

CERAMAH TEKNIK TECHNICAL TALK

ARCTIC TECTONICS: THE PALAEOZOIC AND YOUNGER TECTONIC HISTORY OF NORTH-EASTERN CANADA-NORTHERNMOST GREENLAND AND HOW IT IS RELATED TO SEDIMENTARY BASIN AND CRUSTAL ARCHITECTURE

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20 December 2011
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Abstract: The presentation begins with some remarks on Palaeozoic crustal accretion (orogenesis) in Arctic Canada and northernmost Greenland with a view to how the legacy of these events may have later played a role in the Mesozoic and Cenozoic geological history and basin development in the area. Palaeozoic orogenesis was followed by the formation of the Sverdrup basin system. The presumably subsequent evolution of the adjacent Amerasian segment of the Arctic Ocean (Canada Basin) is one of the last “unknowns” in global plate tectonics. The age of this presumed ocean basin has mainly been inferred from structural and stratigraphic relationships observed onshore on its margins though numerous attempts have been made over the years to interpret magnetic anomalies in Canada Basin in terms of Cretaceous sea-floor spreading. Available geophysical (seismic and potential field) data suggest that much of the Canadian polar margin does indeed have the structure of a passive continental margin. The Amerasian basin margin becomes more complicated to the northeast, off Ellesmere Island and northernmost Greenland. The development of the modern North Atlantic-Arctic plate boundary system began in the Cretaceous. This led to the formation of Labrador Sea and Baffin Bay among other things but was aborted in the Palaeogene as a result of intraplate dynamic processes within Eurasia. Consequent changes in the kinematic relationships between Canada and Greenland led to the intraplate Eureka Orogeny in northeastern Canada-northernmost Greenland in the Eocene, the large-scale structure of which is probably intimately related to the legacy of Palaeozoic crustal accretion, ending the presentation where it began.