

# X-Ray Fluorescence Analysis of the Justiss LA Central IPNH No. 2 Well-Core from LaSalle Parish, Louisiana

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## Abstract

The Cretaceous-Paleogene Boundary Deposit (KPBD) of the northern Gulf of Mexico Basin has been determined to have been deposited catastrophically due to the effects of the Chicxulub Impact. The purpose of this study is to examine the Justiss Oil Company, Inc., LA central IPNH No. 2 well-core from LaSalle Parish, Louisiana, which contains a section of the KPBD and determine in detail the geochemistry of the core and how it correlates to the effects of the Chicxulub Impact. The core has four sections based on lithology: 1) a pre-impact chalk capped by a hard ground, 2) mass transport deposit (part of the KPBD), 3) upper hard ground/suspected air-fall ejecta (part of the KPBD), 4) post-impact Midway Shale, with both the mass transport and fall back ejecta having been deposited as a result of the impact. This fourfold division is confirmed by performing an X-ray Fluorescence (XRF) analysis on the well-core which determined the elements within the core. Before analysis, 36 representative samples were taken from the core and dissolved in 10% HCl to facilitate detection of the more minor elements in the core which are masked by the dominance of calcium carbonate. Elemental analysis using XRF established conclusive evidence of two hard grounds within the core through significant spikes in U that correspond to massive gamma-ray spikes on the well-log. At the top of the KPBD in the upper hard ground there is evidence of the Chicxulub Impact in the elements Ni, Zn, Zr, and Mn which are several hundred ppm higher than anywhere else in the well-core. These elements are in high abundance which suggests that they were deposited as air-fall ejecta from the Chicxulub Impact event, based on comparison with scientific literature.

