

Geodynamic Evolution of Loei and Phetchabun Regions - Does the Discovery of Detrital Chromian Spinel from the Nam Duk Formation (Permian, North-Central Thailand) Provide New Constraint ?

Chongpan Chonglakmani¹ and Dietrich Helmcke²

¹ School of Geotechnology, Institute of Engineering, Suranaree University of Technology, 111 University Avenue, Nakhon Ratchasima 30000, Thailand

² Institute of Geology and Dynamics of the Lithosphere, University of Goettingen, Goldschmidtstr.3, D-37077 Goettingen, F.R. of Germany

(Manuscript received June 30, 2000; accepted February 10, 2001)



Abstract

The discovery of the chromian spinel detritus in sandstones from the Permian Nam Duk Formation (Phetchabun region) confirms that the siliciclastic part of this formation is related to the erosion of a mountain belt caused by compressional deformation. The question discussed is whether this detritus is derived from an older orogen exposed today in the region of Loei east of the Nam Duk Basin, or it is from a mountain belt which evolved during Permian times in the west (Nan-Uttaradit region).

In the first case the Nam Duk Formation would represent the passive continental margin sequence of the "Indochina craton", and in the second case it would be part of the sedimentary wedge associated with the compressional deformation and subsequent uplift to the erosional level during Middle to Upper Permian of a rising mountain belt further in the west. In this contribution, arguments in favour of the second scenario are discussed. The region close to the Nan-Uttaradit suture zone shows evidence of compressional deformation and subsequent uplift to an erosional level in the Permian when the chromian spinel detritus was deposited in the Nam Duk Formation.

Key Words: Geodynamic evolution, chromian spinels, Nam Duk Formation, Nan-Uttaradit suture, Loei, Phetchabun.