THE CHICXULUB IMPACT: RESULTS OF PETROPHYSICAL AND PALEOMAGNETIC INVESTIGATIONS

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The Chicxulub impact event and its relation to the global Cretaceous -Tertiary (K/T) mass extinction has recently resulted into new hot debates. Here we present petrophysical and paleomagnetic data of the CSDP Yaxcopoil YAX-1 drillcore to clarify dating aspects of the issue. Paleomagnetic measurements of the drillcore, coupled with petrophysical data provide a tool of isolating various units including the impact layer, the K/T boundary and the post-impact sequences. NRM and susceptibility values of samples from pre- and post-impact layers show that most samples are weakly magnetized (mainly dia- or paramagnetic with a possible weak ferrimagnetic signal), with densities of 2700 kg m^{-3} in case of pre-impact and 2200 kg m^{-3} in post-impact (Tertiary) samples. The interval from 790 m to 900 m is exceptional. It includes the K/T boundary layer, and consists mainly of suevites and melt breccias. This interval has stronger magnetizations and therefore can be easily recognized by susceptibility and NRM data. Densities from this interval vary within range of 1900 (near to K/T-boundary) to 2600 kg m^{-3} (lower part). This tendency can be partly due to porosity and/or lithological changes.

The K/T-boundary event took place within the magnetic chron 29R. Our data reveal that magnetostratigraphy of the impact layer is more complex. The average inclination of the reversaly magnetized impact layer is -37°. However, it is contaminated by a normal polarity component with an average inclination of +30°. We interpret this complex data as mixture of materials or magnetizations from the chrons 29R - 31N, which were redeposited shortly after impact. Hydrothermal remagnetizations may also contribute to the mixed magnetizations observed in this interval.