

Era	System	Series	Formation and Member	Thickness in Meters	Description	Remarks on Petroleum Geology					
						Source rocks	Reservoir rocks	Cap rocks			
C E N O Z O I C	T E R T I A R Y	N E O G E N E	D I N G Q I N G F O R M A T I O N	Pliocene	Upper member (Nd ³)	220-520	Mudstone, gray and grayish-green; intercalated with shale, marl, siltstone, tuff, and several beds of basal orange-red mudstone. Contains fossil ostracods of <i>Klemicy prinolus</i> cf. <i>valvactumidus</i> Mandelstam and <i>Eucryis longa</i> Mandelstam; and pollen and spores of the <i>Abeitineapollenites</i> , <i>Pinuspollenites</i> - <i>Piceapollenites</i> - <i>Quercoidites</i> - <i>Salixipollenites</i> association, of which pollen contents of angiospermae and gymnospermae are equal in amount.			Clayey rocks in central and southern parts of basins. 300 m.	Chemical analyses of 6 Tertiary green clayey source rocks from the basin indicate the organic carbon (C) averages 1.18%; chloroform-bitumen (A), 5.54 x 10 ⁻⁴ %; and conversion coefficient, 0.047. The saturated hydrocarbon of bitumen family in those rock samples, however, is 30.38% and the aromatic hydrocarbon is 21.98%. Relationship among the source, reservoir, and cap rocks in the basin can be defined as two groups. The first group consists of source and reservoir rocks from middle member of the Niubao Formation and capping rocks from middle part of the upper member of the Niubao. The second group consists of source and reservoir rocks from lower and middle members of the Dingqing Formation and capping rocks from the upper member of the Dingqing. The first group is well-developed throughout the basin. The second group is chiefly developed in the areas of Lunpola, Papashan, and Pagena in southern parts of the basin (fig. 2).
				Miocene	Middle member (Nd ²)	120-280	Mudstone and shale, gray; interbedded with oil-shale, thin-bedded siltstone, and thick-bedded fine-grained sandstone; and locally in southern part of basin, with oolitic siltstone, tuff and thick-bedded basal conglomeratic sandstone and conglomerate, in which oil-impregnated sandstone and fissure-filling bitumen are common. This unit contains ostracods of the <i>Limnocythere argulata</i> Mandelstam and <i>Herpetocyprilla</i> sp.	Organic carbon (C) averages 1.16%; asphaltene (A), 4.78 x 10 ⁻² %; primary pyrite (S), 1.52%; and conversion coefficient (A/C), 0.041.	Porosity, 23.7%; and permeability, 214.3 md.		
					Lower member (Nd ¹)	176-356	Mudstone, shale and siltstone. Mudstone and shale, gray, grayish-green; interbedded and fine lamination. Siltstone, pale-brown to grayish-white; intercalated with mudstone and shale. Fossil assemblages consisting of the ostracod association of <i>Cyprinotus formalis</i> - <i>Pelocypris dingqingensis</i> and of the pollen and spore association of <i>Abietineapollenites</i> , <i>Pinuspollenites</i> - <i>Piceapollenites</i> - <i>Cedripites</i> , and in addition a small amount of angiospermae and pteridospermae pollen and spores.	Organic carbon (C) averages 0.98%; asphaltene (A), 3.59 x 10 ⁻² %; primary pyrite (S), 1.10%; and conversion coefficient (A/C), 0.037.	Porosity, 23.09%; and permeability, 33.93 md.		
		P A L E O G E N E (E O G E N E)	N I U B A O F O R M A T I O N	Oligocene to Eocene	Upper member (En ³)	1,056	Upper part - Sandstone, mudstone, and marl. Orange-red and grayish-green sandstone, mudstone, and marl interbeds with fine lamination. Middle part - Mudstone and sandstone. Orange-red mudstone and sandstone interbeds with cross-lamination. It is about 200 m thick. Lower part - Sandstone, mudstone, and marl. Orange-red and grayish-green sandstone, mudstone, and marl interbeds with fine lamination. Mudstone of this member contains fossil assemblages of the ostracod association of <i>Cypris-Cyprois</i> , and of the pollen and spore association of <i>Ephedripites</i> - <i>Querciodites</i> - <i>Ulmipollenites</i> . Of the <i>Cypris-Cyprois</i> association, (1) <i>Cypris decaryi</i> Gantheur commonly in Eocene strata of the southern Jiangsu Province, the Jiangnan Basin, and at Ninglang of Yunnan Province; and (2) <i>Cyprois-zhanggangensis</i> in Eocene - Oligocene strata of the northern Jiangsu Province, The Jiangnan Basin, and the areas in Henan Province and North China.			Clayey rocks of about 200 m. thick in the middle part of this member are capping throughout the basin.	
				Eocene to Paleocene	Middle member (En ²)	1,011	Mudstone and shale. Gray and grayish-green, alternating beds of mudstone and shale, intercalated with orange-red mudstone, sandstone, and conglomeratic sandstone. Well cuttings indicate the beds contain crystal-tuff, oil-sandstone, oil-impregnated tuff and crude oil and bitumen-filled fissures in mudstone. Yields fossil assemblages of the ostracod association of <i>Cyprinotus-Limnocythere</i> , and of the pollen and spore association of <i>Quercoidites-Ulmipollenites</i> .	Organic carbon (C) averages 0.54%; asphaltene (A), 14.74 x 10 ⁻² %; primary pyrite (S), 0.47%; and conversion coefficient (A/C), 0.273.	Porosity, 12.6%; and permeability, 7.25 md.		
					Lower member (En ¹)	> 700	Conglomerate, conglomeratic sandstone, and mudstone. Orange-red, conglomeratic coarse grained clastic sedimentary rocks; locally intercalated with grayish-green and orange-red mudstone. Well cuttings in eastern part of the basin indicate an unconformable relationship of this unmetamorphic unit with underlying metamorphic rock sequence of Silurian age.				