

ZHAO Xiaoqing and ZHENG Mianping, 2014. Evaporite Basin Reservoir Formation. *Acta Geologica Sinica* (English Edition), 88(supp. 1): 281–282.

Evaporite Basin Reservoir Formation

ZHAO Xiaoqing and ZHENG Mianping

*MLR Key Laboratory of Saline Lake Resources and Environments, Institute of Mineral Resources,
Chinese Academy of Geological Sciences, Beijing 100037, China*

1 Introduction

Today, Industrial value of oil and gas basin in the world for a total of more than 120, which contain lamellar or lenticular evaporite a total of 66, about 55% of the basin. According to statistics, in the basin of oil, salt, symbiosis, 46% of the oil and gas layer in the basin was under the department of salt formation, 41% of the oil and gas layer in the basin was salt system formation, 13% of the oil and gas layer in the basin was between department of salt formation. This shows that the oil and gas produced in salt formation of the lower or upper is the main. In the process of the development of the basin, if there is a dry-wet alternate weather, will form oil and gas and salt deposition, alternately in profile form salt formation of oil and gas formation and cyclic sedimentation. Such as sichuan basin under the Triassic jialing river group and the middle Triassic ray mouth slope is the gas-bearing carbonatite and gypsum and anhydrite rocks, gypsum cyclic sedimentation. Is located above the oil and gas layer gypsum layer is ideal for oil and gas cap, up of oil and gas formation under it and its good, reservoir and caprock. The resulting evaporite and oil and gas generation and preservation and accumulation of is what? This is a striking new problem.

Whether Marine or terrestrial, oil and gas production, storage, cover all there is a close link with evaporite series. Evaporite and oil and gas exists obvious genetic relationships. Oil and gas and evaporite all need to be closed, semi-closed sedimentary basin, and must be in the long geological period with stable sedimentary tectonic conditions. In the regional tectonic characteristics, denudation extent and hydrodynamic condition is also conducive to the preservation of oil and gas and salt. In the same sedimentary basin salt deposition times more, evaporite building the greater the thickness, oil and gas

reserves are more abundant.

In organic matter source, formation mechanism of hydrocarbon generation, reservoir, trap, evaporite basin is good for forming large reservoirs.

2 The Source of Organic Matter

A large number of studies have shown that, lagoon and salt lake ecological environment is not conducive to waters of biological activity. In different salinity environment, there are still different salt tolerance/halophilic species, because few predators, instead more breed, prosperous, at the right season, its propagation range can be extended to the whole lake salt basin (sea).

3 Evaporation Environmental Hydrocarbon Generation Mechanism

Hydrocarbon generation mechanism is the main mechanism of the evaporation basin "solar pond salt gradient" mechanism, especially in large deepwater Marine or terrestrial saline basin, most conducive to water form a hierarchical structure "sandwich". This is because the characteristics of brine evaporation basin. In the evolution of the modern deep and lagoon, as long as there is fresh water or sea water supply, is easy to form three layers structure.

4 High Salt Environments, the Production of Biogas

Low oxygen content, high salt environment conducive to the early formation of the reductive environment and the preservation of sedimentary organic matter. Special nutrients and high salt lake environment medium condition is advantageous to the methanogens living and breeding.

* Corresponding author. E-mail: zhengmp2010@126.com

In addition, evaporite is beneficial to form a good oil and gas reservoir. Because of evaporite series can be used as a source of underground brine, easy to produce dolomitization limestone, so as to increase the porosity and permeability, or calcite role can make dense clouds of rock mass deformation and fracture volume expansion and produce a large number of rules.

In evaporite with hydrocarbon basin, the high proportion of brine into hydrocarbon deposits, the hydrocarbon discharge due to density difference and make it into the pores of the strata; Such as pore layer with cream salt layer, can make the pre-salt reservoirs of oil and gas can only make lateral migration along the reservoir porosity. At the same time, the halite layer also for oil and gas traps.

Key words: Evaporite basin, organic matter, hydrocarbon generation mechanism, biogas, reservoir

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