

= 1930 Salmas earthquake =

The 1930 Salmas earthquake occurred on May 7 at 01 : 34 : 26 IRST in West Azerbaijan Province , Iran . The earthquake , which was among Iran 's largest , measured 7 @. @ 1 on the moment magnitude scale and had a maximum Mercalli intensity of X ( Extreme ) . A damaging foreshock occurred fifteen hours prior to the main event and served as a warning to the people that felt it strongly . Reports from seismologists and seismological organizations indicate that up to 3 @, @ 000 fatalities may have occurred in western Iran and eastern Turkey .

Sixty villages ( including the large settlement of Dilman , which was relocated and rebuilt as Salmas ) were destroyed in the Salmas Plain and in the surrounding mountainous regions . A destructive aftershock sequence affected many villages , and in some cases , damage was inflicted on some that had escaped devastation during the mainshock . An inspection of the region was undertaken , but not until decades later , at which time substantial surface faulting and other ground effects were documented .

= = Preface = =

The epicentral area in the Salmas Plain covers 300 square kilometres ( 120 sq mi ) and is positioned northwest of Lake Urmia . This area had been inhabited primarily by Christians for about a thousand years prior to the event ( which was one of the strongest earthquakes to occur in Iran since 1900 ) . The mountainous areas surrounding the plain are extremely isolated with villages ( comprising mainly Kurdish people ) that are spread far apart . Montane villagers sustained themselves primarily on wheat and cattle farming . To the west , near the Turkish border , lies Aravil Dagı , a volcano that is the highest peak in the region .

= = Foreshock = =

A relatively strong foreshock occurred at about 10 : 03 : 26 IRST on May 6 in the same area as the mainshock . This destructive event caused 25 fatalities and was felt as far as northwestern Azerbaijan and southeastern Turkey . Damage to adobe homes was substantial . Roofs and walls collapsed and in some instances whole homes were demolished . Many of the villagers in the valley spent the following night outdoors and were spared during the main event , but in the mountainous villages where the shock was not felt as strongly ( Shekar Yazı , Sheydan , Ashnak , Aslanik , and others ) the population was not as concerned . Many slept indoors and this led to high casualties in those areas during the mainshock a little more than 15 hours later .

= = Earthquake = =

The earthquake was a result of oblique @-@ slip faulting , and was felt over a very wide area , from Leninakan in Armenia and Tbilisi in Georgia in the north , and Baghdad and Kirkuk in Iraq to the south . Dextral strike @-@ slip motion , along with dip @-@ slip motion ( normal faulting , northeast side down ) occurred on a fault trending west @-@ northwest . The United States ' National Geophysical Data Center lists 1 @, @ 360 fatalities for the event , while the Belgian Centre for Research on the Epidemiology of Disasters ' EM @-@ DAT database and Ambraseys & Melville 2005 both list 2 @, @ 500 . Tchalenko & Berberian 1974 , the USGS ' PAGER loss estimate database , and Utsu 2002 all state 2 @, @ 514 . The Utsu list also acknowledges other estimates of 1 @, @ 360 and 3 @, @ 000 .

= = = Damage = = =

Sixty villages and about 40 churches were destroyed in the southwest Salmas Plain and the surrounding mountainous regions . In the zone of heaviest damage ( bounded by the villages of Kohne Shahr , Payajuk and Zaviehjuk ) all the homes and all but one of the churches were

destroyed . To the east of this area , the large village of Dilman reportedly had 1 @, @ 100 casualties , but seismologists J. S. Tchalenko and M. Berberian questioned the reliability of this figure . In smaller villages , survivors provided an accurate count of those lost because they remembered the victims by name , but in a village of 18 @, @ 000 , survivors were unable to grasp the extent of the losses . Only two homes remained standing there , and the village was renamed Salmas and moved to a new location to the west .

The villages in the mountains to the south , west , and north of the Salmas Plain were generally smaller , and accounted for about half of the total number of villages that were lost . The foreshock was not felt at Borusliqalan ( the westernmost village that was destroyed ) and the losses were high . The foreshock was also not strongly felt to the east of Lake Urmia ( and to the southwest of Tabriz ) where the village of Mamaqan was completely destroyed and 85 people were killed . Other nearby villages went almost unscathed , with the differing amounts of damage being attributed to soil type .

#### = = = Ground effects = = =

A post @-@ earthquake survey of the land was undertaken by seismologists N. N. Ambraseys and C. P. Melville , but it was not completed until the mid 1970s . At that time , 16 kilometres ( 9 @. @ 9 mi ) of surface breaks with right @-@ lateral offsets between 1 ? 4 metres ( 3 ft 3 in ? 13 ft 1 in ) were located between the villages of Shurgil and Kuhneh Shahr . Substantial vertical movement of the west @-@ northwest trending fault was also seen , with even greater maximum displacements of 4 ? 6 metres ( 13 ? 20 ft ) , but the average vertical slip was about 1 @. @ 2 metres ( 3 ft 11 in ) throughout the extent of the observed surface faulting . They estimated that about 30 kilometres ( 19 mi ) of visible fault breaks were present immediately following the shocks , but by the time they had completed their survey 45 years later about half of the surface features had succumbed to erosion . Other effects included disturbed stream and spring flow , water table fluctuations , and landslides .

#### = = = Aftershocks = = =

A series of strong and damaging aftershocks persisted for about three @-@ and @-@ a @-@ half months . The largest in the sequence came on May 8 . The event caused additional destruction to the northeast of the initial meizoseismal area . Qatur , which had been nearly destroyed by the mainshock , took another serious hit . Other villages ( Chaliyan , Givaran , Mir ' Umar , and Ravyan ) also experienced major destruction . Shikaryazi was a village in the southeast region that had not been seriously affected by the mainshock , but experienced heavy damage during the May 8 event .