

"It was unusually close and still that night. In town, dogs were uneasy and barking fitfully. Suddenly, the earth began vibrating . . ."

EARTH

by Lt Col Arthur P. Hahn, RA, PE

Here is a vivid account of the days immediately following the night of 6 May 1976 and how Air Force engineers responded to a "disaster without parallel" in northern Italy.

The word in Italian sounds strange: "terremoto" (terry-moto). Its meaning in English — "earthquake" — needs no definition. To the people in the beautiful Friuli Region of northern Italy, the terremoto of 6 May 1976 was a disaster without parallel. The statistics give an order of magnitude. The area mainly affected is about 20 miles in diameter. Almost 1,000 were killed; 2,000 were injured; 42,000 left homeless; and over 85 percent of the remaining buildings were unsafe for occupancy.

Historians report an earthquake struck the area in the 1500s. Although floods and other natural disasters have occurred in nearly every generation, there are no subsequent reports of earthquakes since that century. Man-made catastrophes have happened all too frequently with wars swirling across the Friuli since Roman times. The gaps through the Alps have always been inviting openings for armies

to pass between Austria and Italy. However, the people are resilient and had fully restored the area from the last damage of the World Wars into a beautiful, tranquil land of scenic villages, orchards and vineyards in a "Pre-Alps" mountainous setting.

In the Friuli, the spring night of 6 May was welcomed at Aviano AB. A squadron of aircraft of the Iowa ANG had just arrived from the United States and would be with us for several weeks. The weather indicated good flying conditions the next day. I was with three military electricians working late that night, in one of the hangars, running electric power to a piece of equipment supporting the aircraft. No one was complaining. It was a typical "BCE panic job," but a necessary one. Looking back, we recall it was unusually close and still that night. In town, dogs were uneasy and barking fitfully. Something seemed in the air.

Suddenly the hangar floor began vibrating and the lights flickered. It took us only an instant to get outside. By then, all electric power was off. The electricians raced for a vault across the street to tend to the generator which was kicking on and off, switch-gear apparently jostled by the quake, while I ran to the Base Command Post only

a few hundred meters from the hangar. My first thoughts were of communication with the rest of the world.

Within minutes we had stable generator power and, miraculously, observation revealed no apparent damage to the airfield, key structures or utilities. Civil engineers began reporting to the shop areas without resort to a recall. Everyone sensed there was big trouble nearby and we immediately began to take stock of the situation. Our Damage Assessment Teams covered the base and reverified: no problems. However, the Italian radio reported heavy damage and loss of life in many nearby communities, some as close as a 10 minute drive from the base.

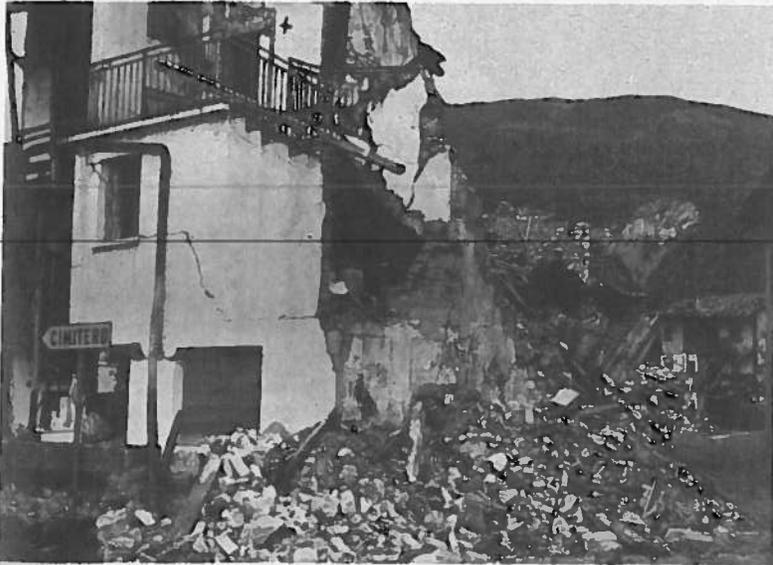
We reviewed our manning and prepared our equipment in case Italian authorities requested our assistance. The base didn't have long to wait. By midnight, medical aid was requested and dispatched to the disaster area. Working through the night, an Air Force hospital team tended injured, finally setting up an aid station in the town of Forgaria, about an hour's drive from Aviano AB.

Help was needed everywhere in the earthquake zone. We asked for and received permission to assist with the recovery efforts in Forgaria since the medical

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What had been a picturesque three story stucco and brick building in Italy, was destroyed, its rubble partially blocking the street.

Affects of an earthslide undermined a highway leading into the town. Access was reopened by 40th Tac Gp engineers.



Duty Chief of O&M, 40th Tactical Aviano AB, explains the work plan to Forgia townspeople.

team had been there, and the base had dispatched a civil engineering damage assessment team to that area on 7 May.

Forgaria is, in reality, a community of villages connected by steep mountain roads. The largest town is Forgaria (population 600), with Cornino, San Rocco, Flagogna and Monte Prat located in the surrounding hills. A mayor and town council manage community affairs and have local jurisdiction. Outside the town limits, the Province of Udine is the controlling authority. These officials, through the Italian mili-

tary, asked the US Government for help.

Coordination was effected with USAFE DCS/Engineering and Services so that vital base recovery would not be jeopardized. The Base Disaster Preparedness Center was activated and served as a daily link between the field unit, home base and higher headquarters.

Deployment of US Forces came on Sunday, 9 May, after details were worked out between the US State Department and the Italian authorities. A convoy of 25 vehicles and approximately 100 personnel, snaked out of Aviano AB for Forgaria in the early morning hours of 9 May.

Principal Air Force recovery efforts were centered in the town of Forgaria itself. Streets were cleared and widened, access to the

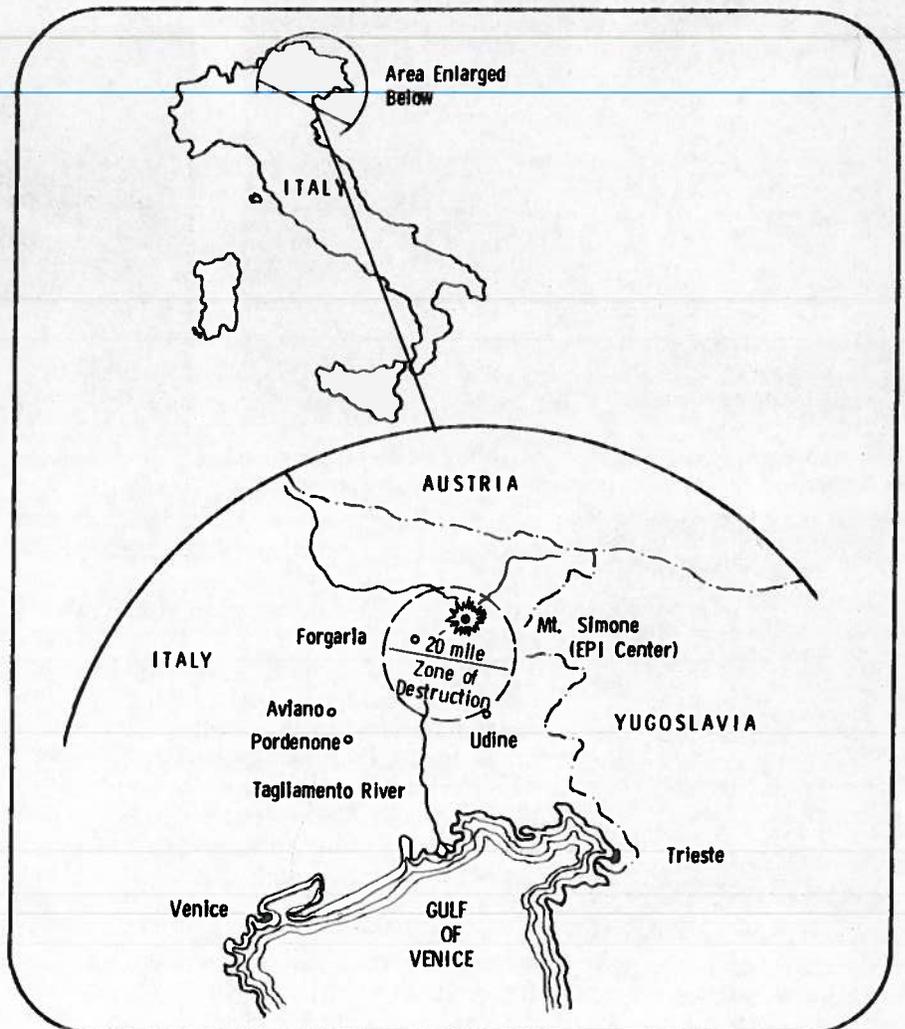
town was established and maintained, debris from demolished buildings was loaded and carried away to dump locations and clogged storm drainage systems were opened.

Nearly all buildings were destroyed. The primary reason for such a massive collapse of structures was evident. Most roof systems consisted of heavy tiles supported by large timbers fastened with hand-forged spikes. This loosely fastened system rested on stone walls. The structural system not only collapsed easily under the earth's movement, but caused problems in loading out debris. The heavy timbers, each weighing several hundred pounds, had to be muscled out of the wreckage to allow efficient front-end loader operation. The stone walls were held together with a



An overhead view of the main square in Forgaria shows the impact of the destruction. Civil Engineers of the 40th Tac Gp are clearing debris.

Map at the right shows the 20-mile zone of destruction of the quake.



soil-like mortar which crumbled in the hand. Therefore, even massive walls could be easily jarred loose. Buildings constructed in the past few years stood virtually undamaged amid the complete destruction of the old buildings. Lesson to be learned: good construction practice and methods are a major factor in building survival.

Much time was spent opening the road system interconnecting the villages. We worked with the Udine Provincial Highway Department. Landslides dislodged huge boulders, some as big as 15 feet in diameter. These boulders, and smaller rocks, cascaded down the mountains, crashing through bridges and buildings, bouncing off of highways, leaving craters in the surface and often completely blocking the roads. Bulldozers and front-end loaders were ideal for quickly opening this highway system. However, heavy rains in mid-month caused us to redo much of the work when additional slides occurred. Within sight of the epicenter, Mt. Simone, we worked nearly a week clearing a mammoth rock slide, estimated at over 7,000 cubic yards, thus opening a vital road link between towns.

Working hand-in-hand with the equipment operators were labor crews who recovered belongings, cut reinforcing steel and removed timber. Buried cars, clothing, furniture, appliances and family mementos were among the items saved. In addition, several stake-bed trucks were busy hauling furniture from condemned homes. As Mr Gerometta, our Deputy Chief of O&M and a native of northern Italy, so aptly put it: "Please save as much as you can. When you've lost everything, even a nail is important." The labor crews earned the respect and admiration of the Italian population. They were sensitive to the peoples' desires and always took the time to search and go slow if there were any chance of recovery. Significant articles, such as municipal records going back hundreds of years and the



A townswoman of Forgaria, Italy, surveys what is left of her home.

sash of office, worn by the mayors of Forgaria for the past 30 years, were recovered amid the rubble. Later, an emotional event occurred when the Mayor presented this sash of office to the Aviano AB Commander as a token of appreciation and friendship on the last day of operations.

Safety was a watchword and it paid off. Within 22 work days, more than 19,000 tons of debris were moved and over 15 miles of roads opened and maintained, by 50 to 100 personnel working daily. Nothing more serious than a cut finger was reported and only minor body damage was sustained to equipment. The drivers and spotters were always on their toes and the vehicle maintenance crews were instantly on the scene in case of mechanical problems.

After a month of hard, dirty, but tremendously satisfying work, the 40th Civil Engineers withdrew on 6 June from Forgaria at the direction of the US Disaster Relief Commander. This action coincided with the withdrawal of the Army's 509th Spe-



cial Forces Engineer Platoon which was working in Osoppo, Italy, a nearby town. The short ceremony that took place on the sunny Saturday morning of 6 June was heartwarming. Tears were in many of the townspeople's eyes, tokens of friendship were exchanged, words of gratitude and encouragement were expressed. It was a time to be proud to be an Air Force Civil Engineer.

Where we had worked, Italian civilian heavy equipment now took over. It will be a long, hard job to rebuild and to replace hundreds of years of tradition and beauty. But those of us who were there, and know the people, their strong will to continue, have no doubt that they will echo our motto: "Can do — Will do."

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