Datashare 118

Controls on fracture network characteristics of the middle member of the Bakken Formation, Elm Coulee field, Williston Basin, United States

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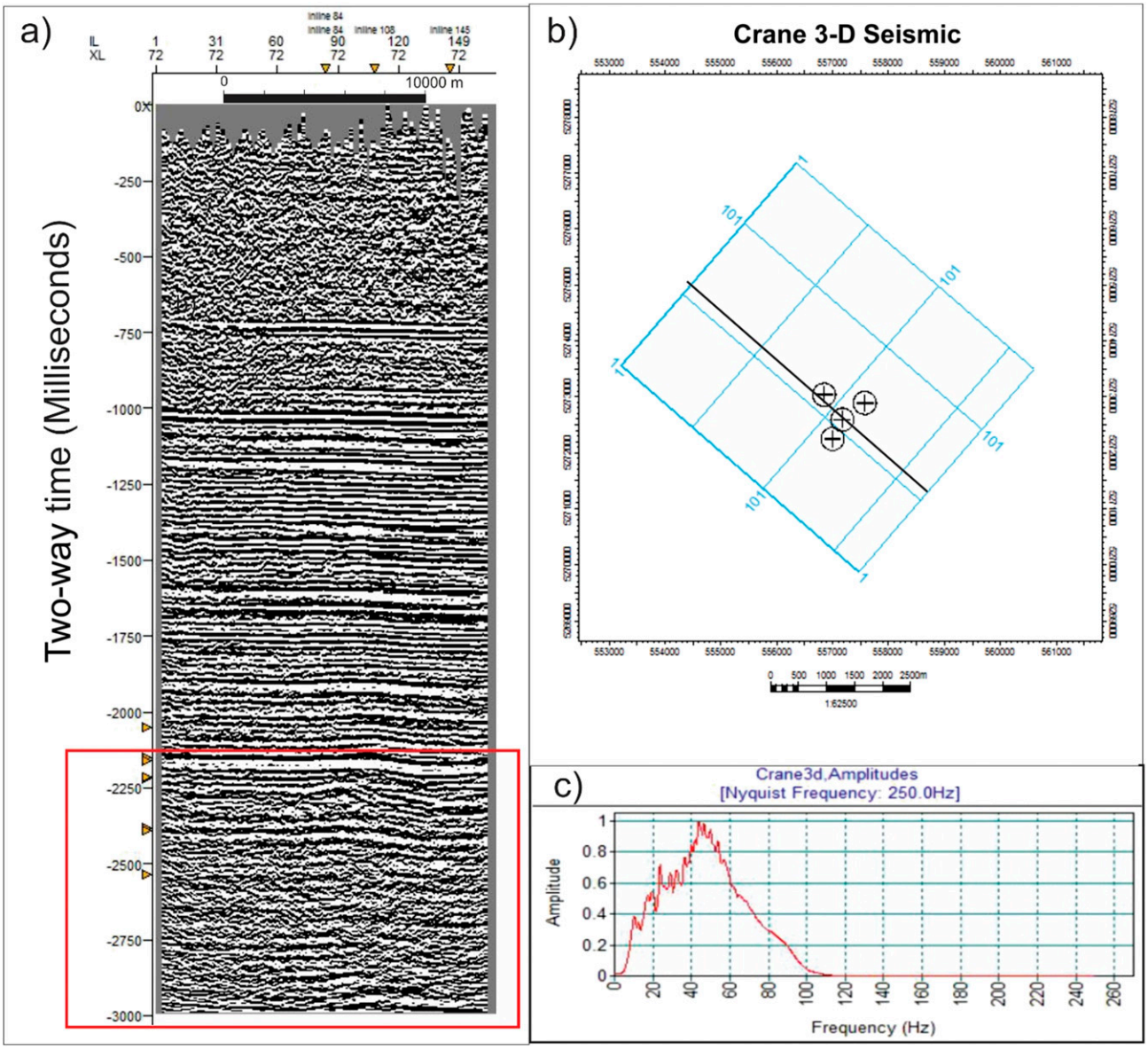

Figure SF1. (A) A seismic section from the original amplitude volume. The red box shows the area of interest. The area of interest has a low signal-to-noise ratio. (B) Location of the seismic section. (C) Amplitude spectrum of the three-dimensional (3-D) seismic data. Vertical exaggeration = 3.

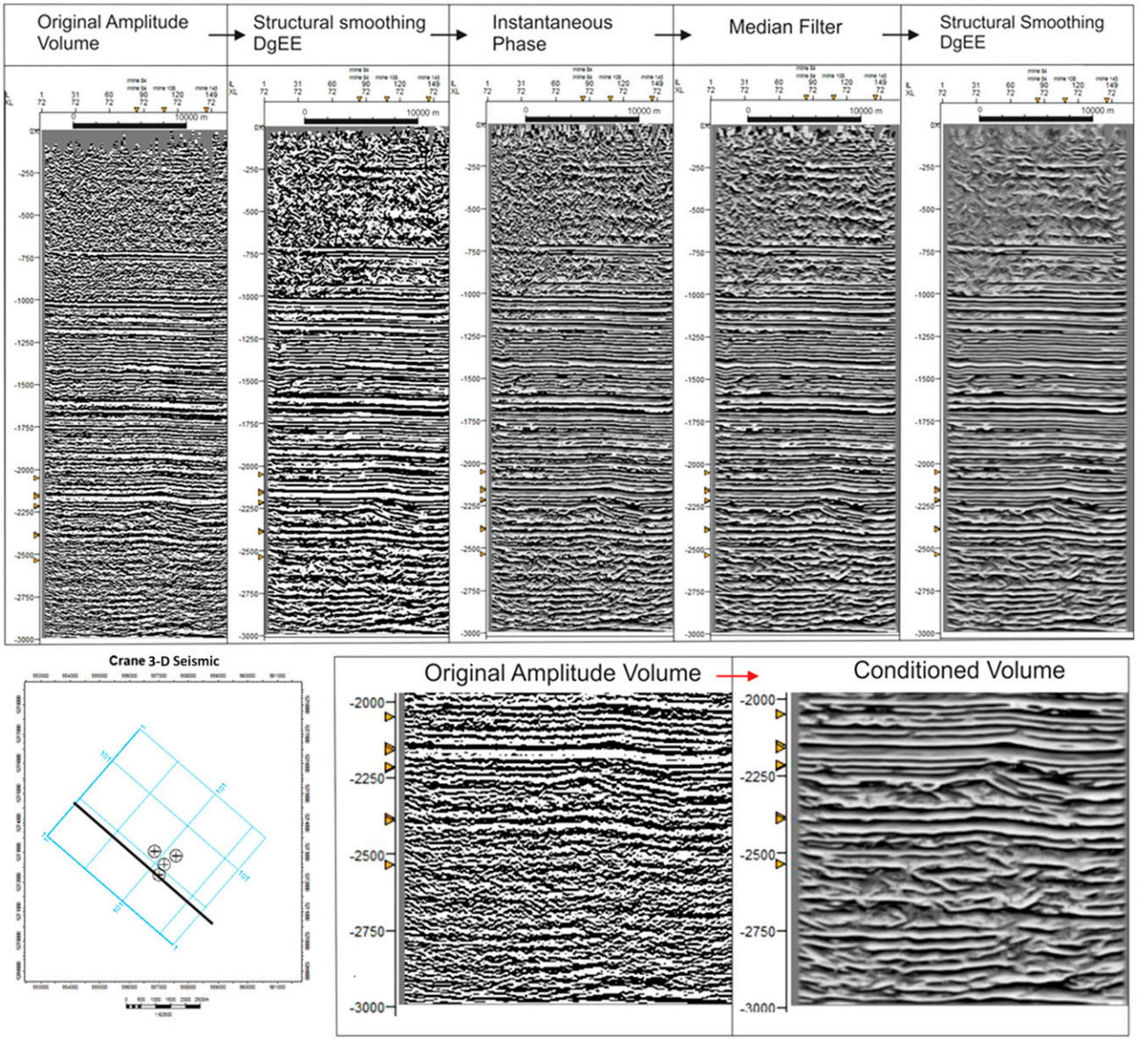

Figure SF2. Seismic section from different three-dimensional (3-D) volumes shown here for comparison on the top of the figure. The location of the seismic section is shown in the bottom left of the figure. The area of interest from Figure SF1 is shown here from the original amplitude volume and the final conditioned volume for comparison. Vertical exaggeration = 3.0. Vertical axis in the seismic sections show two-way time in milliseconds. DgEE = dip guided with edge enhancement.

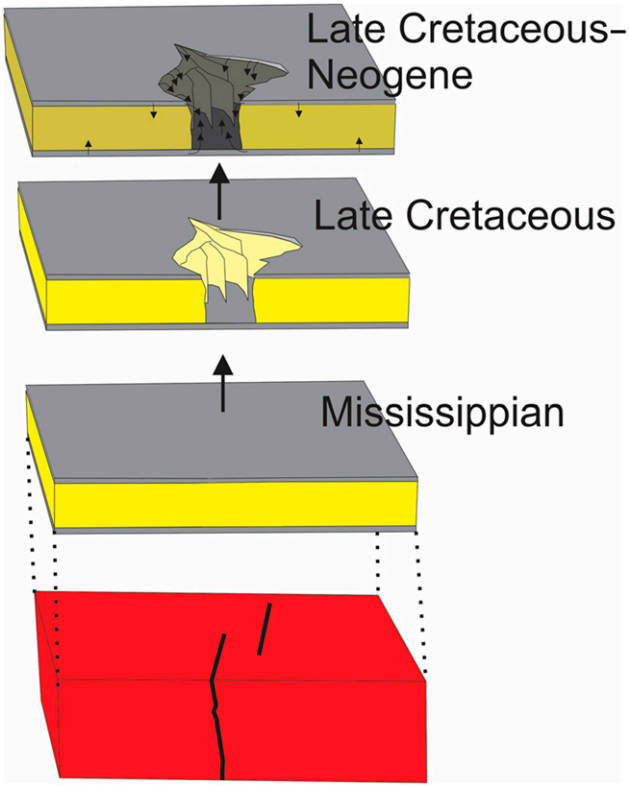

Figure SF3. A schematic diagram showing the evolution of the system from its formation to the modern day. The stepover fault system in the basement starts affecting the structure of the Bakken Formation after its formation in the Devonian–Mississippian. The antiformal structure has evolved by the time oil is being generated in the Late Cretaceous. The oil from the upper and lower members preferentially flows into the deformed zone in the middle member of the Bakken formation, with higher secondary porosity and permeability.

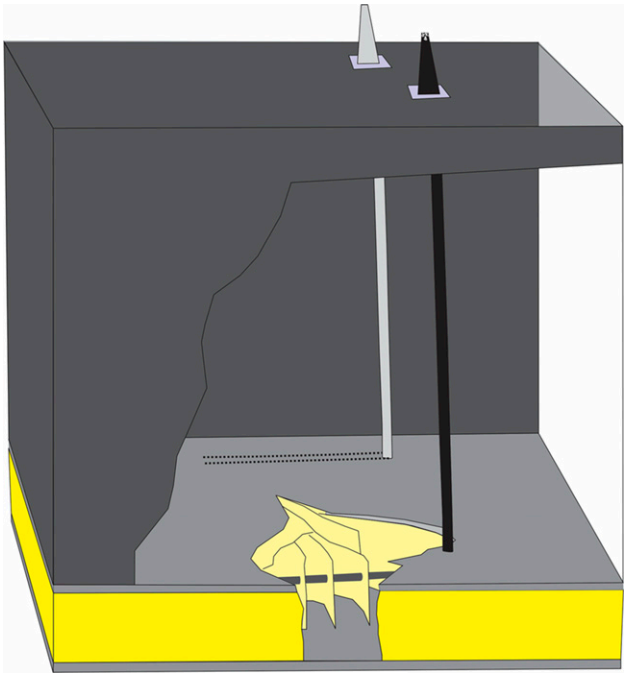

Figure SF4. The well shown in black, which penetrates the deformed zone with the wrench-fault system, produces much more efficiently compared to the well shown in light gray color. This is due to a higher natural fracture density in the deformed zone of the pop-up structure.