

## Preliminary Emergency Management and Organizational Response Observations

May 1, 2003 Bingol Earthquake in Eastern Turkey

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This brief reconnaissance of the 2003 Bingol, Turkey<sup>1</sup> earthquake was conducted during 15-23 May 2003, just over two weeks after the main shock (May 1, 0327 hours). In addition to living in Bingol city for three days, I visited Istanbul, Ankara, and Izmir. Numerous people contributed to my observations.<sup>2</sup> I am grateful to EERI/MCEER for sponsoring this research and to Baylor University for permitting my absence. Since this report contributes to a larger study which includes Dr. Mustafa Erdik (KOERI), Dr. Polat Gulkan (METU), and Dr. Nuray Karanci (METU), I have attempted to minimize duplicating their contributions.<sup>3</sup>

### General Observations

The May 1, 2003 Bingol, Turkey earthquake, with a Richter magnitude of 6.4, impacted the province of Bingol and at least one village in Elazig province. This moderate earthquake occurred in a sparsely populated region with one major city (Bingol, one of 81 province capitals),<sup>4</sup> seven counties or sub-districts (ilce), and 350 small villages and hamlets (bucak and koyler), with a population total of 253,739 (2000 Census of Population). Most of the 177 fatalities and 530 injured were in Bingol city (at least 27 were killed in the collapsed Korkmaz apartments in Duzagac mahalle) or were children in the school dormitory in Celtiksuyu village where almost fifty percent of the total victims perished (84 deaths). Other fatalities and injured were in Cimenli with 13 deaths and 10 injuries. Eight other settlements had between one and seven fatalities.

### An Introduction to Bingol Province and its Population<sup>5</sup>

Bingol (population 68,900) is a city and province center in eastern Turkey, located on a plain in the upper Murat River (Euphrates) water shed on the eastern Anatolian plateau. The city sits on both sides of the Capakcur River which flows through an entrenched alluvial valley. Damage was concentrated on both sides of the river, particularly in Saray and Inonu suburbs, two of the city's thirteen districts. Bingol was officially declared a province in 1936 with the name "Capakcur." The province's average elevation is near 4000 feet (1250 m) although the city itself is only 1151 m (posted at city boundary). Mountains in the region rise above 9000 feet (3000 m). Major mountain peaks are the Bingol (3,250 m); the Genc Cotele (2,940); Seytan (2,906), and Cavsar, one of nine other mountains over 2,150 m.

Several streams, including Gayt and Capakcur, dissect the Bingol plain. Although there are also several small plains in Bingol province, such as Genc, Karliova, and Sancak, the most important streams in the region are the Perisuyu, the Murat, and Goynuk. The many small lakes in the region give the province its name—thousand lakes—or Bingol.

Bingol province, with 39,870 households in 2000, is one of the least populated and poorest provinces in Turkey. (31 people per square km compared to the national average of 88). This disparity is quite evident when looking at a few statistics. The gross domestic product, when comparing Bingol to the national average, indicates significant disparity. Likewise, total number of motor vehicles in Turkey average 945 per 10,000 people, but only 200 per 10,000 in Bingol province. The number of private automobiles shows even more disparity, with Turkey averaging 580 per 10,000 people in 1997, compared to 101 per 10,000 in Bingol.

It is well known that eastern Turkey lags behind the western part when comparing socio-economic indicators. The Bingol province literacy rate is 60.39 percent, compared to the national average of 80.64 per cent. Health indicators show Bingol with 92 doctors resulting in 2,738 patients per doctor, compared to a national average of 1,747 per doctor. Turkey averages 28,879 people per dentist; in Bingol it is 50,387. Statistics on Bingol's rural population with adequate drinking water supply is also lower than the national average (Ministry of Health, 1997). As Professors Karanci and Aksit have commented, a rural development project has been in effect in the region for over a decade, and the Eastern Anatolia Project Plan 2000 is also an effort to economically improve conditions for Bingol (Karanci and Aksit, May 2003).

Turkey has experienced accelerated rural to urban migration for several decades. This has resulted in slow rural growth with drastic increases in the suburbs of large cities. The national rural average growth rate for Turkey is 4.21 %, compared to -22.06 % for villages in Bingol province. During the ten years between 1990 and 2000, the municipality has increased at a rate of 50.43%; almost double the national average (Turkey 2000 General Census of Population).

Employment is mainly in agriculture. Crops are cereals, pulses, industrial plants, and tuber crops. The province accounts for a very small percentage of Turkey's production.<sup>6</sup> Turkey has some 539 million fruit bearing trees; Bingol has less than 300 thousand. According to the latest government statistics, the Province has around 72,000 cattle and about 500,000 sheep and goats. Many of these were killed and many at night roamed the streets of Bingol city during this research.

#### Search and Rescue

Turkey for months had prepared for an anticipated influx of thousands of Iraqi-Kurdish refugees with the start of the American led coalition attack to remove Saddam Hussein from Iraqi leadership. Consequently the Turkish military and the Red Crescent worked together in preparation for the expected refugee crises. Fortunately, when the Iraqi invasion began on March 20, 2003, unlike what occurred in 1990 and 1991, the panic and flight into Turkey from northern Iraq never began. Fortunately, for earthquake recovery,

the massive stockpiles of medical equipment, medicine, surgical kits, trauma equipment, supplies, tents, food, and sanitation equipment, were already in place in southeastern Turkey, relatively close to Bingol. Additionally, the Red Crescent had trained provincial leadership for crisis response. Deputy Governors from the southeast were trained by the Red Crescent in camp organization, management, crisis care, emergency and psychological conditioning, and in other areas which are also appropriate for post-earthquake emergencies. The crisis center was expected to end its operation on May 27, 2003.

In Bingol, as with most destructive earthquake events, and as the author observed in several previous earthquakes in Italy and Turkey, the local residents began immediately searching and attempting to rescue their relatives and neighbors buried under the rubble and debris. A. Nuray Karanci and Bahattin Aksit reflect on this in their report (May 2003).

The search and rescue teams from the military (Turkish Natural Disaster Rescue Battalion), the Red Crescent, AKUT (an NGO), and others quickly responded for this disaster. Search and rescue teams from Ankara, Van, and Diyarbakir deployed to the site. The Civil Defense Crisis Center at Diyarbakir was used to direct and coordinate initial operations. These organizations, with few exceptions, were widely and frequently praised for their sensitivity, competency, devotion, and professionalism. The Army's search and rescue team was acclaimed for its leading role and for leading the efforts of cooperation and responsibilities among the several S&R teams. Psychosocial teams came from Silopi at the Turkish-Iraqi border, from Adana University hospital, and from other locations.

Since the 1999 northwest Turkey earthquakes Turkey's emergency preparedness effort has resulted in over 50 non-governmental search and rescue organizations now available in Turkey. At least 45 members from these Turkish NGOs participated, some with imaging and sound detection devices, in Bingol search and rescue. Several sources now indicate that there are over 400 members of NGOs working on earthquake preparedness and mitigation projects in Turkey. This is in stark comparison to pre-1999. There is now more appreciation by and cooperation with the government for these private support organizations.

The rescue efforts began immediately and by late afternoon on day one (1 May) 70 students had been rescued at the Celiksuyu elementary dormitory building. Most of the survivors were near steel bunk beds or steel lockers which helped provide space from the crushing concrete floors and walls. Six were rescued during the night of May 1 and before dawn on day 2. On day 2, thirty hours after the earthquake, another student was rescued alive.

Greece offered S&R assistance but it was not requested by the Turkish government due to the limited destruction of the earthquake. Turkey had the trained personnel and resources to competently accomplish the emergency response for Bingol and did not need foreign S&R team support.

The visual, oral, and print media focused on the attempt to rescue children trapped in the Celtiksuyu Regional Primary Boarding School in Celtiksuyu village near Bingol city. About 200 children and one teacher were sleeping in the building when it collapsed. S&R teams coordinated their efforts and worked in shifts to locate and retrieve the victims. Approximately 117 students were rescued. The last of the 84 student deaths occurred on May 21, 2003, when Kadir Dolgun, a fourth grade student, succumbed to his injuries.

#### Emergency Response

The timely response to the Bingol 2003 earthquake demonstrated that Turkey has made improvement in its overall ability to respond to disasters. Although there were widely reported and televised skirmishes with police authorities in Bingol city which were directed against the governor for alleged slowness and partiality with tent, food, and water distribution, the actual relief figures indicated reasonable response. The prime minister, Tayip Erdogan, who visited Bingol province soon after the earthquake, attributed the protest and skirmishes to provocateurs. Prime Minister Erdogan announced a plan on May 11 to eliminate the discrepancies between western and eastern Turkey by providing tax, social security premiums and land ownership incentives for poor provinces.

Search and rescue was officially concluded on May 4.

#### Public Services

The Red Crescent (Kizilay) immediately responded to the earthquake in Bingol. A search and rescue team of 8 people (doctor, nurses, and volunteers) and a psychological response team of 4 professionals were dispatched within hours of the event. Mobile kitchens, tent shelters, blankets, and other material were sent soon after the news reached the Crisis Center. The International Federation of Red Cross also sent a psychosocial delegate and a psychosocial professional to augment Turkey's Red Crescent psychosocial team. Although not requested by Turkey, international teams for the emergency phase were available from Austria, Britain, Germany, Greece, Italy, France, Norway, and other countries.

By May 20, Kizilay had provided over 13,000 tents. Fifty people from the organization were in the field. Contributions of over 340,000 hot meals by Kizilay alone, along with 18,000 blankets, and various other materials, were made available to the residents. Tent demand continued to rise as rumors and fear spread that another major earthquake was possible. Some residents, without dwelling damage, demanded tents and refused to sleep in their apparently undamaged homes. Requests for tents were coming from great distances clearly unaffected by this earthquake, such as Pulumur province, which was damaged during the 1971 earthquake (as was Bingol in 1971 with about 900 deaths). Driving through the city one saw thousands of tents along-side completely abandoned 4-5 story apartment buildings. After week one, many residents decided that the dwellings were probably safe during daylight hours. However, most people refused to stay in their apartments during darkness. Karanci and Aksit also address this behavior in their preliminary report (Karanci and Aksit 2003).

The Red Crescent Society of Iran did send relief supplies to Turkey. Supplies valued at \$68,123 were flown to Erzurum on May 6<sup>th</sup> and convoyed the three hour drive to Bingol.

Blankets, rice, vegetable oil, sugar, canned foods, and clothes were included. The International Red Cross and Red Crescent Societies called for member donations of 2,384,000 Swiss francs (US\$ 1,770,000) to assist the emergency relief operations for Bingol.

The American Red Cross indicated that it would send 14,000 kitchen utensils for the Bingol victims.

The initial emergency response activities for Bingol were completed in an effective and appropriate manner. The Turkish Red Crescent responded quickly to the earthquake, and rushed tents and blankets, mobile kitchens, mobile clinic, ambulances and generators to the disaster zone. It was also partly responsible for preparing the deputy governors for the crisis center management. The Red Crescent was directly involved from the beginning at the national level and locally in the Provincial Crises Center.

The Deputy Director of Kizilay, Oktay Ergunay, took a proactive part at the Bingol Crisis Center by making himself available to the crowds and conducting “question and answer” sessions with the survivors. This effort is commendable and contributed toward reducing misinformation, suspicion, and anxiety. For the first eight days, with the use of a megaphone, an obviously concerned official was there to listen and then explain what was being done for the victims. The survivors had many questions and this attempt at “rumor control” seemed very effective.

Kizilay had been severely criticized during the 1999 earthquakes in Turkey and has made vast improvements in leadership, management, organization, and training. This “new” Red Crescent demonstrated its new attitude and efficiency during the Bingol earthquake. Unlike NGOs, Turkey’s Kizilay is charged with great responsibility for disaster preparation and response. It is always expected to be the first to respond for first aid and relief, and has about 30 depots dispersed around Turkey. It is making significant progress in the readiness field.

#### Schools

Most of the schools in Bingol were damaged by the earthquake. Over 31,000 students were without available classrooms on May 1<sup>st</sup>. Four schools within the city were totally destroyed, nine others would have to be destroyed, and eleven others received light or minimal damaged. UNICEF planned to send 100 semi-winterized tents to be used for classrooms. Schools were reopened in temporary accommodations on May 12. On May 18<sup>th</sup> classes were observed in these tents in several locations within Bingol. Governor Avni Cos expects that all damaged and destroyed schools would be repaired or rebuilt by the start of the new school year in October. The prime minister announced in parliament on May 6 that all public buildings and especially schools would be examined for retrofitting.

#### Hospitals

Three hospitals in Bingol were damaged and required evacuation of severely injured patients to hospitals in Elazig, Erzurum, and Diyarbakir. The German Red Cross completed a medical assessment and determined that health needs had been adequately met. There were no outbreaks of epidemics. Three weeks after the event, 10 of the 520 injured and treated victims remained in critical condition. All others had been released from the hospital.

By May 6<sup>th</sup> all communication lines and electricity in the region had been restored and was functioning at normal capacity. There was no major damage to the sewer and water systems. Microbiological analysis of the water in the State Hospital indicated the water was safe.

#### Media Response

The press was quick to assert that this earthquake was similar to most in the past concerning quality of construction. Many political leaders and academics complained and accused builders, contractors, and the government for disregarding building codes, quality control, and geological considerations. President Ahmet Sezer, on May 6, during a television broadcast and in many newspaper reports, urged punishment for those who were responsible for constructing the government buildings that collapsed. Prime Minister Tayyip Erdogan was quick to assert that "...the pain in Bingol has clearly put on the agenda our infrastructure problem...the ideas of stealing materials, corruption, illegalities, and injustice [must be corrected]"<sup>7</sup> Nebil Yenguner, Turkish Chamber of Engineers and Architects, reportedly stated "The placement of the buildings is wrong, the construction techniques are wrong, the concrete is extremely weak."<sup>8</sup>

Although now required, the national average of household insurance for earthquake damage is about 12 percent (Gulkan 2003).<sup>9</sup> This rate is much lower in the east and in rural settlements.

Several sources indicated that Ali Erbay, public prosecutor for Bingol province, has initiated investigations into the collapsed school buildings.

#### Recommendations

Unlike the emergency response following the 1999 earthquakes in Western Turkey, this event seemed to be a timely and competent response by public and private search and rescue and other response organizations. This preliminary and brief review of the earthquake suggests that the military played a major role in the search and rescue and relief efforts. Their establishment and operation of Military Tent City Number 1 at the Sports Complex should be studied as a model of efficiency and competency. The facilities and accommodations, including details of food service, latrines, showers, social needs, camaraderie, attitude of service, and genuine spirit of empathy, appear the best I have observed in over three decades. It also is clear that Kizilay has now emerged from a controversial past (1999 earthquakes) is now a reorganized and highly competent emergency service and training organization.

It was encouraging to see that the recommendations in command and control of the crisis center made after the 1983 Erzurum and 1992 Erzincan earthquakes have been implemented (Mitchell, 1993).

My observations support the observations and recommendations offered by Gulkan and Karanci in their Bingol 2003 reports. Additionally, it further confirms the need for implementing the recommendations in the 1999 White Paper, referred to by Gulkan, and presented to the Turkish government just prior to the 1999 earthquakes. And finally, the recommendations found in Bakir and Boduroglu's work,<sup>10</sup> which followed the 1999 earthquake disasters, are also appropriate to this present research.

## ENDNOTES

<sup>1</sup> Diacritical marks for the Turkish alphabet are omitted.

<sup>2</sup> The following persons, listed chronologically, provided kind and very useful assistance and information concerning my visit: (Friday, 16 May 2003) Prof. Dr. Nazmiye Ozguc, Head of the Human Geography Department, Istanbul University; (Saturday, 17 May) Zafer Dogan, an economist, accompanied me to Bingol, Suat Kotan, driver from Erzurum for three days, and numerous villagers from several Bingol villages including Sancak and Cimenli; (Sunday, 18 May) Ibrahim Avci, Bingol Crisis Center Coordinator, and Deputy Governor of Erzurum, Dr. Ilhan Carabay, Chief Doctor of Bingol State Hospital, Muhittin Ates, English teacher at Anadolu Teachers School, Nizamettin Etdope, English teacher at Anadolu Teachers School, villager leaders from Celtiksuyu village, and villagers from Saricicek; (Monday, 19 May) Turkish Army Captain, anonymous duty officer from Military Tent City No. 1 in the Bingol Sports Stadium; (Tuesday, 20 May) Ozbek Saran, Deputy Chairman, Turkish Red Crescent Society, Oktay Ergunay, Deputy Directorate General, Turkish Red Cross (Kizilay), Mustafa Taymaz, Director, Earthquake Research Center, General Directorate of Disaster Affairs, Dr. Ramazan Demirtas, Chief of Seismology, Earthquake Research Department, General Directorate of Disaster Affairs, Prof. Dr. Mehmet Tomanbay, Representative from Ankara, Member of Parliament (CHP), Grand National Assembly, Prof. Dr. Polat Gulkan, Civil Engineering Department and Director of Disaster Management Research Center, METU, Prof. Dr. Nuray Karanci, Head, Department of Psychology, METU, and Mujgan Cetinday, Grand National Assembly, staffer from the AKP; (Wednesday, 21 May) Prof. Dr. Mehmet Tomanbay, Prof. Dr. Ersin Arioglu, civil engineer, Representative from Istanbul, Member of Parliament (CHP) opposition party, Grand National Assembly, Ankara State Statistics Institute personnel; (Thursday 22 May) Gursel Hanci, Chamber of Commerce and Regional Security Professional. I am grateful to the survivors in Bingol who were gracious enough to share their time with me.

<sup>3</sup> See Polat Gulkan, Sinan Akkar and Ufuk Yazgan, "A Preliminary Engineering Report on the Bingol Earthquake of May 1, 2003," available online at <http://www.metu.edu.tr/homre/wwwdmc> and A. Nuray Karanci and Bahattin Aksit, "Observations on the Social and Psychological Aspects of the 1 May 2003 Bingol Earthquake," May, 2003. Mustafa Erdik's preliminary report, updated on May 13, 2003, is also online at [http://www.koeri.boun.edu.tr/deprenmuh/bingol\\_eq.htm](http://www.koeri.boun.edu.tr/deprenmuh/bingol_eq.htm)

<sup>4</sup> Duzce, the city impacted by the August and November 1999 earthquakes in northwestern Turkey, was declared province number 81.

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scale, only marginally better off than Bingöl. Now, residents of Bingöl and the rural areas will receive free homes built for them by the government through the Government Housing Agency. Theoretically they shouldn't, because the theoretically mandatory disaster insurance scheme makes it incumbent for home owners to purchase the nominally expensive DASK policy for protection. When no one abides with the requirement, then we all chip in to subsidize new homes for practitioners of contumacy.” Provided to the author via email, June 2, 2003.

<sup>10</sup>See Pelin B. Bakir and Hasan M. Boduroglu. 2002. “Earthquake Risk and Hazard Mitigation in Turkey.” *Earthquake Spectra*. Vol. 18, No. 3. Earthquake Engineering Research Institute, 427-447.



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