**BASAL SUEVITE AND BASAL IMPACT MELT ROCKS, A SINGLE IMPACTITE UNIT MARKING THE BOTTOM OF ROCHECHOUART TRANSIENT CRATER.**

P. Lambert[1] , G. R. Osinski[2], and H. M. Sapers[2]. [1]Sciences & Applications, 218 Bd Albert 1er, F33800 Bordeaux, France. E-mail: lambertbdx@numericable.fr. [2]Dept. Earth Sciences, University of Western Ontario, London, ON, Canada.

Early studies suggested a continuum between impact melt-bearing breccia ("suevite") and impact melt rocks at Rochechouart, with an intermediate population where lithic matrix and melt matrix domains co-exists at the hand specimen scale (D-E population in [1]). More recently "upper" and "basal" suevite have been distinguished within the Rochechouart impact deposits [2]; and Montoume breccias have been interpreted as particulate impact melt rocks, transitional between a melt rock and a melt-rich impact breccia [3]. Notably, a large proportion of impact melt rocks currently exposed at Rochechouart bears a significant proportion of lithic clasts [1-2]. All the impact melt rocks exposed stand in direct contact with bedrock [1-2] and can be referred as to "basal impact melt rocks".

Field, petrographic and geochemical data indicate that basal suevite and basal impact melts rocks at Rochechouart are members of a single impactite unit (basal impact melt bearing unit) where the proportion of melt is more significant than its setting (in the matrix or as clasts), the latter varying locally and depending on the scale of observation. The unit spreads over the SW portion of the preserved crater deposits. It is characterized by: 1) systematic setting in direct contact with the autochtonous-parautochtonous bedrock; 2) limited mixing and transportation deduced from petrographic and/or geochemical data indicating a local origin of a significant proportion of both melts and lithic fractions [2]; 3) complex textures including local diffuse contacts between lithic matrix and melt matrix fractions, "melts in melts", schlieren melt matrix breccia clasts, [2]; and 4) depletion or absence of homogeneous melts.

The Rochechouart basal impact melt-bearing unit is interpreted as the result of combined mechanisms associated with the collapse of the transient cavity. These mechanisms involve mechanical fragmentation of the shocked bedrock in the floor of the transient cavity related to uplift and pressure release, superimposed heating due to structural uplift known to cause elevated transient local geotherms at terrestrial impact craters above 20 km diameter [4], and further "intrusion" and mixing with the crater fill deposits. This hypothesis is consistent with the relative inefficiency in homogenizing and mixing of melt at Rochechouart noted by [2]. More generally it could explain the lack of coherent impact melt sheet at Rochechouart. Field and petrological data indicate that significant melting occurs beyond readjustment during the slow thermal re-equilibration process within the heterogeneous mixture of lithic debris and melts.

Beyond impactite nomenclature and related issues, recognition of basal suevite and basal impact melt rocks bear important geological applications. They may constrain the position of the center of the original crater (and its size to a lesser extend) at deeply eroded and/or re-processed impact structures.

**References:** [1] Lambert P. 1977. *Earth and Planetary Science Letters* 35:258-268. [2] Lambert P. 2010. *Geological Society of America Special Paper 465*:509-541. [3] Sapers, H.M. et al. 2009. *40th-LPSC*, abstract 1284. [4] Naumov M. V. 2005. *Geofluids* 5:165-184