

SEISMOTECTONIC CHARACTERIZATION OF THE COLOMBIAN JUNE 6th, 1994 PAEZ EARTHQUAKE

1 JIMÉNEZ, E., 2 FUENZALIDA, H.A. 1Geoscientific, Mining, Environmental and Nuclear, Research and Information Institute – INGEOMINAS -, Bogotá Colombia; 2 Sipetrol, Bogotá, Colombia.

The June 6th , 1994 earthquake that strongly affected the Paez River Basin, in the Cauca province, causing numerous human casualties and heavy landslides in the epicenter zone, was studied using a multidisciplinary approach. This earthquake of magnitude Richter 6.4 is one of the most catastrophic in recent times of Colombia. This study combines geological, geomorphological, tectonic, seismological and neotectonic analysis supported by a field campaign. Six geomorphological units were identified one of them strongly affected by landslides. Based on the interpretation of Landsat TM images and aerophotographies, alignments associated to the northern part of the aftershock distribution zone were observed in the epicenter area. Three structural fault systems are observed with prevailing orientation NE-SW, NW-SE and N-S, showing important features of neotectonic activity. With a relocation of the aftershock sequence, using data from the National Seismological Network of Colombia, a distribution that indicates a fracture zone of about 40 km in length with a strike of N23°E was obtained. In a cross-section of the aftershock distribution, an almost vertical plane, slightly dipping towards the SE, and foci as deep as 10 Km were observed. The previous results are in agreement with the focal mechanism solution estimated for the main event (Strike N23°E, Dip 82°SE, Rake 170°). The estimated extension of the rupture zone is approximately 400 km² . All these observations lead to conclude that rupture took place in a local system called the Irlanda Fault, corresponding to dextral strike slip movement located on the highlands of the Central Cordillera.