor stockpile $45,450

Emergency shelter program:
- Grant to INPROA $165,000
- Grant to Caritas Chile $100,000
- Grant to Miguel Kast Foundation $100,000

TOTAL $503,450

Assistance Provided by U.S. Voluntary Agencies

CWS - gave $5,000 for food assistance.

TOTAL $5,000

Assistance Provided by the International Community

International Organizations

EEC - provided food, medicine, 5,000 tents, 10,000 roofing sheets, and cash to Caritas; total value $282,933 (see also Italy entry).

LRCS - contributed medicine, blankets, food, clothing, and footwear.

WCC - donated $20,000.

Governments

Australia - donated $20,000 through the Chile Red Cross.

Egypt - contributed $2,150.

Germany, Fed. Rep. - contributed $54,645 for the local purchase of pharmaceuticals, 1,500 blankets, and 250 mattresses. Funds were donated to Caritas Chile, Fundación Misión, and Sociedad Proayuda del Niño Lisiado.

Italy - granted $400,000 to Caritas Chile. These funds have been combined with a portion of the EEC's contribution and will be used for several relief endeavors: $270,000 for an emergency shelter program, $22,000 for the purchase of blankets and the balance, $108,000, for food and medicine.

Norway - contributed $52,239 through Caritas Norway to Caritas Chile.

United Kingdom - provided $48,309 to Caritas Chile for local purchase of relief items.

Non-Governmental Organizations

German Agro-Action - gave $24,590.

TOTAL $904,866

Earthquake Ecuador

Date
Mar. 5, 1987
Location
Northern and eastern Ecuador
No. Dead
300 - 2,000
No. Affected
150,000
Damage
Homes and settlements were destroyed; electricity was interrupted; a major road, secondary roads, bridges, and foot trails were washed away; and the Transecuadorean pipeline was broken.

The Disaster

At 8:55 p.m. on Mar. 5, northern Ecuador was rocked by an earthquake measuring 6.0 on the Richter Scale. At 11:10 p.m., a second quake measuring 6.8 struck the same location. These two large shocks were followed by more than 500 aftershocks that evening and the following day. The epicenters of the earthquakes were calculated to be six or seven km north of Reventador Volcano, located 90 km northeast of Quito.

Carchi, Imbabura, Pichincha, and Napo provinces all suffered from the shocks. Damage to housing in the area near the epicenter was extensive, and thousands of people were displaced. Many of the houses of adobe and earth suffered collapsed roofs and walls. On the road between Cayambe and Olmedo about 800 such houses were severely damaged. As many as 40% of the non-wood structures in the Baeza area were destroyed and another 40% seriously damaged. The capital city of Quito also was shaken by the tremors, but severe damage was limited to several multi-story buildings and older structures.

Other losses included structural damage and disruption of services in hospitals, health centers, administrative structures, and schools. A number of power generating plants, transmission lines, and two hydroelectric plants under construction were damaged. Potable water systems and sewage systems in many communities suffered destruction of water-intake systems, treatment works, and distribution pipes. In most places, services were restored after a few days. Erosion and silting of farmlands, loss of livestock and damage to irrigation systems will reduce agricultural output.

Damage to Napo Province was extensive. The first quake triggered huge mudslides that swept down the hillsides, depositing mud, rocks, and trees in the river valleys of this Amazon region. In some places whole mountain sides came down. The huge volume of debris formed natural dams across the rivers. The second large quake a few hours later caused the temporary dams to collapse and let loose torrents of water, mud and debris. Many of the people in the area were swept away in the deluge, along with their homes, vehicles, and livestock. Some of the affected area was covered by as much as 10 m of mud. The geography of the area was permanently altered by the slides and rivers.

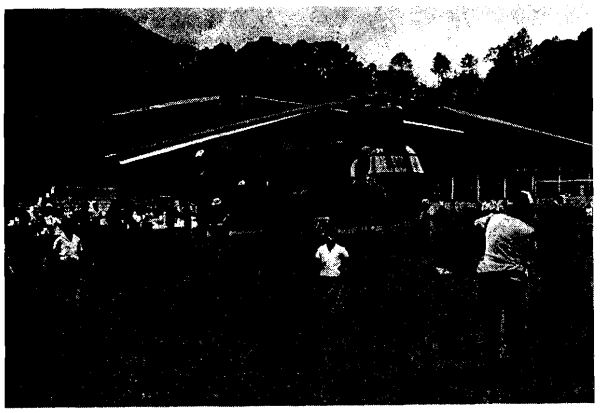
Eastern Napo Province was cut off from the rest of the country when the only road leading into the area was rendered impassable by flooding, landslides, and large cracks in the road surface. Two major bridges and five smaller bridges on the road connecting Baeza and Lago Agrio were destroyed. In addition to the main roads, a number of secondary roads, farm-to-market roads, trails, and footbridges were destroyed, damaged, or blocked by landslides. Some residents along the heavily damaged sections of the roadway were isolated and had to be evacuated. Many houses in Napo Province are constructed of wood and were not as heavily damaged by the tremors than houses constructed of earth. An estimated 8,000 to 10,000 houses, several schools, and markets were damaged. Delivery of necessary supplies and transport of people and goods out of the region were drastically diminished.

Moreover, the Transecuadorean oil pipeline, which generally parallels the road between Baeza and Lago Agrio, was broken. Twenty to 30 km of pipeline were disrupted, and two pipeline bridges, each more than 600 m long, were washed away, and a pumping station was damaged. It was estimated that repairs would take five to six months. This loss threatened the country's economic stability.

The government of Ecuador (GOE) estimated that 58,000 people were left homeless by the disaster. The lack of an up-to-date census of the area before the disaster combined with the extremely rough terrain and the extent of the devastation made it difficult to know how many had died, but estimates ranged from 300 to 2,000.

Action Taken by the Government of Ecuador (GOE) and Non-Governmental Organizations

Immediately after the disaster, the government of Ecuador declared a state of emergency in four provinces: Carchi, Imbabura, Pastaza, and Napo. Later, when the extent of the damage became known, Pichincha was added to the list of emergency provinces. On Mar. 6, President Leon Febres Cordero surveyed the damage in eastern Ecuador by helicopter and subsequently convened a meeting of disaster relief officials.



Airlifts were the sole means of moving relief goods to Lago Agrio.

A National Emergency Operations Center (COEN) was created as the agency to direct the disaster relief and to channel assistance to the affected people. The Ministers of State and the director of the National Civil Defense Authority comprised COEN, presided over by the general secretary of the National Security Council. The National Civil Defense Authority was given responsibility for the greatly affected area from Baeza to Lago Agrio and for other areas affected such as northern Pichincha Province, and Carchi and Imbabura provinces. The Civil Defense Authority coordinated the movement of about 3,000 people who had been isolated because of the destruction to the road and communities. The Civil Defense also established camps at Borja, Baeza, Santa Rosa, and Chaco for 4,000 people temporarily displaced by the disaster. In addition, 1,000 displaced people were moved to Quito. By mid-April, Civil Defense Authority expenses had topped 28 million sucres ($147,400).

Relief supplies for eastern Napo Province, not heavily damaged but isolated, came under the authority of the National Mobilization Authority. Supply centers were established at Lago Agrio and at Coca. Since land transport was impossible, the Ecuadorean Air Force and Army began to airlift supplies. Three Air Force C-130s made three or four flights a day to bring in supplies, which were then distributed by five Army helicopters. Expanded canoe transport was organized on the Napo River.

Other government agencies contributed to relief and rehabilitation measures. The president of the Housing Bank was appointed as the coordinator of international assistance. A special commission headed by the Energy Minister supervised the recovery of the petroleum industry. A loan scheme was created for housing rehabilitation and reconstruction.

Many religious and voluntary institutions became involved in the relief effort. The Ecuadorean Red Cross (ERC) sent 2,700 relief workers to assist with the operation of evacuation camps. The ERC requested assistance from LRCS in providing field kitchens for use in feeding 4,000 displaced people. Monetary contributions to the ERC were used to purchase blankets, stoves, lamps, tools, and other relief items. The local Salvation Army also provided food, clothing, and counseling to victims during the early phase of the relief effort.

Immediate action helped settle some people in temporary shelters, but there remained the problem of supplying the 60,000 to 100,000 people living in eastern Napo Province, cut off from the rest of the country because of the destruction of the road. Airlifts were extremely costly and limited in their effectiveness. Surveys of the damaged road in mid-March indicated that it might not be feasible to reopen the road. Continued seismic activity and the instability of the land created a high likelihood of further landslides and made it inadvisable to attempt to undertake construction in this area. Another road further south, still under construction at the time of the earthquake, also was considered.

A 25-km gap remained to be spanned from the Hollin River to the Pucuno River. When completed, this road would stretch from Tena to Coca where it would connect with the road to Lago Agrio.

The GOE made the completion of the road a priority and appealed for the donation of 11 bridges required along the route. Another bridge was moved from a seldom-used site. The Ecuadorean contractors hired by the GOE Ministry of Public Works to work on the road completed the pilot road on Aug. 17. The road was opened to traffic in late November.

The GOE agreed, as a condition of USAID assistance for the construction of the road link, to set aside a zone of ecological protection as a forest reserve in the area adjacent to the newly constructed road. The decree to establish this protection zone between the Hollin and Pucuno rivers was signed on Sept. 3. Through ongoing forestry

Destruction was random as evidenced by this neighborhood in Cayambe.

projects, USAID plans to clearly delimit the boundaries of the reserve and work with settlers and indigenous groups to encourage ecologically sound methods of cultivation.

Assistance Provided by the U.S. Government

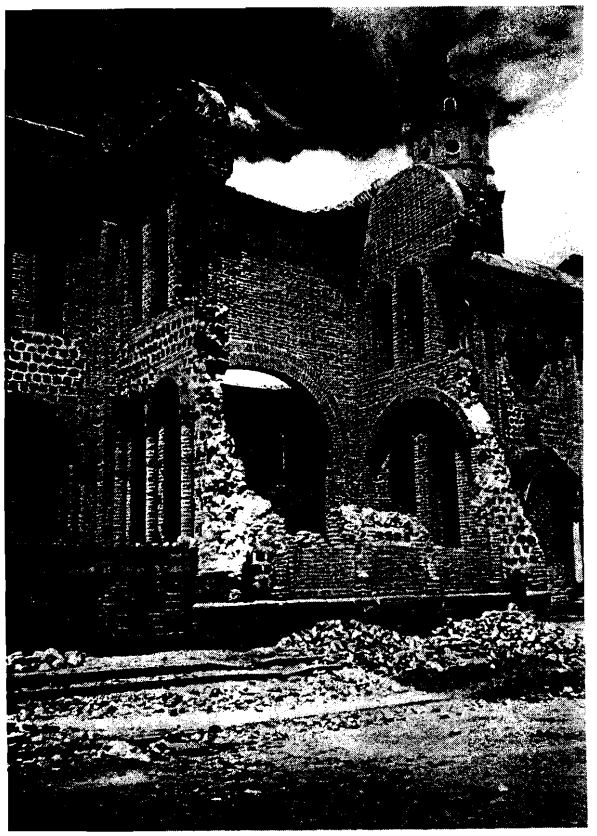
The USG responded to initial requests by the GOE by quickly dispatching relief supplies. On Mar. 8, Ambassador Fernando E. Rondon declared a disaster and authorized the use of the $25,000 ambassador's authority to be used toward financing OFDA-supplied relief items. OFDA sent 500 tents with flys, five tent repair kits, and 2,700 wool blankets from A.I.D./OFDA's stockpile in Panama. The supplies were airlifted by DOD aboard a C-141 and a C-130 on Mar. 8, arriving the same day. An additional 2,300 blankets were sent a few days later. Updated reports on damage and numbers of people affected indicated that there was still an outstanding need for shelter. At the request of the GOE, OFDA supplied 400 rolls of plastic sheeting from the Panama stockpile. DOD transported them aboard two C-130s on Mar. 12.

Although it was clear that parts of northern and eastern Ecuador were devastated, the rugged terrain in the most severely affected areas made damage assessments difficult. OFDA sent one of its Latin America regional advisers, Ricardo Bermudez, to Ecuador on Mar. 11. Mr. Bermudez assessed damages in the Cayambe-Olmedo area, visited the camps established for the displaced people, and oversaw the distribution of USG relief supplies. Disaster specialists from A.I.D./Washington flew into the affected areas to view the damage and observed the distribution of U.S.-donated relief supplies in Baeza, Chaco, and Santa Rosa. The specialists then worked out of the USAID mission in Quito as a liaison with the Washington office.

A number of other specialists in the USG traveled to Ecuador in response to the earthquake. An A.I.D. sanitary engineer went to Baeza on Mar. 8 to give technical assistance in repairing the existing potable water system. The water system also was extended to provide water to the evacuee sites in the area. In response to a GOE request, OFDA sent a geologist from the USGS, Alvaro Espinosa, to help evaluate the origin of the earthquake. The first lady of Ecuador, Eugenia Febres Cordero, asked for assistance in establishing an office at the national level to coordinate the relief efforts of international donors and to organize the internal Ecuadorean response. OFDA obtained the services of Augusta Crino for this purpose; she arrived on Mar. 19. About a month after the disaster, the National Research Council sent a three-person team of experts in landslide hazards to study the effects and causes of landslides that occurred in the aftermath of the earthquake.

Concern over the disaster was felt throughout the United States. Vice President George Bush, ac-

In Ibarra, a church façade crumbled.



companied by OFDA Director Julia Taft and others, traveled to Ecuador to express U.S. support.

The U.S. military helped assess damage during the early aftermath of the earthquakes. Army C-130s and Huey helicopters ferried food, medicine, and doctors to the Baeza area. Later the C-130s were used to fly supplies to Lago Agrio for distribution in Napo Province. Two small U.S. Air Force helicopters from SOUTHCOM flew the supplies from Lago Agrio to isolated areas, generally making six to eight food drops per day.

A replacement bridge restored access to rugged Napo Province.

The GOE enlisted U.S. help to access isolated eastern Napo Province. On Mar. 9, President Febres Cordero asked President Reagan for help in reopening a route and replacing washed-out bridges in the affected area. U.S. Army engineers surveyed the damaged northern route and the unfinished southern route and determined that completing the latter would be more feasible.

OFDA agreed to fund the purchase and transport of bridges for the road being completed by contractors working for the Ecuadorean Ministry of Public Works. OFDA supplied eight bridges totaling 278 m in length. Three additional bridges, which were critical for obtaining access to the area but were not directly included in the 25-km length of road, also were provided. Five small 15-m bridges were later procured to replace existing timber bridges that were not strong enough to withstand the heavy use that was anticipated once the road was open. The U.S. military helped facilitate the completion of the road by assisting with engineering assessment, photo-mapping, bridge procurement, and the transport of bridges and materials.

Eight MT of U.S.-donated food already in Ecuador were distributed by CRS immediately after the disaster. Later an additional 227 MT (valued at $100,000) were provided under the P.L. 480 Title II Program. A.I.D.'s Food for Peace office also agreed to supply 8,500 MT of crude soybean oil to Ecuador. The soybean oil would be sold by the GOE to processing plants which would transport, store and process the product and then market it through normal commercial channels. The $3.4 million generated from the program was to be used to rebuild secondary (market) roads, construct storage facilities, and provide loans to farmers to replace livestock and lost agricultural equipment.

Summary of USG Assistance

FY 1987

Ambassador's authority used for DOD airlift of tents $25,000

DOD airlift of 400 rolls of plastic sheeting $16,340

Transport costs for replacement of tents to Panama stockpile $5,707

Cost of 5,000 wool blankets and replacement shipping costs $25,250

Travel expenses for USGS geophysicist, Alvaro Espinoza $1,675

Administrative costs for Augusta Crino $2,614

16 bridges and related costs $2,541,000

Travel and administrative costs for OFDA disaster specialist LeVonne Harrell and press officer Renée Bafalis (travel account) $2,105

Value of 227 MT of Title II food $100,000

Value of 8,500 MT of crude soybean oil $3,128,000

Transport costs for soybean oil $637,500

Total OFDA $2,619,691
Total FFP $3,865,500

Total FY 1987 ..... $6,485,191

FY 1988

500 tents with flys and 5 tent repair kits $204,250

400 rolls of plastic sheeting $108,000

Inland shipping of bridges $18,000

Total FY 1988 ..... $330,250

TOTAL $6,815,441

Assistance Provided by U.S. Voluntary Agencies and Other Private Groups

ADRA - sent a team from the local regional office to conduct an assessment of damages and needs.

Americares Foundation - sent a team of 4 people to assess needs; airlifted 18.2 MT of medicine, blankets, lamps, stoves, and other equipment (valued at $750,000) which was donated by 25 corporations.

ANRC - contributed $170,254 through LRCS for a housing project in Imbabura Province, and sent 4 delegates for a period of 9 months at a cost of $27,000.

CARE - contributed kitchen utensils and tools, valued at $10,000.

CRS - immediately distributed 8 MT of Title II of in-country stocks and later an additional 227 MT; and provided $75,000 for emergency shelter materials, cooking utensils, tools, and transportation for food.

CWS - furnished $5,000 to Fundaciones Brethren y Unidas.

Friends of the Americas - sent 2,700 "special shoeboxes" containing soap, toothbrushes, and other toiletries.

Operation California - donated medicine, medical supplies, and shelter materials.

Pan American Development Foundation - shipped a container of chlorine tablets for water purification.

Salvation Army - sent $10,000 to the Ecuadorean Salvation Army.

SCF/US - contributed $10,000 to a SCF/Redd Barna program in Ecuador to supply motor boats and restore bridges and footpaths in flooded areas; and collected $6,870 in public contributions for rehabilitation of foot- bridges, model homes, farm tools, and children's needs.

WVRO - provided tents, food, clothing, soap, and fuel through local purchase, valued at $40,000; and airlifted a "flyaway kit" containing blankets, water purification tablets, and cooking utensils, valued at $52,000.

TOTAL $1,156,124

Tents supplied by OFDA gave shelter in Cayambe.

Assistance Provided by the International Community

International Organizations

FAO - contributed technical assistance for agricultural rehabilitation, valued at $250,000.

LRCS - issued an appeal for financial assistance and made an emergency grant of $30,300.

PAHO - sent a sanitary engineer and a regional adviser.

Rotary International - sent $25,000 to be used by Ecuadorean Rotary clubs to meet relief needs and to build new schools.

UNDP - contributed 2 grants totaling $50,000.

UNDRO - dispatched a relief coordination officer to help assess needs in the affected area and supplied an emergency grant of $25,000 for local purchase of emergency relief supplies.

UNICEF - furnished kitchen utensils, plastic, medicine, and water purification supplies; valued at $25,000.

WFP - contributed 78 MT of food.

Governments

Argentina - furnished 10,000 kg of powdered milk, 5,000 kg of rice, 2,000 kg of wheat flour, 3,000 kg of pulses, and medicine for 5,000 people; the value of commodities and transport was $110,000.

Austria - donated $78,125 through UNDRO for local purchase of relief supplies.

Bolivia - donated 400 blankets.

Chile - supplied 100 4-person tents and 14,400 boxes of food supplies, and sent a civil engineer to evaluate damages.

China, People's Rep. - contributed $40,000.

Colombia - contributed $900.

Cuba - sent processed food.

Germany, Fed. Rep. - sent a disaster relief expert to assist with the construction of temporary emergency bridges; built a small foot bridge to span the Aquarico River at Lumbaqui; supplied pharmaceuticals, shelter materials, and food, valued at $54,945; and contributed $1,256,281 for housing reconstruction in Baeza.

Italy - provided 200 tents; medicine, and food supplies sufficient for 150 people for one week.

Israel - donated 450 blankets and 35 tents.

Japan - contributed $250,000 for housing; sent a 3-person medical team; gave 99 family tents, 7 large tents, 2 water purification units, 5 cases of lanterns, 5 cases of blankets, and medical supplies; and dispatched a team to survey damages including officials from the Ministry of Foreign Affairs, the Natural Land Agency, and Japan International Cooperation Agency.

Korea, Rep. of - provided $30,000.

Mexico - provided food supplies.

Netherlands - gave $100,000 through UNDRO.
Soviet Union - gave assistance in kind, valued at $80,000.

Spain - contributed 770 blankets, 10 tents equipped with 8 beds each, 5 tents equipped with 10 beds each (provided by the Spanish Red Cross), 5 MT of medicine, and 1 MT of bandages; the commodities were valued at $78,125 and the cost of transport was $19,531. Spain also provided 200 blankets, 10 tents, and 3 generators, all valued at $39,062.

United Kingdom - sent a DC-8 loaded with 450 tents, 10,875 blankets, 100 rolls of plastic sheeting

and 40 ground sheets which arrived on Mar. 13; donated $142,800 for local purchase of supplies, including medicine, dry foodstuffs, building materials and tools. These materials were distributed through the British Volunteers of the Catholic Institute for International Relations (CIIR) in cooperation with local civil defense volunteers and by other agencies.

Uruguay - gave $460.

Venezuela - contributed 100 blankets, food supplies including corn flour and milk powder, cooking equipment, and $250,000 for housing.

Non-Governmental Organizations

CAFOD (United Kingdom) - contributed $2,500.

Caritas - the following national Caritas organizations contributed cash grants:

Austria - $75,000
Belgium - $21,200
Germany, Fed. Rep - $50,600
Hong Kong - $3,000
Italy - $77,000
Switzerland - $15,150

Developpement et Paix (Canada) - contributed $10,800.

Red Cross and Red Cresent Societies from the following countries made contributions:

Canada - $3,600
Chile - water purification equipment
China, People's Rep. - $15,000 through the Ecuadorean Red Cross
Colombia - 100 tents, 500 blankets, 2 field kitchens
Iceland - $3,000
Italy - 2,178 kg of food and medicine, valued at $51,000
Japan - $30,500
Netherlands - $12,000
Norway - $6,600
Soviet Union - tents, blankets, medicine, bandages
Spain - 5 large tents, 50 campbeds, 200 blankets, 6,300 bandages
Sweden - $7,400

Rettet Das Kind (Austria) - donated $5,000 through SCF/US.

TOTAL $3,324,879

Earthquake El Salvador

Date
Oct. 10, 1986
Location
A 20-block section in downtown San Salvador and eastward along the fault line, particularly in the capital's southeastern residential neighborhoods of Candalaria, Lourdes, Modelo, San Jacinto, and San Marcos
No. Dead
1,100, comprising 900 deaths in San Salvador and 200 in surrounding municipalities, according to official estimates
No. Affected
500,000 in the 22 municipalities of the San Salvador Metropolitan area; 250,000-300,000 homeless; and 20,000 injured
Damage
Heaviest damage was concentrated in a 20-block area of downtown San Salvador. Five residential neighborhoods were leveled with an estimated 23,000 homes destroyed and 30,000 residences damaged. Significant structural damage occurred to 5 major hospitals, 9 health units, numerous private health clinics, many ministries and government buildings, the Central Bank and 7 commercial banks, more than 50% of San Salvador's classroom space, and 460 commercial structures. Total damage was estimated at $1.03 billion, or 25% of the El Salvador 1986 GDP.

The Disaster

Two devastating earthquakes struck the San Salvador metropolitan area on Oct. 10 causing death and destruction that affected virtually every sector of society. The first was registered at 5.4 on the Richter scale and occurred at 11:49 a.m.; the second, registering 4.5 Richter, shook San Salvador again at 12:04 p.m. The tremors were strong enough to be felt in neighboring Honduras and Guatemala. USAID-funded seismic equipment operated by the Seismology Department of the Geotechnical Research Center in the El Salvador Public Works Ministry recorded an additional 1,071 tremors through 8:00 a.m. on Oct. 13, of which 235 were strong enough to be felt by local residents. The numerous aftershocks added to the chaos and caused 75,000 Salvadorans to sleep in the streets.

Although the measured intensity of these tremors was only moderate, other factors made it a particularly damaging event. The location of the epicenters directly beneath the city, the shallow-depth of the movements, and unusually high acceleration rates resulted in an extremely destructive incident. Moreover, the capital city is situated in a valley filled with volcanic ash and stream deposits that amplified seismic waves by up to four times. The volcanic ash in the hilly areas surrounding San Salvador shook loose, causing landslides that further contributed to property damage and loss of life.

Earthquake damage made life in El Salvador even more difficult as the civil war dragged into its seventh year. The earthquakes caused serious damage to public infrastructure, buildings, and homes. A Planning Ministry survey conducted soon after the incident indicated that of 94,000 housing units in the most seriously affected areas, approximately 23,000 were destroyed and 30,000 exhibited serious structural problems. The United Nations Economic Commission for Latin America and the Caribbean (ECLAC) estimated that direct losses and damage to housing totaled $203 million. USAID surmised that 80% of the affected dwellings belonged to society's most disadvantaged—those living in the multi-family, tenement-style buildings and the slum-like dwellings of the shantytowns on the perimeter of the city. Among the more devastated communities were San Jacinto (probably the poorest of the affected areas), Mejicanos, Cuscatancingo, Candelaria, Colonia America, and Colonia Costa Rica.

Structures in central San Salvador, particularly public buildings, were severely affected. Ministry buildings, judicial edifices, military headquarters and jails, municipal markets, and stadiums suffered heavy damage. The following federal offices were damaged beyond repair, requiring demolition and debris removal: the Ministry of Agriculture, the Ministry of Justice, the Central Reserve Bank, the Ministry of Finance, the Civil Service Institute, the Ministry of Education, the Office of the Solicitor General, the Ministry of Planning, and the Judicial Center. Sixteen buildings were rendered unusable pending major repairs. They housed the Ministry of Education, the Social Security Institute, Urban Development, the Ministry of the Interior, Civil Service Institute, National Geographic Institute, the Legislative Assembly, the Attorney General's offices, Customs, the Supreme Court, the Electric Company (CEL), the Post Office, the National Sports Palace, the Ministry of Finance, Agrarian Reform (ISTA), and the General Procurement Office. ECLAC estimated that reconstruction and reparation costs for damage to public buildings were about $46 million. Despite these severe losses, all major ministries began operating within 48 hours from rented space, tents, or other temporary facilities.

A serious loss occurred when eight hospitals in the metropolitan area suffered significant damage; patients were moved to nearby parking lots and parks. Of these, the Social Security Hospital, Benjamin Bloom Children's Hospital, the Gynecology Center, and the Salvadoran Polyclinic required extensive or total reconstruction. The National Nursing School wing of the Military Hospital collapsed even though the Military Hospital itself suffered little structural damage. Also severely damaged were the Cardiac Hospital and the Gynecology Clinic at the Maternity Hospital, which had been the largest Ministry of Health outpatient clinic. The Rosales Hospital and an additional nine health units and numerous private clinics were damaged by the temblors. In all, ECLAC estimates that the health sector suffered damage worth $97 million. This total includes direct costs such as reconstruction and repair as well as indirect costs of emergency medical care ($6 million).

Ruben Dario Building in San Salvador

Military facilities based in San Salvador suffered an estimated $100 million in damages. Those structures most seriously affected included the First Brigade barracks, the Communications Command Center, the National Police offices and the building that housed the National Guard. In addition, more than 50%—or 1,300—of the city's classrooms were destroyed or damaged, and National University lost five buildings. One school collapsed, killing 30 children. ECLAC placed the direct losses of school furniture and equipment at $61 million.

Seven of the 12 Salvadoran banks, which includes the Central Reserve Bank, needed to be rebuilt. The remaining five suffered varying degrees of damage. ECLAC estimated that damage to all 12 banks totaled $26 million. In addition, damage to the five largest churches in the capital amounted to $5 million.

Electricity, communications, public transportation, and water distribution were disrupted. The earthquakes interrupted international and in-country telephone communications; this hampered international donor coordination. The Salvadoran phone company (ANTEL) reported that 17,000 lines had been destroyed, 43,000 lines were temporarily disrupted, and switching equipment in four substations was damaged. ECLAC estimated that total damages to equipment cost the GOES $26 million. For a period after the quakes, ham radio and some commercial telex operations were the sole methods of communicating.

Most of the affected areas immediately lost power when the quake damaged two of the major substations that supply electricity to the metropolitan area and caused electricity poles to fall. Provisional repairs were completed by Oct. 11. Direct damage to the substations and distribution network totaled $6 million.

Breaks in sewage and water lines coupled with the loss of electricity caused the immediate failure of the water system servicing most of metropolitan San Salvador. The local water company reported that 19.4% of the potable water pipe sections and 30% of the sewage lines needed repairs. The power grid and water and sewerage systems suffered $19 million and $31 million in damages, respectively.

Leaking water undermined portions of city streets, causing them to eventually collapse. Heavy debris-moving equipment also destablized the road system and compounded the problem. Landslides blocked roadways and covered the two outer lanes of the major highway leading to Comalapa Airport. Finally, several small bridges suffered structural damage. Damage to the transportation infrastructure totaled $30 million.

USG facilities in San Salvador were among the buildings affected. U.S. Embassy employees evacuated the building during the first quake. An Oct. 11 inspection found that the Chancery had suffered major structural damage. USAID operated from the Agency's guest house as well as dining rooms and garages of private homes for up to six weeks following the incident. The quake stranded computer equipment in the main tower of the U.S. Embassy. However, the main computer system and work stations from the Consesa building and the Annex were saved.

International assistance began arriving several hours after the earthquake struck. Not only

commodities but hundreds of assessment officers, medical personnel, search-and-rescue (SAR) specialists, and others came to the country to assist the Salvadoran government cope with the disaster. Several needs assessments were made, with damage estimates ranging from $820 million to $1.03 billion. USAID and ECLAC agreed with the Salvadoran Planning Minister's damage estimates of $1.03 billion.

Rescue and relief workers initially operated in an uncharacteristically dry environment. By Oct. 23, health workers reported an increase in diarrhea from water contaminated by fallen debris and respiratory ailments caused by dust in the air from the demolition and rescue work. The rains returned on Oct. 28 relieving the aerial contaminants, but hampering rescue operations, delaying the restoration of public services, and adding to the discomfort of the homeless. Many temporary shelters collapsed under the inundating downpours, including tents at the field hospital set up by Benjamin Bloom Children's Hospital and at the Maternity Hospital's makeshift facilities.

Most search and extrication operations were performed by Salvadoran volunteers during the initial hours following the quakes. However, foreign search and rescue specialists later assisted the Salvadorans. Teams came from 12 countries, including Belgium, Brazil, France, Guatemala, Honduras, Italy, Japan, Mexico, Spain, Switzerland, Great Britain, and the United States.

Dogs and handlers immediately searched 24 collapsed structures. However, rescue operations soon concentrated on the Ruben Dario shopping center and the Ministry of Planning where many people were thought to be trapped. In metropolitan San Salvador, SAR teams rescued 63 survivors. Salvadoran citizens pulled at least 37 more from the rubble.

International concern did not cease with the end of the relief phase. Generous contributions aimed at helping El Salvador rebuild and recover were funneled into the country. Multilateral organizations and governments provided hundreds of millions of dollars in loans and grants for the reconstruction of the capital and surrounding areas. The money was earmarked for programs ranging from the restoration of schools and public buildings to the provision of business credits, from the rehabilitation and upgrading of the tugurios and mesones (or slum areas) to the reparation of public services. For information on these grants and loans, see the "Assistance Provided by the International Community" section.

Action Taken by the Government of El Salvador (GOES) and Non-Governmental Organizations

President José Napoleon Duarte was in La Unión Department when the earthquake struck, but immediately flew to the capital to organize relief operations. Duarte declared a state of calamity immediately upon his arrival in San Salvador and appealed for international assistance.

Soon after the disaster declaration, President Duarte summoned the National Emergency Committee (COEN). During its first session, COEN implemented the GOES Emergency Action Plan, a contingency program developed with the assistance of USAID in May 1986. An ad-hoc Crisis Commission was formed comprising Cabinet members, officials of the armed forces, and private sector representatives; the group first met five hours after the earthquake and thereafter convened daily. The Crisis Commission broke down into various sub-groups to assess emergency and rehabilitation needs.

Throughout the night following the event, the GOES established the logistical network for anticipated international relief, dispatched Salvadoran search-and-rescue teams to major urban collapse sites, and coordinated with the private sector in developing a system to monitor and register relief supplies. President Duarte assigned the Armed Forces such relief activities as civil action duties and protection of rescue sites. Soldiers also worked to clear streets of debris and rubble.

Through a GOES mandate, the Business Commission for Disaster Assistance (COEDA), formed by a group of Salvadoran businessmen soon after the earthquake, assumed responsibility for the interim receipt and distribution of national and international relief shipments. COEN took control of the distribution process from COEDA on Oct. 24 and relinquished all responsibilities to the San Salvador municipal government on Nov. 21. Between Oct. 11 and Nov. 21, COEDA and COEN

recorded a total of 313 relief flights and 59 overland shipments of donated goods.

The GOES distribution system consisted of 14 zones and nine surrounding municipalities, each with a relief distribution center. Most incoming supplies arrived by air through Comalapa Airport while many goods entered the country through overland routes. The internationally donated relief items were taken to the International Fairground where they were recorded and then distributed to each center according to submitted requests and a needs assessment performed by the San Salvador municipal government. COEDA enlisted 800 volunteers to distribute relief items to the appropriate centers during the days following the disaster. COEDA volunteers logged 120,000 man-hours engaged in relief distribution and supplied 216 public and private institutions and communities with donations intended to alleviate the suffering of the disaster victims.

The GOES tasked the National Emergency Commission of Finances (COMFIEN), a sub-group of the Crisis Commission, with receiving and coordinating the distribution of all national and international monetary donations. Two U.S. accounting firms assisted COMFIEN by recording and auditing gifts of money. By mid-February 1987, COMFIEN reported total fiscal receipts as equivalent to $2.63 million and from the following sources: private businesses (36.7%); individuals (30.0%); foreign governments (22.7%); Salvadoran consulates (6.0%); social institutions (4.2%); and bank interest on deposits (0.4%). Of this total, $860,000 was raised by a telethon sponsored by COMFIEN, Club 20-30, and Salvadoran television channels 2, 4, and 6 on Oct. 26. Some contributions bypassed COEDA, COMFIEN, and the official accounting system and were consigned directly to Archbishop Arturo Rivera y Damas's Ecclesiastical Emergency Commission (CEE), the Knights of Malta, or other groups.

Search dogs and sensitive listening devices were used to locate survivors trapped in collapsed buildings.

The outpouring of medical donations was tremendous. By Oct. 11, UNDRO was advising against more medical and rescue teams. Eighteen medical/rescue and assessment teams consisting of more than 245 relief workers were in-country by Oct. 12 assisting the GOES and Salvadoran doctors. Medicine particularly was needed and by Oct. 14, government representatives, PAHO,

the chief of the French medical team, and other bilateral representatives met to finalize and quantify a list of medical needs. On Oct. 15, UNDRO placed an appeal for medicine and medical supplies, which was met within three hours by France, Switzerland, and the Netherlands. The consignment arrived on Oct. 17.

In addition to distribution efforts, the GOES and private Salvadoran agencies undertook five principal relief operations: search and rescue, the provision of medical care, the establishment of feeding and temporary shelter programs, public service reparations, and demolition and clearing.

Search and Rescue - Within minutes, Salvadoran volunteers and the Salvadoran Red Cross (SRC) organized and initiated the search for trapped victims. Immediate search efforts focused on 24 collapsed structures. However, rescue operations soon concentrated on the Ruben Dario building, the Ministry of Planning, the Gran Hotel, the Dueñas building, and Tropigas.

The GOES provided material support for foreign and domestic extrication teams in the form of jackhammers, compressors, hand tools, cutting tools, and other equipment from various GOES agencies and local suppliers. Heavy equipment—including cranes, bulldozers, front-end loaders, and trucks—was provided through USAID's Public Services Restoration Project.

Provision of Medical Care - Because most of the metropolitan hospitals were rendered unsafe, the first concern was moving patients to secure areas. Those who were able to be transferred were sent home or to unaffected hospitals on the outskirts of San Salvador. The hospital in Santa Ana received a large number of such patients.

For those not able to be moved and for the thousands of injured seeking medical attention immediately after the quakes, temporary medical facilities were established in parking lots and surrounding parks. Only Rosales Hospital continued caring for patients in its existing structure. Medical tents were used by patients requiring emergency and immediate surgery; doctors were often forced to operate under rudimentary conditions. The Salvadoran military established Civic Action Health Clinic tent camps in Los Planes and in Colonia Costa Rica; they were dismantled after 10 days. The military also accepted civilian casualties and operated a burn center after the original one at Benjamin Bloom Hospital was destroyed.

Patients often preferred the security of the outdoor hospitals to the buildings even after it was determined by authorities that they were usable. For example, structural engineers determined that only columns in the kitchen and the elevator shaft of the military hospital suffered serious damage and that patients could safely return to the building. Only after two torrential rainstorms at the end of November battered the outdoor tent hospitals did the wary return to the hospital confines.

In order to reach those who could not get to a hospital, the Ministry of Health (MOH) commissioned a 25-squad mobile health brigade to work in the areas most affected by the earthquake. Each unit consisted of two or three doctors, two nurses or student nurses, a health educator, and a health inspector or environmental health promoter.

With assistance by USAID, the MOH and the National Disaster Committee assessed health needs and received, monitored, and distributed donated drugs and medical supplies. The MOH authorized the chief of the Drug and Medical Supply Management Unit, an ad-hoc organization under the Health Systems Revitalization Project (VISISA), to receive and distribute emergencies supplies within the metropolitan region.

Non-governmental organizations assisted the GOES by serving the public and setting up health clinics. During the first weeks following the quake, 40 medical teams and 21 sanitation units from other countries were operating within the metropolitan area. These centers offered immediate first-aid care, minor surgery, vaccinations, and other services to earthquake victims.

Finally, the MOH initiated a spraying program on Oct. 21 in an effort to control pestilence. The MOH also instituted vaccination campaigns against tetanus, diptheria, and typhoid and performed epidemiological surveys.

Temporary Shelter and Feeding Programs - The earthquakes exacerbated the existing critical housing shortage in the metropolitan region. The

Salvadoran national government, municipal authorities, the Red Cross, the ad-hoc Ecclesiastical Emergency Committee (CEE) formed by Archbishop Arturo Rivera y Damas, and numerous local groups immediately initiated temporary shelter activities, distributing plastic sheeting and tents. By the end of November, 1,000 families had benefited from the program.

COEDA, CEE, the Red Cross, USAID, and other local and international private voluntary organizations participated in providing plastic sheeting and tents for the homeless. The United States and the Netherlands supplied the majority of plastic sheeting given to homeless Salvadorans.

COEDA provided shelter for 14,000 families; CEE distributed plastic sheeting to 7,050 families; and the Red Cross gave OFDA-supplied plastic to 10,537 additional families during the first three weeks after the quakes. USAID and other international voluntary organizations doled out additional plastic and tents. The CEE and local metropolitan authorities drew from cash donations to provide construction material and tools for provisional shelter projects.

Clean-up efforts reflected the GOES emphasis on rebuilding as much as possible on the same sites. Manual laborers cleared rubble and deposited it on the streets where heavy equipment, donated by the Public Works Ministry, was used to transfer the debris to disposal areas. After further consideration, however, the GOES realized that as many as 8,900 of the reconstructed houses would again be threatened by landslides if rebuilt on the same locations. GOES reconstruction plans, as a result, involved the relocation of some of those houses to safer areas.

The distribution of emergency food supplies during the first weeks after the disaster involved a concerted effort among GOES organizations such as the National Commission for the Displaced (CONADES) and the Interior Ministry's Community Development Directorate (DIDECO) and many in-country NGOs, including the Salvadoran Evangelical Development Assistance Committee (CESAD). The country was fortunate that the quake occurred when there were large quantities of food in Salvadoran storehouses. Shipments of USG P.L.-480 Title II food had recently arrived for Salvadoran food programs. Those groups coordinating feeding programs included the Red Cross, San Salvador municipal authorities, the CEE, COEDA, and COEN. During the first 11 days, GOES agencies distributed 15-day rations to 60,000 families, while the CEE provided 38,793 families with one-month provisions. The Red Cross delivered 32,000 one-week rations during the first month after the disaster and additional food baskets to 20,000 families by February 1987. COEDA, the Businessmen's Civic Action Group, and COEN reached 4,139 families with food packages by Oct. 21. In addition CRS/Caritas provided rations to approximately 125,000 residents. The ICRC and CESAD served several thousand of the earthquake victims. CESAD and DIDECO supported GOES feeding programs before the incident and diverted their commodities from regular recipients to earthquake victims.

Food rations reached not only the homeless but other groups in need. Because local stores had lost large quantities of their stocks, people with resources had nowhere to purchase food. Food also was accepted by people afraid to return to their homes, those taking relief goods from more than one organization, and those suffering from the war, not the earthquake.

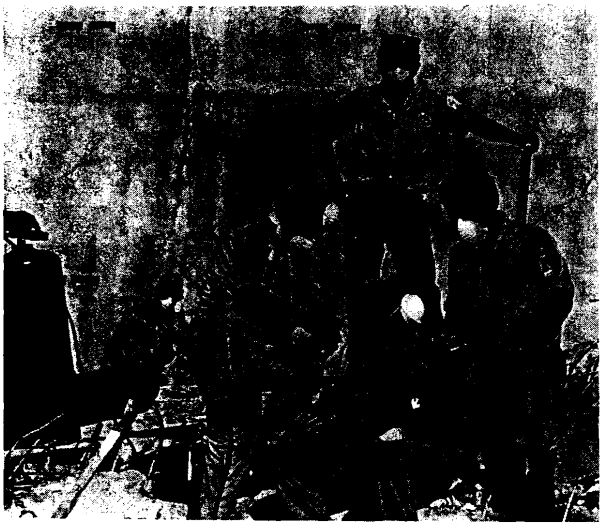
Public Services Reparation - Electricity, water, sewage, and telecommunications were immediately lost after the incident. Relief workers and the Salvadoran government transported water to affected communities by tank trucks and water tanks. ANDA, the National Water Agency, increased the number of truck deliveries during the emergency phase making 2,180 truck deliveries during the 30 days after the disaster. The GOES restored partial telephone service with the assistance of a 1,000-line, portable switching unit on loan from Guatemala and battery banks previously procured through the USAID Restoration Projects.

Demolition and Clearing - The Public Works Ministry and the San Salvador municipal government coordinated demolition and clearing activities. Public Works and municipal employees were assisted by about 9,000 volunteers throughout the 24-hour shifts during the clean-up phase. About 150,000 cubic m of rubble were removed at a cost of $56 million. Because the location and number of existing disposal sites could not accommodate

the volume of debris, workers dumped excess materials into roadside ditches and natural drainage areas, which will contribute to road damage during future rainy seasons.

Search and rescue operations, temporary shelter and feeding programs, and immediate recovery programs lasting for 30 days cost $25 million. Since $11 million of this total was provided by international donors, the GOES covered $14 million of the related costs.

Honduran and Salvadoran firefighters collaborated during rescue operations.



Salvadoran voluntary groups proved instrumental to the relief effort. Archbishop Arturo Rivera y Damas formed the CEE which served as one of the strongest private Salvadoran relief organizations. The CEE independently received and distributed assistance to 266 affected communities reaching 38,793 families. By Nov. 10, the CEE had received 2,263 MT of food from CRS/El Salvador stores (including USG PL-480 Title II commodities) and the Archdiocese Social Secretary's warehouse. Other purchases and international donations of tents, clothes, blankets, and construction material placed the value of CEE-controlled commodities at $823,000 and cash contributions of $906,000.

Caritas channeled 15 shipments of relief items through the CEE from the South Texas Blood Bank, California, Caritas/Germany, Caritas/Italy, CWS, Kansas City, Mexico, San Pedro Cancha (Guatemala), Spain, and Tucson, Arizona. CRS contributions worth $822,959 were consigned to the CEE. Other organizations supported the CEE in assessing damage, locating needy people or institutions, receiving commodities, and distributing relief. Among these assisting organizations were the Comisión Arquidiócesana de Pastoral en Salud (CAPS), CONCERN, International Aesculapius, International Medical Assistance, Medicins du Monde, and Provida.

The El Salvador Red Cross (SRC) provided first-aid and rescue services. Working with the American National Red Cross (ANRC), the SRC established a 400-volunteer network that traced the whereabouts of missing people, both U.S. and Salvadoran. By February 1987, the SRC had responded to 8,542 of 9,298 inquiries sent by the ANRC in Washington. The tracing was accomplished although the SRC tracing office was destroyed by the quake. SRC volunteers also separated and distributed USG-supplied rolls of plastic sheeting for temporary shelters.

DIACONIA, an interdenominational church organization, formed the Intereccelestical Emergency Coordination Committee (IECC) to coordinate relief efforts of six organizations: the Catholic Archdiocese, the Emmanual Baptist Church, the Episcopal Church, the Federation for Cooperatives of El Salvador (FEDECOOPADES), the Pro-Cooperative Foundation (FUNPROCOOP), and the Lutheran Church. DIACONIA distributed food, shelter, and medicine to 73,377 families. Eight international and U.S. PVOs channeled $568,530 through DIACONIA for relief projects.

Also instrumental in the dispersion of relief material was the Knights of Malta of El Salvador. The Boy Scout organization Sherpas aided the Knights of Malta in distributing relief items.

TACA International, the Salvadoran national airlines, contributed goods and manpower to the relief effort. TACA transported many internationally provided donations (including contributions by ADRA, CWS, and Americares), received incoming items, and provided the manpower, space, and equipment for loading and unloading goods. TACA offices in San Salvador, Miami, Los Angeles, San Francisco, Houston, New Orleans, and Mexico sent medicine and medical supplies, inflatable beds, tents, food, purified water, cots, kitchen utensils, clothes, and mattresses.

Similarly, the Salvadoran pharmaceutical manufacturing association, INQUIFAR, received donated medicine from its member companies and gave the contribution to COEDA for allocation and distribution. Through the combined effort, INQUIFAR gathered $23,346 worth of pharmaceutical products for the injured.

Salvadoran embassies, consulates, and communities around the world responded with compassion and generosity. Salvadoran embassies in Costa Rica, France, Guatemala, Honduras, Mexico, Panama, and the United States sent more than 980 cartons of medicine, surgical and other medical supplies, clothing, purified water, blankets, linens, batteries, toiletry items, rolls of plastic, empty barrels, and plastic containers. Salvadoran consulates in Belize, Costa Rica, and the U.S. cities of Atlanta, Houston, Los Angeles, Miami, and San Francisco also sent significant quantities of medicine, medical supplies, food, and clothes.

Salvadoran communities in Chile, Costa Rica, and the U.S. cities of Baton Rouge, Houston, Los Angeles, Miami, Orlando, Washington, D.C., and others provided significant quantities of relief goods. Donations included medicine, clothes, personal hygiene items, plastic sheeting, medical equipment and supplies, and shoes.

By mid-November 1986, El Salvador had emerged from the emergency phase and had organized short-term recovery programs. The GOES created a National Directorate for Earthquake Reconstruction which assumed power over the individual ministries and agencies to coordinate the overall GOES effort. Estimates place multilateral and bilateral loans and grants for reconstruction at $392 million, with $92 million coming from multilateral sources and individual countries supplying $300 million (these totals include a USG-provided $50 million special Congressional appropriation and the $75 million Economic Support Fund (ESF) grant).

Assistance Provided by the U.S. Government

USG employees evacuated the embassy and Consesa buildings during the first earthquake. No one in the official U.S. community suffered serious injuries. U.S. Marines stationed in El Salvador made numerous trips into damaged buildings retrieving equipment and personal effects. Despite efforts to collect vitally needed equipment, the loss of most Embassy and USAID office space, equipment, and communications hampered initial disaster operations.

Because the Chancery and its annex were rendered structurally unfit, the USAID Guest House functioned as the disaster command operations center. Also, the ambassador's residence was converted into the headquarters for communications from which all final decisions and communication with Washington were made. Damage to much of the embassy's radios and telex equipment made communicating with Washington and within San Salvador difficult. What radio equipment was operable proved insufficient; many radios broke on the third or fourth day of operations from overuse. Washington was contacted as soon as a means of communication became available and was informed that U.S. Ambassador Edwin G. Corr had declared on Oct. 10, 1986, that a state of calamity existed in San Salvador and its environs, thereby allowing OFDA money to be used for the disaster.

USG employees in San Salvador immediately began to help in relief activities. Along with checking on USG employees and their families, embassy representatives toured major hotels ensuring that U.S. citizens were safe. Several hours after the quake, a contingent of five USAID personnel assessed damage to medical facilities, shortages of medical equipment and medicine, and patient-load at the various health care centers located in the disaster area. Other USAID and embassy employees searched for and rescued victims.

On Oct. 11, another group worked with the SRC to cut OFDA-donated plastic sheeting and to distribute water tanks, food, and blankets. The American Women's Association and USAID staff gave out food and coffee to search-and-rescue workers at the Ruben Dario site.

In the weeks after the disaster, USG volunteers assisted those seeking news of friends and family in El Salvador. U.S. military personnel stationed in El Salvador aided the Salvadoran armed forces in keeping order and assessing damage to military

installations in the capital. Despite the confusion and added responsibilities, USAID and embassy employees also managed to continue their work from makeshift offices.

From Washington, the USG responded with immediacy. The State Department formed a Task Force to assist U.S. Embassy and USAID personnel stationed in Salvador as well as to field inquiries from concerned relatives of U.S. citizens there. Simultaneously, OFDA convened an El Salvador Working Group to coordinate immediate USG assistance. OFDA worked around the clock for two weeks responding to the disaster.

Thirty-eight flights carried USG-donated relief items, most of which were delivered within a few days of the disaster. Hours after the earthquakes, two Huey helicopters originating from Honduras transported a 15-member Military Emergency Response Team to Salvador. The medical personnel carried with them medical supplies and equipment, three medical tents, four 500-gallon water tanks, and communications gear. The team remained in El Salvador for only 24 hours because of the overabundance of medical professionals who had come to Salvador to assist the injured. Although the DOD-donated team withdrew, it left some equipment—such as medical tents and water bladders—on loan for the duration of relief operations.

On Oct. 11, five USG flights landed at Comalapa Airport bringing the following relief teams and goods:

- A DOD C-130 relief flight carried 1,100 blankets, 50 tents, and 100 folding stretchers from OFDA's Panama stockpile. The plane stopped in San José, Costa Rica, where it picked up five OFDA regional preparedness advisers, 10 cases of radio equipment, and a portable generator. OFDA paid for the flight and commodities.

- A search-and-rescue team of four dogs and four handlers plus two coordinators was transported aboard a DOD-supplied C-141 from Andrews Air Force Base.

- Two more C-130s laden with relief commodities flew from Panama to San Salvador. Among the cargo taken from OFDA's Panama stockpile were 12 3,000-gallon water tanks, 309 rolls of plastic sheeting, and 1,500 wool blankets. OFDA paid for the supplies and the transportation. The water tanks were delivered immediately to the area hospitals caring for the injured.

- OFDA flew a five-member fire and rescue squad from the Dade County Fire and Rescue Department (Miami, Florida) to Comalapa Airport.

From Oct. 12 through Oct. 15, several OFDA-chartered flights arrived in El Salvador bringing more goods. A DOD C-130 carried an additional 210 rolls of plastic sheeting and 200 body bags from OFDA's Panama stockpile on Oct. 12. The following day a DOD C-130 was loaded with 236 rolls of plastic sheeting destined for Salvadorans made homeless by the quake.

On Oct. 13, OFDA chartered a C-5A from Andrews Air Force Base to carry 960 rolls of plastic, 200 tents, and 10 tent-repair kits from OFDA's stockpile in New Windsor, Maryland. The plane made a stopover in Panama where it loaded additional tent kits comprising 1,380 tents, 356 tent flies, and repair tools. OFDA covered the costs of the commodities, the airlift, and inland transportation. Another DOD C-130 loaded with 87 tents, 24 3,000-gallon water tanks, and 110 rolls of plastic flew from Panama to Salvador on Oct. 15. OFDA-supplied plastic sheeting and tents were distributed to more than 10,537 homeless families.

That same week, OFDA chartered four aircraft to move non-USG commodities and personnel as a gesture of goodwill and cooperation. Two of these flights carried six pallets of plastic sheeting donated by the Costa Rican government and 13.4 MT of medical supplies from Atlanta, Georgia, provided by MAP International (a U.S. PVO). OFDA also arranged a C-141 airlift of 10 French and Swiss search and rescue professionals and 30 MT of goods collected throughout Europe. The personnel and commodities were flown from Zurich to San Salvador. Another C-141 was later chartered to return the French and Swiss dog teams to Paris and Zurich. Although the initial cost of the round-trip transport ($126,618) was absorbed by OFDA, the EEC reimbursed OFDA

for travel expenses through the Belgian company Balair Ltd.

On Oct. 16, Secretary of State George Shultz flew to El Salvador, toured the devastated sections of the capital, and reviewed damage and relief operations. Accompanying Mr. Shultz were Undersecretary of State Ronald I. Spiers, A.I.D. Administrator M. Peter McPherson, OFDA Director Julia V. Taft, the Japanese and U.K. ambassadors to the United States, IDB President Antonio Ortiz Mena, U.S. Reps. Bobbi Fiedler (R-Ca.) and John Murtha (D-Pa.), and other State Department and A.I.D. personnel. President Duarte briefed the visiting U.S. delegation and guided them through damaged neighborhoods.

By the end of the relief operations, the GOES had received the following OFDA commodities:

ITEM	QUANTITY	COST
Plastic sheeting	1,433 rolls	$389,776
Tents with flies and repair kits	1,457 tents 356 flies 6 repair kits	$611,940
Wool blankets	4,105	$16,420
Cotton blankets	4,700	$24,675
Folding stretchers	50	$800
Water tanks (3,000-gallon)	36	$86,400
Body bags	840	$8,300
General purpose (DOD) tents	20	$27,000
TOTAL		**$1,165,311**

DOD SOUTHCOM proved instrumental in coordinating the airlift of relief items from OFDA's Panama stockpile. In addition, SOUTHCOM donated the following DOD relief items independent of OFDA contributions: 4 cases of tetanus toxoid, 4 cases of albumin, 126 boxes of cholera vaccine, 4 boxes of antiobiotics, 24 boxes of saline, 28 boxes of ringers solution, 44 cases of MRE, 20 litters, 10 blanket sets, 10 medical chests, 738 sheets, 102 blankets, 3 general-purpose medical tents, 4 water blivets, 4 fuel blivets, 1 5kW generator, 1 case of calcium hyperchlorite, 100 goggles, and 100 dust masks.

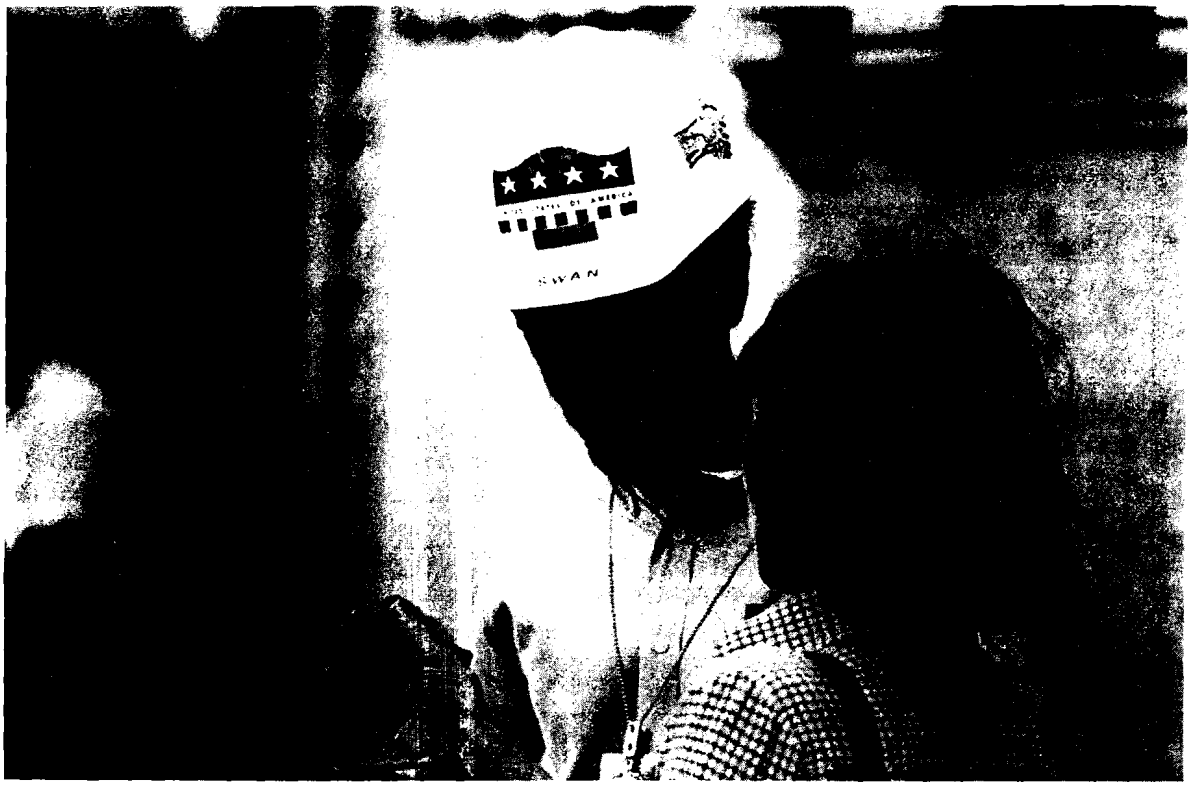
On Oct. 23, the USG provided a grant of $300,000 to the municipality of San Salvador and seven adjacent communities for an emergency housing repair program. Salvadoran officials used the money to purchase tin roofing, lumber, nails, and tools for slum dwellers who needed assistance to rehabilitate their homes. The GOES determined that 34,000 families would receive such materials.

The USG also contributed large quantities of food. CRS/Guatemala donated 1,419 MT of its PL-480 Title II food from its stocks, and OFDA paid the cost of transporting the food to El Salvador. CRS/El Salvador, WFP-CONADES, DIDECO, and CESAD—all in-country programs—also diverted their Title II commodities from regular programs to emergency feeding of the earthquake victims. In addition to the CRS/Guatemala donation, CRS/El Salvador provided 404 MT of food, WFP-CONADES gave 1,609 MT, and DIDECO and CESAD supplied 1,121 MT and 70 MT, respectively. FFP later replenished all of these food stocks. PL-480 Title II commodities from Guatemala and El Salvador constituted a large part of food used for emergency feeding programs. (Refer to the Temporary Shelter and Feeding Programs section under "Action Taken by the Government of El Salvador (GOES) and Non-Governmental Organizations".)

Money from the AID/Latin America and the Caribbean Bureau also was used for various relief projects. The USAID Public Services Restoration Project purchased or diverted the following goods from its ongoing development projects: repair equipment and accessories for a water restoration program; battery banks for the communications networks; circuit breakers, replacement/spare transformers, and accessories to restore electrical service; and heavy equipment such as cranes, bulldozers, front end loaders, and trucks for debris removal.

Throughout the recovery period, OFDA sponsored an array of specialists who provided technical assistance. OFDA sent a search team and a contingent of the Dade County Fire and Rescue Department. The U.S. search-and-rescue team assisted domestic and international squads in digging out survivors. Working the Ruben Dario and Ministry of Planning sites, the dog teams spotted five live victims and 11 corpses

OFDA Assistant Director Alan Swan



while the urban collapse team extricated 32 survivors by Oct. 13.

OFDA also dispatched its regional assessment advisers stationed at the U.S. Embassy in San José, Costa Rica. While in Salvador, the OFDA team performed a damage assessment of and managed USG disaster operations. Alan Swan, OFDA's assistant director of Latin America and the Caribbean, flew to San Salvador on Oct. 16 to evaluate USG relief operations and to assess needs that could be filled by the USG. Two USAID personnel from the San José, Costa Rica, Mission monitored and distributed USG relief commodities. A housing specialist from the USAID Mission in Lima (Kraig Baier) assessed housing reconstruction needs. Similarly, two housing experts from the consulting firm INTERTECT evaluated damage and shelter needs.

An OFDA-funded seismologist from the USGS accompanied a U.S. Earthquake Engineering Research Institute group to study the seismography of the area. OFDA also dispatched an urban search-and-rescue expert from the Arizona State Unversity to assist in the overall relief effort.

The USAID Mission in San Salvador independently provided services to assist the GOES in various relief program. Personnel from USAID's offices of Human Resources and Humanitarian Aid (HR/HA) and Health Information Designs (HID) assisted the GOES in performing a health needs assessment and monitoring and distributing incoming medicine and medical supplies. USAID and VISISA were credited with providing technical assistance, computer capability, and volunteers.

The USAID Office of the Private Sector served as an intermediary between COEDA and the USG. In addition, USAID paid for the services of the U.S. accounting firm Arthur Young and Company to computerize, record, and track national and international contributions and inventories.

USG assistance was not limited to recovery and USG officials approached its earthquake aid program in three phases: emergency, recovery, and reconstruction. The first phase—emergency—focused on immediately providing basic necessities to the affected. About $2.9 million was donated by the USG during the initial weeks after the incident.

Member of the Dade Country Fire and Rescue team navigated through rebar and concrete to enter a collapsed building.

For the short-term recovery phase that lasted from October 1986 to January 1987, the U.S. Congress approved $50 million in supplemental aid. The money financed a Public Services Restoration program that yielded the following results:

- Transportation Infrastructure - five culvert bridges were repaired;
- Public Market Repair - five major markets reopened in temporary facilities while demolition and design work was completed for permanent reconstruction;
- Medical Facilities Restoration - temporary hospital wards, operating rooms, and other reconstruction were underway at four major hospitals;
- School Rehabilitation - 724 classrooms were constructed, 240 classrooms were repaired, and 112,000 desks were distributed to elementary schools;
- Utility Rehabilitation - two urban electrification projects were completed; water lines and pumping stations were repaired; one sewage collection project was under construction; and thousands of repairs were made to the city's water distribution system, electrical grid, and communications networks; and
- Public Sector Building Construction - 63 temporary government offices and buildings were erected in six major complexes.

USG recovery money also financed: (1) the removal of 115,000 cubic m of rubble to reopen the street network providing 900,000 person-days of employment; (2) the provision of building materials to 34,600 families for temporary quarters; (3) $18.7 million in housing credits for 6,500 families; (4) $8.8 million in loans for 2,500 small businesses to restore operations; (5) the relocation of 1,500 families from slum areas to three large sites equipped with basic services; and (6) the initiation of small-scale restoration projects (water, sewage, drainage, streets, etc.) in 24 poor residential areas.

The third area of USG assistance emphasized longer-term reconstruction. A $75-million Economic Support Fund (ESF) grant was provided to the GOES and the Salvadoran private sector to rehabilitate and rebuild housing, vital infrastructure, businesses, and basic services. Of this grant, $44 million is to be used for credits and $31 million for public sector service reconstruction activities, PVOs, and project support.

Summary of USG Assistance

Ambassador's authority used for locally purchased water jugs and medical supplies $25,000

DOD airlift (C-130) of blankets, tents, and stretchers from OFDA's Panama stockpile and the OFDA assessment team from San José, Costa Rica $11,000

DOD airlift (C-130) of blankets, plastic, water tanks, and DOD-supplied tents from Panama $36,884

DOD airlift (C-130) of 230 rolls of plastic from Panama $11,000

DOD airlift of medical supplies (worth $1,500,000) provided by MAP International from Georgia $19,000

DOD airlift (C-5A) of tents, plastic sheeting, and water tanks from OFDA stockpiles in New Windsor and Panama $100,000

DOD airlift (C-130) of 213 rolls of plastic sheeting from Panama $11,000

DOD airlift of 5 pallets of plastic sheeting donated by the Costa Rican government from San José $12,100

Airlift of the 5-member Dade County Fire and Rescue Unit from Miami, Florida (covered through an pre-existing contract with Dade County) $20,000

Cost of contractor David Huie from USAID/San José from Oct. 14 to Oct. 31 ..... $1,472

Cost of USAID/San José Program Management Officer David Kitson from Oct. 14 to Oct. 24 .. $960

Cost of USAID/Lima housing expert Kraig Baier (OFDA travel funds) $1,860

Cost of OFDA Latin America and the Caribbean regional disaster adviser Paul Bell $12,000

200 body bags purchased from DOD in Panama $4,884

Local support of emergency relief program used toward the purchase of food for rescue workers, radios, hard hats, driver services, plastic jugs, and the services of one liaison officer who oversaw the unloading of relief goods at Comalapa Airport $25,000

Local emergency housing repair program $300,000

Technical assistance of USGS seismologist Dr. David Harlow from Oct. 16 to Oct. 30 ..... $2,059

Replacement cost for 1,978 rolls of plastic taken from the New Windsor and Panama stockpiles $544,016

28 hand-held radios (ham frequency) and batteries purchased from N & G Distributing Company $6,190

Cost of INTERTECT employees Fred Cuny and Paul Thompson to perform a housing damage assessment $12,913

Cost of dog handler Caroline Hebard to attend a Nov. 17-18, 1986, A.I.D. debriefing held in Washington $320

Radio repeaters, antennas, and air freight ... $2,145

Replacement cost of 36 3,000-gallon water tanks from the Panama stockpile $86,472

Technical assistance of an urban search-and-rescue expert Richard Olsen from Arizona State University $1,407

Grant to CRS for inland freight costs of 1,419 MT of PL-480 food from Guatemala $29,637

Ocean freight of 710 rolls of plastic to Panama $15,000

Ocean freight costs of moving 500 tents and 5 tent repair kits to Panama (partial) $5,706

Shipping cost of 1,000 tent replacements to Panama $25,000

Transport costs of moving 5,490 blankets to Panama from New Windsor $5,000

Cost of 5,000 wool blankets taken from Panama stockpile plus freight $5,000

Expenses of the visit of OFDA Director Julia V. Taft (OFDA travel funds) $70

Expenses of the visit of OFDA Assistant Director/Latin America and the Caribbean Division Alan Swan (OFDA travel funds) $955

Value of 4,623 MT PL-480 Title II food stocks used in feeding programs: CRS/Guatemala, CRS/El Salvador, WFP-CONADES, DIDECO, and CESAD (FFP funds) $1,077,800

Repair equipment and accessories for water restoration purchased through U.S. Public Services Restoration Project funds (AID/LAC Bureau funds) $290,000

Circuit breakers for electricity restoration purchased through U.S. Public Services Restoration Project funds (AID/LAC Bureau funds) $1,400,000

Replacement/spare transformers for electricity restoration purchase through the U.S. Public Services Restoration Project (AID/LAC Bureau funds) $600,000

Accessories to rehabilitate electrical services purchased through U.S. Public Services Restoration Project money (AID/LAC Bureau funds) $100,000

Congressional Appropriation for short-term recovery programs $50,000,000

Rehabilitation projects (ESF funds) $75,000,000

Total OFDA $1,334,050
Total FFP $1,077,800
Total Other USG $127,390,000

TOTAL $129,801,850

Summary of FFP Assistance

SPONSOR	PROGRAM & COMMODITY	QUANTITY (MT)	COST ($)
CRS/ Guatemala	Title II: beans, corn, vegoil, NFDM, cornmeal	1,419	446,700
CRS/ El Salvador	Title II: cornmeal, vegoil, rice	404	89,200
CESAD	Title II: cornmeal, vegoil, rice	70	21,500
DIDECO	Title II: vegoil, NFDM, rice	1,121	236,400
WFP/ CONADES	Title II: corn, vegoil, NFDM	1,609	284,000
TOTAL		**4,623**	**$1,077,800**

Assistance Provided by U.S. Voluntary Agencies and Other Private Groups

Response from U.S. private voluntary agencies and individuals was immediate and generous. OFDA/Washington contacted the U.S. media and the Salvadoran Embassy to discourage in-kind donations because unnecessary goods were pouring into El Salvador. As noted below, U.S. organizations, nevertheless, sent huge quantities of food, clothes, medicine, medical supplies, and other relief commodities. In addition to the items recorded below, 37 private individuals contributed significant amounts of relief items.

Abbot Laboratories - supplied 7 boxes of water purification tablets.

ADRA - dispatched a representative to perform a needs assessment and provided medical supplies and equipment worth $25,000, food worth $7,500, tarps and accessories, an electric generator, 21 cartons of plastic sheeting, and 34 sacks of shoes. ADRA-Puerto Rico independently supplied 69 cartons of clothes, 3 cartons of medicine, 33 cartons of food, and a tent; ASG/ADRA-El Salvador gave 40 bundles of tents. ADRA worked with OFASA in San Salvador; and ADRA/OFASA contributed 340 cartons of milk.

Amateur Radio Fans - provided 2 parcels of medical equipment.

American Airlines - contributed 54 cartons of instant coffee, 19 decanters of Agua Crystal, 12 cartons of toothbrushes, and 9 cartons of clothes.

American Assistance Products - sent 38 boxes of medicine.

American Jewish Joint Distribution Committee - donated $10,000 and 10 collapsible water containers.

American Scientific Products - gave 128 cases of medicine.

Americares Foundation - dispatched 2 Americares representatives to Salvador to perform an assessment; flew a first shipment of 27.2 MT of tents, blankets, sutures, antibiotics, bandages, water purifying tablets and other relief goods worth $2,000,000 million; flew a second load of 18.1 MT of medicine, valued at $750,000; and organized 3

ocean shipments of relief supplies worth $350,000, $500,000, and $300,000, respectively. With the Knights of Malta/Guatemala, Americares jointly provided 1 representative and 2 trucks loaded with antibiotics, other medicine, and medical supplies; valued at $500,000. The Salvadoran Knights of Malta coordinated the in-country distribution of goods provided by Americares.

ANRC - contributed $15,000 and the following commodities worth $5,600: 10 collapsible water containers, 1,500 blankets, 100 tents, 1,000 surgical gloves, 1,000 syringes, 100 first-aid kits, and 500 kerosene lamps. The ANRC dispatched 3 disaster specialists to assist the ICRC in San Salvador. The Los Angeles Red Cross independently sent $241,000, medicine, and periodicals. The ANRC also forwarded to the SRC inquiries as to the whereabouts and condition of family members and friends in Salvador at the time of the quake.

Assembly of God - provided 64 cartons of medicine.

Association of the Friends of the U.S. - donated 15 cartons and 21 bundles of clothes.

AVX Ceramix - sent 15 pallets of clothes and an additional 211 bundles of clothes and medicine.

Baptist Biblical Church - supplied 4 cartons of medicine and 1 box of medical instruments.

Baptist University of Seattle - contributed 7 bundles of medicine.

Baptist World Alliance - provided $10,000 and worked with the Baptist Association of El Salvador in providing medical supplies, water purification supplies and equipment, temporary shelter, and blankets.

Bemis Company - channeled $40,000 through the Salvadoran Knights of Malta for the local purchase of relief goods.

Best Generics - gave 106 cartons of medicine.

Blessings International - sent 6 boxes of medicine.

Bristol Meyer - donated 50 cases of medicine.

Brother's Brother Foundation - supplied $20,000 and channeled $200,000 worth of medical equipment and supplies through the Rotary Club of El Salvador.

Camel - provided 60 tents.

Cannon Fieldcrest - contributed 600 blankets.

CARE - with the Salvadoran Foundation for Development and Modest Housing (FUNDASAL), coordinated temporary housing reconstruction for the homeless, a project utilizing $25,000 worth of CARE-donated materials from its operations in Guatemala. CARE also provided approximately 2,000 MT of PL-480 food commodities from its stores in Guatemala and was reimbursed by USAID.

Challenge - provided 33 bundles of clothes, 1 box of lamps, 16 bundles of medicine, 1 box of cradles, 4 pairs of crutches, 12 gallons of water, 1 box of toys, and 18 bundles of food. Challenge employees separately donated 1 package of sheets, 2 containers of tents, 4 packages of mattresses, 40 containers of food, 2 bags of flour, and 1 container of clothes. Challenge Miami independently sent 4 bundles and 2 containers of clothes, 29 containers of medicine, 3 lots of orthopedic equipment, 1 cot, 1 orthopedic cane, 8 bundles and 4 containers of food, 1 bag of medical articles, and 1 tent.

Chicope - sent 540 cases of diapers.

Church of God World Mission - supplied 115 cartons of clothes.

Church of Jesus Christ of the Latter Day Saints - gave 130 family-sized tents and radios.

Commercial Agriculture Bank - donated 100 tents.

Commercial Bank - provided 50 tents.

Cross Connection - contributed 71 medical articles and 5 cartons of blankets, sheets, and other general relief items.

Cross Connection and Rundl - jointly sent 7 bundles of medical articles.

CRS - collected relief goods worth $822,959 from Action Medeor (Germany), Aesculapius, Archdiocese of Tucson, Medecins du Monde, the EEC,

Medical Aid for El Salvador, Norwegian Popular Aid, Operation California, Salvadoran Community of Baton Rouge, and CWS; the items were given to CEE for distribution. CRS distributed food to more than 100,000 homes arranged by parish communities and neighborhood groups; provided 14 pallets of tents; channeled $50,000 through the Ecclesiastical Emergency Committee of Caritas; dispatched an emergency staff member from Guatemala to support a 2-person CRS staff in Salvador; and earmarked $100,000 for housing reconstruction kits.

CWS - formed part of a joint assessment team with LWF and WCC; delivered from Guatemala 5,000 blankets, 10 family-sized tents, and 1,500 bottles of water-purification tablets; gave medical supplies, valued at $150,000 through the Inter-Church Medical Assistance; and issued an appeal for $300,000.

Direct Relief International - provided orthopedic and medical instruments as well as an ocean shipment of relief goods, valued at $446,000. The relief items were consigned to the Salvadoran Knights of Malta for distribution.

Earthquake Engineering Research Institute - dispatched a team of scientists to collect seismological data on the earthquake.

Ecumenical Council of Tuscon - gave 199 cartons of medicine and medical supplies, an electric sterilizer, a water pump, 56 sacks of grain and other food items, more than 35 cartons of blankets, 19 tents, and a carton of plastic tape.

Emergency Committee of Houston - sent 30 cartons of medicine.

Evangelical Church - contributed 1 carton of food, 2 tents, 5 cartons of clothes, and 2 cartons of medicine.

Foster Parents Plan - performed a housing assessment.

Friends of the Americas - sent a shipment of 100 cartons of shoe boxes filled with some food, personal supplies, and clothes aboard a TACA flight that donated space on Oct. 14, 1986. TACA again provided space aboard an Oct. 15, 1986, flight to Friends of the Americas that sent a second load comprised of 20 cartons of medicine, food, and vitamins. Finally, the organization's mobile medical unit, which is based in Guatemala, was sent to Salvador to assist the injured. A portion of the commodities sent was reported to be $50,000.

Girl Scouts of Southeastern Lousiana - provided 15 awnings.

Heart Beat International - gave medical equipment.

Heritage - donated 26 cases of tapes and sponges.

Houston - contributed 47 cartons of medicine and medical supplies, 11 bundles of plasma, 104 cartons and containers of clothes, and 22 cartons of canned food; the Emergency Committee of Houston separately dispatched 30 cartons of medicine.

Inter-American Society - gave medicine and clothes.

International Medical Association - supplied 39 boxes of antibiotics.

International Rescue Committee - sent mobile units for evacuation, antibiotics, and a sanitation engineer, all from Honduras, and dispatched a construction engineer from Costa Rica to conduct a housing survey.

International Scouting Committee - contributed clothes, medicine, and food.

Johnson and Johnson - gave 9 pallets of bandages and hospital supplies.

Kimai Exports - supplied 24 tents.

Knights of Malta - contributed tetanus vaccines and 19.5 MT of blankets, diapers, bandages, and medicine.

Kodak Exports, Ltd. - provided 13 cartons of X-ray film.

Latin Society in Los Angeles - donated 2 boxes of clothes and 3 boxes of cotton cushions.

Lemmon - gave 55 cases of metronidizole.

Los Angeles - supplied 5 bundles of medical supplies and a tent.

Louisiana State University students - donated approximately 1 MT of food and clothes.

MAP International - dispatched an assessment team comprising a pharmacist and a communications specialist and donated 13.5 MT of medical supplies, worth $1,500,000, and 816 cartons of medicine consigned to DOD for transport.

McDonald's - gave 50 tents.

Medical Aid for El Salvador - donated 25 pallets of medicine.

Miami - provided 200 bundles of flour as well as medicine and medical equipment.

Miami Children's Hospital - contributed 4 MT of medicine worth $9,978.

Miami Fund for Help to El Salvador - sent antibiotics.

Mission Aviation Fellowship (MAF) - transported 2.3 MT of medical supplies for MAP.

North Carolina - gave medicine.

Northwest Medical Team - provided medical supplies and medicine. At the request of a Puerto Rican health specialist, this Christian medical relief association dispatched a team on Oct. 19 consisting of 3 doctors, 2 operating room nurses, 1 technician, 1 administrator, and 2 newsmen who worked with the medical staff at San Juan de Dios Hospital in Santa Ana.

Oasis International, Inc. - contributed 35 cartons of orthopedic equipment.

Operation California - dispatched 3 emergency staff members and organized an airlift that included medical supplies, plastic sheeting for temporary shelter, and rescue equipment for extrication. Operation California worked with Medical Aid for El Salvador and the CEE.

Oshner Clinic of New Orleans (Sister City) - sent 8 pallets and one lot of medicine and 4 pallets of infusion supplies.

Oxfam America - dispatched a consultant and donated $15,000 for a medical airlift which departed from Los Angeles. The donated money was used for the local purchase of medicine, plastic sheeting, and tents. Oxfam America worked with the CEE in El Salvador.

Pan American Development Foundation (PADF) - paid for the transportation of a 22.5 MT shipment of medical equipment donated by San Mateo County Medical Society and comprising 46 hospital beds and bedside tables, a centrifuge, an operating table, an examining table, baby cribs, two dental chairs, medicine, and other supplies; PADF also sent an airlift of $175,000 worth of medical supplies and equipment and an ocean shipment of 15 pallets of medical supplies. PADF worked in conjunction with OAS and FUSADEF in San Salvador.

Perez Grading Company - sent 1 tent.

Pfizer - dispatched 121 cases of antibiotics.

Philip Morris International - channeled $30,000 through PADF for the transportation of supplies.

Project Hope - assessed damage and living conditions in the affected communities, delivered tents, and tested water in the Metropolitan region.

Project Hope and the Shriners of North America - jointly sent 2 teams of doctors from Shriners Hospitals who identified earthquake victims that would benefit from treatment in the U.S. and brought 11 children who were injured as a result of the earthquake to the U.S. for treatment. An Air Force MEDIVAC-141, charted by the White House, ferried the children first to Tampa then to Boston to be treated at Shriner's Hospital.

Public Health Equipment and Supply - sent 1 carton of deodorant for insecticide odors.

Relief Foundation - donated 20 bundles of medicine, 5 cartons of milk, and 1 pair of crutches.

Rotary Club - contributed 41 cartons of milk while the Rotary Club of Miami seperately sent 11 sacks of grain.

Saint Louis Hospital in Los Angeles - gave medicine.

Salvadoran-American Federation - supplied vaccines.

Salvadoran-American Foundation - dispatched food and medicine, valued at $11,689.

Salvadoran Association in Washington - donated 6 cartons of food and 3 cartons of canned juice.

Salvadoran Committee for Human Rights - channeled $1,400 through DIACONIA/ El Salvador.

Salvadoran Medical Center - provided 3 cartons of medicine.

Salvation Army - sent 200 blankets, 200 cartons of medicine and medical supplies, and 60 tents. Using the tents and medicine brought into the country, the Salvation Army set up a large health clinic to provide daily care to 300 patients and food to 200 people each day from Oct. 15 to Nov. 15.

San Francisco Committee of Aid to El Salvador - contributed 5 cartons of medicine and 1 carton of vaccines.

San Mateo Medical Society Auxiliary - donated 22.5 MT of medical equipment and supplies.

SCF/US - provided $10,000 for immediate relief needs. The SCF/Salvador operations purchased $1,800 worth of cleaning agents, medical supplies, and water purification pills for Bloom Children's Hospital. SCF also gave $13,300 for the local purchase of temporary shelter materials, water containers, cleaning materials, and medicine; and collected $1,000 worth of foodstuffs and clothes from neighboring communities for disaster victims. SCF also raised $104,000 from private sources for (1) housing rehabilitation, (2) credits through community banks, (3) sanitation facilities and health interventions, (4) psychological support, and (5) policy coordination during the rehabilitation phase.

Schwagman of New Orleans - gave 52 cartons of canned clams.

Searle - sent Lomotil.

Shaklee - provided 121 cases of soap.

SIRA - supplied 13 cartons of clothes and 13 cartons of medicine.

United Industries, S.A./U.S. - donated 5 cartons of medicine.

World Concern Development Organization - contributed $20,000 and diverted part of a $4 million shipment of medical supplies, sent before the earthquake for a development project, for use in emergency aid, including gauze and antibiotics. In-country, World Concern worked with Americares, CESAD, and the Evangelical Relief and Development Committee of El Salvador.

World Relief Corporation - sent a representative to perform a needs assessment and to support the 13-member, in-country staff, and gave $5,000 that was used to purchase roofing material, plastic sheeting, and household items; and worked with CESAD and USAID.

WVRO - dispatched a representative to perform an assessment and to support 50 WVRO in-country staffers; committed $200,000 for a two-phased program: (1) $40,000 for emergency relief and (2) $160,000 for rehabilitation. Emergency relief funds were used to purchase mattresses, blankets, pillows, containerized water, hygiene supplies, tents, plastic sheeting, and shoes. The rehabilitation money will be used for food aid, medical supplies, and housing repair. WVRO worked closely with the CEE and the National Relief Committee.

Xerox of El Salvador/U.S. - gave 16 tents and 10 cartons of blankets.

TOTAL $8,716,226

Assistance Provided by the International Community

Please Note: The total of "Assistance Provided by the International Community" includes reconstruction grants but not reconstruction loans.

International Organizations

EEC - dispatched a relief flight—through cooperation with the U.K. and the British Red Cross—loaded with 500 family tents and other supplies and sent 2 hosptial tents, 20 health clinic tents,

cooking utensils, and blankets, valued at $40,000. In cooperation with the Swiss government, sent 9 MT of relief goods consisting of 2 hospital beds, 20 health post tents, kitchen utensils, and blankets aboard the Oct. 15 Swiss relief flight.

FAO - provided 3 vehicles for the Salvadoran Ministry of Health's 25- truck mobile health brigade.

ICRC - assisted relief operations through its 21-person, in-country team and sent 5 MT of medicine aboard the Swiss disaster relief flight that arrived in Salvador on Oct. 12.

Inter-American Development Bank - gave $7,100,000 to be used during the reconstruction phase for a housing program in slum communities and made available $18,100,000 in reconstruction loans for a recovery program involving health, sanitation, transport, energy, and telephone services.

LRCS - sent a sub-regional delegation to El Salvador (and a relief flight from Panama loaded with approximately 13 MT of 3,000 blankets, 457 tents, and 200 first-aid kits donated by the Swedish Red Cross and valued at $139,394) to work with the SRC in assessing damage, providing emergency medical care at its center and through mobile units, and collecting and distributing shelter, food, clothes, and other supplies. For one month following the incident, LRCS distributed short-term food supplies to thousands of families, and in November it distributed family food baskets comprising milk, canned meat, cereal, coffee, corn, rice, beans, sugar, and salt. Thirty-day rations were provided to more than 20,290 families, and by February 1987 plastic or tents were given to 17,576 families and 479 institutions. The LRCS launched an appeal on Oct. 17 for $6,900,000 for expenses incurred during the emergency phase and later reconstruction and rehabilitation programs.

LWF - channeled $50,000 through DIACONIA/El Salvador.

PAHO - dispatched a team of disaster specialists on Oct. 10 to assess the magnitude and impact of the earthquakes as well as to identify health needs. The team consisted of a representative from PAHO headquarters in Washington and 2 field representatives from San José and Guatemala. This group worked closely with the Salvadoran Health Ministry and CNE to assess health needs, coordinate international medical assistance, and plan the early stages of the reconstruction of damaged hospitals. Two weeks later, a second team of technical specialists from PAHO headquarters arrived in El Salvador to plan reconstruction and assist the government in modifying the overall health care system. Approximately $145,000 in international donations was funneled through PAHO and consisted of essential medicine, basic equipment for hospitals, environmental sanitation equipment, and medical supplies for trauma patients.

Rotary International - channeled $25,000 through the Salvadoran Rotary Clubs to locally purchase food and shelter materials and to aid orphaned children through the disaster relief program of the Rotary Foundation.

UNDP - gave $50,000 and provided the following grants for reconstruction: (1) $8,300,000 for housing reconstruction; (2) $80,000 for emergency repairs to the Rosales, Bloom, and Social Security hospitals; (3) $200,000 for the rehabilitation of the *mesones/tugurios* dwellings; (4) $200,000 to the pediatric hospital for emergencies; and (5) $1,600,000 for low-cost housing. UNDP rehabilitation grants total $10,380,000. With ECLAC, the UNDP sent an assessment team on Oct. 16 to define mid- and long-term needs for a special appeal through the U.N. General Assembly.

UNDRO - gave $30,000 and dispatched a delegate.

UNICEF - delivered $50,000 worth of goods from Guatemala to El Salvador including medical supplies, 50 Coleman lamps, water purification tablets, 100 plastic containers, and 2,000 blankets; dispatched 8 additional UNICEF representatives to support the relief operations of in-country staff.

WCC - channeled $150,000 through DIACONIA/El Salvador.

WFP - released USG PL-480 Title II foodstocks in El Salvador to be used for emergency feeding programs. WFP worked with the Salvadoran agency CONADES on an in-country feeding program.

World Bank - gave loans totaling $102,400,000 for: (1) housing credit lines; (2) schools and public buildings; (3) roads and public services; (4) micro- and small-business credits; (5) training; and (6) studies and technical assistance.

Governments

Algeria - supplied rescue equipment; 296 bundles of tents and accessories; and 49 bundles of cotton blankets.

Argentina - donated the services of a 6-doctor trauma team and 8 other personnel as well as 32,380 kg of food, medicine, and medical supplies; the donated commodities and transport was worth $160,000.

Austria - sent 3 cartons of plastic bags; more than 25 cartons of assorted surgical supplies; and 1.5 MT of blankets, bed sheets, and surgical gowns aboard the Oct. 15 relief flight from Zurich (sent in cooperation with the Austrian Red Cross).

Belgium - donated $8,000,000 for reconstruction. The funds are to be used to build a 100-bed hospital in Zacamil.

Brazil - loaned a 14-tent, fully equipped camp hospital and medical personnel and gave medical supplies including 29 cartons of medicine, 599 cartons of infusion supplies, and 30 cartons of disinfectants. The Brazilian government also supplied 23 bundles of used clothes and 643 cartons of food. Donations from the state government of Sergipe included 5 cartons each of medicine and food as well as 9 cartons of clothes.

Canada - contributed $362,319 and an additional $109,000 through PAHO and LRCS.

Chile - gave 20 cartons of medicine and reconstruction grants of $400,000 and $10,000 to rebuild health units in Ciudad Delgado and Mejicanos, respectively.

China, People's Rep. - donated $200,000 and 226 cartons of medicine.

Colombia - provided 259 bundles of medicine, 3 cartons of vaccines, more than 6 cartons of hand tools (including picks, shovels, handles, and 16 wheelbarrels), 33 sacks of beans, 259 cartons of assorted food, 4 tents, 209 bags of clothes, and 88 cartons mixed with clothes and blankets.

Costa Rica - dispatched a search-and-medical squad and a 5-member assessment team headed by Costa Rican Vice President Dengo. The government also donated 48 bags of cereal, 21 MT of plastic sheeting, and 19 cartons of clothes.

Cuba - supplied 11 boxes of gas stoves, 3 boxes of kitchen utensils, and medical supplies including 16 boxes of medicine, 10 bundles of suture material, and 656 boxes of plasma.

Denmark - channeled $261,438 through the Danish Red Cross.

Dominican Republic - gave more than 111 cartons of clothes, more than 59 cartons of medicine, 20 tents, 100 tool handles, and 5 cartons of candles. Food donations consisted of 236 sacks of flour, dried fish, rice and cereal as well as 603 cartons of sardines, canned oil, and other food products.

Ecuador - donated 126 cartons of medicine, 164 quintals of dried vegetables, and 377 cartons of assorted provisions.

Finland - channeled $117,296 through the Finish Red Cross and LRCS and gave 100 tents.

France - loaned satellite communications equipment and dispatched a 9-member medical team. The government donated 1.8 MT of relief goods and medical equipment transported by the Oct. 12 Swiss Rescue Flight (including water purification supplies and blankets). A shipment of roofing material was consigned to the Salvadoran Knights of Malta. In addition, the French Embassy in San Salvador gave 5 cartons of medicine, 30 bundles of clothes, 3 cartons of food, and 264 cartons of milk. Aboard the Oct. 15 Swiss relief flight, France sent 2 MT of powdered milk and 3.5 MT of medicine and medical supplies. In cooperation with Hopital sans frontieres and Secours Catholique, the French government sent 550 kg of medicine, 80 kg of emergency canteens, and 300 kg of clothes; valued at $11,940.

Germany, Fed. Rep. - donated $47,000,000 and sent a Boeing-707 relief flight carrying a medical team, 600 family tents, 20 sanitary tents, camp beds, medicine, and medical supplies. On Oct. 16,

Salvadoran children

a second relief flight was sent in cooperation with the FRG Red Cross, FRG Caritas, Diakonische Werk, Arbeiter Samariter Bund, and Care/ Germany, valued at $84,158, which included 129 bundles of pharmaceuticals, 129 packages of bandages, 2 boxes of medical equipment, 252 boxes of medicine, 1,150 boxes of food, 129 emergency stoves, 129 cots, 129 tarps, 5 tents, and more than 3,050 kg of blankets and sheets. The West German government also gave the following reconstruction grants: (1) $2,500,000 for urban planning technical assistance; (2) $500,000 for the development of alternative construction materials; and (3) $4,250,000 in assistance to the San Salvador Archdiocese, CONADES, for the reconstruction of Salesian centers. The FRG Credit Bank also donated $15,000,000 for the reconstruction of Bloom Hospital.

Guatemala - dispatched an 80-member medical-rescue team, water-tank trucks, and medical supplies and provided 100 bundles of cornflour, blankets, powdered milk, nails, and plastic sheeting. The Guatemalan Emergency Committee (CONE) independently sent 315 quintals of plastic sheeting, 1,050 barrels of soybean oil, hydrochloric acid for water purification, and medicine. The Finance Ministry provided clothes, food, milk, nylon, water, and medicine.

Honduras - dispatched a rescue team, a medical squad, radio experts, and 3 shipments of medicine.

Israel - gave $5,284 and .5 MT of medicine, medical supplies, and food for hospitalized children.

Italy - dispatched a C-130 carrying 2 jeeps, physicians, a logistician, and a team of 3 rescue specialists and 5 dogs. Italy also sent 3 additional planeloads of various quantities of water tanks, household goods, medicine, medical supplies, tools including shovels and picks, generators, food, tents, and 3,500-liter tanks; all donations valued at $1,400,000. The third relief flight carried 12 MT of relief supplies (1,600 blankets, 114 tents, 4 generators, 10 storage tanks, tool kits), valued at $109,790. The Italian government also contributed the following reconstruction grants:

(1) $11,000,000 for the rehabilitation of the *tugurios;* (2) $20,000,000 for environmental sanitation projects in slum communities; (3) $9,000,000 for the relocation of families living in seismic-risk areas or in the mesones to Apupa; and (4) $12,000,000 to improve existing public health facilities and to construct a new health center. The Italian government is also making available a $3,000,000 loan to promote economic and social activities for the homeless and a $3,000,000 loan for a seismic and volcanic evaluation.

Japan - provided $250,000, a 4-member medical/search-and-rescue team, and 2 consignments of disaster relief commodities valued at $64,102. The government of Japan also donated a reconstruction grant of $1,800,000 to purchase equipment and vehicles for rubble removal.

Korea, Rep. of - gave $30,000.

Malta - sent 870 bundles of medicine, 161 boxes of blankets, 59 tents, and disinfectant soap.

Mexico - loaned a water purification and bottling plant and a hospital ship with helicopters, ambulances, medical personnel and supplies; dispatched 2 rescue squads comprised of 62 people with equipment and an operating room; and donated 276 boxes, 10 bags, and 2,696 cartons of foodstuffs, 14 bags, 3 lots, and 500 containers of medicine and medical supplies, and assorted quantities of cots, alcohol, water, infusion material, household goods, and tents. The Secretary of Health also sent 18 rolls of plastic bags and 18 parcels of plastic. Moreover, the Mexican Embassy in San Salvador provided 35 bundles of plastic sheeting, 11 bundles of shovels and picks, and assorted relief goods including chemicals, clothes, food, medicine, plastic, cotton, and napkins.

Netherlands - provided $450,000 earmarked for rehabilitation and reconstruction, $112,000 through CRS for housing reconstruction projects, and 6 MT of medicine and transport costs contribution for Oct. 15 Swiss relief flight, valued at $125,000. The government of the Netherlands provided additional grants of $14,700,000 to be used in reconstructing the University of San Salvador and $330,000 to rebuild the San Jacinto and San Miguelito health centers.

New Zealand - channeled $37,129 through the Salvadoran Red Cross.

Nicaragua - donated 38 packages of clothes, 99 bags of blankets, medicine, plasma, and blood supplies for transfusions.

Norway - sent tents, 50 wheelbarrels, 150 picks, and 300 bundles of shovels.

Panama - gave 472 cartons of medicine and pharmaceuticals and 10 sacks of food; the Panamanian Air Force contributed 207 bundles of food and canned milk; the Military Civic Action sent 234 cartons of canned food, detergent, and coffee as well as 589 packages of foodstuffs and toliet paper; and the Panamanian Embassy in San Salvador donated 26 cartons of food, 20 sacks of beans, 118 cartons of medicine, 2 cartons of clothes, and 8 cartons of baby bottles.

Peru - provided the services of a seismologist and 2 physicians and contributed 100 cartons of purified water, 120 bags of powered milk, 64 cartons of medicine and syringes, 100 shovels, 100 tool handles, 107 sacks of cereal, 399 cartons of sardines, and 10 cartons of bagged milk.

Spain - dispatched a relief flight carrying 1 Nissan fire truck, a fire- and-rescue squad, a rescue team, 440 containers of medicine and medical supplies, 55 containers of infusion materials, more than 100 cots, 5 electric generators, over 60 tents, and soap. The Spanish Embassy in San Salvador donated an additional 12 cartons of medicine.

Switzerland - sent a Swiss Disaster Unit that arrived in Salvador on Oct. 12 comprising 21 search-and-rescue specialists, 15 dogs, 4 water treatment specialist, 18 relief experts, heavy extrication equipment, and a 9-member relief coordination team which included radio operators, a physician, and support personnel; donated 52 medical kits, 50 cartons of clothes, 55 tents, 1,000 home utensils, and 4,000 blankets. A second relief flight was sent on Oct. 15 with consigments from Austria, Fed. Rep. of Germany, France, Netherlands, EEC, ICRC, and Humedica/FRG. Swiss officials contributed 9 MT of relief supplies including 2 hospital tents, 20 health clinics tents, utensils, and blankets through the EEC that were sent on the Oct. 15 flight.

United Kingdom - dispatched a 14-member fire and rescue squad and donated the following items: 208 containers and 50 cartons of medicine and disinfectant, 4 packages of medical equipment, 4 generators, fuel, more than 10 cartons of radios and spare parts, 20 cartons of food, 80 pieces of plastic lamina, 600 bags of tents, 7 boxes of tools, 3 bundles of rescue equipment, and 3 cots. The U.K. also loaned the following equipment and personnel to establish two water-purification plants: 3 water-purification machines with 11 accessories, 36 water-purification units, 2 boxes of tablets for water purification, 3 boxes of calcium sulfite, 1 drum of lubrication oil, 4 generators, 1 box of cables, 1 water pump, 48 containers of water-purification filters, and 18 drums of fuel.

Uruguay - provided 80 bags of medicine and 36 bundles of rice.

Venezuela - dispatched more than 91 cartons of medicine, 152 cartons of clothes and shoes, 876 cartons of food, 4.1 MT of medicine, and an assessment team consisting of physicians and firefighters. The Venezuelan Investment Fund, via the Venezuelan Central Bank, loaned the Durate government $9,000,000 to be used as creit for private enterprises.

Non-Governmental Organizations

Action d'Urgence Internationale (France) - dispatched 4 rescue specialists, an electronic listening device, and 2 rescue dogs.

ADRA/Costa Rica - provided 34 cartons of infant milk, 2 cartons of medicine, and 2 cartons and 9 bags of clothes.

Arbeiter Samariter Bund (Germany, Fed. Rep.) - gave — in cooperation with the FRG Government — anodynes, antibiotics, blood plasma, and bandages, valued at $49,505.

Bread for the World - channeled $100,000 through DIACONIA/El Salvador.

Cadets of the Army Junior Reserve Officers Corp (Germany, Fed. Rep.) - gave $200.

CARE/Guatemala - contributed 600 barrels of soybean oil, 8 cartons of school items, and 455 sacks of grain.

Caritas - the following national Caritas organizations reported their contributions that were channeled through Caritas Internationalis:

- Germany, Fed. Rep. - $50,000 as well as 700 bundles of tents, and 53 bundles of medicine and relief supplies; commodities valued at $100,000
- Italy - 387 bundles of tents and emergency first aid totaling $70,000

Catholic Fund for Overseas Development (U.K.) - provided $50,000.

Commission of Human Rights of England - channeled $910 through DIACONIA/ El Salvador.

Corps Mondial de Secours (France) - dispatched a 10-member rescue/medical team with 3 dogs and 1 MT of relief supplies.

DIACONIA/Switzerland - channeled $200,000 through DIACONIA/El Salvador.

Episcopal Commission of the Pastoral Society (Mexico) - contributed 70 MT of lamina, construction material, medicine, food, and clothes.

French Private Sector - consigned an airshipment of food, medicine, and roofing materials to the Salvadoran Knights of Malta for distribution.

Green Cross/Honduras - donated 69 cartons of dextrose and plaster.

Green Cross/Mexico - supplied 10 cartons of medicine.

Honda (Japan) - supplied 20 generators through LCRS, valued at $18,000.

Hopital sans frontieres - gave, through a joint contribution with the French Government and Secours Catholique, 550 kg medicine, 80 kg emergency canteens, and 300 kg clothes; total value was $11,940.

Humedica/Germany, Fed. Rep. - sent 1.5 MT of medicine (via the second Swiss Disaster Relief Flight dispatched Oct. 15, 1986).

Humedica/Guatemala - donated 3 cartons of tetnus vaccine.

International Rescue Corps/U.K. - dispatched a 14-member search and rescue team with 2 dogs and technical equipment.

Japan Shipbuilding Industry Foundation - channeled $32,051 through the Japanese Red Cross.

Medicins du Monde (France) - dispatched 2 doctors to support a 13-member medical team.

MSF (France) - donated 15 water tanks (transported aboard the second Swiss Disaster Relief Flight), and the services of 3 medican teams comprised of 15 doctors, nurses, and logisticians. These medical personnel provided free consultations and logged 1,200 consultations in the 25 days following the temblor. MSF established a community for 25,000 homeless and provided, with the assistance of the national water company (ANDA), bathing facilities, septic tanks, and potable water. MSF also installed water bladders in 12 more communities between Oct. 12 and Nov. 20. They kept these and water containers in 29 other locations full, delivering over 60,000 gallons of water per day. MSF worked with the Salvadoran Foundation for Minimum Housing (FUNDASAL) in relocating inhabitants of the temporary community they created during the emergency phase.

National Association of the Knights of Malta/ Mexico - supplied 7 cartons of meficine.

National Association of the Knights of Malta/ Switzerland - channelled .5 MT of antibiotics, antiseptics, and ligatures through the Salvadoran Knights of Malta.

National Association of the Knights of Malta/ Venezuela - consigned 3 shipments of medicine, food, and roofing oaterial to the Salvadoran Knights of Malta for distribution. Two of the shipments carried 31.9 MT of medicine and food.

National Metallurgists (Honduras) - contributed 31,200 galvanized lamina sheets and 2.8 MT of nails.

Oxfam/U.K. - channeled $50,000 through DIACONIA/El Salvador.

The following national Red Cross organizations donated relief items:

- Australia - $3,125
- Austria - $6,061, 1,000 surgical clothes sets worth $1,807, 19 cartons of clothes, 660 blankets, and 52 cartons of sheets
- Bulgaria - 160 cartons of milk, 424 cartons of food, 30 cartons of clothes, and 200 cartons of bed sheets
- Canada - $3,623
- China, People's Rep. - $30,000
- Colombia - 30 boxes of plaster, 100 bags of 10-yard shrouding, 50 oral electrolyte solution, 20 rolls of gauze, 40,000 ampules of distilled water, 15 rolls of cotton, 30 syringes, medicine, and bandages
- Costa Rica - 597 cartons of medicine and sutures, 119 cartons of miscellaneous goods, 32 cartons of food, and 30 cartons of clothes
- Czechoslovakia - 375 cartons of food
- Dominican Republic - 736 cartons of medicine, 315 cartons of food, 57 blankets, 8 cartons of vaccines, 4 cartons of medical supplies, 2 boxes of diapers, 1 carton of thermometers, 3 wheelchairs, and 1 pair of crutches
- Denmark (jointly with the Danish government) - 200 tents worth $81,928
- Finland - 100 family tents, bed sheets, kitchen sets, stoves, and medical supplies, valued at $74,752
- France - $36,867
- Germany, Fed. Rep - 400 tents, 500 bedsheets, 200 kitchen sets, 2,000 kerosene stoves, 50 stretchers, and bandage material; all commodities were worth $79,717
- Germany, Fed. Rep., and Netherlands - blankets, utensils, medical supplies, tents, Coleman lanterns, and cots
- Guatemala - 6 cartons of medical equipment, technical personnel, blood, and medicine
- Honduras - 262 cartons filled with a mixture of clothes, medicine, milk, and plastic
- Japan - $64,458
- Mexico - 4 doctors, more than 792 containers of medicine and medical supplies, 283 cartons of

Collapsed structure in downtown San Salvador

food and powdered milk, and 7 cartons of tools and gloves

Netherlands - 8 people, 5 medical kits, 5,000 blankets, and 100 family tents—all worth $92,048—and plastic sheeting, value not reported

Nicaragua - technical personnel, 15 field tents, 6 first-aid kits, 3 medical kits, 330 units of plasma, medicine, 5 boxes of children's clothes, blankets, 4 flexcamps with such accessories as stoves, beds, and latrines

Norway - $13,605

Panama - medicine, vaccines, and clothes

Poland - 41 bales of tents and accessories

Soviet Union - 2,000 blankets, 2,000 boxes of milk powder, 13 cartons of medicine, 100 first-aid kits, and 54 tents.

Spain - 60 first-aid tent kits, 10 large tents, and 100 cots

Sweden - 3,000 blankets, 257 tents, and 200 first-aid kits from Panama warehouse; all valued at $93,023

Switzerland - medicine, 1,000 household sets, 1,550 sets of kitchen utensils, 50 dressing sets, 13,600 blankets, 5 large medical tents, 22 large tents, and 50 family tents; all valued at $160,721

United Kingdom (in cooperation with the EEC and the U.K. Government) - a relief flight ($86,171) with 500 family tents and medicine ($118,999) and $51,293 for the local purchase of food

Venezuela - 15 cartons of food and 293 cartons of medicine

Yugoslavia - 5 cartons of medical supplies and 91 cartons of clothes

Roche Interamerica (Honduras) - contributed 32 cartons of medicine.

Rotary Club/Mexico - provided 10 shovels, 4 plastic containers, 1 roll of cable, 2 sacks of milk, 98 bundles of medicine, 20 cartons of sardines, 20 cartons of milk, 1 carton of medicine, 29 cartons of shoes and clothes, 1 carton of gloves, 10 cartons of soap and detergent, 1 parcel of shovels, 2 bundles of metal buckets, 34 cartons of food, 5 cartons of tools, 18 rolls of plastic, and 51 bundles of food and tools.

Secours Catholique (France) - donated 400 blankets from 'France Avec Vous' Association; $29,851 to Caritas/El Salvador; and 550 kg medicine, 80 kg emergency canteens, and 300 kg of clothes, through a joint contribution with the French Government and Hopital sans frontières; valued at $11,940.

Secours Populaire Francais (France) - contributed medicine and medical supplies worth $14,925.

UNICEF/Denmark - sent 33 cartons of medicine.

UNICEF/Guatemala - gave blankets and guaze.

Union Church/Guatemala - contributed $2,400.

Union Church/Honduras - provided $1,200.

Village to Village Caravan/Mexico - sent 43.6 MT and 1 lot of food, clothes, medicine and other goods.

The following international non-governmental organizations provided medicine, medical supplies, blankets, food, clothes, tents, shoes, beds, wood, tools, construction material, lamps, batteries, personal hygiene goods, and other relief items. A listing of what each organization provided can be obtained from OFDA.

Amigos Colombianos
Association of the Church of God (Costa Rica)
Association to Aid Refugees (Japan)
Assumption Church (Mexico)
Assumption College of Mexico
Barrio Tepito, Mexico
Barrio to Barrio (Mexico)
Cakchiquel of Integral Development (Guatemala)
Cayman Airways (U.K.)
Christian Assembly (Guatemala)
Church of the Latter Day Saints (Costa Rica)
City of Madrid, Spain
City of San Pedro Carcha-Alta Verapaz, Guatemala
Colgate Palmolive/Costa Rica
Committee of the Friends of El Salvador (Colombia)
Confederation of Pastors in San José (Costa Rica)
Cooperative Institute of Panama
Coprinsa (Costa Rica)
Costa Rican Social Security (CCSS)
Diochemie/Austria
Empresa Galia (France)
Evangelic Conference of God (Canada)
F.A. Panamanian
Fedefarma (Guatemala)
Firemen of Puerto Barrios, Guatemala
Formfit of Guatemala & Cia. Ltd.
Galaxia and Lasser Industries/Honduras
Gillette of El Salvador/Panama
Guatemalan Association of Film Exhibitions
Guatemalan Chamber of Commerce
Hoechst of Germany/Honduras
Honduran Emergency Committee
Hotel Prado (Costa Rica)
Imperial Chemical Industries, Panama
Institutional Revolutionary Party (PRI)/Mexico
Irish Catholic Agency for Development/Honduras
Johnson & Johnson/Guatemala
Ladies' Association (Costa Rica)
Matsushita Electric/Costa Rica
McCann-Erickson/Guatemala
Mexican-American School (Mexico)
Mexican Social Security
Morries and Dickson/Costa Rica
Numar, S.A. (Costa Rica)
OFASA (Costa Rica)
Panama Pacific International
Parish of San Juan, Guatemala
People of Mexico
People of Nicaragua
R.H.M. (Honduras)
Rotary Club of Monterrey, Mexico
Sandozag Switzerland
Sandoz Latinoamerica/Panama
Tecpan Guatemala
Telemaraton 17/13 Toshiba (Japan)
Transaid (Germany, Fed. Rep.)
Trocaire A.I.D. (Honduras)
Women's Association (Ecuador)
World Service Church (Mexico)

TOTAL $170,161,090

Civil Strife Haiti

Date
June 29 - July 4, 1987
Location
Port-au-Prince
No. Dead
30
No. Affected
More than 100 injured
Damage
Not reported

The Disaster

Beginning on June 29, the Haitian provisional military-civilian government, headed by Lt. Gen. Henri Namphy, was confronted with general strikes throughout the country. One week earlier, the government had issued new election guidelines that voided regulations already drafted by the Provisional Electoral Council. The government's unexpected action provoked widespread criticism among various Haitian organizations that said the government was violating the newly established constitution by usurping the powers of the electoral council. Leaders of these organizations called a general strike, which was accompanied by street protests; this resulted in interruptions in public transportation, frequent road blocks, and violence in Port-au-Prince and in other cities. Thirty people died and more than 100 were injured.

Action Taken by the Government of Haiti (GOH) and Non-Governmental Organizations

The government of Haiti appealed to the USG and to the international community for assistance in providing medical supplies for people injured during the civil disturbances. The Haitian Red Cross provided services to people injured or displaced by the violence.

Assistance Provided by the U.S. Government

In response to the GOH request for medical supplies, U.S. Ambassador Brunson McKinley declared a disaster on July 4 and subsequently obligated $15,000 for the local procurement of medical supplies. The U.S. mission purchased cotton, surgical instruments, drugs, X-ray film, and orthopedic equipment. The supplies were delivered to the state university hospital in Port-au-Prince and to regional hospitals in Les Cayes, Cap Haitien, and Gonaïves.

TOTAL $15,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Canada - purchased 1,000 kits for blood donations and transfusions, which were given to the Haitian Red Cross.

Floods Haiti

Date
Oct. 23, 1986
Location
Island of La Gonâve
No. Dead
69
No. Affected
About 75% of the island's population, or 45,000
Damage
834 houses were damaged or destroyed; considerable crop and livestock losses resulted; roads and water systems were seriously affected.

The Disaster

Several consecutive days of rain, culminating in a torrential downpour on Oct. 23, resulted in severe flash flooding on the island of La Gonâve. Sixty-nine people were killed in the deluge, which also destroyed 510 houses and seriously damaged 324 houses. Livestock and crop (maize, millet, and tobacco) losses were expected to be substantial in an area that had experienced below normal rainfall before the storm. The flood also interrupted electrical service and rendered rural roads impassable. Of particular immediate concern was the lack of potable water because of the contamination of water sources.

Action Taken by the Government of Haiti (GOH) and Non-Governmental Organizations

The director general of OPDES (Organisation Pre-Desastres et de Secours) led a delegation of government and voluntary agency representatives in conducting a preliminary damage assessment on Oct. 24. Transported to the island by a Haitian armed forces helicopter, the delegation visited several flooded areas in the town of Anse-à-Galets and flew over rural sections of the country. A local aid committee was formed to establish a definitive list of personal damages. Representatives of the National Water Authority carried out field surveys to determine the condition of the potable water system, and the minister of agriculture visited La Gonâve on Oct. 31 to survey crop damage.

With potable water the priority need in the aftermath of the flooding, OPDES appealed to USAID/Haiti for help in procuring four collapsible water storage tanks. The Haitian Maritime Service dedicated a vessel to carrying the water containers and other relief supplies to the island.

A representative of the Haitian Red Cross (HRC) participated in the initial OPDES damage assessment. Subsequently, the HRC sent 15-16 tons of relief supplies to the affected population, including water, food, plastic sheeting, water purifiers, and kitchen and eating utensils.

The Service Chretien d'Haiti, a combined service agency of Haitian Protestant churches, participated in a survey of relief needs and provided tools and food.

Assistance Provided by the U.S. Government

After hearing reports of the gravity of the situation on La Gonâve, U.S. Ambassador Brunson McKinley determined on Oct. 30 that a flash flood disaster existed on the island. From his disaster assistance authority, Ambassador McKinley committed $25,000 to the effort to provide potable water to the residents of La Gonave. The cash grant to OPDES was used for the local purchase of one-gallon plastic jugs and chlorine bleach in medicine dropper bottles for water disinfection. The ambassador's fund also covered the cost of shipping water and other relief supplies to the island in a Haitian Maritime Service vessel.

In response to the GOH request for water storage containers, relayed to OFDA by USAID/Haiti, the USG also provided four collapsible 3,000-gallon water storage bladders. The tanks, which arrived in Haiti on Nov. 2, were transshipped to La Gonave and donated to the GOH. The cost of replacing the tanks in the Panama stockpile was $9,488.

TOTAL $34,488

Assistance Provided by U.S. Voluntary Agencies

CWS - forwarded $5,000 from the Executive Director's Emergency Fund to Service Chretien d'Haiti to assist in providing emergency relief.

TOTAL $5,000

Assistance Provided by the International Community

None reported

Floods Panama

Date
Oct. 16, 1986
Location
Low-income areas of Panama City; Los Santos Province; and outlying areas of Chiriquí Province
No. Dead
2
No. Affected
About 3,500; more than 2,500 homeless
Damage
15 buildings were destroyed and 162 were structurally damaged. Losses of livestock, housing, and personal/household effects totaled $250,000. The water supply system suffered $100,000 in damages.

The Disaster

During the week of Oct. 12, torrential rains battered Panama. The inundation, which followed an unusually heavy rainy season, caused extensive flooding and damage. Particularly affected were Los Santos Province, several low-income sections of Panama City, and outlying areas of Chiriquí Province. Of these regions, the communities of Flores, Río Viejo de Solar, Pueblo Nuevo, Chara, El Cacao, Bebedero, Bucaro, and Puerto Piña y Quema suffered most from high water-levels measuring 1.8 m at some points.

Flooding forced the temporary evacuation of more than 1,000 people in the two affected coastal provinces and more than 1,500 in the Juan Diaz area of Panama City. A mudslide triggered by the rains killed two children. Moreover, serious food shortages resulted in the affected areas of Los Santos and Chiriquí provinces. Flooding, deficient latrine construction, and water contamination contributed to occurrences of hepatitis, diarrhea and respiratory illnesses among the affected population around Tonosí in Los Santos Province.

Material damage included livestock ($25,000), housing ($150,000), personal/household effects ($75,000), and water supply system ($100,000). In addition, 15 buildings were destroyed and 162 structures were damaged.

Action Taken by the Government of Panama (GOP) and Non-Governmental Organizations

The GOP Ministry of Housing surveyed the stricken area and determined that mattresses, cots, and canned goods were needed. Because GOP funds for the required relief items were not readily available, First Lady Mariela Díaz de Delvalle, through the Office of Proyectos Especiales de la Primera Dama de la República (Special Projects of the First Lady), appealed for U.S. assistance and initiated the distribution of relief goods.

The Headquarters of the Seventh Military Zone of the Defense Forces coordinated logistical activities including the temporary evacuation of civilians and the storage of relief supplies. Actual distribution of donated goods was performed by Tonosí Rural Hospital officials and the Civic Committee of Tonosí. Other organizations participating in these efforts included the Catholic Church, the Office of the First Lady of the Republic, the Ministry of Health, and the Panamanian Red Cross.

Assistance Provided the U.S. Government

On Oct. 16, 1986, Ambassador Arthur H. Davis determined that the extent of damages warranted USG assistance. The Ambassador's Authority of $25,000 was channeled through the Office of the First Lady of Panama for the local purchase of food and bedding. Panamanian suppliers Riande Comercial, S.A., Abastos Gago, S.A., and La Confianza, S.A., provided 400 mattresses, 600 bedsheets, and foodstuffs that included milk, oil, coffee, grains, fish, ham and salt.

On Oct. 21, these USAID-funded commodities were received, sorted, and prepared for distribution. The GOP transported the relief items to Tonosí and Pedasí in Los Santos Province. USAID staff monitored distribution. More than 450 severely affected residents of Tonosí benefited from a mass-feeding program established with the U.S. food donations.

TOTAL $25,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

None reported

Landslide Venezuela

Date
Sept. 6, 1987
Location
Aragua State, particularly the Caribbean beach towns of Rancho Grande, Parque Guamita, La Nevera, and the northern Maracay neighborhoods of Mata Seca, El Limón, El Progreso, and Tierra Nuestra
No. Dead
96 according to the Venezuelan Government; unofficial estimates place the death toll at 10 times the official figure.
No. Affected
15,000, including 300 injured, 8,000 evacuated, and 1,700 homeless
Damage
104 buildings were destroyed; mudslides buried several hundred cars and structurally damaged 25 km of the main road connecting Maracay with the coastal resort of Ocumare de la Costa. Estimates of property damage ranged between $800,000 and $1,000,000.

The Disaster

On Sept. 6, heavy rainfall triggered widespread flooding and landslides that entombed many Venezuelans and caused extensive damage to housing, roads, and communications. The downpour dumped two-months' worth of rain on the city of Maracay and its environs within a six-hour period. The rains caused the El Limón and the Las Delicias rivers to inundate various localities north of Maracay, 200 km west of Caracas. Mud, rocks, and tree trunks carried along by the deluge leveled the northern neighborhoods of El Progreso, El Limón, Río Blanco, and Guamita. As the debris accumulated in the rivers, large dikes formed behind which fast flowing water built up. One such wall measured 200 m long and 6 m high. Eventually the dikes burst, releasing torrents of water. Rampaging floodwaters spread two m of mud in the streets of Limón and created two new, swiftly flowing branches of the Limón River down residential roads.

Landslides were particularly destructive in the corridor between the Caribbean coast and Maracay. Mud and debris destroyed part of the Ocumare Highway, which passes through the mountains of Henry Pittier National Park and serves as the main route uniting Maracay with the Caribbean resorts of Ocumare de la Costa, El Playon and Bahía de Cata. Mudslides covered 25 km of the major thoroughfare, burying vehicles and pushing several cars into adjacent ravines. Hundreds of motorists who were returning from Caribbean beach resorts were stranded. Highway traffic on Sept. 5-6 was particularly heavy because it was the last weekend of school vacation for Venezuelan children, and many residents were returning from the national beaches. The Venezuelan Interior Ministry estimated that 1,000 cars were buried and 2,000 more abandoned on the Ocumare Highway. A bridge on the affected road suffered serious damage and relief officials feared that taking heavy rescue equipment over the bridge would cause the structure to collapse.

About 1,500 people made homeless by the landslides and flooding sought refuge at the Army's Conscript Barracks in Maracay. Meanwhile, survivors were moved from the Ocumare Highway and the coastal towns were flown to a soccer field at the Universidad Central de Venezuela campus in Maracay where rescue workers had converted the field into a landing zone for relief operations.

On Sept. 9, 5,000 troops and volunteers were flown to disaster sites to assist in extricating victims from the mud and distributing relief goods. Rains again inundated the disaster area the following weekend, forcing rescuers to suspend operations on Sept. 11-12. By Sept. 13, the weather had cleared and evacuation operations resumed.

Action Taken by the Government of Venezuela (GOV) and Non-Governmental Organizations

Venezuelan President Jaime Lusinchi declared Aragua State a disaster zone on Sept. 7. In accordance with needs identified by Aragua officials, the president issued an appeal to the citizens of Venezuela for relief donations such as food, clothing, medicine and heavy earth-moving equipment to assist the disaster victims. The Venezuelan National Guard and Civil Defense were dispatched to the area to assist rescue workers.

The GOV immediately initiated a mass evacuation of stranded coastal residents and beach-goers using boat and helicopter transit to Puerto Cabello; from Puerto Cabello, evacuees rode buses to Maracay. The Venezuelan National Guard and Civil Defense airlifted 5,000 from the coastal areas of Ocumare, Turiamo, and Choroni. Of these, 3,500 were residents of Ocumare and 1,500 were tourists, including 25 vacationing U.S. Embassy employees and their families who were marooned in Cata.

President Lusinchi and several of his cabinet ministers toured the emergency area on Sept. 8 and decided that the disaster occurred largely because construction had been permitted on the Limón River floodplains. On Sept. 9, Aragua Governor Antonio Aranguren told U.S. Ambassador Otto Reich that because of the mountainous terrain and blocked roads the only way to reach some of the affected disaster zones was by heavy-lift helicopters. The president's office and the Defense and Interior ministries contacted U.S. Ambassador Reich that same day requesting that the USG send two Chinook (CH-47) helicopters to transport food and other supplies to isolated areas

and to transfer needed equipment to the disaster area to clear the roads of the estimated 1,000 autos buried by the mudslides.

Spurred by perceived threats of pestilence, the GOV attempted to extricate corpses early in the relief effort. On Sept. 9, the Ministry of Health established emergency vaccination centers near the four devastated neighborhoods of Maracay and fumigated the disaster area in an attempt to prevent epidemic outbreaks.

Two organizations coordinated relief operations: the Venezuelan National Red Cross and the National Relief Command, which is headed by the President's private secretary and draws on military and civil defense resources. The GOV Navy transported critical food to the isolated communities throughout the relief period.

Extrication efforts were hampered by the inability to move heavy equipment to locales where it was needed. After an inventory of available in-country resources, conducted with the assistance of the USG assessment team, and a review of options on Sept. 11, the GOV rescinded its request for U.S. DOD helicopters. Instead, the GOV relied on the Venezuelan navy, which provided helicopters that were used to move cranes, wreckers, front-end loaders, dump trucks, fuel trucks, air compressors, and other support equipment from Puerto Cabello to Ocumare. Rescue workers moved the transferred equipment up the Ocumare Highway from the Caribbean resort toward Río Limón and pulled out the trapped automobiles, clearing the landslides, and opening the road as far as Puente Hierro bridge.

Assistance Provided by the U.S. Government

U.S Ambassador Otto Reich determined that the extent of damage caused by the Sept. 6 inundations and the subsequent mudslides warranted USG humanitarian aid. On Sept. 8 he exercised his disaster assistance authority and released $25,000 to the Venezuelan Red Cross for support of Red Cross relief operations. He also contacted OFDA on Sept. 9, suggesting that Washington be prepared to deploy the Chinook helicopters, requested by the GOV that day, should the USG assessment reveal a need for such support.

A DOD Disaster Assistance Survey Team (DAST) sponsored by OFDA accompanied OFDA Regional Adviser Paul Bell to Venezuela on Sept. 10 to perform a damage assessment for the USG. The DAST comprised a logistician, a heavy-helicopter operations officer, a communications specialist, and SOUTHCOM's disaster officer. The U.S. deputy chief of mission, the defense attaché and staff officers, and the USAID mission disaster relief officer met Paul Bell and the DAST. Soon after the team's arrival, Governor Antonio Aranguren of Aragua State and Transportation Ministry representatives briefed the USG officials on the status of disaster relief operations. The assessment team and U.S. Embassy personnel toured the disaster site by helicopter and on foot on Sept. 11.

The U.S. assessment team recommended that helicopters were definitely needed to transport heavy rescue equipment to the disaster sites; however, Mr. Bell suggested that the GOV had enough in-country helicopters to accomplish the task without the requested Chinook aircraft. The OFDA-sponsored assessment officers had met with GOV representatives on Sept. 11 and learned that an inventory of available resources revealed that the Venezuelan navy had some aircraft that could be used during the relief phase. The GOV officially rescinded their request for Chinook helicopters, and the DOD DAST returned to Panama on Sept. 14.

Summary of USG Assistance

Ambassador's disaster assistance authority given to the Venezuelan Red Cross $25,000

TDY of DOD DAST from Panama to assist OFDA regional adviser with assessment $1,100

Transportation for OFDA regional adviser and DAST ($100 of this amount came from the OFDA regional adviser's contract) $5,600

TOTAL $31,700

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

None reported

FY 1987 Disasters

Africa and the Near East

DISASTERS

Africa and the Near East
Insect Infestation
- Burkina Faso
- Cameroon
- Chad
- Ethiopia
- The Gambia
- Guinea-Bissau
- Mali
- Mauritania
- Niger
- Senegal
- Sudan
- Yemen Arab Rep.

Benin Epidemic

Botswana Drought

Chad Rat Infestation

Equatorial Guinea Fire

Ethiopia Drought I

Ethiopia Drought II

Guinea-Bissau Storm

Mozambique Civil Strife

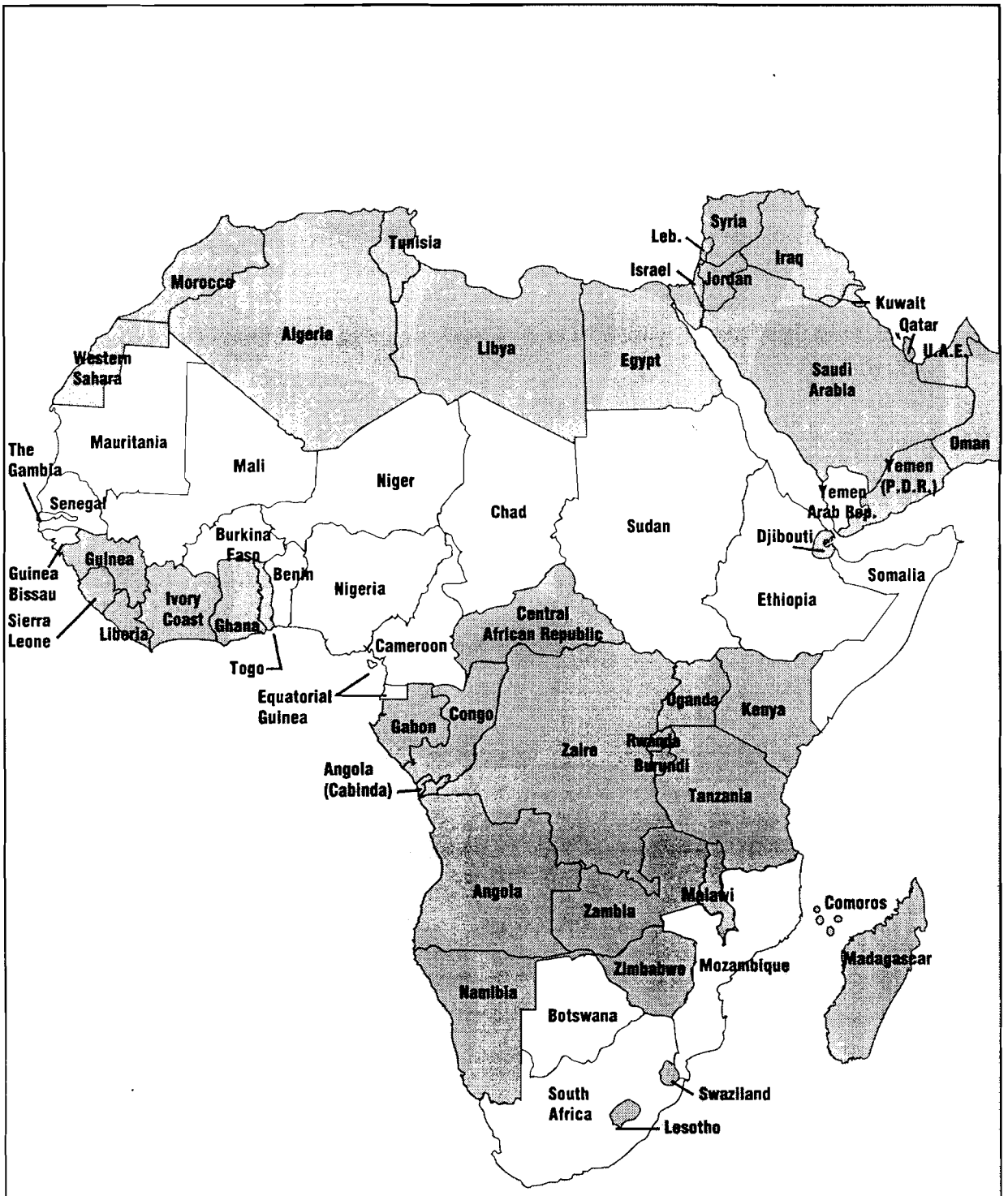
Nigeria Epidemic

Somalia Drought

South Africa Floods

South Africa Food Shortage

Sudan Rat Infestation



Africa and the Near East

BURKINA FASO

Burkina Faso faced a significant grasshopper infestation in 1986 that required international assistance. More than 210,000 ha were sprayed by airplanes to protect crops. This operation proved successful, but the Government of Burkina (GOB) and the donors were concerned because the grasshoppers were able to lay eggs before they died. Thus, planning for the 1987 season began early; if rain fell at 1986 levels, the infestation would be at least as serious.

In December 1986, the GOB presented a plan in which it estimated that 150,000 ha would need to be treated during the early part of the 1987 agricultural season and that 30,000 ha would need treatment later on. The plan divided the campaign into two phases. During the first phase, ground treatment was expected to cover 50,000 ha and would involve extensive use of dusting bags by farmers and vehicle-mounted sprayers by Crop Protection Service (CPS) agents. Phase One also included the use of three helicopters for surveying and the treatment of 100,000 ha. During the second phase, the GOB planned to limit ground treatments to 25,000 ha, using vehicle-mounted sprayers, but increase aerial treatment to 275,000 ha, which would require three small aircraft and two helicopters for surveying and treatment.

The plan also spelled out the required inputs for the anti-grasshopper campaign and appealed to the international community for assistance. U.S. Ambassador Leonardo Neher responded by declaring the situation to be a potential disaster on Feb. 21, 1987. USAID/Ouagadougou decided to concentrate its contribution on providing technical assistance, 20,000 liters of fentrothion, and helicopter surveying. The technical assistance component consisted of two people: Charles Kelly, who provided management support to USAID/Ouagadougou, and Dr. William H. Settle, an entomologist from the University of California at Davis. Mr. Kelly also provided guidance to the U.S. mission in Niamey on the grasshopper/locust campaign in Niger. Other donors—major donors included France, West Germany, Canada, Italy, the Netherlands, and the EEC—provided propoxur (for ground control), more fenitrothion, sprayers, radios, protective clothing, logistical support, and technical assistance.

As it turned out, the grasshopper situation in Burkina in 1987 was significantly less severe than expected. During Phase I (June 15-Aug. 15), a total of 125,000 ha was evaluated as infested by grasshoppers, principally *Oedaleus senegalensis*, a voracious pest that has some locust characteristics (such as the tendency to become gregarious). Only 9,070 ha were treated, all by ground crews.

The area assessed as being infested during the second phase (Sept. 15 - Nov. 1) totaled 113,100 ha. Only 34,635 ha were treated, mainly by a Canadian-financed Turbo Thrush, because of low insect densities. Of the total hectarage infested, about 60,000 ha were located in a block southwest of Yako (100 km northwest of Ouagadougou) where 19,648 ha were treated (17,900 of this by air) before operations ceased on Oct. 15, because of the political situation. Only 600 liters of the USG-donated fenitrothion (out of 20,000 liters) were needed. The CPS report on the 1987 campaign attributes the low level of infestation to several factors: the late start of the rainy season, poor rainfall (both in quantity and timing), hot weather, and grasshopper larvae deaths during the early part of the season caused by dust storms. Armyworms were generally a bigger problem than grasshoppers.

Summary of USG Assistance

FY 1987

Mission allotment for a manager (Charles Kelly) for 12 months $73,400

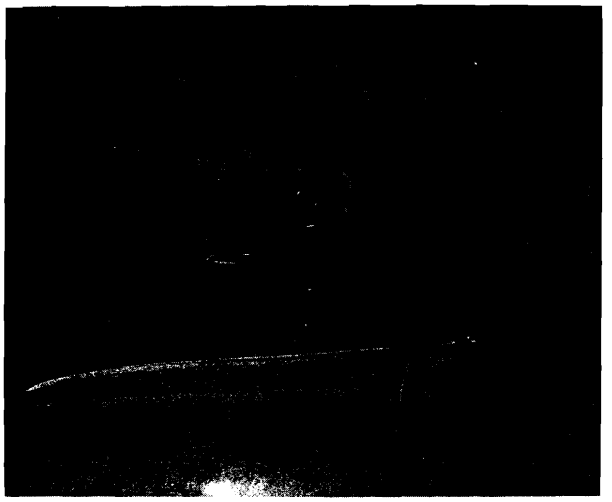
Mission allotment for the purchase of 20,000 liters of fenitrothion: OFDA funds $35,000
AFR/OEO funds $170,000

Contract with Evergreen Aviation for a helicopter to do survey work $235,082

Mission allotment for support of the helicopter operation: vehicle ($17,000), maps, labor, and fuel (the Toyota was donated to the SCF office in Ouagadougou after the grasshopper campaign) $38,250

Entomologist (Dr. William H. Settle) for 12 weeks (Aug. 7 - Oct. 31) from University of California at Davis $40,000

Appropriate protective gear was required when handling pesticides



Total OFDA $421,732
Total Other USG $170,000

Total FY 1987 ..... $591,732

FY 1988
OFDA extension of Charles Kelly's contract for 1 month $10,600

Total FY 1988 ..... $10,600

TOTAL $602,332

Assistance Provided by U.S. Voluntary Agencies
None reported

Assistance Provided by the International Community
Canada - provided $746,268 for 310 MT of propoxur, other pesticides, a Turbo Thrush, and training.

China, People's Rep. - contributed 22 MT of malathion.

EEC - donated $178,674 for 15,320 liters of fenitrothion, protective clothing, 700 face masks, and technical assistance.

France - gave $515,000 for 8,000 liters of fenitrothion, 100 hand sprayers, 500 ULV sprayers, a helicopter for surveying, protective clothing, and training at PRIFAS.

Germany, Fed. Rep. - provided $420,000 for 170 MT of propoxur, 20,000 liters of fenitrothion, 500 ULV sprayers, protective clothing, 1,000 face masks, Unimogs, and training.

Italy - contributed $399,166 for 7,520 liters of malathion, other pesticides, 194 sprayers, 50 dusters on wheels, 4 large-volume dusters, protective clothing, 510 masks, 25 tents, 6 vehicles, and an expert.

Netherlands - donated $375,000 for 100 MT of malathion, 20,000 liters of fenitrothion, 300 sprayers, 330 goggles, and logistical support.

Soviet Union - provided protective clothing, 1,000 face masks, and an entomologist.

Switzerland - contributed $221,429 for 15,000 liters of fenitrothion, protective clothing, and training.

UNDP - provided $267,342 for 50 sprayers, 10 tents, 2 experts, and 2 vehicles (on loan) through FAO.

UNICEF - donated $25,000 for the loan of 2 trucks and operating costs.

TOTAL $3,147,879

CAMEROON

Cameroon stood on the fringe of the 1986 locust and grasshopper invasion but still experienced outbreaks. Insects covered a total of 32,000 ha in the far northern part of the country with densities of up to 100,000 to 150,000 per ha. The Crop Protection Services (CPS) of the Government of the Republic of Cameroon (GRC) was able to treat only 2,650 ha from the ground. Fortunately, however, aerial spraying in Chad kept crop losses to a minimum in northern Cameroon.

The inadequacy of 1986 control efforts caused concern that abundant rains in 1987 would lead to serious outbreaks of grasshoppers. A preliminary FAO assessment in the early spring of 1987 found the area at serious risk to be 70,000 ha, while GRC estimates were 90,000 ha. Land affected by insects supports 40,000 to 60,000 farm families. The GRC then presented a plan to the donors that involved the treatment of 240,000 ha in a two-phase campaign; the GRC and FAO later revised this figure to 170,000 ha. In response to this appeal, U.S. Ambassador Myles Frechette

declared a disaster on Mar. 24, 1987. The USG contribution totaled $200,000 and had two components: $190,000 for a grant to FAO/ECLO for assistance to the CPS and $10,000 to pay for the services of two radio communications specialists. FAO worked with the GRC to coordinate the campaign. Other major donors included the EEC, Canada, and the United Kingdom.

Phase I activities continued until the end of August and covered the six divisions in the far northern province. The CPS reported that 54,000 ha were treated in a joint farmer-CPS ground control effort. Densities of the pests reached 50 per sq. m in Mayo Tsanaga Province around Mokolo and mortality averaged 90% in treated areas. The Senegalese grasshopper was reported to be the most prevalent species.

An FAO evaluation team that visited Cameroon in October 1987 found that control efforts had reached only 15,000-20,000 ha and were in general inappropriate. For example, the major pest was not *O. senegalensis* but a deep-burrowing grasshopper better eradicated with bait formulation rather than from backpack sprayers. The FAO team also found that the levels of infestation did not warrant second-phase activities.

Summary of USG Assistance

Grant to FAO for field agent and farmer training, a locust specialist, air and ground logistician, equipment, vehicle, and administrative costs (AFR/OEO funds) $190,000

2 radio communications specialists $10,000

Total OFDA $10,000
Total Other USG $190,000

TOTAL $200,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Canada - provided $144,300 for the local purchase of pesticides and sprayers.

Denmark - financed FAO-provided technical assistance for one month.

EEC - donated $73,000 for pesticides and protective clothing.

France - provided funding for pilot and mechanic of UTAVA—the GRC aerial spraying unit—and for training.

Germany, Fed. Rep. - donated $125,000

United Kingdom - contributed $250,000.

TOTAL $592,300

CHAD

Chad faced a major insect infestation in 1986: almost 150,000 ha were treated by air in a campaign to which donors contributed more than $4.3 million. Because of the late start in the aerial campaign and inadequate ground control efforts, many of the grasshoppers were able to lay eggs before they were killed. The Government of Chad (GOC) and donors were concerned that the country could face an equally serious infestation in 1987 if weather conditions were favorable to hatching.

To prepare for the potential disaster in 1987, the GOC and donors began to draw up an action plan in December 1986. The strategy of the GOC control program was divided into two phases: Phase I focused on ground control, and Phase II concentrated on aerial treatment. More frequently than most Sahelian countries, Chad is at risk from infestations of desert locusts (*Schistocerca gregaria*) and African migratory locusts (*Locusta migratoria*), as well as from grasshoppers, particularly *Oedaleus senegalensis*. With the proper climactic conditions, Chad could be hit with serious crop loss. To make matters worse, rats plagued Chadian farms in 1986 and 1987 (see the case report on the Chad rat infestation). Because of weak infrastructure in Chad, the action plan put emphasis on getting campaign inputs, such as pesticides, vehicles, fuel, and aircraft, pre-positioned at field depots.

The U.S. mission in Ndjamena recommended that the USG concentrate its part of the multi-donor intervention on technical assistance, pesticides, aerial control, and transport. U.S. Ambassador John Blane declared on Feb. 12, 1987, that Chad faced a potential disaster from insect infestation

and requested that OFDA fund, as soon as possible, an entomologist to work with the USAID/Ndjamena and the GOC for at least six months. This entomologist, Habib Khoury, arrived in early April and helped coordinate the USG component of the campaign. OFDA provided malathion for aerial treatment, 250 hours of flying time, fuel, transport, and radios. Other donors concentrated on funding eggpod surveys, training, ground control, and technical assistance.

The rainy season got off to a good start in May: the rains began earlier than usual and precipitation levels in late May and early June were high. This good start to the rains proved favorable to grasshopper development. However, the lack of rains from mid-June through early July diminished the insect population. Regular rains started again in July, causing the northern movement of the grasshopper population. This population grew, developed, and increased in number in the northern sahelian zone until mid-September. Diminishing rains in late September and early October forced the insects to return southward to more favorable habitats.

The desert locust situation also was carefully monitored. The first sighting was recorded in mid-June indicating the presence of solitary desert locust adults in north Kalait. Another report in early July indicated the presence of larval bands around the same zone. The FAO consultant in Chad confirmed this presence in late July. He observed dense gregarious larval bands and light flying swarms north of Kalait. More reports in August noted that desert locust swarms were observed flying over Iriba and Guereda and moving in different directions (eastward and westward). However, an aerial survey financed by USAID and France and conducted by PRIFAS, FAO, and USAID in late August did not find any gregarious concentrations around the suspected locations.

In mid-September, October, and early November, desert locust infestations again were observed around the Kalait area. Thus, simultaneous prospection and ground treatment were started by the National Plant Protection Service and OCLALAV (a West African regional anti-desert locust organization) in Kalait, Fada, Iriba, Guereda, and Biltine.

In early October, USAID provided satellite imagery and additional maps to the prospection teams to better orient their efforts. The imagery indicated the favorable breeding locations for desert locusts.

The temperature drop to 8°C (5°C at night) reported around the Kalait zone in early November was an indicator that the desert locust infestation would be reduced. After that, no more infestations were observed. African migratory locusts posed no danger to Chad this year.

The GOC conducted eggpod surveys and implemented the ground-control phase of the campaign. Although the severity of the infestation was not as serious as feared because of inconsistent rains and adequate ground control, an aerial intervention program was still necessary. The GOC requested that USAID work in the eastern part of the Sahelian zone. This area covered five prefectures—Ouaddai, Biltine, Guera, Batha, and Salamat—that were at high risk of infestation according to the eggpod survey done in early 1987. Thirteen locations in these prefectures were chosen as operating sites for the aerial program; the choice of these sites was based on the availability of landing strips, warehouses, and proximity to important agricultural crop lands. The malathion purchased by OFDA arrived in Ndjamena in late April, in time to be pre-positioned at the operating sites before the beginning of the rainy season, when road transportation becomes difficult if not impossible. Avgas, fuel, and vehicles were also pre-positioned, allowing smooth and uninterrupted operation of the airplanes. FAO provided the aerial control teams with radios, financed by A.I.D. in 1986, that greatly improved communications between the field and Plant Protection headquarters. A.I.D. provided four more radios in 1987.

The objective of the USAID aerial treatment program was to spray 150,000 ha of the crop area in eastern Chad. USAID/Ndjamena contracted with Mission Aviation Fellowship (MAF) to execute the program. MAF worked with USAID technicians and the GOC Plant Protection prospection teams. The GOC teams played an essential role in the program by preparing infestation maps and conducting field surveys. Aerial treatment began on Sept. 9 and was completed within two months; spraying took place on 32

days, and the rest of the time was used for moving from one site to another or for on-site preparations. The aerial program reached about 90% of its target, or about 134,000 ha of crop land and the closely surrounding grassland. Surveys after treatment showed mortality rates averaged 95%; many local farmers indicated their satisfaction with the effectiveness of the aerial spraying. The total flying time used was 376 hours, and the amount of malathion needed was 63,560 liters.

In conclusion, Habib Khoury, the A.I.D.-contracted entomologist, noted that the 1987 grasshopper infestation was heavy but less serious than expected due to the extended dry period in June and July. In eastern Chad, the timely and effective aerial treatment killed most of the grasshopper population before the end-of-season heavy egg laying. Thus, the intial grasshopper population of the 1988 season should be low and the infestation light in central and eastern Chad.

Summary of USG Assistance

Entomologist: Habib Koury contracted for Apr. 1 - Oct. 31 (most of this case report is based on Mr. Khoury's final report) $112,000

Aerial treatment specialist: Alfred Rivas contracted for July 1 - Oct. 31 (however, this TDY was cut short) $79,000

Purchase and shipping of 90,000 liters of malathion 98% ULV from American Cyanamid (ocean freight costs amounted to $11,482, while air freight from Antwerp to Ndjamena cost $175,000) $490,000

Mission allotment for in-country transport of the malathion $16,500

Contract with Mission Aviation Fellowship for aerial treatment program (cost included flying time, spare parts, tools, generators, 2 teams, 6 radios, 10 maps, 2 first-aid kits, and other logistical support) $398,700

Mission allotment for avgas and diesel fuel $74,023

Mission allotment for ground support: clearing of airstrips and other support $80,000

Purchase and shipping of 4 radios from Electronic Equipment Bank, Inc $3,988

TOTAL $1,254,211

Assistance Provided by U.S. Voluntary Agencies

Mission Aviation Fellowship - implemented aerial spraying program.

WVRO - donated 50 hand sprayers.

Assistance Provided by the International Community

Canada - provided $30,000 for the local purchase of pesticides.

EEC - donated $196,500 for 14,600 liters of fenitrothion and $27,000 for transport.

FAO - contributed 33,000 liters of fenitrothion.

France - donated 80 hours of helicopter prospection, 150 hours of aerial spraying, ground-control equipment, 40 MT of propoxur and lindane dust, 10,000 liters of fenitrothion, funds for eggpod surveying, 500 ULV sprayers, 100 backpack sprayers, technical assistance, and training; some of this assistance amounted to $490,000.

Germany, Fed. Rep. - contributed $252,809 for technical assistance, 50 MT of propoxur, 10,000 liters of fenitrothion, 1,000 hand sprayers, and protective clothing.

Indonesia - donated $10,000.

Italy - contributed $244,444 for pesticides, vehicles, sprayers, and protective clothing.

Switzerland - donated $27,000 for training.

UNDP - contributed $34,000.

TOTAL $1,311,753

ETHIOPIA

For the second consecutive year, swarms of locusts and grasshoppers infested northern Ethiopia. Extensive breeding of desert locusts occurred in Eritrea's Red Sea coastal plains, a primary breeding habitat. The incipient outbreak

appeared in this lowland region during December 1986, and locusts finished hatching in February. The Ministry of Agriculture (MOA), in conjunction with the Desert Locust Control Organization for East Africa (DLCO-EA), mounted a spray campaign against adults and new offspring. Despite the control operations, considerable numbers of locusts survived. Favorable ecological conditions fostered early maturation and reproduction. Many swarms moved westward into the highlands. To prevent further migrations, MOA and DLCO continued aerial spraying. Hazy weather conditions reduced the effectiveness of their operations and several swarms could not be controlled. By June, the MOA and DLCO-EA had sprayed 70,000 ha by air in Eritrea with 10,000 more ha covered by ground-control operations. Eritrea's northwestern lowlands also harbored locusts. Swarms coming from neighboring Sudan and Ethiopia's infested highlands invaded Eritrea and then migrated southward into Tigray, infesting all regions of the latter as far as the Tigray/Wello border. In addition to the locust infestation, large numbers of voracious armyworms were found eating grass and crops in Tigray.

Two secessionist movements operating in Eritrea and Tigray impeded surveying and spraying in these two regions. The Eritrean Relief Association (ERA), an organization affiliated with the Eritrean People's Liberation Front (EPLF), voiced concern about the locust threat to the major 1987 harvest. The Relief Society of Tigray (REST), the assistance arm of the Tigray People's Liberation Front (TPLF), spotted locust breeding in Tigray and expressed fear of the enormous swarms coming in from Eritrea. Both ERA and REST conducted ground-control operations within their respective provinces but by July felt compelled to appeal for assistance from the international community. Despite all control efforts, including the MOA/DLCO spraying campaign, locust swarms continued spreading southward. Although little crop damage had been reported by mid-July, expanded locust control was deemed necessary to prevent the spread of the infestation into Wello. On July 13, FAO called an emergency desert locust meeting for selected donors, private relief organizations, and U.N. agencies. MOA appealed to the USG and the international community for support of urgent actions to control the locust infestation in northern Ethiopia.

Because of the potential threat to crops and possible movement of locusts to the neighboring countries of Sudan, Somalia, and Kenya, U.S. Chargé d'Affaires James Cheek declared a disaster on July 28. The U.S. Mission requested that OFDA provide a grant to FAO for the multilateral locust control effort. A $168,500 grant was allocated to FAO and used to purchase protective clothing, camping equipment, and first-aid kits, and to provide logistical support for two survey and control helicopters provided by Canada. Of the FAO grant, $273 was used to print 4,000 brochures in Amharic on how to apply carbaryl and necessary safety precautions. In late August, OFDA financed the procurement and shipment of 35 MT of carbaryl and 10,000 face masks.

A test program to compare insecticide spraying equipment analyzed data with the aid of a computer

Summary of USG Assistance
Grant to FAO for logistical support of Canadian helicopters $140,000

Grant to FAO for camping equipment, protective clothing, first-aid kits, and brochures $28,500

10,000 face masks purchased from DOD, plus shipping costs $1,552

35 MT of carbaryl purchased from Union Carbide $150,464

Air freight of carbaryl $60,000

TOTAL $380,516

Assistance Provided by U.S. Voluntary Agencies
None reported

Assistance Provided by the International Community

International Organizations
EEC - provided 60,000 liters of fenitrothion and overhaul of aircraft engines, valued at $750,000.

FAO - sent a locust expert and distributed camping equipment, radios, and batteries, valued at $100,000.

ICRC - provided 3 fixed-wing aircraft, valued at $500,000.

World Bank - contributed knapsack sprayers.

Governments
Australia - donated $71,000 for helicopter logistical support.

Canada - provided 2 helicopters with pilots qualified in survey and control, valued at $370,000.

France - sent 25,000 liters of pesticide, valued at $320,000.

Switzerland - gave 10,000 liters of Basuden pesticide, 50 knapsack sprayers, and protective equipment for ground-spraying teams, valued at $160,000.

Sweden - contributed 50,000 dry-cell batteries to operate ULV hand sprayers, totaling $25,000.

United Kingdom - donated pesticides and equipment, totaling $800,000.

Non-Governmental Organizations
Band Aid - gave 37.5 MT of bendiocarb, valued at $140,000.

Oxfam/U.K. - sent 37.5 MT of bendiocarb, valued at $140,000.

TOTAL $3,376,000

THE GAMBIA

(Please note: OFDA responded to two insect infestation disasters declared in the Gambia in FY 1987. The first, declared on Oct. 14, 1986, addressed residual needs related to the 1986 Sahel-wide campaign against grasshoppers. A case report of that disaster is included in the **OFDA Annual Report FY 1986**. OFDA funds for that disaster totaled $568,091 in FY 1987. The description below covers the second disaster, declared in February 1987.)

In 1986, the Gambia faced a major infestation of *Oeduleus senegalensis* and *Zonocerus variegatus* species of grasshopper and treated almost 320,000 ha, mostly by air. Unfortunately, eradication efforts that year were too late to prevent significant egg-laying. To prevent a recurrence, the Government of the Gambia (GOTG) in 1987 set up a task force to deal with the potential grasshopper infestation while the FAO representative convened a donor steering-committee in late January. The GOTG task force developed a strategy calling for a two-phased approach: Phase I emphasized farmer and CPS ground spraying while Phase II focused on aerial spraying. The CPS conducted eggpod surveys in early February and indicated that 280,000 ha would have to be treated if rains were reasonably abundant. The donor community was concerned that the eggpod survey was done without technical assistance, yet USAID/Banjul accepted a figure of 300,000 ha at risk, encompassing three of the country's five divisions. On the basis of this assessment, U.S. Ambassador Herbert E. Horowitz declared the situation in the Gambia to be a potential disaster

on Feb. 13, 1987. At the mission's request, OFDA immediately provided funding for an entomologist to assist the CPS in its work and for a local-hire coordinator to assist USAID/Banjul in implementing the USG program. An OFDA-sponsored assessment team sent to Senegal also went to the Gambia in mid-March for several days to help USAID/Banjul design an appropriate USG response. The team met with USAID and GOTG officials and representatives of other donor organizations and inspected CPS facilities and equipment.

The GOTG Task Force refined its action plan with the help of Dr. George Allen, a U.S.-funded entomologist, and other technical assistance in late April. The strategy for Phase I, commencing in mid-June with the onset of the rains, was to consist of a major ground offensive by trained farmers and ground crews to suppress early populations of hoppers. Farmers were to treat 35,000 ha using dust and ULV formulations of propoxur, fenitrothion, and malathion from existing government stocks. The CPS established a well-organized system to oversee survey and spray activities. Nine phytosanitary bases were strategically located across the country to provide a network to monitor, survey, and control hopper outbreaks. A total of 29 surveillance posts, consisting of two CPS agents and one extension agent, reported to the phytosanitary stations.

Workers pumping excess pesticide out of spray plane

These nine stations supplied logistical support, collected data, and assisted in spray activities.

CPS extension ground crew operations in Phase I consisted of vehicle-mounted and backpack ULV applications of malathion on 75,000 ha of open and crop lands and 50,000 ha adjacent to forested areas. In addition, 4,000 ha were to be treated with Sevin-4-Oil (carbaryl) bait to introduce this technology and compare the efficacy of ULV and bait formulations in areas containing high grasses. Phase I was to make maximum utilization of the CPS and farmer training activities. Phase II was to include treatment of 20,000 ha by air if necessary. However, it was hoped that the success of ground crew and farmer activities would reduce the need for aerial application to small areas. Aerial operations are considered to be less effective in certain areas of the Gambia as the growing season progresses because grasses and other foliage keep spray from reaching the insects.

The GOTG action plan estimated the campaign cost to total $1.9 million including pesticides, spray equipment, communications, technical assistance, and supplies. USAID/Banjul expected that timely communications and transport would be a major impediment in the campaign as no reliable system existed for communicating vital data from surveillance posts to phytosanitary stations. Therefore, USAID/Banjul, with the help of the OFDA-funded assessment team and entomologist, decided to focus on these needs, providing about a third of the estimated campaign requirements. Coordinating with the GOTG and other donors, USG inputs totaled $633,754 and included training, pesticides, radios and communications equipment, motorbikes, sprayers, aviation fuel, and technical assistance. The "train-the-trainers" program, designed by OFDA and AFR/OEO, took place in Banjul in early April (see Section I, Preparedness, for more detail). The U.S.-donated communications equipment enabled field agents to report grasshopper infestations and requirements to CPS headquarters. Malathion and carbaryl bait were provided for both aerial and ground application. The U.S. also contributed 18,000 liters of fuel for the Phase II airplane, provided by Luxembourg. Other donors provided pesticides, spraying equipment, and technical assistance to ensure that the GOTG had sufficient resources for the campaign.

Rainfall continued to be sporadic and generally below average into August. The primary threats

to crops in early summer included hairy caterpillars, armyworms, and millipedes, with some localized nymphal Senegalese grasshopper populations reported. Phase I ground control crews, made up of CPS agents and farmers, monitored and treated these pest outbreaks. Propoxur, fenitrothion, and malathion dusts were in stock at all 38 CPS stations while each phytosanitary base received one drum each of liquid malathion and fenitrothion.

By mid-August, rainfall approached average levels but pest outbreaks remained sporadic and limited in size. However, farmers and CPS surveyors identified a risk area of 5,400 ha of forest land bordering on rice fields in Western Division. The GOTG decided to use the Luxembourg-donated plane to treat this area with fenitrothion 98% ULV; this was the only instance of aerial treatment in the 1987 campaign. Ground control activities continued throughout August and September.

By Oct. 1, participants at the GOTG steering committee meeting agreed that Phase I activities had been successful. The concerted response was much improved over the 1986 campaign: campaign planning was initiated and completed earlier, donors responded sooner, inputs arrived on time, and the CPS teams were trained and expeditiously deployed to various areas of the country to control localized grasshopper outbreaks.

Summary of USG Assistance
(Note: The total here does not add up to $633,754 as the training courses are included in the preparedness section.)

Entomologist: Dr. George Allen contracted for Apr. 1 - June 15 and again from Aug. 31 - Sept. 26; funds included cost of a vehicle (Nissan Patrol 4-WD diesel) $96,000

Entomologist: Timothy McNary of USDA/APHIS for July 20 - Sept. 21 (AFR/OEO funds) $40,000

Communications system: 38 station radios, 4 mobile radios, and 4 air-to-ground receivers purchased from N&G Distributing Company $105,068

Transport for radios $20,925

73,750 liters of malathion 91% ULV purchased from American Cyanamid; cost includes ocean transport on Maersk Lines $268,357

1,840 liters of Sevin-4-Oil carbaryl purchased from Union Carbide; cost includes ocean transport $7,052

Mission allotment of 18,000 liters of aviation fuel (for Luxembourg Cessna Agtruck) purchased from Mobil/Dakar $20,000

Mission allotment for the local purchase of electrolyte for batteries $300

Mission allotment for the local purchase of 100 motorized backpack sprayers $10,000

Mission allotment for the local purchase of 29 motorbikes $25,000

10 lawn spreaders purchased from Sears for the application of carbaryl bait, plus transport; these turned out to be the wrong kind of spreaders $466

10 cyclone seed spreaders purchased form Spyker Spreader Works for the application of carbaryl bait, plus transport $1,116

50 hand-held tally registers purchased from Carolina Biological Supply Company for field counting of grasshopper populations, plus transport $614

Total OFDA $554,898
Total Other USG $40,000

TOTAL $594,898

Assistance Provided by the U.S. Voluntary Agencies
None reported

Assistance Provided by the International Community
Action Aid - contributed 52 motorized backpack sprayers, valued at $15,000; 4 vehicle-mounted Micronair sprayers, valued at $36,000; and 200 protective outfits (jackets, aprons, masks, and boots), valued at $13,000.

EEC - provided 14,600 liters of fenitrothion, 3 Micronair sprayers, and protective clothing, all valued at $195,897.

Italy - donated 400 manual backpack sprayers, 90 motorized backpack sprayers, 4 spray guns, and 10 wheelbarrow-mounted sprayers; and 5,000 liters of malathion, valued at $200,793; and an agricultural agronomist for six months.

Japan - contributed 132 motorized backpack sprayers, 20 MT of fenitrothion 3% dust, and 12 small trucks.

Luxembourg - provided a Cessna Agtruck airplane with pilot and mechanic for 200 hours of flying time, valued at $140,000.

United Kingdom - provided 140 MT of propoxur, valued at $105,000; 510 hand dusters, valued at $5,100; and a logistician for one month.

TOTAL $710,790

GUINEA-BISSAU

In late April, the U.S. mission in Bissau reported that the populations of several species of grasshoppers had reached damaging levels, particularly in northeastern and central Guinea-Bissau along the border with the Casamance area of Senegal. The Government of Guinea-Bissau (GOGB) estimated that 77,000 ha of cropland and many more hectares of surrounding forest land were affected. Eggpod surveys conducted by the GOGB Crop Protection Service (CPS) in conjunction with FAO in April and May showed that at least 52,000 ha contained enough eggs to produce grassphopper densities of 18.5 to 92.5 per sq. m, depending on location. The major pest was *Zonocerus variegatus*, (the variegated grasshopper), although the *Oedaleus senegalensis* was also sighted. The area of heaviest infestation started at the border with Senegal near Gabo and extended south to Bafata and east to Bissora. The GOGB projected potential 1987 losses of as much as 70% of crops; this was based on 1986 observations, which included 100% loss of sorghum in some villages due to frequent heavy rains.

The director of the CPS coordinated donor inputs, specifically requesting that pesticides be in place before the heavy rains began in July. By spring, the CPS had begun applying fenitrothion with ULV backpack sprayers in the highest risk areas. At that time, dust pesticides were not available in Guinea-Bissau for farmer application, although later Italy and the EEC provided fenitrothion 3% dust and propoxur pesticides.

U.S. Ambassador John Dale Blacken determined on May 28 that the potential insect infestation threatening Guinea-Bissau constituted a disaster. The USG contribution totaled $290,320 and included several components: an entomologist to assist the CPS, pesticides, spare parts, training, and sprayers (see below for more details).

In Guinea-Bissau, a rice farmer attempts to scare grasshoppers out of his field.

Summary of USG Assistance
(Note: Although the bulk of the program was funded by the A.I.D. Africa Bureau, OFDA purchased the pesticides and sprayers.)

Entomologist: Bruce Thornley (from USDA/APHIS) to assist the CPS from July through October (AFR/OEO funds) $39,000

Funds to enable 2 CPS personnel (the director and the chief of field operations) to attend A.I.D. training course held in Niamey in May (AFR/OEO funds) $5,000

90 bicycles plus spare parts and tires (AFR/OEO funds) $25,000

Vehicle and application equipment spare parts (AFR/OEO funds) $50,000

8,000 liters of Sevin-4-Oil carbaryl purchased from Union Carbide ($17,500 for pesticides, $6,750 for ocean transport) (AFR/OEO funds) $24,250

7,500 liters of malathion 95% ULV purchased from American Cyanamid ($25,085 for pesticide, $6,952 for ocean transport) (AFR/OEO funds) $32,037

100 motorized backpack ULV sprayers plus spare parts from Hudson for CPS (AFR/OEO funds) $40,000

20,000 liters of vehicle fuel (15,000 liters diesel fuel, 5,000 liters gasoline fuel) (AFR/OEO funds) $13,000

Allotment to USAID/Bissau for operational expenses (AFR/OEO funds) $20,000

Camping equipment (AFR/OEO funds) ... $35,000

Technician: Dr. Donald Pletsch to repair and maintain sprayers (OFDA funds) $7,033

Total OFDA $7,033
Total Other USG $283,287

TOTAL $290,320

Assistance Provided by U.S. Voluntary Agencies
None reported

Assistance Provided by the International Community
Denmark - contributed the salary for the services of OCLALAV technicians for one month.

EEC - provided 3,000 liters of fenitrothion.

FAO - provided 2 Micronair sprayers and 90-day training at a French grasshopper research facility in Montpellier for a CPS employee.

Italy - provided 2,000 kg of propoxur 2% dust, 100 liters of malathion, and other pesticides.

MALI

Mali suffered again in 1987 from grasshopper and locust infestations, with a major outbreak of the Senegalese grasshopper, *Oedaleus senegalensis*. Organizing for this year's grasshopper/locust control campaign effectively started in February when the Ministry of Agriculture of the Government of the Republic of Mali (GRM) briefed the donor community on the potential threat to crops projected both from last year's infestations and eggpod surveys done in December 1986 and early January 1987. The GRM also presented an operational plan designed to meet that threat in a rational and timely manner in two phases. One phase emphasized pesticide treatment by farmers and included ground techniques such as hand dusting, backpack spraying, and vehicle-mounted equipment. Projections for Phase II operations emphasized aerial treatment.

On Feb. 12, U.S. Ambassador Robert J. Ryan, Jr., declared the insect infestation threat to be a potential disaster. The USG became involved in Mali's control campaign, supplying crucial equipment and technical assistance. (See "Summary of USG Assistance," below).

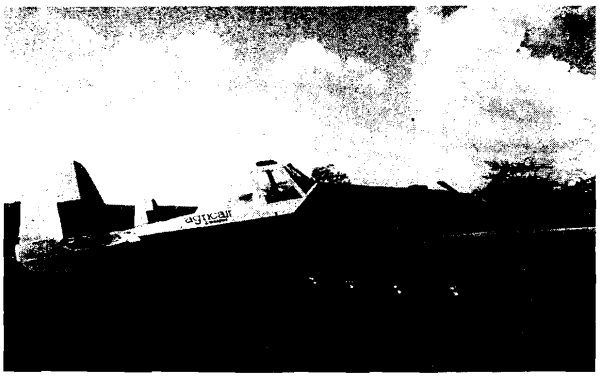
The season was characterized by rainfall that was generally lower than 1986 and more sporadically distributed in time and space. Thus, grasshopper hatchings, particularly those of the *Oedalus*, were less than expected. Because of the complex mix of different coexisting generations of grasshopper populations, the two phases of operations, namely ground and aerial, overlapped greatly. Ground operations continued very late into the season.

Phase I treatments were effective in mitigating local crop damages, particularly with regard to

the non-migratory pests such as *Kraussaria angulifera* and *Hieroglyphus*. A USAID-financed Evergreen helicopter arrived in Bamako Aug. 6 for survey work, which was conducted between Aug. 19 and Sept. 19. Spraying treatments began Oct. 5 and lasted through Oct. 18. Parts of southeastern Mauritania, near Mali's border, were treated during this spray operation.

The GRM Cabinet, the Ministry of Agriculture, and the FAO resident representative convened a donor meeting on Nov. 3, 1987, to review the 1987 operational program. It was the general consensus that CPS efforts with donor support were effective in protecting more than 400,000 ha (61,000 ha in southeastern Mauritania) against grasshoppers. All participants noted much improvement in management and coordination of the 1987 program over the 1986 effort. For the most part, donor pledges reached field sites on time and were available for control activities.

Populations of the desert locust, *Schistocerca gregaria*, were found in dense concentrations in Adrar des Iforas, in the northeastern part of the country late in the year. Spray operations began on Dec. 25 and continued until Jan. 14, 1988. Altogether almost 15,000 ha of hopper and adult concentrations were controlled, using 4,500 liters of malathion and 4,000 liters of fenitrothion 50% ULV. While the results of the control measures were satisfactory, some swarms escaped, heading west and northwest toward northern Mauritania



This Turbo Thrush spray plane was used to disperse insecticide in Mali.

and Western Sahara. In the event of widespread spring breeding in northern Africa, the Sahelian countries will be potentially threatened by invasions of the desert locust in 1988.

Summary of USG Assistance

FY 1987

Mission allotment for a manager (Ian McKay) to help implement the control program $42,000

Mission allotment for farmer training $10,000

Funds for CPS training and support: radio training ($3,500), training manuals ($6,500), and logistical support and fuel ($15,000) (AFR/OEO funds) $25,000

Purchase of 100 scales from DOD ($545), plus shipping costs ($400) $945

Purchase of 10,000 face masks from DOD, plus shipping costs $1,305

Entomologist (George Popov) to help implement control program: OFDA funds $38,000
AFR/OEO funds $14,000

Aviation fuel for Phase II operations (AFR/OEO funds) $20,000

Mission allotment for 350 hours of flying time for Phase II operations (AFR/OEO funds) $304,000

Purchase of 32,000 liters of malathion from American Cyanamid $106,404

Sea freight of malathion $11,150

Contract with Evergreen Aviation for a helicopter for 100 hours of surveying $152,629

Mission allotment for support of control campaign $80,000

Mission allotment for fuel and logistical support for Phase II camapign (AFR/OEO funds) . $67,000

Mission allotment for aerial support for Phase II (AFR/OEO funds) $40,000

Mission allotment for support of helicopter (AFR/OEO funds) $100,000

Total OFDA $442,433
Total Other USG $570,000

Total FY 1987 ..... $1,012,433

FY 1988
Transport of malathion from Dakar to Bamako $5,541

Total FY 1988 ..... $5,541

TOTAL $1,017,974

Assistance Provided by U.S. Voluntary Agencies
None reported

Assistance Provided by the International Community
Canada - provided $500,000 for aerial spraying.

Denmark - provided technical assistance.

EEC - contributed $308,940 for 118 MT of fenitrothion, 15,600 liters of fenitrothion, protective clothing, eggpod surveying, and support costs.

France - gave $575,000 for 5,000 liters of fenitrothion, 30 MT of propoxur, 500 sprayers, a truck, 80 hours of helicopter time, training, a plane, and logistical support.

Germany, Fed. Rep. - contributed $546,000 for training, technical assistance, sprayers, 100 MT of propoxur, and 6 MT of fenitrothion.

Italy - provided $140,000 for pesticides, sprayers, dusters, and protective clothing.

Japan - gave 150 MT of propoxur.

Norway - contributed $1,500,000 through Stromme Foundation for aerial operations, 100 sprayers, protective clothing, face masks, 33,000 liters of fenitrothion, and 4 Land Rovers.

UNDP - provided a truck.

United Kingdom - contributed $285,000 for 150 MT of propoxur and 10 Land Rovers.

TOTAL $3,854,940

MAURITANIA

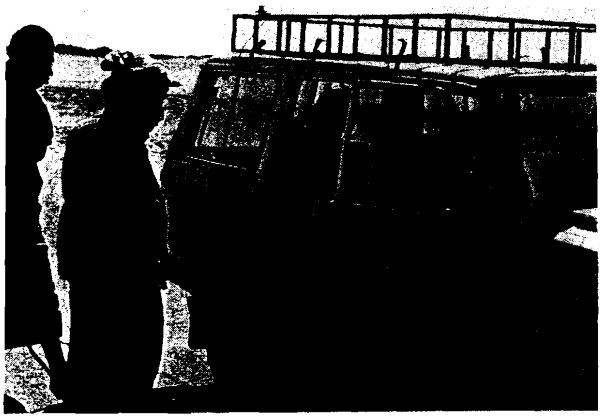
Mauritania suffered again in 1987 from grasshoppers and locusts. In January the U.S. mission in Nouakchott requested that A.I.D./Washington provide an entomologist for an eggpod survey conducted jointly by Mauritania and Mali. A.I.D. responded by sending USAID/Bamako entomologist Ian McKay, who participated in a two-week training mission with Malian and Mauritanian crop protection personnel. Results of the eggpod survey confirmed the infestation of the dominant grasshopper species *Oedaleus senegalensis* in Mauritania.

Based on the 1986 grasshopper/locust campaign, the Government of the Islamic Republic of Mauritania (GIRM) developed a plan for the expected 1987 infestation. The plan involved two phases of

Mali CPS Supervisor Kamissoko displays grasshopper eggpods.

operations, with survey work done by the CPS. During the first phase, the CPS trained farmers and coordinated crop-dusting activities. The CPS teams aimed to treat 100,000 ha in this fashion. The second phase involved small-plane spray operations in the southeastern region. By Oct. 16, 33,000 ha had been sprayed in Mauritania. After the FAO reviewed the plan and a multi-donor and GIRM committee accepted it on Jan. 28, various donors began pledging support. At USAID/Nouakchott's request, OFDA's assessment team, which was already in Africa, went to Mauritania between Mar. 22-27.

Following the GIRM's appeal to the USG for assistance, U.S. Ambassador Robert L. Pugh determined on Apr. 2 that Mauritania's grasshopper/locust threat constituted a disaster. AFR/OEO then funded a one-year contract between USAID/Nouakchott and entomologist Bill Thomas, who served as technical assistant and consultant during Mauritania's control campaign. AFR/OEO also provided $5,000 to fund key participants' involvement in the PRIFAS training course in Montpellier, France.



Mauritania CPS officials radio back to home base from an area infested by grasshoppers.

OFDA provided essential supplies for the pest control campaign and financed flying time for Phase II operations. In November, swarms of desert locusts (*Schistocerca gregaria*) were sighted in north-central Mauritania, moving north toward Morocco and Algeria.

Summary of USG Assistance

Entomologist: Bill Thomas contracted for 1 year to act as program coordinator for USAID/Nouakchott; funds included a vehicle and associated costs (AFR/OEO funds) $100,000

Mission allotment for logistical support and a public awareness campaign $25,000

Purchase of 12,000 face masks from DOD ($1,100), plus air freight ($500) $1,600

Purchase of 15 radios ($21,764), plus air freight ($1,536) $23,300

Mission allotment for vehicle fuel $45,000

Mission allotment for flying time on Luxembourg-provided airplane $32,600

Total OFDA $127,500
Total Other USG $100,000

TOTAL $227,500

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

China, People's Rep. - contributed 20 MT of insecticide.

EEC - donated $236,300 for 110 MT of fenitrothion, technical assistance, the transport of 598 MT of Japanese pesticides, and protective clothing.

FAO - contributed $20,000 for in-country training.

France - contributed $197,700 for helicopter flying time, 50 MT of propoxur, 10,000 liters of fenitrothion, a 4-WD truck with sprayers and blowers, technical assistance, and a donation for the PRIFAS training course.

Germany, Fed. Rep. - donated $112,400 for ground treatment.

Italy - gave $442,000 for 4 vehicles, pesticides, and protective clothing.

Japan - gave 13 vehicles, 30,000 liters of fenitrothion, other pesticides, protective clothing, and field materials (tents, beds, and mosquito nets).

TOTAL $1,008,400

NIGER

Niger was less affected by infestations of grasshoppers and locusts than its neighbors in 1986 because of several factors: less favorable ecological conditions for grasshopper growth, adequate control efforts in other Sahelian countries, and the fact that the Nigerien Crop Protection Service is one of the best in the Sahel. Nevertheless, limited infestations did occur, and the government of Niger (GON) was concerned as 1986 drew to a close about the possibility of a much larger problem in 1987. The GON therefore prepared an action plan and a list of requirements; it presented these to a donor committee at the end of the year. Donors made various tentative commitments in early 1987; USAID/Niamey felt that the best USG response should include pilot and mechanic training, aircraft maintenance and fuel, pilot and aircraft insurance, and radios. Pesticide requirements, other training, and ground-control supplies were covered by other donors and in-country stocks. The Grasshopper/Locust Working Group in Washington dispatched Carroll Voss, an aircraft specialist and a member of the OFDA assessment team (see Senegal case report), and Charles Kelly, OFDA-sponsored drought and locust disaster coordinator in Burkina Faso, to Niger in early March to help define the U.S. Mission's requests. U.S. Ambassador Richard W. Bogosian then declared the situation to be a potential disaster on Mar. 13, thereby allowing OFDA money to be committed.

Rainfall during 1987 began later and was less plentiful than expected in many areas of southern Niger. As a result, the grasshopper situation did not develop as expected. During most of the 1987 agricultural season, only scattered grasshopper infestations were reported in the Tahoua, Maradi, and Zinder departments, usually from areas bordering Nigeria.

Grasshopper infestations became more intense in the eastern Tahoua, Maradi, and Zinder departments in early September as the result of abnormal rainfall patterns. Other areas of the departments were, at the same time, experiencing moderate to severe drought conditions. In late August, the CPS dispatched its three Cessna spray planes to respond to increased field reports of grasshopper damage in the three departments.

As the normal end of the rainy season began, reports of more serious grasshopper infestations were received at the regional and national level. Field surveys in late September by the FAO/Niger entomologist, using the USAID-financed Evergreen helicopter, indicated that an area of 40,000 sq. km, including 600,000 ha of severe infestations, existed in central Niger.

Based on these field reports, the GON mounted an urgent and large-scale control operation to minimize crop losses. Specific requests for new donor assistance were made, and the GON contracted for the services of a locally available spray aircraft.

The effectiveness of the emergency control operation, which eventually involved five spray planes and the Evergreen helicopter, was limited. The emergency operations began after the peak of the grasshopper damage had occurred and at the point of harvest (October) in many of the areas under attack.

The CPS reported that ground crews and villagers treated 141,213 ha for grasshoppers during 1987. Aerial spraying reportedly covered 208,593 ha, although repeat treatments by aircraft and ground crews occurred with some frequency because of low kill rates and reinfestation. No estimates of the area requiring retreatment have been reported.

As for locusts, early rains in 1987 led to the development of small gregarious bands of desert locusts in the eastern Aïr mountains. OCLALAV, in cooperation with the CPS and using CPS aircraft, undertook a joint control operation in July and August. Although isolated immature gregarious locust bands had been identified through ground surveys, a helicopter survey of the mountains in early September indicated that no major concentrations existed. Based on the aerial survey, vegetation conditions in the south and central regions of the mountains were assessed as being good for transiting locust swarms from areas farther to the east (Chad and Sudan).

Ground surveillance continued in the Aïr mountains and Temesna during September and early October. The transfer of some OCLALAV vehicles to Chad limited the effectiveness of this surveillance.

During early October, unconfirmed reports were received indicating that locust swarms had begun arriving in and were transiting through the Aïr mountains and the areas to the west. OCLALAV, Algerian, and CPS ground crews confirmed these observations, but were hampered in control operations by a lack of vehicles, communications, and equipment.

In early October, at the same time the decision was made to increase grasshopper control operations in south central Niger, the GON began reallocating aircraft and dispatched the rented twin-engine aircraft to assist in locust control operations. The effectiveness of the aircraft was limited by poor communications, the lack of adequate field teams, the lack of vehicles for locating locust swarms, and the speed with which swarms were migrating across the Aïr mountains and northwestern Niger.

In late October, the USAID-financed helicopter was dispatched to the locust zone to assist in surveys and in swarm location. The helicopter covered the western Aïr mountains and verified that reported swarms had moved from the mountains towards the west. Helicopter operations in the desert area (Tamesna) were not undertaken for technical reasons, although one swarm was identified 50 km west of the town of Arlit.

Locust control operations by aircraft and ground crews continued in the Tamesna area into late November. By the beginning of December, the CPS concluded that all major swarms had moved west from Niger, but substantial residual populations of solitary or gregarious locusts remained in isolated areas of vegetation in the northwest and in the Aïr.

In 1987 an estimated 15,200 ha were treated for locusts by ground crews. Aerial treatment of locusts during the season is estimated to have covered 41,600 ha. Some repeat treatment by aircraft and ground crews occurred because of reinfestations and poor kill rates.

USAID's support of the CPS grasshopper/locust control program began in early May with the hiring of a project assistant and periodic technical assistance from OFDA regional adviser, Charles Kelly. This assistance expanded with the provision of funding for aircraft operations (fuel and repair costs) and training (pilots in the U.S., technicians at PRIFAS/ France, and the aerial application workshop in Niamey). Additional assistance was requested for VHF (later changed to HF) radios and operating costs for the OCLALAV/Niger teams for monitoring locust conditions in Niger. Stephen Straley of the U.S. Forest Service went to Niger to work as the aerial operations manager from July 5 through Sept. 3 (he was funded through a pre-existing contract between OFDA and the U.S. Forest Service). OFDA also contracted with Evergreen for a helicopter to be used in several Sahelian countries for insect surveying. The helicopter proved very useful but equipment failure caused delays on several occasions in Niger.

Summary of USG Assistance

FY 1987

Purchase of 6 VHF radios for the GON to support aircraft ground coordination $3,333

Mission allotment for aircraft maintenance (routine maintenance of 3 Cessnas and the services of 2 mechanic aides) $26,500

Mission allotment to enable USAID/Niamey to hire someone locally to help manage the grasshopper/locust campaign (AFR/OEO funds) $16,867

Grant to GON for campaign expenses $10,000

Mission allotment for OCLALAV team support (for basic operating costs of teams in Agadez: per diem, fuel, etc.) $15,000

Contract with Evergreen Aviation for the use of a Bell 206 helicopter $173,431

Mission allotment for helicopter support: 20,000 l of jet fuel, chase vehicle support and fuel, and miscellaneous supplies: OFDA funds $11,000
AFR/OEO funds (transferred from unused training funds) $17,100

7 HF radios purchased from Motorola for the CPS $41,433

Mission allotment for avgas (aircraft fuel) $20,000

Protective clothing purchased from USFS and air freight $1,500

3 battery chargers and air freight $1,222

Total OFDA $303,419
Total Other USG $33,967

Total FY 1987 ..... $337,386

FY 1988
Mission allotment for increase in operations support (jet fuel, vehicle fuel, salaries, and supplies) $8,500

Total FY 1988 ..... $8,500

TOTAL $345,986

Assistance Provided by U.S. Voluntary Agencies
None reported

Assistance Provided by the International Community
Belgium - provided 11,000 liters of fenitrothion, 30,000 liters of fuel, a technician and a mechanic, 2 Land Rovers, and 2 Unimog sprayers.

Canada - contributed $373,134 for 5,000 sets of protective clothing, training for 10,000 villagers, the repair of landing strips, fuel, salaries for 2 CPS pilots, tools and spare parts for CPS aircraft, and pumping equipment.

EEC - donated $354,610 for 90 MT of fenitrothion dust, 24,000 liters of fenitrothion 50% ULV, 15,000 pairs of protective clothing, and other pesticides.

FAO - provided 40 MT of warfarin (rodenticide), and equipment and consultants for the UNDP/FAO early warning project.

France - contributed $329,489 for an entomologist for FAO, a pilot, repair of landing strips, 500 ULV sprayers, 50 MT of lindane, 5,000 liters of fenitrothion, a PRIFAS project in Niamey, and consultants and experts.

Germany, Fed. Rep. - donated $2,528,090 for 10,000 ULV battery sprayers, 220,000 liters of fenitrothion 20% ULV, batteries, 10,000 pairs of gloves and protective goggles, a micro-computer, 4 HF radios, and equipment for the UNDP/FAO early warning project.

Italy - contributed $430,952 for 4 vehicles, 20 motorcycles, 500 face masks, 500 protective goggles, 300 pairs of rubber boots, 1,000 units of protective cream, 20,000 liters of malathion 40% ULV, other pesticides, salaries for a driver, per diem for CPS agents, an agro-economist for 6 months, and fuel.

Japan - gave 90,000 liters of fenitrothion.
Switzerland - provided $42,000 for the UNDP/FAO early warning project.

UNDP - contributed $594,000 to finance the early warning project with FAO.

TOTAL $4,652,275

SENEGAL

The 1986 anti-grasshopper campaign in Senegal was one of the largest in Africa. More than 1 million ha were treated by aerial spraying, with planes provided by the United States and Canada. Despite problems with donor coordination and logistical arrangements, the 1986 grasshopper control program was considered a success. Major crop losses were averted, however, but the grasshoppers were able to lay eggs before spraying took place. Therefore, it was expected that another campaign would be necessary for 1987 but that it would run much more smoothly.

This expectation proved to be correct. A limited infestation occurred in 1987, which was handled successfully by the Senegalese Crop Protection Service (CPS) and donor inputs. Meager rainfall in 1987 and the excellent 1986 control effort were identified as causes for the lower than expected levels of infestation.

In early February 1987, USAID/Dakar estimated that between 800,000 and 1 million ha might need treatment that year. This projection was based on the number of hectares infested in 1986, the stage of the pest life cycle when treatment was applied, and the probability of infestation in areas that were assessed as potential problem areas in 1986 but not treated. CPS eggpod surveys and prelimi-

nary forecasts from FAO and PRIFAS, a French-based entomological institute, also indicated a potentially large area of infestation. This led U.S. Ambassabor Lannon Walker to declare a disaster on Feb. 19, 1987. Early-season USG assistance concentrated on the provision of an entomologist, an assessment team, and field monitor to assist the CPS in performing eggpod surveys and a four-member assessment which went to Senegal in early March. This team, consisting of an OFDA operations officer, an entomologist, an aerial spray specialist, and a logistician, spent several weeks in Senegal, giving technical advice and assisting the CPS and donor representatives in drawing up the Senegal action plan. (The cost of this team is included under "Africa-regional" because members of the team also went to several other countries.)

The resulting action plan called for treatment of between 1.2 and 1.32 million ha, 700,000-800,000 of this by air, in three phases. Phase I of the program was due to start in mid-June with the onset of the rainy season and carry on to mid-August. During this phase, 270,000 ha were to be treated from the ground, using both dust and ULV pesticide formulations, while 100,000-200,000 ha were slated for aerial treatment. Phase II would cover the period from mid-August until early October and involve 140,000 ha of ground control and 500,000 ha of aerial treatment. Phase III, consisting of 110,000 ha of ground treatment and 100,000 ha of aerial spraying, was designed to eliminate returning third generation pests. Before the first phase, the Senegalese CPS planned to conduct farmer training, pre-position pesticides, and conduct surveys. USAID/Dakar, with the assistance of the OFDA assessment team, recommended that the USG concentrate on providing training, one-third (240,000 ha) of the aerial treatment requirements—including pesticides, flying time, and fuel—and technical assistance and equipment for an operations center.

In mid-July, field surveys reported that the lack of sufficient rains in June and early July greatly retarded the hatching of significant populations of grasshoppers throughout Senegal. Then in late July, three areas totaling 33,000 ha, infested with *O. senegalensis* were delineated. Densities ranged from five to 30 per sq. km. Two Turbine Thrush aircraft, donated by the USG, sprayed 5,000 ha of this area along the Gambian border from Passi Ngayene to the Pate forest reserve and along the banks of the Bolon River from Dabali to Diamafare. Aerial treatment began on July 23 and ended within two days. CPS agents treated the rest of the infested area.

In August, an additional 19,000 ha were delimited for treatment in the forest reserve of Mebegue. Activities of the U.S. team, the CPS, the Canadian team, and the French military were well-coordinated. Equipment, pesticides, and fuel were dispatched to Kaolack and spraying began on Aug. 10. Six days later, the two U.S.-provided Thrushes finished treating 22,000 ha.
As a result of a combination of factors, including the excellent intervention in 1986 and better and more timely ground control measures in 1987, only 27,000 ha required aerial treatment in Senegal in the 1987 campaign. The weather in particular played a big role in reducing grasshopper outbreaks: early rain followed by drought caused heavy mortality in the early instars; later rains were heavy enough to cause mortality in late-hatching grasshoppers. As of December 1987, a major control campaign is not expected to be needed in 1988.

Summary of USG Assistance

Entomologist on assignment in Guinea-Bissau: Bruce Thornley (from USDA/APHIS) for one-month assessment $3,475

Team leader (OFDA disaster specialist Robert Thibeault) of assessment team (OFDA travel budget) $6,665

Start-up funds and logistical support for team $35,000

Training in eggpod surveys $20,000

Program assistant (Peace Corps volunteer) for 4 months $16,000

Technical assistance: Dr. Ellis Huddleston, Dr. Flournoy (Flip) Philips, and George Cavin for operations center $209,000

Mission allotment for maps, cartography equipment, radios, and survey kits $41,000

Mission allotment for fuel and lubricants .. $50,000

Mission allotment for logistical support of helicopter and planes $30,000

Purchase and shipping of 88,850 liters of carbaryl from Union Carbide $227,500

Purchase and shipping of 113,400 liters of malathion from American Cyanamid $405,803

Contract with Evergreen Helicopters for 60 hours of surveying from June 1-July 31 ..... $139,309

Contract with T&G Aviation for 2 Turbo Thrush aircraft and 1 DC-7 (the latter for contingency only) for aerial spraying of 240,000 ha $740,000

TOTAL $1,923,752

Assistance Provided by U.S. Voluntary Agencies
None reported

Assistance Provided by International Community
Belgium - contributed 14,000 liters of fenitrothion.

Canada - donated $750,000 for flying time (from Agriair, a Canadian company), training, and pesticides.

China, People's Rep. - donated 20 MT of malathion.

EEC - provided $265,038 for 20,000 liters of fenitrothion, operating expenses, and technical assistance.

France - contributed $176,277 for Alouette helicopter, 30 MT of propoxur, 500 pulverizers, PRIFAS training, and logistical support (provided by French military).

Germany, Fed. Rep. - provided $134,831.

Italy - donated $318,492 for 5 trucks, spayers, dusters, and protective equipment.

Japan - provided 50,000 liters of fenitrothion.

United Kingdom - contributed 15 Land Rovers.

TOTAL $1,644,638

SUDAN

Insects continued their onslaught in Sudan despite that country's aggressive counterattack of 1986. The coastal part of Red Sea Province, and the central Northern Kordofan and Northern Darfur provinces, winter and summer breeding grounds respectively for desert locusts, witnessed the most activity.

As 1987 began, adult locust swarms were sweeping in from northern Eritrea in Ethiopia to reproduce in Kassala and Red Sea provinces. Threatening harvests as far away as the Middle East, this outbreak had the potential to be the most serious in the Red Sea region since a similiar plague in 1978-79. In mid-February, Saudi Arabia reported mature swarms entering its territory from that breeding ground. When the summer season began in May, the infestation shifted to a vast area in central and western Sudan. Breeding occurred as far east as Khartoum and as far north as Northern Province, but was concentrated in Northern and Southern Darfur provinces, with some swarms crossing over from Chad. Once the locusts had emigrated from the region in November, reports along the Red Sea Coast indicated renewed winter breeding there. Scattered outbreaks of grasshoppers all over the country increased the threat to agriculture. The insect plague in Sudan is expected to continue in 1988.

The Sudanese Plant Protection Department (PPD) along with DLCO-EA, assumed primary responsibility for insect control, issuing biweekly reports on the situation. PPD teams undertook ground spraying and dispensing poisoned bait while DLCO-EA conducted the winter aerial spraying. Control efforts by GOS-contracted aircraft for the summer was supplemented by DLCO which sprayed Northern and Southern Darfur provinces. A steering committee comprising representatives of the GOS, FAO, and other international donors met regularly to monitor the campaign. Despite difficulties imposed by the scattered nature of the swarms, crop loss was kept to a minimum in the affected zones. By mid-October, intense ground and air work had cleared Khartoum, Kordofan, and both Darfur provinces of the predators. Up to 43,000 ha were sprayed in northern Sudan alone, with the major aerial initiatives of 1987 taking place against densely packed locusts in Northern and Southern Darfur.

Benefiting from past experience and donations, the PPD was able to mount a more extensive survey and control operation in 1987 than in previous years. Nevertheless, as the summer campaign began, outstanding needs included additional pesticides and staff training. On Feb. 15, U.S. Ambassador G. Norman Anderson declared the situation a disaster. OFDA provided $600,000 to the EEC to purchase 400 MT of propoxur 2% dust through a Luxembourg procurement agent, Luxconsult. Shipments totaling 100 MT of the pesticide arrived by air throughout June with 300 MT being delivered by sea in August. AFRO/OEO also furnished $50,000 for locust control and pesticide management training to PPD staff from June 8-18 in Khartoum. An additional $298,400 unspent over from an OFDA grant to the EEC in FY 1986 was put into a fund with an EEC contribution of $122,600 and used for FAO technical assistance. Counterpart funds of $1,722,000 generated by the Commodity Import Program went toward local campaign costs.

Summary of USG Assistance

Grant to the EEC for 400 MT of propoxur $600,000

TOTAL $600,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Canada - sent a delegation to assess the situation and provided $175,000 for the medium-term locust effort.

EEC - contributed $35,000 through FAO for radios; provided funding for consultant to do a mid-program evaluation; gave $122,600 for FAO technical assistance; and donated fuel for PPD operations.

Italy - furnished protective clothing and spray equipment, worth $157,000.

Finland - provided $57,000 through FAO for purchase of equipment and miscellaneous costs.

Japan - supplied 50,000 liters of pesticide through FAO.

Netherlands - assisted the USG training program and donated $211,000 through FAO for equipment; sent Bendiocarb 1% pesticide, valued at $600,000.

United Kingdom - gave 80,600 liters of fenitrothion and vehicles, valued at $1,200,000, plus $175,000 worth of equipment.

TOTAL $2,732,600

YEMEN ARAB REPUBLIC

In mid-March, the Yemeni Liaison Officer for Locust Control and Counsellor to the Ministry of Agriculture and Fisheries (MAF) met with USAID/Sanaa staff to discuss the status of the Yemeni desert locust campaign. MAF officials had conducted a locust survey the previous month that identified an area 90 km by seven km near Wadi Midi as the zone of highest infestation. The adult locust population was estimated at one per 30 sq. m. The MAF sprayed this area but was able to kill only 10% to 15% of the locusts. More hatching was expected to take place in late March.

The MAF had pesticides and spraying equipment but supplies were inadequate and antiquated. For all these reasons, the MAF was concerned that the locust situation had crisis potential and therefore requested international assistance.

To further assess the situation and work with MAF locust control officials, OFDA and A.I.D.'s Asia and Near East Bureau dispatched Maghdy Ghieth, pesticide management specialist from USAID/Cairo, to Yemen. Mr. Ghieth's subsequent field survey found that the northern Tihama region near the Saudi border and Red Sea coast was experiencing an alarming level of infestation of desert locusts. The affected area measured 1,000 sq. km. These locusts were gregarious hoppers at first, second, and third instars of the nymphal stage feeding on sorghum, millet, and non-crop vegetation. After this assessment, U.S. Ambassador William A. Rugh declared a disaster on Apr. 16. Potential donors held a meeting in mid-April and requested that the FAO act as coordinator of the campaign.

The Yemen Arab Republic Government (YARG) developed a three-phase plan for the control and containment of the locusts. Phase I, the emer-

gency effort, called for intensive ground spraying and baiting in the northern Hama area and in the adjacent valleys in the western escarpment. No aerial spraying was anticipated. Phase II was to begin in July 1987 and consist of monitoring and control when needed in the central highlands and eastern region. Finally, Phase III, the long-term plan, called for developing an early warning monitoring network and training a cadre of specialists.

The USAID pesticide management specialist assisted USAID/Sanaa in identifying appropriate USG contributions. OFDA provided carbaryl bait and malathion for ground control, protective clothing, and generators. In addition, A.I.D./ Washington furnished money for a YARG official to attend the A.I.D.-designed training course in Khartoum on June 1-18 and for a consultant, Janice Jensen, to conduct a pesticide disposal survey from June 26 to July 4. (These training activities were funded from OFDA's preparedness budget and are discussed in more detail in the preparedness section).

Summary of USG Assistance

Pesticide management specialist: Maghdy Ghieth (from USAID/ Cairo) for a 3-week assessment (Mar. 28 - Apr. 18) $3,441

Purchase and shipping of 10,000 liters of malathion from American Cyanamid $37,382

Purchase and shipping of 15 MT of carbaryl (Sevin 855) from Union Carbide $67,275

25 sets of protective clothing purchased from USFS (includes goggles, masks, rubber boots, and cotton overalls), plus shipping $2,500

Mission allotment for 8 5-kVA generators and round-trip airfare for a trainer $25,000

TOTAL $135,598

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

FAO - provided a 4-wheel-drive pickup and 2 Micronair sprayers.

Japan - contributed 5,000 liters of malathion.

United Kingdom - provided 20,000 liters of fenitrothion and 2 Land Rovers.

Epidemic Benin

Date
January - March 1987
Location
Atacora, Borgou and Zou provinces
No. Dead
24
No. Affected
80

The Disaster

Although a continual problem in the People's Republic of Benin, the scourge of meningitis (strains A and C) reached serious proportions in the early part of the year. It had claimed its first victim on Jan. 1 and by the weekend of Mar. 12 was afflicting up to 80 people in Borgou and Atacora provinces. The brain-debilitating disease also spilled over into Zou Province, killing six people. Doctors were especially alarmed at the high number of stricken teachers, fearing spread of the sickness among students. By the time the inoculation campaign took effect, the death toll stood at 24 out of a total of 80 reported cases.

Action Taken by the Government of the People's Republic of Benin (GPRB)

The Ministry of Health's (MOH) National Director of Sanitary Protection toured the affected areas in Borgou and Atacora provinces. Based on his evaluation, the MOH provided meningitis vaccine to local medical centers, but the limited supplies proved of little avail. To provide adequate inoculation of all people between 2 and 25, the afflicted areas needed an additional 275,000 doses. Accordingly, the GPRB launched an appeal on Mar. 13 for international assistance. Outside donors responded with 296,000 doses, which Beninois and French doctors promptly administered.

Assistance Provided by the U.S. Government

Following the appeal for assistance by the GPRB and an assessment by USAID and embassy economic officers, Ambassador Walter Stadtler declared a state of disaster on Mar. 20, 1987. He requested money for 50,000 doses of vaccine at a cost of $10,650 from the Merieux Institute in Lyons, France. Commercial air freight plus local handling amounted to $2,400. With assistance from OFDA and the U.S. Embassy in France, the vaccines arrived within two working days. GPRB representatives were on hand to receive the contributions.

TOTAL $13,050

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

Belgium - provided 70,000 doses of vaccine.

France - gave 130,000 doses of vaccine.

Germany, Fed. Rep. - donated 25,000 doses of vaccine.

UNICEF - provided $830 for medical supplies.

WHO - furnished 21,000 doses of vaccine.

TOTAL $830

Drought Botswana

Date
1982 - 1987
Location
Nationwide, except for Chobe District
No. Dead
Not reported
No. Affected
671,000

The Disaster

For the sixth consecutive year, Botswana experienced below normal rainfall. Rains in October and November were adequate, but between December and April they failed almost completely. Six years of drought have caused the water table to drop significantly and many borehole wells and watering holes had dried up. Cereal production for the year amounted to about 30,000 MT, far short of the 260,000 MT needed to feed the country's population. As a result, Botswana had to import about 190,000 MT and appeal for 40,000 MT in emergency food aid.

Large numbers of rural families were driven into deeper levels of poverty as a result of the continued loss of crops and livestock. Of the 671,000 people receiving emergency food assistance in 1987, 252,000 were school children, 400,000 belonged to other vulnerable groups, and 19,000 lived in remote areas. As a result of government feeding programs, the percentage of malnourished children under five years of age fell from 18% to 16%.

Action Taken by the Government of Botswana (GOB)

On Apr. 8, 1987, President Masire declared the sixth consecutive year of drought and appealed for continued assistance. The GOB's drought relief program continued to support the following components: supplementary feeding of vulnerable groups, a labor-based relief program to provide income to an estimated 230,000 people unemployed as a result of the drought, and an agricultural recovery project that provided water, seeds, stockfeed, and livestock vaccine to farmers and herd owners.

Assistance Provided the U.S. Government

On Apr. 9, U.S. Ambassador Natale Bellocchi declared a drought disaster in Botswana for the sixth year in a row. Ambassador Bellocchi contributed $25,000 to the Handstamping Project, part of the GOB's labor-based relief program. The Handstamping Project paid rural women to pound sorghum into flour for the supplementary feeding program.

Following the GOB's appeal and the recommendation of a USAID/ Gaborone food needs assessment team, A.I.D.'s Office of Food for Peace allocated 21,440 MT of CSM for the GOB/WFP supplementary feeding program. The commodity cost was valued at $5,375,000 and ocean freight and inland transport costs totaled $2,526,000.

Total OFDA $25,000
Total FFP $7,901,000

TOTAL $7,926,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

EEC - donated well drilling equipment, valued at $392,000.

UNDP - contributed $38,000 for agricultural and meteorological equipment.

United Kingdom - donated $360,000 to purchase seeds.

WFP - provided food for the GOB's supplementary feeding program.

TOTAL $790,000

Rat Infestation Chad

The Disaster

Rodent irruptions have been an age-old problem in the Sahelian region of Africa. Rats tend to increase in the aftermath of drought when environmental recovery creates a new abundance of food, water, and shelter. Chad's rat infestation reached alarming proportions by April 1987. The government of Chad's Ministry of Agriculture reported infestation rates of between 10% and 40% in five Sahelian prefectures surveyed. Although the Sahelian zone seemed to be the most severely affected, rodent sightings emanated from all of the country's 14 prefectures.

Initially, *Gerbillus gerbillus* and *Jaculus jaculus* were the primary rodents reported in the rat outbreak in Chad. Later, *Mastomys* also were sighted in significant numbers. Rats caused severe damage to 1986 crops, including groundnuts, vegetables, millet, and sorghum. During the dry season, recessional sorghum and vegetable gardens came under rodent attack, leaving onions and tomatoes significantly marred. *Jaculus* and *Gerbillus* consumed or cached millet and sorghum seeds right after planting, forcing farmers to reseed some fields as many as three times. Farmers would dig up stashes of buried seeds and then replant them.

Rodent populations were expected to peak in 1987 before declining to normal levels in one or two years. Although many factors such as drought or rat disease could alter predicted trends, the potential exists for severe rodent-induced damage during the 1987-88 and the 1988-89 cropping cycles. The resulting loss of cereal production in the Sahelian zone could ultimately lead to critical food shortages in Chad.

Action Taken by the Government of Chad (GOC)

After reports of the rat irruption reached the GOC, the Ministry of Agriculture's Plant Protection Division (PPD) conducted testing in several prefectures and determined that the infestation was extremely serious. Test results prompted the GOC to request USG assistance, since the PPD lacked the necessary resources, training, and logistical support to manage a large-scale pest control campaign. The Ministry of Agriculture and a technician from the Denver Wildlife Research Center (DWRC) developed a plan of action and supervised the pre-mixing of rat bait.

Assistance Provided by the U.S. Government

A.I.D.'s Africa Bureau sponsored G. Keith LaVoie from DWRC to go to Chad and assess the reported rat outbreak. During his two-week stay from May 9 to May 24, Mr. LaVoie confirmed the severity of the rat infestation and recommended the use of rodenticides, including zinc phosphide, which is an acute rodenticide. The Africa Bureau and OFDA preferred not to proceed with a rat control program based on zinc phosphide because of its toxicity and the risks to people and other non-target groups, given the Chadian setting.

On June 30, 1987, U.S. Ambassador John Blane declared the Chad rat infestation a potential disaster of sufficient magnitude to warrant USG assistance. To comply with USG environmental concerns, a rodent control program based on the use of warfarin was proposed. Unlike zinc phosphide, warfarin is an anti-coagulant that requires multiple feedings to kill the rodents. Acknowledging the ambassador's declaration, OFDA concurred with the essence of the proposed program, although the initial plan underwent various revisions before its implementation.

The Regional Environmental Officer (REO) in Abidjan who was already familiar with the Chadian biophysical environment, drafted the Initial Environmental Exam required by A.I.D. and the U.S. Environmental Protection Agency. The REO endorsed the proposed plan of action, determining that warfarin would have no adverse consequences for the environment provided there were effective measures for control of distribution and storage, training of users and applicators, and monitoring of the use and effectiveness of the rodenticide.

The mission decided to conduct a trial program in 1987 to test the proposed rat control measures. It had become clear that by the time the warfarin was procured, shipped, delivered up-country, formulated, and made available to the farmers the agricultural cycle would have already run its course. Thus, 400 kg of warfarin were shipped to treat approximately 1,000 ha of affected land. Two hundred boxes of vitamin K and 26,800 milk cartons were shipped from the United States. The vitamin K was provided as a contingency antidote to the warfarin, and the milk cartons were made into bait stations.

OFDA contracted a technician from DWRC who went to Chad at the beginning of October to help in the planning and implementation of the rat control test program.

By December 1987, reports from the field indicated that warfarin, when used properly, is effective for rat control in the Chadian setting. After warfarin bait was formulated, bags of bait were distributed to the test sites at Ndjamena, Mao, Bokoro, Abeche, and Abougoudam. A total of 130 ha was treated in the prefectures of Chari-Baguirmi, Ouaddai, and Kanem. The tests were aimed at *Mastomys*, the rat species that posed a significant threat to vegetable crops and recessional sorghum. Following a two-week warfarin baiting program, significant reductions of *Mastomys*, as well as *Gerbillus* and *Jaculus*, were noted at all test sites.

Sixty-one extension CPS agents were trained in bait formulation, application, and evaluation of the rodent control program. Agents and farmers at all test sites expressed satisfaction with the use of warfarin, noting its efficacy and ease of application.

Farmers learn to place bait in test program for rat control.
Photo by Keith LaVoie, Denver Wildlife Research Center

Summary of USG Assistance

FY 1987

Labor costs for bait formulation	$1,000
Local purchase of materials (barrels, bags, dye etc.) for baiting	$1,000
Local purchase of grain for baiting	$2,000
Local purchase of vegoil for baiting	$200
In-country transport costs	$1,050
Training (including materials and in-country travel)	$5,000
26,800 milk cartons purchased from International Paper Co., plus air freight	$7,626
435.46 kg (960 lbs.) of 0.5% warfarin concentrate purchased from Bell Laboratory	$912
Air freight of warfarin	$3,791
80 packages of 6 1-cc vials of vitamin K purchased from DOD, plus air freight	$936
Total FY 1987	$23,515

FY 1988

Cost of DWRC expert Clay Mitchell's assistance with implementation of pest control programs	$9,195
Total FY 1988	$9,195
TOTAL	**$32,710**

Assistance Provided by U.S. Voluntary Agencies
None reported

Assistance Provided by the International Community
None reported

Fire Equatorial Guinea

Date
Feb. 11, 1987
Location
Malabo
No. Dead
0
No. Affected
313 homeless
Damage
83 houses were destroyed.

The Disaster

Equatorial Guinea, a former Spanish colony, is one of the poorer countries in Africa. On the night of Feb. 11, a fire spread through a heavily populated slum section of the capital city of Malabo, destroying 83 dwellings and leaving 313 people homeless. Those affected lost all their personal belongings and household effects.

Action Taken by Non-Governmental Organizations

The government of Equatorial Guinea was unable to provide assistance to the families affected by the fire. Malabo's poorly equipped firefighting brigades arrived long after the blaze was under way and were unable to control the conflagration. Various church and voluntary organizations responded quickly by offering shelter, food, and clothing to the victims. The Office of the Archbishop of Malabo coordinated relief efforts and accepted donations from private citizens, local construction companies, and other donors.

Assistance Provided by the U.S. Government

U.S. Ambassador Francis Stephen Ruddy determined on Mar. 6 that the disaster warranted USG assistance and donated $10,000 from the Disaster Assistance Account to the Archbishop of Malabo. The donation was used to buy mattresses, stoves, kerosene lamps, and utensils for the victims of the fire.

TOTAL $10,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

France - provided a cash donation, value not reported.

Spain - gave a cash donation, value not reported.

UNDP - furnished a cash donation, value not reported.

Drought I Ethiopia

Date
March - June 1987
Location
Ogaden area of Harerge region
No. Dead
367
No. Affected
330,000
Damage
Livestock losses (cattle, sheep, goat, camel) ranged between 25-90% per household.

The Disaster

Drought cast its dark shadow once again over Ethiopia, this time affecting the Ogaden region. Lack of rainfall in the Harerge region except for the southern Jijiga and Gursum districts (awrajas) over the last three years had created crisis conditions by March 1987. As water sources dried up, the nomads who traditionally herd their flocks across the Ethiopian- Somali border watched helplessly as their animals perished. Livestock losses (cattle, sheep, goat, camel) ranged from 25% to 90% per family.

Malnutrition and occasional death set in, with milk-dependent children especially at risk. At least 367 people, many of them infants, lost their lives between March and May. The fewer than 20 functioning wells in the entire 90,000-sq.-km region yielded only saline or insufficient water. Very heavy rainfall in May alleviated the situation but also brought about severe flooding in Kelafo and Goda districts. Animals died from disease and bloating; recovery time for the half-starved beasts could take up to 10 months.

Action Taken by the Government of the People's Democratic Republic of Ethiopia (GPDRE)

The Relief and Rehabilitation Commission (RRC), the GPDRE organization charged with coordinating and directing all disaster relief operations, launched an appeal for outside aid. Recognizing the drought's severity, it brought together various Western governments and NGOs to facilitate donor aid and visits to the region. In June, the GPDRE began releasing 1,400 MT of grain from RRC stocks for distribution by World University Service of Canada (WUSC) over the following six months.

Assistance Provided by the U.S. Government

A U.S. Embassy economic officer visited the southeastern area of the Ogaden between May 8-12 as part of an assessment team with representatives of the U.N., the RRC, and the LWF. Local GPDRE officials briefed the team on drought conditions. From May 12 - 18, an A.I.D. contractor also toured the region with U.N. and RRC delegates, interviewing GPDRE and WUSC representatives.

Despite considerable help from other governments and non- profit organizations, certain gaps remained. Acting on the RRC's appeal, Chargé James R. Cheek determined that modest, selective U.S. aid was needed and accordingly declared the drought a disaster on June 16. OFDA provided $50,000 to the LWF's emergency medical assistance program. The USG also approved the transfer of 470 MT of NFDM to UNHCR from WVRO's FY 1986 food stocks (whose value is included in the **OFDA Annual Report FY 1986**). This milk went to UNHCR's program for Ethiopian refugees who had fled to Somalia after a previous drought and were now returning.

TOTAL $50,000

Assistance Provided by U.S. Voluntary Agencies

CRS - helped with food and water distribution.

WVRO - donated 470 MT of NFDM to UNHCR.

Assistance Provided by the International Community

International Organizations

EEC - funded internal transport cost of grain distributed by WUSC.

LWF - spent $303,900 on emergency medical assistance; dispatched 5 mobile medical teams that provided basic child care.

UNHCR - conducted a program for refugees returning from Somalia to the Ethiopian Ogaden.

UNICEF - undertook a cooperative project with local authorities involving maternal health, limited agricultural inputs, and drinking water.

Governments

Canada - funded WUSC's administrative costs.

Non-Governmental Organizations

SCF/UK - conducted a nutritional survey of affected children in Wardes and Degeh Bur districts.

WUSC/Canada - distributed a 6-month supply of RRC food (1,400 MT of grains); undertook water and health activities, including an expanded program of immunization and preventive health care.

TOTAL $303,900

Drought II Ethiopia

Date
Beginning July 1987 and ongoing
Location
Eritrea, Tigray, Wello, Harerge, Shewa, Gamo Gofa, Sidamo, Gonder, and Bale regions
No. Dead
0
No. Affected
5,000,000 - 7,000,000
Damage
Northern regions had near total crop losses in some areas; early estimates placed 1988 food needs at 950,000 MT.

The Disaster

Please note: At the time of publication, the Ethiopia drought emergency was ongoing. Additional U.S. and international assistance is expected to be pledged toward the disaster and will be reported in the **OFDA Annual Report FY 1988.**

The Meher season (June and July) is normally the time when the major rains fall throughout much of Ethiopia. In 1987, June and July passed with little to no significant rain throughout much of the country, with the north most severely affected. In August, a number of areas received heavy rains that were in some cases destructive rather than beneficial to crops; other areas remained extremely dry. Light rains that fell in September were insufficient and too late. The rain failure devastated crops in Eritrea, Tigray, Wello, and Harerge and caused considerable crop losses in Shewa, Gamo Gofa, Sidamo, Gonder, and Bale.

AirServ transported food to rural Ethiopians.

By the end of July, it was already becoming clear that Ethiopia was facing a drought potentially as serious as the one in 1984-85. The government of the People's Democratic Republic of Ethiopia (GPDRE) sent assessment teams to survey the extent of the drought and estimate food needs. Based on initial estimates of crop losses, on Sept. 7 the GPDRE issued an appeal for 950,000 MT of emergency food, a figure that the United Nations in Ethiopia endorsed. A better estimate of food needs was expected in November or December, after actual harvest losses were known. FAO and GPDRE teams returned to the field in October to conduct assessments.

Representatives from PVOs and donor countries already were present in Ethiopia when the drought began to unfold. Most had been involved in the previous drought just two years earlier. When the rains failed again in 1987, international donors immediately began to plan for relief operations. Representatives from embassies conducted field assessments to confirm the extent of the drought, and NGOs working in rural areas shared their knowledge of local conditions. Once needs were identified, relief officials attempted to position food early to avoid mass movements of people to feeding centers. During the 1984-1985 drought, thousands of lives were lost in camps around feeding centers when people weakened by malnutrition and living in crowded and unsanitary conditions succumbed to diseases. If food could be delivered in time, people could receive one-month rations and return home again.

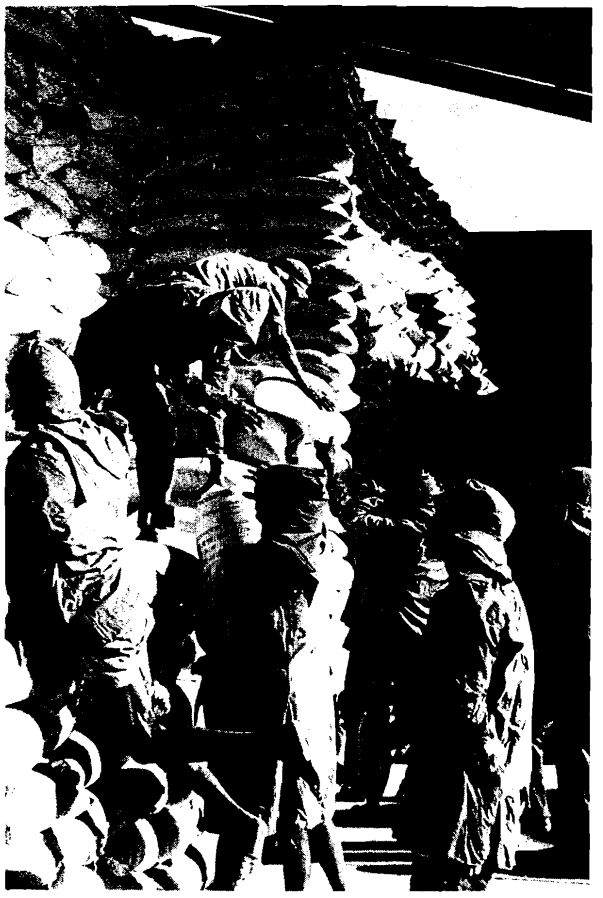
The success of supplying relief food to people affected by the drought hinged on the capacity of available infrastructure to receive and distribute food. Port handling equipment, truck fleets, and roadways had all deteriorated since the large food relief operation in 1985. Extremely rough terrain, underdeveloped roads, and military activity created difficult conditions for overland transport. A multi-donor Relief Transport Mission performed a study of the transport capacity available within Ethiopia to meet impending food emergency needs. Nine members from different countries and international organizations examined port, truck, rail, and air transportation capacity and made recommendations on additional transport needs. In the study, they identified a requirement for 300 additional trucks in the north, spare parts for many existing trucks, port handling equipment, storage facilities and aircraft. The U.N. established an "Emergency Transport Fund" to be used as a contingency for major airlift operations.

Even before pledged food contributions arrived, relief agencies began moving in-country stocks of food. Some of the affected areas needed food by November and December. On Oct. 23, 1987, an incident occurred that put in question the possibility of moving enough food in time. The Eritrean People's Liberation Front (EPLF) in Eritrea attacked a convoy of relief trucks carrying food. Sixteen 30-ton trucks belonging to the WFP Transport Operation in Ethiopia (WTOE) and carrying 360 MT of WFP food were burned. CRS lost seven trucks carrying 94 MT of USG food. The road was closed and transport of relief food was temporar-

ily halted. Donors called for an "open roads/own risk" policy in which clearly marked humanitarian relief convoys traveling without government escort would be permitted to move freely along the road. The U.N. resident coordinator authorized a resumption of U.N. relief convoys on Nov. 9.

Action Taken by the Government of the People's Democratic Republic of Ethiopia (GPDRE)

When the July rains failed and early indicators pointed to drought, the GPDRE began to assess the severity of the crop damage and the potential food shortage. In August, the government dispatched seven teams of members from the Relief and Rehabilitation Commission (RRC), the Ministry of Agriculture (MOA), and the Central Statistics Organization to the affected regions. Although the real extent of crop losses would not be known until the harvest in November, this preliminary survey clearly indicated that there would be a severe food shortage. In mid-October, the chief commissioner of the RRC together with the prime minister and other GPDRE senior officials visited drought-stricken regions to observe the situation first-hand.



Unloading U. S.-donated grain

The GPDRE allocated 50,000 MT of food from its food security reserve for relief purposes. In addition, President Mengistu approved the transfer of 120 million Ethiopian birr (about $60 million) to be used for the drought emergency. To meet the greater need for trucks to transport food in the north, the government's Ethiopian Freight Transport Corporation (EFTC) moved 50 trucks from the south.

The RRC convened regular meetings with the international community to discuss relief needs and related activities. The government cooperated with international organizations, donor countries, and non-governmental organizations in allowing representatives access to drought areas to assess conditions. The GPDRE approved requests by the ICRC, the United Nations, and NGOs to lease privately owned trucks and to bring in aircraft to begin relief airlifts. GPDRE officials also agreed to hold port charges to the level agreed upon during the previous drought in 1985.

Assistance Provided the U.S. Government

The A.I.D.-sponsored Famine Early Warning System (FEWS) signaled the USG that the drought was expected to lead to a serious food shortage. The USG recognized a need to act quickly and as early as August approved 10,000 MT of emergency food for Ethiopia. In September, teams of FFP officers and officials from USAID/Addis Ababa conducted field assessments in Harerge, Gonder, Gojam, and Shewa. Their observations confirmed the severity of the drought.

On Sept. 14, U.S. Chargé James R. Cheek declared that the drought constituted a disaster. In support of the U.N.'s leading role in coordinating the emergency response, OFDA obligated $1.5 million the rehabilitation and maintenance of the WTOE truck fleet. This fleet was established during the 1984-85 drought as an independent operation to move donor food in Ethiopia. Concern for adequate transportation resources led OFDA to make further contributions in this area. Based on the needs identified in the WFP transport study, OFDA contributed $1,063,000 to WFP for the

Hungry Ethiopian families received U. S.-donated food at distribution points.

purchase of 28 trailers and $1,292,000 to Air Serv International for the purchase of two Twin Otter aircraft for use by PVOs.

A number of officials from A.I.D./Washington went to Ethiopia to observe drought conditions, review food handling and distribution capabilities, and meet with PVO representatives and government officials to discuss ways to improve relief operations. A visit by OFDA Director Julia V. Taft, OFDA Assistant Director for Africa Tim Knight, and FFP Director for Africa Bill Pearson in November, and a later trip by A.I.D. Administrator Alan Woods, led to further U.S. commitments.

A.I.D. increased its staff in the Ethiopia mission to better manage relief activities. OFDA contributed by providing USAID/Addis Ababa with $20,000 to fund an Ethiopian transportation expert. OFDA also supplied a $307,000 grant to UNDP as the USG contribution toward the U.N. Emergency Prevention and Preparedness Group's (EPPG) professional staff in Ethiopia. These funds covered the cost of two field monitors, one logistical information/coordination officer, two drivers, one secretary, vehicles, and related support costs.

The USG made a major commitment of emergency food Sept. 17 by approving the transport of 114,252 MT. The food was channeled through four PVOs that had worked with A.I.D. in the past and had experience in food distribution programs in Ethiopia. Food for Peace PL-480 Title II programs and USDA Section 416 commodities provided the food. Ocean freight and internal transport costs also were covered under these programs. In addition, OFDA provided money for program support, which included costs such as field distribution staff, vehicles, office equipment, and other operational expenses. Later LRCS, ICRC, and the Missionaries of Charity (MC) requested food. A total of 8,346 MT of food and associated transport costs were approved for these organizations.

The USG commodities already committed are initial contributions to ease the drought emergency. The United States expects to be involved in relief efforts throughout FY 1988.

Summary of USG Assistance

FY 1987

Rehabilitation and maintenance of the WTOE truck fleet $1,500,000

Grant to UNDP for EPPG's professional staff $307,000

Partial internal transport costs for FFP-donated food (FFP funds) $1,527,200

Total OFDA $1,807,000
Total FFP. $1,527,200

Total FY 1987 ..... $3,334,200

FY 1988

Hire of aircraft for OFDA director's visit to Ethiopia $3,000

Mission allotment for Ethiopian transportation expert $20,000

Grant to WFP for purchase of 28 trailers $1,063,000

Grant to Air Serv International for 2 Twin Otter aircraft $1,619,000

PVO program costs funded by OFDA:
CARE - $810,400; FHI -$936,725;
SCF/US - $151,373 ..... $1,898,498

FFP funds for 132,623 MT of food and related transport costs (see table on next page) $45,256,400

Total OFDA $4,603,498
Total FFP $45,256,400

Total FY 1988 ..... $49,859,898

TOTAL $53,194,098

Assistance Provided by U.S. Voluntary Agencies

CARE - commenced an emergency food distribution program in Harerge. In the first phase of the program, scheduled to run from November 1987 through June 1988, CARE will distribute 32,375 MT of U.S.-donated food.

CRS - conducted relief operations in cooperation with other voluntary organizations under the consortium of Joint Relief Partnership (JRP) which operates in Tigray, Eritrea, Harerge, Shewa, Wello, Gonder, Arsi, Sidamo, Wellega and Keffa.

FHI - began to distribute 22,500 MT of U.S.-donated food in Shewa, Gonder, and Wello using food-for-work projects. For the initial phase (through April 1988), FHI contributed $219,701 of its own money and will use A.I.D. money for field operating expenses.

SCF/US - started a feeding program in the districts of Yifat and Timuga in Shewa Region using 16,102 MT of U.S.-donated food in the first phase.

TOTAL $219,701

Assistance Provided by the International Community

International Organizations

In September, a nine-member, multi-donor team organized by WFP assessed the transport capacity available within Ethiopia to handle the food emergency. The study reported on port, truck, rail, and air transportation capacity and made recommendations on what inputs would be required for the expected food shortage. The RRC and the donors generally accepted the needs outlined in the study and over the next several months worked together to meet the needs.

EEC - pledged 100,000 MT of food; provided spare parts for trucks and equipment for the road network; and contributed water cans, medicine, tents, and blankets.

FAO - conducted an extensive survey of 1987 crop production in Ethiopia and estimated the extent of food shortages for 1988.

WFP - pledged 51,300 MT of food and extended its role in food transport for at least one year. WTOE agreed to move 30 of its trucks to the north.

Governments

Australia - pledged 11,000 MT, $1,370,000 for food transport and purchase of non-food emergency items for the north, and $750,000 for the EPPG Emergency Transport Fund.

Austria - pledged 2,000 MT and $41,000 to the EPPG Emergency Transport Fund.

Canada - pledged food and non-food aid, valued at $10,000,000.

Finland - pledged 250 MT of food.

Germany, Fed. Rep. - donated $83,000 for a special consignment of supplies for UNICEF, pledged 20,000 MT of food, and donated $750,000 to the EPPG Emergency Transport Fund.

Italy - pledged 15,000 MT and $2,400,000 to repair Fiat trucks.

Netherlands - pledged 20,100 MT of food.

Switzerland - pledged 2,000 MT of food.

United Kingdom - pledged 10,000 MT of food (valued at $3,100,000) and $840,000 for distribution costs; pledged $1,000,000 to the EPPG Emergency Transport Fund; and agreed to provide 8 tractors for the port of Massawa, 7 replacement grain dump trucks and spare parts for the port of Assab, 105 tarpaulins, and 6,500 pallets.

Non-Governmental Organizations

Band Aid - pledged 20 40-MT trucks.

Redd Barna (SCF/Norway) - pledged 10,040 MT of food.

TOTAL $20,334,000

Summary of FY 1988 FFP Assistance

SPONSOR	PROGRAM & COMMODITY	QUANTITY (MT)	COMMODITY COST ($)	TRANSPORT COST ($)	TOTAL COST ($)
CARE	Title II: vegoil	1,125	801,000	225,000	1,026,000
	Sec. 416: wheat	31,250	3,625,000	4,687,500	8,312,500
CRS/MC	Title II: 200 MT pinto beans; 1,560 MT bulgur; 186 MT vegoil; 400 MT NFDM	2,346	561,900	574,900	1,136,800
FHI	Title II: 365 MT vegoil; 210 MT CSM	575	317,600	159,400	477,000
	Sec. 416: wheat	6,300	730,800	1,431,500	2,162,300
ICRC	Title II: pinto beans	2,000	1,000,000	250,000	1,250,000
CRS/JRP	Title II: 8,700 MT bulgur; 4,800 MT NFDM; 4,325 MT vegoil	17,825	5,200,000	5,342,600	10,542,600
	Sec. 416: wheat	51,100	5,927,600	9,962,400	15,890,000
LRCS	Sec. 416: wheat	4,000	500,000	431,600	931,600
SCF/US	Title II: 1,283 MT NFDM; 569 MT vegoil	1,852	546,900	410,300	957,200
	Sec. 416: wheat	14,250	1,653,000	2,444,600	4,097,600
TOTAL		**132,623**	**$20,863,800**	**$25,919,800***	**$46,783,600**

* includes $1,527,200 FY 1987 funds

Storm Guinea-Bissau

Date
July 1, 1987
Location
Tombali Region in the south
No. Dead
1
No. Affected
3,700 people homeless; 3 injured
Damage
Hundreds of houses and 25 school buildings were damaged.

The Disaster

On July 1, a freak storm with hurricane-force gusts struck the tiny country of Guinea-Bissau, on the coast of West Africa. Storms of this magnitude are highly unusual in the eastern Atlantic Ocean. The storm hit the southern region of Tombali, destroying hundreds of houses and leaving more than 3,700 people without shelter. In addition, high winds blew the roofs off 25 schools in the region. The accompanying rains ruined many families' supply of seeds and food stocks, which was to have lasted until the harvest in October.

Action Taken by the Government of Guinea-Bissau (GOGB)

The Tombali regional authorities immediately established an Office of Disaster Relief and Rehabilitation under the chairmanship of the governor of the region and enlisted 1,000 volunteers to help with relief and reconstruction activities. The Ministry of Agriculture and Fishery provided cement and rice to the regional office's relief operation. The national government sent a damage evaluation team to Tombali's capital, Catio. The team reported that Catio's central school, power plant, several government buildings, and hundreds of houses had been damaged or destroyed. On Aug. 8, the Secretary of State for International Cooperation made an appeal to international donors for 194 MT of rice as emergency food rations and an unspecified amount of construction materials to repair damaged buildings.

Assistance Provided the U.S. Government

In response to the GOGB's appeal, U.S. Ambassador John D. Blacken determined on Aug. 27 that the situation warranted USG assistance. A USAID representative made several trips to the region to survey the damage. The GOGB Ministry of Education, Culture, and Sports requested that USG funds be used to repair schools that had been damaged by the storm. Ambassador Blacken donated $25,000 to Societé Franzetti and Company, a private construction firm, to repair six schools in Tombali Region.

TOTAL $25,000

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

FAO - contributed 90 sheets of zinc roofing.

UNDP - provided materials to repair the Catio electric power plant.

WFP - donated 100 MT of rice.

Civil Strife Mozambique

Date
1987
Location
Maputo, Gaza, Inhambane, Manica, Sofala, Tete, Zambezia, Nampula, and Niassa provinces
No. Dead
80,000 children in 1986 (official estimate)
No. Affected
6,500,000, including 3,200,000 at-risk
No. Displaced
1,500,000 displaced in country, plus more than 700,000 refugees

The Disaster

While the return of the rains in 1986 and 1987 brought an end to the drought in many countries in Africa, Mozambique remained under the specter of famine. Continued civil strife and the lingering effects of drought inhibited food production and caused widespread malnutrition in rural areas and severe food shortages in the cities. Anti-government guerrillas terrorized farmers and prevented them from harvesting their crops. More than 2 million Mozambicans were forced to abandon their land and their livelihood. As a result, 1987's marketed cereal production remained at the low levels recorded during the 1981-84 drought, only about 60,000 MT. WFP estimated that more than 700,000 MT of cereals were needed to meet the emergency and normal market food requirements for the crop year April through May. According to the government, an estimated 6.5 million Mozambicans (roughly 44% of the population) were dependent on donor food aid.

Malnourished orphans in Caia

Of the 6.5 million people requiring emergency food aid, 3.2 million were identified as being "at-risk" and directly affected by the civil strife. Most of these victims were forced to leave their villages with little or no clothing or personal belongings. Many moved into government-protected relief camps, where they were entirely dependent on donated food rations. Villagers in remote areas subsisted on leaves, seeds, and roots. Malnutrition and disease were prevalent among this group, and in some areas the child mortality rate was higher than 300 per 1,000. According to the prime minister, in 1986 at least 80,000 children under the age of five died of malnutrition and disease. In addition to the 3.2 million at risk, 3.3 million people who lived in urban areas also were dependent on international food assistance because of the disruption of the commercial marketing system. These people were able to buy donated food rations in the urban marketplace and were not considered to be at-risk. An estimated 700,000 Mozambicans had fled to the neighboring countries of Malawi, South Africa, Zimbabwe, Tanzania, Zambia, and Swaziland to escape the civil strife.

Mozambique has been in the midst of a civil war since 1975, when it gained independence from Portugal. The Mozambique National Resistance (MNR), also known as RENAMO, has sought to undermine the socialist government under the leadership of one party, known as FRELIMO. The FRELIMO government asserts that these resistance groups are bandits supported by the South African government to destabilize the Mozambican economy and keep the country economically dependent on South Africa. In 1987, small bands of guerrillas stepped up their attacks on the nation's infrastructure, sabotaging roads and railways and ambushing truck convoys delivering food to relief camps. Schools, health clinics, and development projects were also frequent targets of RENAMO attacks. Also in 1987, marauders reportedly attacked several villages and massacred hundreds of civilians. RENAMO carried out hit-and-run attacks in all 10 provinces, and joint Mozambican and Zimbabwean forces were only temporarily successful at recapturing rebel-controlled areas.

Action Taken by the Government of the People's Republic of Mozambique (GPRM) and Non-Governmental Organizations

Since 1981, the GPRM has been faced with a nationwide food emergency, brought on by a combination of natural disasters and civil strife. That year, the GPRM created the Department for the Prevention and Control of Natural Calamities (DPCCN) to coordinate the government's relief activities. In 1984, the GPRM signed a project agreement with a U.S. PVO, CARE, to manage and operate the Logistical Support Unit (LSU) within the DPCCN. The LSU was put in charge of port clearance, handling, and warehousing of

Displaced persons camp at Casa Banana

internationally donated relief supplies, transportation of food and other relief commodities to district distribution centers, and maintenance and operation of delivery vehicles. The LSU also was responsible for tabulating the at-risk population and assessing food needs in each affected province. Military-escorted truck convoys and donor-funded airlifts delivered food and other relief supplies to affected groups in all 10 provinces.

In 1987, the GPRM formed the National Emergency Executive Commission, under the direction of the Minister of Cooperation, to coordinate the emergency response planning with the U.N. Special Coordinator and representatives of the donor community. An Emergency Operations Committee also was established to solve logistical problems and facilitate the transportation of food. The GPRM sent an official delegation to the U.N.-sponsored donors' meeting on Mozambique, held in Geneva, on Mar. 31, 1987. Two domestic NGOs also were involved in providing relief supplies to victims of civil strife. The Mozambican Red Cross managed relief operations in Niassa, Zambezia, Tete and Manica provinces, while the Christian Council of Mozambique (CCM) provided clothes, blankets, seeds, and utensils to victims in Sofala, Inhambane, Gaza, and Maputo provinces.

Mozambican women fetch water at displaced persons camps.

Assistance Provided by the U.S. Government

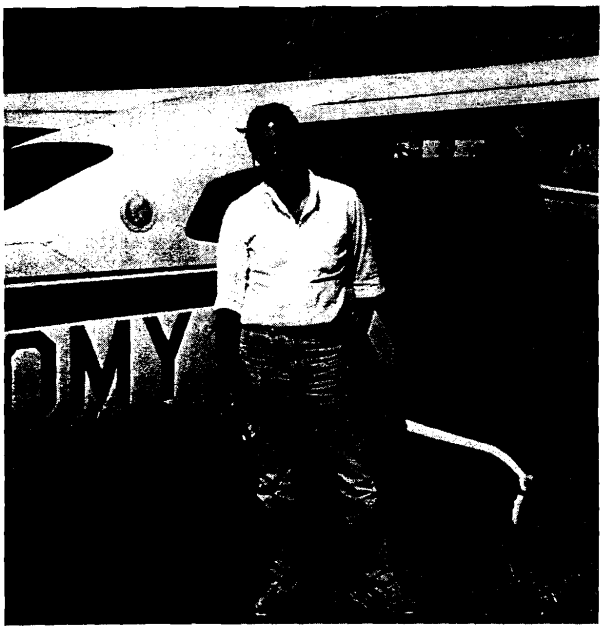
For the fourth consecutive year the U.S. government provided humanitarian assistance to Mozambique. On Jan. 8, 1987, U.S. Ambassador Peter Jon De Vos determined that the ongoing food emergency continued to warrant USG assistance. The bulk of this assistance came in the form of emergency food aid. In fact, the United States was the largest single donor of emergency food commodities in FY 1987. On Mar. 31, OFDA Director Julia Taft and OFDA Assistant Director Timothy Knight were part of the U.S. delegation attending the U.N. sponsored donors' meeting on Mozambique. In her statement before the opening session, Ms. Taft pledged that the U.S. government would provide 150,000 MT of food and more than $7 million in emergency assistance grants. By the end of fiscal year 1987, A.I.D.'s Office of Food for Peace had provided 175,094 MT of emergency food commodities.

Since 1984, OFDA has funded the highly successful CARE project, which manages the Logistical Support Unit of the DPCCN. In FY 1987, OFDA contributed $1,075,028 and FFP contributed $1.2 million toward the extension of this project, which paid for personnel, vehicles, fuel, spare parts, and maintenance. OFDA also provided $299,449 to WVRO for its food distribution program in Zambezia, Tete, Manica, Sofala, and Gaza provinces. FFP contributed $281,270 in support of this program. This money was used to pay for personnel, fuel, trucks, and maintenance costs. In addition, OFDA funded another WVRO program that distributed AgPaks—packages of seeds, tools, and fertilizer—to farmers in Tete and Zambezia provinces.

Widespread malnutrition and disease and a severe shortage of medicine were apparent throughout Mozambique. Between 1982 and 1986, 484 health posts were destroyed by guerrilla attacks. In response to an appeal from UNICEF, OFDA provided two grants to purchase vital medicines and supplies for the GPRM Ministry of Health. OFDA also negotiated with ICRC to expand its emergency relief program in Mozambique, especially in those areas not accessible to the DPCCN. In October, OFDA donated $1.2 million to ICRC for emergency medical assistance and logistical support. ICRC flew medicine and other essential goods to insecure areas in several provinces.

In FY 1987, the USG improved its ability to monitor projects and ensure that USG-donated food and assistance was getting to those most in need. In May, OFDA extended its contract with a U.S. PVO, Air Serv International, to provide airplane passenger service to USAID, CARE, and UNICEF employees to inspect relief and rehabilitation activities. OFDA Assistant Director for Africa, Timothy Knight, made two trips to Mozambique in FY 1987, talked with GPRM officials and visited several food distribution camps. In December, OFDA sent a long-term personal services contractor, Herb Bedolfe, to help USAID/Maputo manage the USG-sponsored programs.

OFDA Assistant Director Tim Knight on assessment mission in Mozambique



Summary of USG Assistance

FY 1987

OFDA ASSISTANCE

Grant to UNICEF for medicine $2,000,000

Grant to CARE for LSU $1,075,028

Grant to WVRO for AgPak program $500,292

Grant to WVRO for food distribution $299,449

Grant to Air Serv International $264,000

FFP ASSISTANCE

110,000 MT of Title II food to GPRM ... $24,544,000
Transport costs for 110,000 MT $8,269,100

24,594 MT of Section 416 food to GPRM $12,263,100
Transport costs for 24,594 MT $2,264,200

15,500 MT of Title II food to WVRO $4,084,900
Transport costs for 15,500 MT $4,606,300

25,000 MT of food in swap with Kenya . $2,261,000
Transport costs for 25,000 MT $5,053,000

Grant to WVRO for program support $281,270

Grant to CARE for program support $1,200,000

Total OFDA $4,138,769
Total FFP $64,826,870

Total FY 1987 ..... $68,965,639

FY 1988

Grant to ICRC (supplemental funds) $1,200,000

Grant to UNICEF $1,400,000

Contract for relief monitor Herb Bedolfe (supplemental funds) $110,000

Total FY 1988 ..... $2,710,000

TOTAL $71,675,639

Assistance Provided by U.S. Voluntary Agencies

ADRA - provided blankets, clothing, shoes and water purification tablets, valued at $881,000.

Air Serv International - under contract to OFDA, provided crew and twin-engine aircraft for use by USAID/Maputo, CARE, and UNICEF personnel to monitor emergency relief programs. Air Serv also flew airlifts to Niassa Province for Oxfam/U.K. and Redd Barna.

Americares - sent drugs, medical supplies, and shoes, value not reported.

CARE - has managed and operated the Logistical Support Unit of the DPCCN since 1984. This unit handles the receipt, warehousing, transportation,

distribution, and monitoring of most of the internationally donated relief commodities, including food. A.I.D. has funded the project.

CRS - sent clothing, quilts, and soap, value not reported.

CWS - donated blankets, clothing, soap, seeds, and vegetable packs, all valued at $2,588,494; and contributed $33,000 to the Christian Council of Mozambique.

FHI - provided seeds and clothing.

WVRO - managed 2 programs in Mozambique, both funded by A.I.D. One project distributed 30,000 MT of food to 245,000 beneficiaries in Tete, Manica, Zambezia, Gaza, and Maputo. The other program distributed AgPaks—packages of seeds, tools, and fertilizer—to farmers in Tete and Zambezia provinces.

TOTAL $3,502,494

Assistance Provided by the International Community

On Mar. 31, 1987, the U.N. secretary general convened a donors' conference to address the situation in Mozambique. At this conference, governments and non-governmental organizations pledged more than $200 million in food and other assistance. The following listing of international assistance is based on reports submitted to OFDA as of October 1987. Pledges and appeals have not been included in the total.

International Organizations

Caritas Internationalis - sent rice, maize, and flour, and appealed for $2,798,000 to conduct a relief program for 50,000 families.

EEC - contributed grants to MSF ($1,112,971), ICRC ($1,131,734), Freedom from Hunger ($846,420), Bioforce ($800,476), World Vision ($742,857), and Oxfam/U.K. ($675,295). The EEC also gave 30,000 MT of corn, 15,000 MT of wheat, 6,000 MT of rice, and 9,000 MT of various cereals; total contribution of $5,309,753.

ICRC - resumed its emergency relief programs in 1987. In cooperation with the Mozambican Red Cross, ICRC distributed medicine, food rations, and personal supplies in Nampula, Niassa, Sofala, Tete, and Zambezia.

LRCS - funded an airlift of relief supplies using the Mozambican national airline LAM.

LWF - donated blankets, soap, foodstuffs, and maize; and sent a fact-finding mission to assess needs.

UNDP - Resident Representative Arturo Hein-Caceres was appointed the U.N. Special Coordinator for Emergency Relief Operations in Mozambique.

UNDRO - sent a team to develop a computerized information system for the Emergency Operations Committee to track emergency needs and food distribution.

UNICEF - managed several emergency relief and rehabilitation projects in Mozambique, including a resettlement project in Espungabera district (Manica Province), a rehabilitation project in Changara district (Tete Province), a water project in Inhambane Province, an orphan reintegration program, and a vital medicines program.

WCC - launched an appeal for $6.5 million to support the Christian Council of Mozambique.

WFP - under its ongoing food distribution program, provided over 25,000 MT of corn and 5,000 MT of beans. In cooperation with DPCCN, financed several airlifts of food and chartered a coastal barge to deliver food to victims in Inhambane Province. WFP also conducted a number of food needs assessments and refurbished the port at Maputo.

World Vision International - donated shoes and clothing.

Governments

Australia - contributed $104,070 to UNDRO, $101,351 to ICRC, $9,613 to the UNICEF-sponsored Changara district (Tete Province) rehabilitation project, and 3,300 MT of corn for distribution by World Vision.

Austria - pledged $800,000 to the U.N. appeal.

Belgium - gave $81,081 to MSF and 5,000 MT of corn, valued at $720,000.

Botswana - pledged $1,176,000 to the U.N. appeal.

Canada - donated $1,200,000 to UNICEF, $795,871 to World Vision/Canada, $641,880 to UNDRO, $522,388 to ICRC, $570,000 to LRCS, $187,970 to UNCHR, and 3,300 MT of corn for distribution by World Vision.

Czechoslovakia - pledged $414,000 to the U.N. appeal.

Denmark - donated $31,111 to the UNICEF-sponsored Changara district (Tete province) rehabilitation project, $285,700 to ICRC, and 11,600 MT of corn through WFP.

Finland - contributed $522,142 to UNICEF, $333,333 to the Finnish church, and $111,111 to UNDRO.

France - pledged $800,000 to the U.N. appeal, including $35,000 for trucks and 5,000 MT of wheat through WFP.

German Dem. Rep. - gave 2,000 blankets ($55,556), 5 trucks ($254,000), cement ($87,432), cash for clothing ($2,000,000); total contribution of $2,396,988.

Germany, Fed. Rep. - gave $733,516 to German NGOs, $219,780 to UNICEF, $166,667 to UNHCR, $136,612 to ICRC, and 10,000 MT of corn and 3,000 MT of wheat through WFP.

Hungary - provided food, medicine, and hospital supplies to the Mozambican Red Cross, value not reported.

Ireland - gave $59,612 to UNICEF and $28,075 to UNDRO.

Italy - financed the WFP airlift of food to Manica, Sofala, and Zambezia provinces ($2,000,000), and contributed trucks and cranes ($7,850,000), medicine for Zambezia ($6,100,000), grant to UNDRO ($90,000), fuel to UNICEF for use in Tete ($200,000), and 17,500 MT of cereals; total contribution of $16,240,000.

Japan - donated medical equipment, spare parts, trucks, and vehicles; contributed Toyota vehicles and tuna fish, valued at $961,538, to UNICEF; and provided $226,337 for coastal food delivery.

Luxembourg - contributed $7,936 to the UNICEF-sponsored Changara project.

Netherlands - provided agricultural inputs ($2,000,000), medical equipment ($1,246,366), vehicles ($1,226,616), fertilizers ($1,728,111), port equipment ($1,040,000), cash grant to DPCCN ($655,345), cash grant to Caritas ($203,010), cash grant to CARE ($47,130), cash grant to UNICEF ($1,461,000), and 50,000 MT of corn; total contribution of $9,607,578.

New Zealand - contributed $16,018 to the UNICEF-sponsored Changara district rehabilitation project, gave $10,000 for tires, and supported the WFP appeal for port equipment.

Norway - gave $5,018,972 to NGOs, $150,000 to WHO, $130,719 for fuel to UNICEF to be used for relief vehicles in Tete Province, and $48,735 to the UNICEF Espungabera district rehabilitation project. .

Portugal - pledged $2,100,000 to the U.N. appeal.

Sweden - donated vehicles ($11,230,767), seeds and tools ($1,846,154), medical equipment ($1,671,461), family supplies ($769,231), blankets ($461,538), water supply equipment ($230,769), and cash grant to WFP ($1,200,000); total value of $17,409,920.

Switzerland - provided computer equipment for the Office of the Special U.N. Coordinator to assist record keeping and reporting, made a cash contribution of $180,000 to the WFP appeal for port equipment, and donated $67,658 to the UNICEF airlift.

Soviet Union - contributed $282,711 to the Mozambican Red Cross.

United Kingdom - donated 30,000 MT of wheat ($9,000,000), trucks and tractors ($823,202), grant to UNHCR ($770,416), grants to OXFAM and SCF/UK ($900,000), grant to Christian Council of Mozambique ($385,208), and grant to UNDRO ($329,428); total contribution of $12,208,254.

Yugoslavia - donated tractors, spare parts, farm equipment, soap, and food, value not reported.

Non-Governmental Organizations

African Islamic Community - sent clothing and rice.

Bioforce - provided seeds for Inhambane Province.

CARE/U.K. - provided trucks, tractors, and spare parts.

Collectif Francais Urgence Mozambique - donated clothing, medicines, and medical supplies.

Community AID Abroad (Australia) - sent shoes, clothing, and maize, valued at $176,056, and gave $55,000 to the Christian Council of Mozambique.

Eduardo Mondlane Foundation - provided tools and construction materials.

Freedom from Hunger - supplied blankets, utensils, soap, and clothing.

Jesus Alive - donated 39 tons of cement.

MSF - provided medical assistance in Inhambane Province, financed by EEC and the Government of Belgium.

Oxfam/U.K. - donated 195 MT of powdered milk, 200 MT of sugar, 50 MT of skimmed milk, 60 MT of sorghum seed, clothing, soap, tools, and utensils. In cooperation with the Norwegian NGO Redd Barna, Oxfam sponsored airlifts of food and relief supplies to Niassa Province.

Redd Barna - provided blankets, clothing, and cooking supplies.

SCF/UK - provided zinc sheeting, blankets, tractors, trailers, and trucks, and conducted airlifts to Zambezia Province.

TOTAL $78,101,056

Epidemic Nigeria

Date
November 1986 - July 1987
Location
Southeastern and southwestern Nigeria, especially Benue, Cross River, and Oyo states
No. Dead
About 1,000 reported
No. Affected
At least 1,200 additional cases, but many more suspected

The Disaster

An outbreak of yellow fever was first confirmed in the Oju local government area (LGA) of Benue state in November 1986. From there the disease quickly spread to the Ogoja area of the neighboring state of Cross River. More than 500 deaths, mostly of children and youth, were reported in the southeastern states before the epidemic was contained. Isolated cases also were reported in Imo and Anambra states.

The decline in incidence of the disease was thought to be caused partly by a reduction in the vector population, a mosquito *(Aedes africanus)*, during the dry season. A resurgence was therefore expected when the rains returned, especially given the low level of immunization in traditionally endemic areas. After reports of sporadic and scattered cases during the January to May period, a second wave of the epidemic appeared with the onset of rains in May. This time the epicenter was the Ogbomosho area of Oyo state in the populous southwestern region of the country, giving rise to fears that outbreaks might occur in the highly urbanized areas of Lagos and Ibadan.

The second epidemic peaked within several weeks. A number of indigenous cases of yellow fever in the states of Ogun, Ondo, Lagos, Kwara, and Bendel failed to reach epidemic proportions. The high level of *Aedes aegypti*, the identified vector in the southwestern area, was clearly linked with the pattern of water usage and storage. Most of western Nigeria suffers from a shortage of water, and many houses are supplied by mobile tankers, even in the larger towns with piped water systems. The practice of storing water in open or poorly covered containers provides a perfect breeding ground for the mosquitoes that transmit the disease.

An official update in July 1987 put the number of cases for the second epidemic at 915, with 401 deaths. Of this total, 758 cases and 375 deaths occurred in Oyo state. Since only hospitalized cases were reported and relatively few cases reached hospitals, the true dimension of the disaster is not known. Surveys by expatriate consultants indicated a much higher rate of morbidity and mortality than was reported.

Action Taken by the Government of Nigeria (GON)

The GON responded to the growing health crisis in late 1986 by sending assessment teams to the affected areas and preparing for a vaccination campaign. UNICEF and WHO were called on to procure vaccine, needles and syringes. The strategy was to vaccinate all people in the affected local government area as well as those in bordering LGAs. The Federal Ministry of Health (FMOH) dispatched a 30-person team of vaccinators in December to immunize 30,000 people a day at all exit and entry points in the affected states. The state of Benue planned to mount its own campaign in January using military personnel and vehicles. The target population grew as the epidemic spread. Six mobile teams (four of them from MSF) worked in Ogbomosho as the focus shifted from Benue to Oyo state in May. Efforts to combat the yellow fever epidemic were hampered, however, by logistical problems, a lack of functioning ped-o-jets, and an insufficient supply of vaccine. Neither the virus research institute at Ibadan nor the federal vaccine production laboratory in Yaba (Lagos) was adequately equipped to respond to an outbreak on such a large scale.

Task forces were established on the national and the state levels. The federal task force was responsible for coordinating the efforts of state governments and for ensuring that federal assistance reached the states quickly. The federal task force also set priorities for immunization based on the geographic area most severely affected.

Representatives of the FMOH worked with the CDC team sent to Nigeria under A.I.D.'s CCCD (Combating Childhood Communicable Diseases) project to conduct surveys in Benue and Cross River states during the first epidemic in December. The FMOH accepted the A.I.D. Mission's suggestion to incorporate yellow fever in the CCCD program and thereby add that disease to the Ministry's EPI (Expanded Program of Immunization) effort.

At the request of the GON, CDC physicians returned to Nigeria in May, under WHO sponsorship, to conduct further surveys and make recommendations. Copies of a report prepared by the CDC consultants after this visit were circulated to

various embassies prior to a donors' meeting on June 12. At that meeting, the Minister of Health announced that the GON had accepted Task Force recommendations based on the report. These included an intensified mass vaccination campaign in six southwestern states (as well as a continuation of efforts in Benue, Cross River, Imo, and Anambra and an extension to Plateau and Gongola states), increased surveillance, and stepped-up anti-vector activities. Spray trucks and backpacks rather than aerial spraying would be the method used in vector control. A campaign to educate the public in methods of reducing vector breeding grounds would be undertaken. Identified areas of need included vaccine, vehicles, ped-o-jets, insecticide and spray equipment, and laboratory supplies for diagnostic testing. The GON appealed to donors present to assist with these requirements. USAID was asked to provide technical assistance for one to three months in carrying out the surveillance and mass immunization aspects of the yellow fever campaign.

As of June 15, 10 million doses of vaccine had been received in Nigeria from all sources, including FMOH resources. The GON had allocated $4.5 million for vaccines and another $620,000 to finance operations.

Assistance Provided by the U.S. Government

The FMOH contacted USAID/Lagos in early December 1986 with a request for technical assistance in combating the yellow fever epidemic. In response, the mission notified the GON of the imminent arrival of a team of medical experts from the CDC under the auspices of the recently signed ACSI (Africa Child Survival Initiative)-CCCD program of A.I.D. (under an agreement with CDC). The team, comprising Dr. Robert Craven and Dr. Kevin DeCock, began a survey of Benue and Cross River states on Dec. 9, together with representatives of WHO and the FMOH. Dr. Thomas Monath, chief of the Yellow Fever Division of the CDC, joined the group on Dec. 12. In a draft report from this first visit, the CDC team recommended immunization campaigns in the epidemic area and in other areas at risk, follow-up entomological studies in Oju in the early rainy season of 1987, and strengthened diagnostic and vaccine production facilities in Nigeria. Based on the team's recommendation, the mission proposed that yellow fever vaccination be included in the EPI effort of the CCCD project.

When the second outbreak of yellow fever threatened the densely populated southwestern region of Nigeria, U.S. Ambassador Princeton N. Lyman made a disaster determination on May 12, 1987, to allow the use of disaster relief money in assisting GON efforts to respond to the epidemic. He requested that some of the needed equipment (vaccine, ped-o-jets, laboratory supplies) and medical expertise be provided through OFDA and the ACSI-CCCD project. The CDC was again asked to give technical assistance to the FMOH in developing a long-term program.

Dr. Monath and Dr. DeCock returned to Nigeria as WHO consultants in May to survey six southwestern states and make a definitive analysis of requirements. Their second report emphasized again the need for both a mass immunization plan, focused on the epidemic zone and areas at highest risk, and improved surveillance and vector control. They suggested further that two short-term consultants be identified to assist the GON in the yellow fever campaign, one to handle operational matters related to immunization, and the other to coordinate overall surveillance. Because effective monitoring depends heavily on rapid laboratory diagnosis, an urgent need was seen to upgrade diagnostic facilities in Lagos and Ibadan.

Based on the findings in the Monath/DeCock report and in response to Ambassador Lyman's request, OFDA procured emergency laboratory equipment from U.S. suppliers. Included were test kits, a spectrophotometer, microscope equipment, tissue incubators, and mini-readers. Funded in part from the Ambassador's $25,000 disaster assistance authority, the commodities were shipped via Nigeria Airways on June 6 and June 10 and presented to the FMOH in ceremonies on June 18. Dr. Charles Callisher, Chief of the Center for Infectious Disease Arbovirus Reference Branch in Fort Collins, Colorado, arrived in Nigeria on June 16 to assist with installation of the U.S.-furnished laboratory equipment. This technical assistance also was funded by OFDA.

The CDC identified 30 ped-o-jets from its inventory that could be donated (through USAID/

Lagos) to the GON. Shipped under funding provided by the ACSI-CCCD project, the ped-o-jets arrived in Lagos on June 14, along with a supply of spare parts.

Dr. Mac Otten, a medical epidemiologist, was selected by CDC to assist the FMOH in coordinating the yellow fever surveillance systems. A U.S. public health officer, Charles Watkins, was nominated to serve as technical manager of the mass immunization campaign at the national level. Both arrived in Lagos about June 30, their work funded from the CCCD project.

Summary of USG Assistance

Laboratory supplies and transport (includes ambassador's authority) $59,495

Travel and administrative costs of expert to install laboratory equipment $5,355

Estimated value of 30 ped-o-jets and spare parts (ACSI-CCCD funded) $30,000

Total OFDA $64,850
Total Other USG $30,000

TOTAL $94,850

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by the International Community

International Organizations

EEC - provided grants totaling $1,100,000 to finance the vaccination campaign conducted by MSF/Netherlands; also, unspecified assistance through WHO.

UNICEF - procured 2,000,000 doses of vaccine for the FMOH on a reimbursable basis and 2,000,000 each syringes and needles; posted an epidemiologist in Benue state and provided transport and cold boxes for the state immunization campaign; served on the GON federal task force.

WHO - donated 600,000 doses of vaccine; provided an assessment team consisting of an entomologist and an emergency expert; sponsored consultancy of CDC experts; planned to send an expert to help increase the production of locally produced vaccine; served on the GON federal task force.

Governments

Germany, Fed. Rep. - contributed money through the EEC.

Japan - gave $200,000 for the purchase of vaccines.

Sweden - provided $200,000 through WHO.

United Kingdom - donated $81,248 to WHO through the EEC.

Non-Governmental Organizations

MSF/Netherlands - fielded immunization teams in Benue and Oyo states.

TOTAL $1,583,248

Drought Somalia

Date
April - July 1987
Location
12 of 18 regions in the country (especially the central zone)
No. Dead
About 600 (government figure)
No. Affected
500,000 (U.S. assessment team figure)
Damage
Livestock losses (camel, sheep, cattle) ranged between 40% to 100% in certain districts; crops washed out; flooding damaged transportation and communication links.

The Disaster

The failure of the seasonal rains (October-December and April-June) created a severe drought in 12 of Somalia's 18 regions. Some areas, particularly in the central rangelands, reported no rain for one to two years. Once fertile pastureland and sorghum fields stood as empty, parched reminders to the drought's effect. For reasons probably related to water sources, nomads who traditionally move from borehead to borehead did not, placing undue stress on local resources.

Totally dependent on livestock, these people faced a serious threat of survival. Their animals weakened and died, not from lack of water but from lack of forage. Livestock losses reached as high as 40% to 100% in certain districts. By April, the drought had affected 500,000 people, and had claimed 600 lives.

Differences between the Somali government and donors existed from the outset over the magnitude of the problem. For instance, while the Somali government reported as many as 5.1 million persons affected, WFP conducted a survey in 14 regions that reduced the estimate to 265,000. A USG drought evaluation team put the figure at 500,000 and determined that differences arose from varying research methodology and lack of census data. The team said that no baseline data existed to distinguish between those suffering from chronic, structural malnutrition and those suffering temporarily from the drought.

Concerned international organizations and governments responded to the Apr. 28 Somali government's appeal for outside help with the creation of the DACC chaired by the UNDP. The group proved most active and useful in donor collaboration. It gathered data on the drought, aired ideas and concerns, and formulated collective approaches vis-à-vis the Somali government. Technical subcommittees of the DACC also met to discuss specific concerns. For example, health and nutrition personnel reviewed survey methodology and the content of the ration needed by drought victims.

When rain finally arrived in early May, 80% of the wells had dried up and victims were consuming less than a liter of water a day. The long-awaited precipitation soon replaced old problems with new ones. Although coming too late to prevent destitution, heavy downpours washed out crops, disrupted communications and transportation, and hampered relief efforts. Flooding reached its high point on Jun. 24, rendering 20,000 villagers and 10,000 refugees homeless but causing no deaths. An aerial survey funded by A.I.D. and Oxfam reported little damage to livestock and listed the Hiran Gedo, lower Shabelle, and Juba provinces as especially affected areas.

Action Taken by the Government of the Somali Democratic Republic (GSDR)

On Apr. 28, the Minister of Interior convened a meeting of donor representatives in which he outlined the drought's severity and appealed for outside help. The Ministry assisted the USG team with current information on inaccessible areas and the affected population and provided staff to the donor Drought Action Coordination Committee (DACC). Within the GSDR itself, the Food Aid Department arranged for transport of some donated food. An inter-ministerial committee and the Ministry of Interior coordinated drought-related activities. The Ministry of Agriculture formed a separate ad-hoc group of GSDR and donor representatives to investigate the flooding.

Assistance Provided by the U.S. Government

Once the USG realized the magnitude of the drought, emergency relief measures were put into effect. On Apr. 30, two days after the GSDR's appeal, U.S. Chargé David P. Rawson declared a state of disaster and donated $25,000 under the Ambassador's Authority. The GSDR used that money to transport wheat to drought victims.

OFDA put together a Drought Assessment Team (DAT) composed of two CDC experts, two food specialists, a Water and Sanitation for Health (WASH) engineer, and an OFDA disaster operations officer. In addition, the assistant director of OFDA's Africa Division visited Somalia to help coordinate the DAT's activities. The team met with concerned parties and visited the drought area from May 13 to June 3. One part of the DAT examined water resources in the central rangelands while the other assisted GSDR Ministry of Health, WHO, and UNICEF members in a six-region health and nutrition survey. The latter found that 18% of children in the control area (the Bay Region) had moderate protein deficiencies; of

these, 4% were severely malnourished. Diarrhea, respiratory ailments, and specific vitamin deficiencies were identified as major medical concerns.

The DAT's recommendations included the provision of commodities to help 500,000 affected people, a grant to UNICEF for drugs, and the local purchase of cereals and livestock (to help reinvigorate herds) from counterpart funds. FFP followed through on these findings with 1,350 MT of NFDM and 2,250 MT of vegoil to the GSDR, while OFDA donated $250,000 to UNICEF's emergency medical program. The cost of the Title II food plus shipping was $1.9 million. Counterpart funds also was used for local purchase and transport of cereals. As of early March 1988, noting that the FFP commodities exceeded drought needs, the mission proposed selling off 1,800 MT of the vegoil and 500 MT of the DSM, with proceeds from the sale going to a special future emergency fund.

Summary of USG Assistance

Ambassador's authority used by the GSDR to pay part of moving 4,000 MT of wheat $25,000

Grant to UNICEF toward its emergency medical program $250,000

Travel and administrative expenses for DAT member to Somalia (contracted food management expert Dwight Swartzendruber) $1,643

Travel and administrative expenses for 2 DAT members to Somalia (CDC experts Richard Peck and Daniel Miller) $8,680

Travel and administrative expenses for CDC experts to attend A.I.D. /Washington debriefing $480

Travel and administrative expenses for OFDA Operations Officer Bernadette Bundy (from OFDA travel budget) $4,415

Travel and administrative expenses for OFDA Assistant Director Tim Knight to Somalia (from OFDA travel budget) $2,375

1,350 MT of NFDM and 2,250 MT of vegoil (commodity cost plus shipping) from FFP PL 480 Title II program $1,900,000

Total OFDA $292,593
Total FFP $1,900,000

TOTAL $2,192,593

Assistance Provided by U.S. Voluntary Agencies

CWS - provided $10,000 to purchase tents, blankets, and seeds for the flooding; contributed a water specialist for Oxfam/U.K. sanitation survey.

TOTAL $10,000

Assistance Provided by the International Community

International Organizations

EEC - provided $22,500 for transport costs.

FAO - dispatched an early-warning team to assess drought conditions in some of the most affected areas; and donated $50,000 for seeds to flood-stricken farmers.

LRCS - contributed a nutritionist for the Oxfam study.

UNDP - organized the Drought Action Coordination Committee of international organizations and donors to coordinate the outside response; and provided $30,000 for a water relief program.

UNICEF - collaborated with WHO, GSDR, and USG for the nutritional evaluation; conducted a joint infant health survey with Oxfam; sent a medical team to vaccinate against measles and distribute Vitamin A; and supplied $250,000 worth of drugs and medical supplies from UNHCR stocks for use by GSDR and WHO medical teams.

WFP - sent 6 teams into 14 regions to assess food and water availability and status of livestock; monitored the delivery of 3,600 MT of USG food; donated 100,000 liters of fuel, 1,800 MT of wheat flour, 270 MT of vegoil, 1,350 MT of corn and 1,440 MT of DSM from refugee and regular feeding project buffer stocks, value not reported;

and paid $47,470 for transportation of these commodities and launched an appeal for their replacement.

WHO - collaborated with UNICEF, GSDR, and USG in the nutritional evaluation; and gave medicine and medical supplies costing $50,000.

Governments

Germany, Fed. Rep. - supplied $27,750 for logistical support; and paid part of transport costs for 4,000 MT of wheat.

India - gave 4,000 MT of wheat.

Italy - provided 10,000 MT of rice and local transportation.

Kenya - donated 2,000 MT of corn and 1,000 MT of rice.

Pakistan - contributed 3,000 MT of rice.

United Kingdom - sent veterinary medicine and supplies worth $80,000.

Non-Governmental Organizations

British Organization for Community Development/U.K. - contributed nutritionist for Oxfam survey.

Oxfam/U.K. - provided fuel for water pumps, an assessment team to conduct nutrition and sanitation surveys, and food valued at $32,230.

TOTAL $589,950

Floods South Africa

Date
Sept. 26-29, 1987
Location
Natal Province
No. Dead
400 (estimated)
No. Affected
Official estimate: more than 50,000 homeless
Unofficial estimate
More than 500,000
Damage
Severe damage occurred to bridges, roads, and rail lines throughout the province; a major aqueduct serving Durban was destroyed; low-income housing in urban townships and Kwazulu was severely damaged or destroyed.

The Disaster

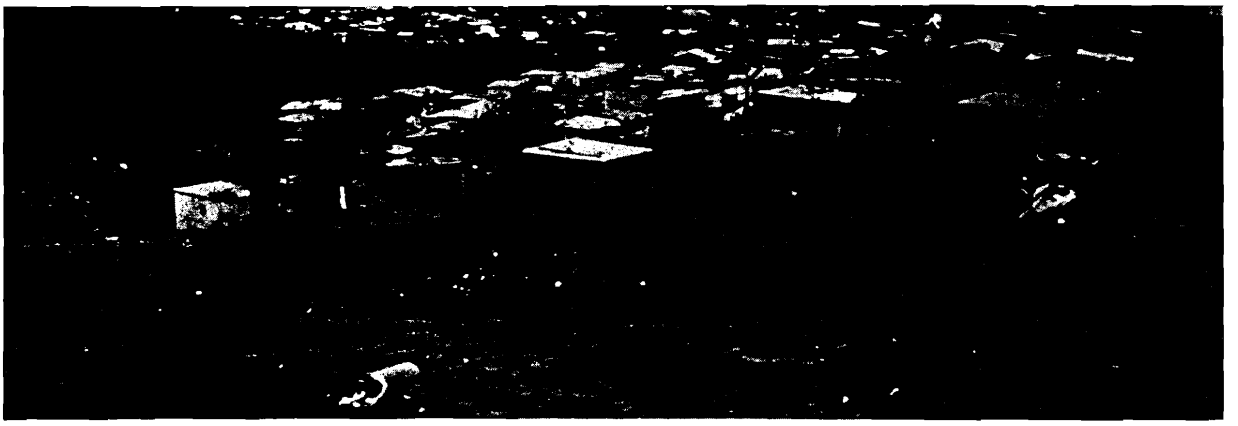
The final week of September brought up to 762 mm (30 in.) of rain to the east coast province of Natal. This record rainfall caused disastrous floods in the cities of Durban, Richard's Bay, Pietermaritzburg, and Ladysmith. In addition, many of the black and Indian townships and settlements in the Kwazulu homeland were severely affected. As of Oct. 9, the South African police said that more than 250 people were confirmed dead and at least 154 missing. The disparity in estimates of the number of people homeless became a political issue. While the official report figure for persons rendered homeless by floods was over 50,000, the University of Natal reported a figure higher than 500,000.

Durban, with a population of more than 1 million, was cut off after floods washed away bridges, roads, and rail lines. Severe damage to infrastructure also left Pietermaritzburg temporarily isolated. A major bridge on the main coastal highway north of Durban collapsed, tossing five cars with occupants into the raging Tugela river. The disruption of the transport system was of particular concern in the apartheid-structured community, where most black workers rely heavily on trains to enter the urban work zones.

In addition to the destruction of vital transportation routes, floods damaged several aqueducts. The major aqueduct serving Durban was washed away, leaving the city with a scarce supply of potable water. The critical shortage of water in Durban and Pietermaritzburg led to water rationing. In the greater Durban area, authorities had to cut off water supplies for a time, leaving between 60% to 80% of all houses without running water. The heavy rains also caused sewerage treatment plants to overflow into various rivers. As a result, an estimated 250,000 shack dwellers in the southern coastal area had no potable water.

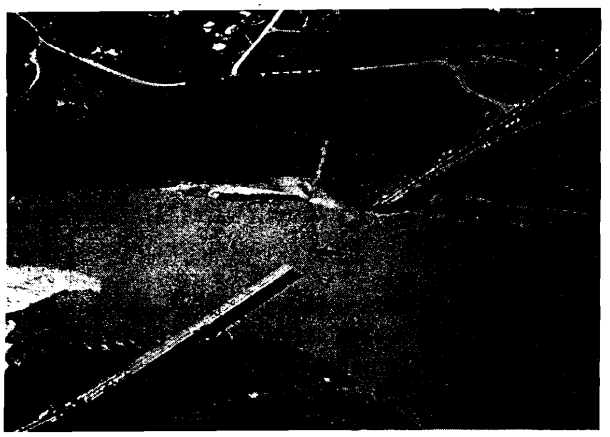
Low-income housing near urban centers suffered extensive damage. More than 1 million people live outside Durban in the so-called "informal housing sector." An estimated 80% of them live in mud houses with tin roofs. Most of these shacks did not survive the five days of torrential downpours. Likewise, many of the flimsy mud and thatch houses in the rural communities of the Kwazulu homeland were damaged or destroyed by floods and mudslides. Many rural villagers were isolated for several days without food, medicine, or shelter.

Loss of other infrastructure also had a significant impact on the people and the economy of South Africa. South Africa's tourist industry suffered great losses as beaches were inundated with debris. Coastal swimming areas were filthy with silt and mud. All tourist-oriented establishments slowed down at a time of otherwise booming business. Severe damage to the Shell-BP oil refinery worried government officials, who thought it would lead to a fuel shortage. Several sugar mills in Natal closed down temporarily because cane could not be transported out of the fields.



A house overhangs a gully formed by floodwaters.

Floodwaters swept away a bridge.



Action Taken by the Government of South Africa (SAG) and Non-Governmental Organizations

The SAG's initial efforts focused on emergency evacuation. Military troops were sent to the port of Richard's Bay to transport stranded flood victims. Many of the residents took refuge on rooftops until rescuers arrived. Next, the government proceeded to repair key infrastructure. While the major aqueducts were being repaired, the SAG monitored the availability of potable water. Supplies were rationed or cut off in areas where potable water was scarce.

In areas where rivers overflowed, the SAG encouraged people near dams to leave. The government declared a state of disaster in Richard's Bay, Pietermaritzburg, and Ladysmith, thereby releasing relief funds to flood victims of those regions. The SAG also appealed to the public for cash contributions toward the relief efforts.

The Natal Red Cross provided blankets and dry clothing to 5,000 people who left townships and squatter settlements. Other Red Cross relief efforts included the purchase and distribution of cooking utensils, cots, and personal kits to displaced families. A major newspaper launched an appeal in support of Red Cross relief efforts. Charitable organizations conducted fund-raising activities and local communities collected dry blankets and food for the flood victims. Local groups also helped distribute chlorine pills and other means of purifying the water in areas where sewerage plants had overflowed.

Operation Hunger and the Urban Foundation, two local NGOs, also provided assistance to flood victims. The Valley Trust set up crisis relief centers in the severely affected tribal areas of the Kwazulu homeland. Relief center medical personnel aimed to identify the most needy victims and provide appropriate health services. They also screened applicants and provided those who qualified for assistance with food, clothing, blankets, and building materials. NGOs providing assistance to the most afflicted areas helped in the distribution and use of building supplies.

Assistance Provided the U.S. Government

On Sept. 9, U.S. Ambassador Edward Perkins determined that the disaster in Natal Province warranted USG assistance and allocated $25,000 to the Natal Red Cross for purchase of local relief supplies.

At the request of the U.S. consul in Durban, disaster and housing consultant, Fred Cuny made an assessment of the flood-affected areas. Mr. Cuny already was in South Africa on other business. He was accompanied and assisted by the mission disaster relief officer, Mark Johnson. OFDA financed Fred Cuny's TDY, which amounted to $2,787.

Following the recommendations of the assessment team, OFDA provided $40,000 for the local purchase of plastic sheeting and other materials to be given to local outreach organizations already providing assistance to flood victims. The plastic sheeting was used for temporary shelter throughout the rest of the rainy season. The additional money also was used for inland transport costs and the purchase flood-resistant housing construction manuals.

Young women take home food donations.

Summary of USG Assistance

FY 1987

Ambassador's authority given to the Natal Red Cross $25,000

Total FY 1987 ..... $25,000

FY 1988

Cost of consultant Fred Cuny $2,787

Mission allotment for the local purchase of plastic sheeting, inland transport, and printing of building instructions $40,000

Total FY 1988 ..... $42,787

TOTAL $67,787

Assistance Provided by U.S. Voluntary Agencies

None reported

Assistance Provided by International Community

EEC - granted $226,000 for the immediate relief program for families of the poorest victims.

Germany, Fed. Rep. - donated $27,000.

United Kingdom - donated $48,700.

TOTAL $301,700


UNITED STATES OF AMERICA