

การลำดับชั้นสนามแม่เหล็กบรรพกาลของหมวดหินภูทอก บริเวณเขาภูทอกและภูวัว
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MAGNETOSTRATIGRAPHY OF THE PHU THOK FORMATION AT PHU THOK
AND PHU WUA AREAS, CHANGWAT NONG KHAI

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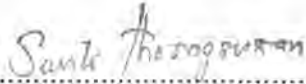
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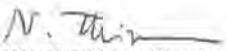
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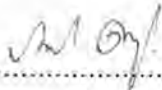
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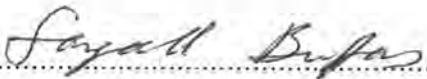

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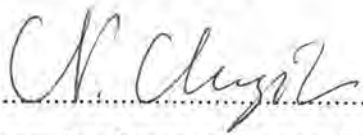
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หินทรายแดงภูทอก บริเวณเขาภูทอกและภูวัว จังหวัดหนองคาย ซึ่งโผล่เฉพาะบนพื้นที่ที่เป็นเขา มีการวางตัวของชั้นหินตามแนวโครงสร้างตะวันตกเฉียงเหนือ-ตะวันออกเฉียงใต้ และถูกกำกับด้วยรอยเลื่อนในแนวเดียวกัน ประกอบไปด้วยหินทรายสองชนิดคือ หินทรายเนื้อละเอียดถึงเนื้อหยาบปานกลางสีน้ำตาลอมแดงชั้นหนาที่มีการวางชั้นเฉียงระดับขนาดใหญ่ แทรกสลับไปกับหินทรายเนื้อละเอียดมากถึงขนาดทรายแป้งเนื้อปูนสีแดงอมน้ำตาลแกมม่วงที่มีโครงสร้างลอนคลื่น (wavy structure) ความหนารวมของหมวดหินภูทอกในพื้นที่ประมาณ 205 เมตร

ผลการศึกษาจากตัวอย่างที่เก็บอย่างมีทิศทาง เฉพาะด้วยเครื่องเจาะขนาดเล็กอย่างต่อเนื่องของสอง section จากเขาทั้งสองลูกและวัดค่าทิศทางสนามแม่เหล็กที่ฝังในหินด้วยเครื่องแมกนีโตมิเตอร์ชนิดหมุนแสดงผลเป็นตัวเลข พบว่าสภาพแม่เหล็กหุติยภูมิจะถูกทำลายจนหมดเมื่อเผาที่อุณหภูมิ 350-500°C หรืออาจถึง 650°C

การลำดับชั้นสนามแม่เหล็กบรรพกาลซึ่งได้จากข้อมูลตัวอย่างหิน 351 ตัวอย่างย่อยประกอบไปด้วยการสลับกันของขั้วแม่เหล็กแบบปกติ 7 ครั้งและแบบย้อนกลับ 7 ครั้ง และสามารถเทียบกับมาตรฐานการกลับทิศทางของสนามแม่เหล็กโลก ได้อายุอยู่ในช่วงครีเตเชียสตอนต้น หรือระหว่าง Valanginian ถึง Hauterivian


VGP (Virtual Geomagnetic Pole) ของหินทรายภูทอกในพื้นที่ศึกษาซึ่งได้ข้อมูลจาก 225 ตัวอย่างย่อยที่เชื่อถือได้มีค่าเฉลี่ย 61.9°N, 189.9°E (K= 1006.0, A95 = 1.8) ซึ่งใกล้เคียงกับ VGP ของกลุ่มหินโคราช แสดงให้เห็นว่าในช่วงเวลาก่อนที่หินภูทอกจะสะสมตัวจนกระทั่งสะสมตัวแล้ว (ที่เส้นรุ้งเหนือประมาณ 17.8° ± 1.2° บนแผ่นจูลทวีปอินโดจีน) แผ่นจูลทวีปอินโดจีนมีการเคลื่อนตัวน้อยมากทิศทางสภาพแม่เหล็กปฐมภูมิที่เชียงเบนไปทางทิศตะวันออกเฉียงเหนือบ่งชี้ได้ถึงการหมุนตัวตามเข็มนาฬิกาของแผ่นจูลทวีปอินโดจีน (หรืออินโดจีน/ฉาน-ไทย) เกิดขึ้นภายหลังการสะสมตัวของหินภูทอก

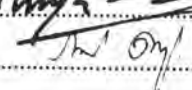
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SUVAPAK IMSAMUT : MAGNETOSTRATIGRAPHY OF THE PHU THOK FORMATION AT PHU THOK AND PHU WUA AREAS, CHANGWAT NONG KHAI. THESIS ADVISOR : PUNYA CHARUSIRI, Ph.D., VEEROTE DAORERK, M.Sc. 306 pp. ISBN 974-633-244-9

The Phu Thok red sandstone rocks, which expose at Khao Phu Thok and Phu Wua, Changwat Nong Khai, which have general attitude following the NW-trending regional structure which is fault-bound. They consist of two distinct sedimentological units of which the first is thickly-bedded, reddish brown, fine- to medium- grained (arkosic) sandstone with large-scale cross-beddings. The second is purplish to brownish red, mostly calcareous, very fine-grained sandstone (and some siltstone) with wavy structures. The total thickness of the whole Phu Thok sequence is about 205 m.

The oriented samples collected by portable core drilling machine from two continuous sections of the sandstone at Khao Phu Thok and Phu Wua, were measured by digital spinner magnetometer. The results indicate that the secondary magnetism is completely demagnetized in temperature range from 350°C to 500°C or may be up to 650°C .

The magnetostratigraphy of the Phu Thok sequence constructed from 351 specimens clearly indicate seven normal and seven reverse polarity bands. In addition, this magnetostratigraphy is well correlated with the Standard Geomagnetic Polarity Time Scale at time of Early Cretaceous (Valanginian to Hauterivian).

The Mean VGP (Virtual Geomagnetic Pole) of the Phu Thok rocks is calculated from 225 significant specimens. It is 61.9°N , 189.9°E with $K = 1006.0$, $A95 = 1.8$ and is quite similar to the overall VGP of the average Khorat Group. This implies the little or no movement of the Indochina micro-Plate until Phu Thok rocks were deposited (at paleolatitude of $17.8^{\circ} \pm 1.2^{\circ}\text{N}$, in part of the Indochina microplate). Moreover, the northeast declination of primary magnetism in the rocks possibly advocates the clockwise rotation of the Indochina taking place after the cessation of Phu Thok deposit.

ภาควิชาธรณีวิทยา (Geology).....

ลายมือชื่อนิสิต.....

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