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Line 29 crosses northern part of the Roer Valley Graben (RVG), the Peel Boundary Fault and the Peel-Maasbommel Complex (PMC) from the southwest to the northeast. The seismic line is oriented perpendicular to the main structural trend.

Within the RVG, a thick Permian and Triassic sequence is present that cannot be differentiated further due to the limited seismic resolution. Above this sequence, a relatively thick Altena Group could be interpreted, mainly supported by correlation with other seismic lines and constrained by well AST-GT-02, although the latter well is not representative for the central part of the graben. The Altena Group is unconformably overlain by a thin Chalk Group interval, which most likely represents a succession of both pre and post inversion units (Ommelanden, Maastricht and/or Houthem formations). Older Chalk units along with Jurassic and Early Cretaceous intervals are eroded during inversion and reverse fault reactivation during both the Late Cretaceous Sub-Hercynian and Paleogene Laramide inversion phases. Consequently, the Chalk was deposited during inversion (syn-inversion) or was partly eroded by later inversion phases, such as the Laramide event.

Across the Peel Boundary Fault, the Peel-Maasbommel Complex experienced significant uplift and erosion during the Late Jurassic–Early Cretaceous rifting event. As a result, no Jurassic material is preserved here. Here, a thick Carboniferous sequence and a substantial Chalk Group are present, separated by a thin interval of Permo-Triassic strata on the northern side of the PMC. The relatively thick Carboniferous interval comprises the Carboniferous Limestone Group (also known as the Zeeland Formation), a complete Namurian sequence (including Namurian A en B), followed by the Baarlo en Ruurlo Formations which correspond to Westphalian A. Younger Upper Carboniferous units (Westfalien C and D) units are not encountered on the PMC.

The thin Permo-Triassic interval locally shows a clear angular relationship with the underlying Carboniferous strata. Here, the Rotliegend and Zechstein strata cannot be differentiated, but, due to their strong reflectivity, stand out from the Triassic interval. The Peel-Maasbommel Complex experienced strong uplift and erosion during the main Late Jurassic–Early Cretaceous rifting event. Thinning of the Permo-Triassic and truncation of the Carboniferous can be seen below the Cretaceous unconformity, especially in the southern part of the Peel-Maasbommel Complex. The Chalk Group includes both syn-inversion (Aken, Vaals and Gulpen formations) and post-inversion (Maastricht and Houthem formations) units. This interpretation is mainly based on correlation with Line 31.

A detailed subdivision of the North Sea groups on the PMC was made for the H30-Peelhorst & Venloslenk. This subdivision is here indicated with thin black lines only.