



DISASTER CASE REPORT

Agency for
International
Development

Washington D.C.
20523

YEMEN ARAB REPUBLIC - Earthquake

Date: December 13, 1982 (FY 83)

Location: Dhamar region

No. Dead: 1,507 confirmed; 2,500 estimated

No. Injured: About 1,500

No. Affected: Approximately 800,000; 700 villages affected and an estimated 400,000 people left homeless (of which 300,000 were housed in tents and other temporary shelters)

Damage: A total of 42,314 homes were no longer habitable (11,380 totally destroyed, 3,407 partially destroyed, and 27,527 severely damaged); the water supply was disrupted in 122 villages; and 78 schools, 651 mosques, and 131 water projects (pumps, streams, pipes, canals) were destroyed. Economic losses were estimated by the government as follows: \$17 million in lost housing; \$73.3 million in public facilities such as schools, utilities, and mosques; \$28.5 million in agriculture (grain and animal losses); and \$199.5 million in private property such as tools, furniture, and vehicles. Estimated loss to GNP was two billion dollars.

The Disaster

The earthquake which hit the Yemen Arab Republic (North Yemen) at about noon local time on December 13, 1982, measured 6 on the Richter scale. Damage was concentrated in the densely populated and mountainous Dhamar Governorate near the quake's hypocenter (14°17'N and 44°34'E), though the 40-second tremor was felt as far away as Sanaa, Yemen's capital, some 90 km to the south. The potential for earthquakes had clearly existed in Yemen, as evidenced by the type of terrain (80% volcanic basalt) and by the country's proximity to major plate boundaries (the Arabian and the African along the Red Sea Rift); yet, no major tremors had been recorded in modern times. This was the first instrumentally measured earthquake in that location. More than 1,000 aftershocks jolted the region during the next month, with the most powerful registering between 4 and 5 on the Richter scale on December 30.

The earthquake destroyed or damaged more than 700 villages, many of them remote mountain hamlets at altitudes between 2,000 and 2,400 meters. The villages of Alaib, Al-Anis, and Darwan were among those reduced to rubble. In the latter, more than 500 people died, including 40 worshippers in the village mosque and 150 children who were buried beneath their school's collapsed walls. The quake's victims were mainly women, children, and the elderly - those persons most likely to be indoors at midday. The inaccessibility of the hard-hit, outlying areas slowed rescue operations and delayed attempts by the authorities to estimate the number of casualties and the extent of damage. A complete absence of civil records further hampered identification of the missing. The total number of known dead was finally put at 1,507, but it was estimated that at least 2,500 people and possibly more had died in the quake. An additional 1,500 people were injured according to early reports.

The final estimate of 400,000 homeless included many people whose homes were still standing but who were afraid to return to their dwellings. Traditional Yemeni housing constructed of unreinforced stone and dry mud mortar proved to be extremely vulnerable in earthquakes. Especially hard hit were houses built on escarpments and soft volcanic rock. Many of the homes left standing were believed to have suffered irreparable structural damage.

The earthquake also caused extensive damage to public utilities and rural works and disrupted water and food supplies. Some 122 villages lost their source of water when hand-dug wells and cisterns collapsed and streams dried up. In contrast, drilled wells were often undamaged. Crops had been recently harvested, but much of the grain was lost when the buildings in which it was stored were flattened in the quake.

The material loss to Yemen's predominantly agricultural economy was expected to be enormous, requiring considerable external assistance in reconstruction.

Action Taken by the Government of the Yemen Arab Republic (YARG) and Non-Governmental Agencies

Yemeni President Ali Abdullah Salih declared a state of emergency and mobilized the armed forces for rescue operations in the disaster area. Convoys of trucks were soon carrying relief supplies to the affected region, while rescue workers labored round the clock in the search for survivors. An emergency relief committee was formed, headed by the Chief of Staff of the Armed Forces and composed also of the Ministers of Health, Municipalities, and Youth, and the Governor of Dhamar Province. The Minister of Development, who served also as the Chairman of the Central Planning Organization (CPO), was named national coordinator for emergency relief operations. An official appeal for international assistance was issued through the Office of the United Nations Disaster Relief Coordinator (UNDRO).

Yemeni authorities organized a committee structure to handle the problems of logistics in the distribution of supplies during the early relief phase. Four district zones were established at Al-Ans, Al-Anis, Jahran, and Al-Hada. For each group of six villages a local committee was set up which reported needs to the respective zone. The zone committee in turn passed on requests for supplies to the Central Coordinating Committee in Dhamar. The military was in charge of the distribution of supplies during the first weeks after the earthquake, with civilian agencies eventually assuming the operation.

With the help of donor-provided field hospitals, medical teams and supplies, YARG health officials took care of the medical needs of the earthquake victims. The most seriously injured were transferred to hospitals in Dhamar and Sanaa. Six health zones were established by the Ministry of Health to provide longer term care. Medical teams working in each zone responded to both curative and public health needs (immunization, water purification, sanitation, etc.). Mobile units went out to all affected villages from the central bases in these zones.

The CPO and the Council of Yemeni Development Associations (CYDA) conducted a village by village survey between December 14 and January 10 in an attempt to gather statistics on damages. CYDA also assisted the Ministry of Public Works in assessing damage to water systems. Eight teams surveyed 884 villages and found that 122 of them had lost their source of water. Tank trucks delivered potable water to those villages until new wells could be provided.

As a more complete picture unfolded on the extent of devastation, the YARG renewed its appeal for donor assistance in providing tents. In all, about 300,000 persons were eventually housed in tents or other temporary shelters, while an additional number sought refuge with family or friends in other areas of Yemen. The YARG itself provided \$300,000 for tents. It was estimated that some 42,000 housing units would have to be replaced.

The YARG declared the emergency phase terminated as of January 15, and the focus moved to rehabilitation and reconstruction. An executive committee headed by the Deputy Minister of Public Works was set up to collect reports, formulate plans, and oversee reconstruction efforts. Prime Minister Abdul Karim Al-Iryani appealed for international assistance in this phase also. A specific request was made for aid in carrying out engineering surveys to determine the structural soundness and repairability of the remaining homes in the disaster area.

The newly created Yemen Arab Republic Red Crescent (YARRC) appealed to the League of Red Cross Societies on December 13 for assistance in obtaining such emergency supplies as drugs, serums, tents, blankets, kitchen utensils, food, and clothing. The YARRC, which was a member of the field operations committee, purchased \$5,000 worth of hospital linens and assisted in the distribution of relief supplies. Together with the League, the YARRC aided health authorities by providing a limited number of locally employed health personnel. As a reconstruction project, the

YARRC planned to work jointly with the German Red Cross (Federal Republic of Germany) and the Ministry of Health in building a health center at Uthmah.

Other in-country assistance was provided by Yemen Airlines which offered to carry relief supplies free on a space available basis from European cities, and by a private donor who gave \$219,000 for the local purchase of jerry cans for water.

Assistance Provided by the United States Government (USG)

U.S. Ambassador David E. Zweifel determined on December 14 that a disaster situation of a magnitude warranting USG assistance existed in Yemen. He exercised his disaster relief authority to obligate the sum of \$25,000 which, however, was ultimately not used. On the same day, a USAID/Embassy team departed Sanaa for the affected area to meet with Yemeni officials before beginning a two-day on-ground needs assessment. Ambassador Zweifel and other members of the diplomatic corps later toured the stricken area by helicopter. Over the next several weeks, the Ambassador also attended a series of donors' meetings held to review the status of relief efforts and to coordinate disaster assistance.

To help provide for the immediate needs of the earthquake victims, the U.S. Mission lent four vehicles to the YARG to serve as ambulances, and A.I.D.'s Office of U.S. Foreign Disaster Assistance (OFDA) authorized the release and air transport of eight collapsible 3,000 gallon water tanks from its stockpile at Camp Darby, Leghorn, Italy. The tanks arrived in Sanaa on December 17.

As relief requirements became better identified, OFDA approved the release of the following additional commodities from Leghorn: 1,000 tents/flies, 15,000 wool blankets, medical supplies (680 hospital gowns and 50 masks), and six 30 KW generators. These supplies were airlifted to Sanaa by the U.S. Department of Defense on December 19 and 20. In view of the continuing shortage of shelters, and in response to a U.S. Embassy request for a second airlift of tents, OFDA arranged with DOD to transport another 2,000 tents/flies - 1,300 from Leghorn and 700 from U.S. stocks - to Yemen on December 25 and 26. Other USG commodity assistance included the procurement of ten mobile medical kits through UNICEF.

The USG also provided technical assistance. Two technicians from the 8th Support Group (USAREUR) accompanied the six generators to Yemen to supervise installation and train local

operators. Peace Corps volunteers assisted the YARG in carrying out water system and public health surveys. Moreover, U.S. Geological Survey personnel participated in a Saudi Arabian-financed seismic survey of the Dhamar area in late December and early January.

Summary of USG Assistance

Value of 3,000 tents/flies (including freight charges).....	\$1,203,850
Value of 15,000 wool blankets (including freight charges).....	\$135,590
Cost of replacing six 30K generators to Leghorn.....	\$44,000
Cost of replacing eight water tanks (including freight).....	\$15,843
Reimbursement to DOD for airlift of water tanks, tents, blankets, generators, and medical supplies from Leghorn and the U.S., and expenses of two technicians.....	\$713,279
Value of 10 medical kits purchased through UNICEF.....	\$10,000
	TOTAL
	\$2,122,562

Assistance Provided by U.S. Voluntary Agencies

Catholic Relief Services (CRS) - the only American voluntary agency with a program in Yemen helped with an on-site assessment of damage and announced a \$156,000 emergency aid program. CRS purchased the following items (all locally except for tents) with monies from the CRS Emergency Fund and from contributions channeled through CRS in response to the program: 450 tents valued at \$125,000; hospital linens; 5,000 blankets; children's clothing valued at \$40,000; 2,000 sets of cooking utensils; and 5,000 sweaters worth \$21,300. [Note: To avoid double counting, contributions are credited to individual donors. The difference between the known value of other agency contributions through CRS (\$158,357) and the known value of the above items (\$186,300) is credited to CRS (\$27,943).]

Lutheran World Relief - gave \$24,000 to CRS for the purchase of 100 tents.

Save the Children - launched an appeal on behalf of its Norwegian and British counterparts in Yemen; donated \$5,000 to Redd Barna (Norwegian Save the Children).

Southern Baptist Convention, Foreign Mission Board - associated with a hospital in Yemen, sent a five-person medical team (two orthopedic surgeons, two nurses, and one aide); appropriated \$70,000 for relief supplies, of which \$50,000 was used for the local purchase of food.

World Vision - donated \$20,000 in cash.

TOTAL \$146,943

Assistance Provided by the International Community

International Organizations

Arab Gulf Fund for United Nations Development (AGFUND) - contributed \$1 million for the purchase of tents.

Bureau of Arab Ministers of Health - provided \$100,000 in cash.

European Economic Community (EEC) - donated \$902,759 in cash through LORCS; gave 100 tents, 4,000 blankets, and two tons of medical supplies, value not reported; financed an airlift for the Belgian Red Cross at a cost of \$60,000.

Food and Agriculture Organization/World Food Program (FAO/WFP) - provided foodstuffs (wheat flour, pulses, dried skim milk, and vegoil) for 50,000 persons for three months, with a total value of \$908,300. The WFP sent a food survey/evaluation team to Yemen in mid-February, and the FAO surveyed the agriculture and livestock sectors and recommended recovery programs.

International Committee of the Red Cross (ICRC) - provided 927 tents valued at \$65,745 and clothing, value not reported, through LORCS; in addition, ICRC donated \$10,000 in cash for the local purchase of cooking utensils and \$5,000 in cash for the purchase of hospital equipment.

League of Red Cross Societies (LORCS) - sent a relief officer and delegates to the disaster scene and, on behalf of the Yemen Arab Red Crescent, issued an appeal to national societies on December 13. (See contributions listed below.) LORCS provided cash for initial requirements (to be reimbursed from contributions), clothing worth \$40,000, and other relief supplies valued at \$5,000.

Office of the United Nations Disaster Relief Coordinator (UNDRO) - provided the services of a relief officer and \$30,000 in cash; launched an international appeal for assistance on behalf on the YARG.

United Nations Development Program (UNDP) - coordinated international assistance, especially technical assistance, and donated \$30,000 in cash.

UNICEF - coordinated medical donations and provided medical supplies (dextron solution and tetanus serum) valued at \$20,000, as well as 500,000 water purification tablets and 150 sprayers, value not reported; allocated \$200,000 from the emergency reserve fund for the purchase of 830 tents, 3,400 cooking sets, blankets, and other relief supplies; diverted six vehicles worth \$80,000 from country projects to be used as ambulances; in cooperation with the YARG, drilled new wells in areas where old wells had been destroyed; paid costs of shipping 750 excess UNRWA tents to Yemen from Lebanon, value not reported; and shipped 3,000 tents valued at \$304,000 from funds given by Japan (presumed included in Japan's listed contribution).

World Health Organization (WHO) - gave \$1,418 in cash from the emergency relief fund through LORCS; donated pharmaceuticals, disinfectants, surgical supplies, and emergency kits, all valued at \$50,000; provided services of experts to help supervise health activities and assist in the water survey.

Governments

Algeria - donated 103 tents, value not reported.

Australia - gave \$45,730 in cash to LORCS for the purchase of tents.

Bahrain - provided bedding, blankets, clothing, cooking stoves, and 7 MT of medical supplies, all valued at \$425,000.

Belgium (government, Red Cross, and EEC) - provided \$80,435 worth of assistance, including 100 family tents, two hospital tents, 76 stretchers, 4,000 blankets, medicines, and vaccines.

Canada - contributed \$325,203 in cash to UNICEF for the purchase of 2,000 tents and \$142,317 in cash through LORCS.

China (P.R., government and Red Cross) - gave three tons of medicines valued at \$35,774 through LORCS.

Denmark (government and Red Cross) - provided 40 family tents valued at \$8,000 and bed linens worth \$62,973 through LORCS; also gave \$87,404 to UNICEF for tetanus vaccines.

Djibouti - donated 216 tents, value not reported.

Egypt - airlifted 40 MT of medicines, 11 MT of canned food, 3,000 tents, and 4,500 blankets; value not reported.

France - provided a team of geologists and the following items, value not reported: 300 tents, 2 MT of clothing, 2 MT of medical supplies, two helicopters, 2,000 MT of wheat, 700 blankets, five hospital tents, 4.1 MT of soap and antiseptics, 100 kg of antibiotics, and 100 kg of food.

German Democratic Republic - contributed medicines worth \$62,500 to the Yemen Arab Red Crescent and 170 tents, value not reported.

Germany, Federal Republic - provided four doctors and orthopedic instruments and \$13,250 in cash in conjunction with the FRG Red Cross; also gave the following assistance, value not reported: a 26-person search and rescue team with dogs, 44 technicians trained in electrical and water connections and building demolition, 750 tents, 18,000 blankets, 2.5 MT of children's clothing, and two generators.

India - sent a medical team and a sanitation expert, 1,100 blankets, and 10.8 MT of medicines; value not reported.

Italy - provided orthopedic surgeons and airlifted medicines and medical equipment valued at \$357,000.

Japan - contributed \$500,000 in cash.

Jordan - provided a 17-person medical team.

Kuwait - provided a medical team and at least six plane loads of emergency supplies, including 1,052 tents, blankets, medicines, and food; value not reported.

Libya - sent a 20-person medical team and 100 tents, value not reported.

Netherlands - supplied 165 tents, 360 cooking sets, 5,000 blankets, medicines, heavy canvas for shelters, and an emergency hospital at Dhamar, all valued at \$202,000; also provided a total of \$3,846,152 for the reconstruction phase: \$1,923,076 for housing reconstruction, and \$961,538 each for the reconstruction of current projects and food aid.

Norway - gave 5,000 blankets, value not reported; donated \$214,285 to Redd Barna (Norwegian Save the Children) and \$113,534 in cash through LORCS.

Oman - provided five plane loads of supplies, including 1,000 tents, 1,500 blankets, foodstuffs, and 6 MT of medicines; value not reported.

People's Democratic Republic of Yemen (South Yemen) - sent a 26-member medical team, medicines, and relief supplies; value not reported.

Qatar - provided a medical team, medicines, 1,000 tents, and 5,000 blankets; value not reported.

Saudi Arabia - allocated about \$30 million (100 million riyals) in emergency assistance which included the following: one mobile hospital of 50-100 beds; 37 medical and support personnel; five C-130 loads of medical aid and 40 plane loads of other relief aid including blood plasma, dextron, antibiotics, analgesics, oxygen cylinders, splints, surgical equipment, blood transfusion sets, 3,000 tents, 6,000 mattresses, 12,000 blankets, 15 MT of baby food, and 300 MT of food in 50 kg boxes. Saudi Airlines provided free transportation home to Yemenis who were residing in Saudi Arabia.

Somalia - sent a medical team, 50 tents, and 100 tons of fresh food; value not reported.

Soviet Union - donated 145 tents and 2.5 MT of medical supplies, value not reported.

Sweden - donated 35,000 blankets valued at \$230,000 through UNICEF and \$205,480 worth of tents and clothing through the Swedish Red Cross.

Switzerland - dispatched a 43-person intervention team, including 11 medical personnel, 11 rescue specialists, and a search team of 16 persons and 12 dogs; also provided the following items, value not reported: 6 MT of medical equipment, 4 MT of tools and rescue equipment, 850 kg of blood plasma, and 35,000 blankets through UNICEF, and water purifying equipment, 160 tents, and 1,000 blankets through the Yemen Arab Red Crescent.

Turkey - donated medicines and 2,000 blankets; value not reported.

United Arab Emirates - provided food and medical aid and 39 medical personnel; value not reported.

United Kingdom - contributed \$16,140 in cash through CRS, 5,000 liters of insecticide valued at \$28,225, and 500,000 water purification tablets, blood transfusion sets, and 300 hospital masks, value not reported.

Voluntary Agencies

Algeria Red Crescent - contributed the following through LORCS: 100 tents, three dispensary tents, 2,000 blankets, soap, medicines, and foodstuffs, all valued at \$150,438.

Australia Red Cross - gave \$1,847 in cash through LORCS.

Bahrain Red Crescent - provided in-kind assistance valued at \$51,945 as well as \$18,812 in cash through LORCS.

Belgium Red Cross - (See Governments.)

Bulgaria Red Cross - provided 101 family tents, 1,600 blankets, clothing, and food through LORCS, all valued at \$125,957.

Canada Red Cross - donated \$8,132 in cash through LORCS.

Caritas (Belgium) - provided \$3,000 in cash to CRS.

Caritas (Germany, Federal Republic) - gave \$41,580 in cash to CRS.

Caritas (Italy) - gave \$7,407 in cash to CRS.

Caritas (Switzerland) - donated \$24,650 in cash to CRS.

Caritas (Norway) - donated 600 tents valued at \$150,000.

China Red Cross - (See Governments)

Christian Aid (U.K.) - gave \$8,132 in cash through LORCS.

Denmark Red Cross - provided services of a chief delegate. (See also Governments)

Diakonisches Werk (Germany, Federal Republic) - gave \$41,580 in cash to CRS.

Egypt Red Crescent - gave 4,500 blankets and foodstuffs through LORCS, all valued at \$57,340.

ESTEC (Netherlands) - gave \$2,762 in cash through LORCS.

Ethiopia Red Cross - donated \$4,917 in cash through LORCS.

Finland Red Cross - provided the following through LORCS: 50 tents, 2,000 blankets, and 3 MT of children's clothing, all valued at \$57,412, and gave \$8,842 in cash.

France Red Cross - gave one MT of protein tablets valued at \$6,021 through LORCS.

German Democratic Republic Red Cross - provided 67 packs of medicines valued at \$62,916 through LORCS.

Germany, Federal Republic Red Cross - provided the following through LORCS: 780 round tents, 18,000 blankets, and 2.1 MT of children's clothing, all valued at \$284,137; also, medical supplies, a water purification program, 50 Bonn tents, 70 Nomad tents, services of an administrator/accountant, and services of four technicians, value not reported. The FRG Red Cross ship Flora supplied 30 collapsible water tanks and six 30 KW generators. (See also Governments.)

Hungary Red Cross - donated woolen blankets, bed linen, towels, and medicines through LORCS, all valued at \$39,362.

Individuals - gave \$23 in cash through LORCS.

Ireland Red Cross - gave \$6,694 in cash through LORCS.

Italian private contributors - donated 5,000 kitchen sets, value not reported.

Japan Red Cross - provided \$4,728 in cash and medical supplies valued at \$13,983 through LORCS.

Japan Shipping Industry Foundation - gave \$19,504 in cash through LORCS.

Korea (Republic of) Red Cross - gave \$3,000 in cash through LORCS.

Kuwait Red Crescent - provided 4,790 blankets, 34 cartons of bed linen, and children's blankets through LORCS, all valued at \$50,277. Kuwaiti women formed a committee to assist the homeless and injured in coordination with the Red Crescent Society.

Libya Red Crescent - provided 2,000 blankets, 50 family tents, and 310 cartons of foodstuffs through LORCS, all valued at \$70,287.

Liechtenstein Red Cross - gave \$236 in cash through LORCS.

Methodist Relief Fund (U.K.) - gave \$3,239 in cash through LORCS.

Morocco Red Crescent - donated 2,000 blankets, 60 tents, and 22 MT of foodstuffs through LORCS, all valued at \$52,217.

Netherlands Red Cross - gave \$24,862 in cash through LORCS.

New Zealand Red Cross - donated \$1,349 in cash through LORCS.

Norway Red Cross - provided \$33,333 in cash and 5,000 woolen blankets worth \$14,958 through LORCS.

Oxfam (U.K.) - provided 19,000 blankets, three 10,000 gallon and five 2,000 gallon water tanks, value not reported, and 50 rolls of plastic sheeting valued at \$12,097.

Pakistan Red Crescent - donated 2.1 MT of medical supplies valued at \$15,603 through LORCS.

Palestinian Red Crescent (in Yemen) - provided medical relief assistance.

Palestinian Women's Union - offered volunteers to work in Yemen.

Philips Co. (Netherlands) - provided a portable X-ray unit, value not reported.

Qatar Red Crescent - gave 2,500 blankets and 100 tents through LORCS, all valued at \$65,616.

Radda Barnen (Swedish Save the Children Fund) - donated 5,000 blankets, value not reported.

Redd Barna (Norwegian Save the Children) - provided 24-hour emergency clinical care.

Rumania Red Cross - provided \$39,048 worth of clothing through LORCS.

Save the Children Fund (U.K.) - provided 24-hour medical clinical care and an assessment team.

Soviet Union Red Cross - contributed the following through LORCS: 2.4 MT of medicines, one MT of baby food, 145 tents, and 3,000 blankets, all valued at \$119,902.

Spanish Moslem Organization - donated 195 new coats through LORCS, value not reported.

Sweden Red Cross - (See Governments)

Switzerland Red Cross - donated medical supplies worth \$13,532 and 253 family tents valued at \$70,170 through LORCS.

Tunisia Red Crescent - provided the following through LORCS: 89 parcels of medicines, 21 parcels of blankets, and 100 parcels of foodstuffs, all valued at \$15,000.

United Kingdom Red Cross - gave \$8,132 in cash through LORCS.

Yugoslavia Red Cross - gave the following through LORCS: six family tents, 170 blankets, three stretchers, 100 bottles of blood plasma, syringes and needles, value not reported.

TOTAL \$42,324,603