

ture, formation, evolution and basic tectonic characteristics of orogenic belts, especially to the three-dimensional structure in orogenic process and orogenic belts nowadays. From the practice and method studies of geological mapping in seven mapping areas of orogenic belts in west China arranged by Geological Survey Bureau of China during "Ninth-Five-Year plan", we suggest that we should use different geological methods in different rock provinces and summarize some theories and methods about typical rock provinces and textural geological mapping in orogenic belts respectively, such as non-Smith stratigraphy, depositional basins, intrusive igneous rocks, metamorphic rocks, three-dimensional structure and tectonic evolutionary model of orogenic belts. The main aim of this paper is to provide some new systematic theories and methods about 1:250 000 regional geological mapping in blank region of Qinghai-Tibet plateau among "new cycle general survey of land and resources" developed on large scale in China and improve the study of basic geological survey in new cycle general survey of land and resources.

Key words: orogenic belt; three-dimensional structure; theory and method; geological mapping.

西藏萨迦三叠系修康群发现白垩纪箭石

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西藏萨迦县北部发育修康群(T_{3x}), 其岩性为一套灰绿色页岩夹灰色灰岩及灰色岩屑石英砂岩。灰岩及砂岩均呈不同尺度的透镜体, 大者长宽达几百 m, 内部地层层序清楚, 小者仅几 cm。局部夹有砖红色页岩及灰岩。本群以页岩夹灰岩及砂岩透镜体为特征, 与标准剖面能很好对比。

修康群命名剖面位于萨迦县北边拉孜县中贝地区, 产双壳类化石: *Halobia charlyana*, *H. cf. convexa*, *H. cf. fallax*, *H. ornatisissima*, *Palaeonucula* sp.。邻区仁布、日喀则一带产有菊石 *Juvavites* sp.。普兰本群中产有放射虫: *Hexaloncha* sp., *Lithocamps* sp., *Histrastrum* sp., *Cenosphaera* sp., *Cenellipsis* sp. 等。从上述生物化石的时代可确定修康群时代为晚三叠世^[1]。

然而在修康群命名剖面上, 盛怀斌^[2]在修康群上部灰岩中发现了早二叠世的菊石, 代表分子有 *Neocrimites obesus* Sheng, *Adrianites nitidus* Sheng, *Stacheoceras xiukangense* Sheng, *Timorites sinensis* Sheng 等, 肯定了修康群中有二叠纪地层。郭铁鹰等在萨迦县北部公路边修康群红色灰岩中曾

发现过二叠纪菊石。

因而修康群一直被认为是一套传统意义上的“混杂岩”, 既其基质为晚三叠世, 但其中混杂有老地层如二叠纪的外来岩块——印度板块在晚三叠世向北俯冲的产物。

中国地质大学西藏队在萨迦北部修康群页岩中发现大量箭石化石, 经鉴定有: *Hibolites parahastatus* Yang et Wu, *H. subfusiformis* (Raspail), *H. cf. xizangensis* Yang et Wu, *H. sp.*, *Belemnopsis cf. sinensis* Yang et Wu。上述分子中, *Hibolites parahastatus* Yang et Wu, *H. subfusiformis* (Raspail), *H. cf. xizangensis* Yang et Wu 仅分布在早白垩世, *Belemnopsis cf. sinensis* Yang et Wu 分布在晚侏罗世—早白垩世, 其生物群面貌与吴顺宝^[3]所定的 *Hibolites parahastatus* — *H. jiabulensis* 组合极为相似, 时代属早白垩世。

因此, 修康群早白垩世箭石化石的发现说明:
(1) 修康群时代跨度大, 包含有二叠纪—早白垩世地
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Characteristics of Oil Reservoir of Low-Mature Oil in Gunan Sag, Jiyang Depression

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Abstract: There is rich resources of low-mature oil in Gunan sag, Jiyang depression. The low-mature oil is characterized by high content of gammacerane, predominance of phytane and low maturity. The oil-shale and oil-mudstone with abundant algal matter in the first member of Shahejie Formation of Lower Tertiary is considered as the source rock of the low-mature oil. The oil is distributed around the source area and concentrated in the first and second members of Shahejie Formation. The fault controls the migration distance and reservoir beds. There are three reservoir models: self-sourced and lateral migration, self-sourced and vertical migration through fault, as well as hybrid migration. The lateral migration and charge into lithologic-faulted block trap led to the single-sourced accumulation inside Gunan basin, while vertical migration and charge into faulted trap caused hybrid-sourced accumulation in the marginal faulted zone of the basin.

Key words: low-mature oil; accumulation model; migration; charge; Gunan sag.

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层.如果按传统的“混杂岩”观点,其基质为早白垩世,二叠、三叠纪地层均为外来岩块.修康群时代为早白垩世,其原地层时代及代号应改变.此外,印度板块向北俯冲的确切时代应是早白垩世,而不是晚三叠世.(2)由于修康群各期地层均呈断片或断块,甚至呈极小的透镜体产出,发育极多的逆冲推覆构造.因而极有可能是由于萨迦北部地雅鲁藏布江缝合带,二叠纪—早白垩世地层受南北向的强烈挤压发生逆冲推覆,并经多期活动而将地层强烈剪切为上述断片或断块的混杂体.这种成因方式和传统意义的“混杂岩”有本质上的差别.修康群应是多个地层(年代、生物及岩石地层单位等)单位的构造混杂体,图面上应以构造地层单位填出.

总之,不管是上述那种情况,时代原属晚三叠世的修康群中发现早白垩世箭石为修康群的成因提供了一个新的研究切入点.

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