

Subglacial eruption pillow lava breccias in Fumarole Bay, Deception Island, Antarctica.

¹RISSO, C., ²APARICIO, A., ³DELGADO, A. and ⁴NULLO, F.E.

¹FCEyN-Universidad de Buenos Aires, Argentina; ²Museo Nacional de Ciencias Naturales-CSIC, Madrid, España;

³Estación Experimental del Zaidin-CSIC, Granada, España;

⁴FCEyN-Universidad de Buenos Aires-CONICET, Argentina.

A small outcrop in Fumarole Bay belongs to the "Conjunto Superior" and begins with base-surge deposits, poorly consolidated with reverse grading laminated bedding sets, deposited maybe during an explosive activity in a cupola of steam. To the top the participation of pillows and lobe fragments increase, followed by a massive lava flow and ending with strombolian deposits similar to others presents in several localities of the island. This sequence indicates the independence of water in the last stages of the eruption.

The pillow lava breccia have a central part of massive columnar jointing lava with basaltic-andesite composition. The external zone is composed by pillow lobes and fragments. Their size range from 0.10 to 4 meters. Their shape vary from nearly spherical to elongate. The central zone, has porphyritic to cluster texture with plagioclase and clinopyroxene phenocrysts and glassy groundmass with plagioclase and clinopyroxene partially palagonitized. The external zone is characterized by a black obsidian rim.

High negative deuterium rates ($\delta^2\text{H}=66.7-61.4$) indicates meteoric water contribution. The pillow lava outcrop is 50 meters up to the actual sea level and in his original eruption position. According with this observations the eruption begun under a thin and shallow ice/snow cover.