ABSTRACT: Compared with marine gas hydrate, continental gas hydrate in Muli permafrost Qilian Mountain has a discontinuous vertical distribution and bad horizontal relativity, in addition, no BSRs or other reliable marks can be used. So gas hydrate exploration methods of permafrost have obvious difference with that of ocean. According to recent exploration works in Sanlutian study area, Muli permafrost, core observation, test analysis, well logging, seismonigraphy, drilling, gas logging, geochemistry and other methods are used to summarize the gas hydrate identification characteristics. Each method has its reliability level and fineness, so comprehensive researches must be conducted to improve the exploration level.

KEY WORDS: permafrost; gas hydrate; exploration and identification.

INTRODUCTION
Gas Hydrate is a kind of cage-like solid thing, which formed by water and gas under the condition of low temperature and high pressure. Due to the advantages of its high energy density, clear and large capacity storage, Natural Gas Hydrate is known as the alternative resources of coal, oil and gas. The main component in Natural Gas Hydrate is CH4 (Being as "greenhouse gases"), the greenhouse effect is more than 20 times of the same quality carbon dioxide gas), which is quite sensitive to the environmental change. Three aspects of gas hydrates are considered important: their fossil fuel resource potential (Kvenvolden, 1988), their effect on global climate (Revelle, 1983; Macdonald, 1990), and their role as a submarine geohazard (Bornhold, 1989; Kayen, 1991).

No matter from resource utilization or the perspective of environmental geology, it is profound significant to do research on the Gas Hydrate. While the differences of forming background, the pattern, the accumulation mechanism of gas hydrate lead to that its exploration methods are different from ocean to permafrost. In nature, gas hydrate distributes in submarine sediments where the water depths is more than 300m or in the permafrost regions 130m below the surface (Shi, 1999; Kvenvolden, 1995). Gas hydrate in China are mainly distributed in the South China Sea, the East China Sea, tibet plateau permafrost and the northeast tundra, above all, the south China sea is much more rich in Gas hydrate (Li, 2007; Gong, 2007). Found so far, Gas hydrate is mainly distributed in the Shenhu sea area of the South China Sea and Qilian mountains Muli permafrost region in China.

Gas hydrate samples were drilled in DK-1, DK-2, DK-3 which were constructed by Qinghai No.105 coal geological exploration team and the China Geological Survey in Sanlutian study area, Muli coal field, Tianjun county, Qinghai province in 2008-2009. This is also the first time to drill for gas hydrate samples in permafrost in China. Meanwhile, This is the first time drilling for gas hydrate samples in middle and lower latitudes permafrost zone. Three of five boreholes constructed by Sanlutian study area drilled for Gas hydrate samples, in 2013. We have found a typical suspected Gas hydrate sample in one of the drill holes (due to the preservation problems, it was not tested in the laboratory). This is a breakthrough for Gas hydrate exploration in the survey area.

GEOLOGICAL SETTING
Qilian Mountain is located in the north of Qinghai-Tibet Plateau. Generally, Qilian mountain is divided into three tectonic units, including north Qilian structural belt (the Hexi corridor, corridor Hanshan), the Qilian block lu (sent) and the south Qilian structural belt (Lu, 2010) (Fig. 1). Since Sinian period, Qilian mountain has experienced the stage of continental rift (Sinian period-middle Cambrian), seafloor spreading and trench arc basin system stage (late Cambrian - ordovician) and orogenic stage (after the middle Ordovician experienced subduction orogeny, collision orogeny and intracontinental orogeny), etc. Finally, Qilian mountain turn into the present geological tectonic framework (Feng, 1997).

Juhugeng coal mine is located in the upstream of datong river basin, that is the weatern Xiyu plate (I) Middle Qilian block (I3). Its structural feature is duplex syncline that towards northeast, and this region obviously develop thrust fault towards northwest, which were cut into different size of intermittent blocks by larger size shear fracture from north east. Then the Shear fractures became nature boundary for the division of each mine fields in Juhugeng mining area. Therefore, the study area presents the structural characteristics of the north-south zonation, the east-west distraction partition (Fig. 2). The destination layer of Juhugeng is Jurassic lacustrine coal-bearing stratum, including Jiangcang Formation (J3j) and Muli Formation (J2m) of middle Jurassic [Wen, 2006]. Sanlutian Gas Hydrates study area is located in the south Syncline of the synclinorium in Juhugeng mine. The old stratum of