

## GEOLOGIC COLUMN AND UNIT DESCRIPTION

AGE	ROCK UNIT	LITHOLOGY; THICKNESS WHERE KNOWN	UNIT DESCRIPTION
QUATERNARY	Alluvium 	Sand, clay and gravel; thickness less than 10 meters	Alluvium, consisting of sand, clay and gravel, is distributed in the drainage basins of the Kan Ho (甘河), the No-min Ho (諾敏河), the Ken Ho (根河), and their tributaries, covering low terrace remnants and flood plains.
	Diluvium 	Sand, clay and gravel; thickness less than 10 m	Diluvium is sporadically distributed along the northern banks of the No-min Ho, the Kan Ho, and their tributaries. It consists of sand and clay with gravel, and forms river terraces 3 to 10 m in relative height.
TERTIARY	Neogene basalt 	Cryptocrystalline augite basalt	Neogene basalt along the Ken Ho and the Kan Ho consists chiefly of black or dark gray compact cryptocrystalline trap-type basalt. Under a microscope it shows a granular structure, containing microcrystals of augite and feldspar, and the groundmass rarely contains microphenocrysts of olivine and augite.
	Cretaceous andesite 	Biotite andesite and hornblende-biotite andesite	Cretaceous andesite occurs as flows resting on the Cretaceous rhyolite (rh) and overlain by the Neogene basalt. The rock along the Kan Ho and the I-t'u-li Ho (伊圖魯河) is dark or light green massive compact porous biotite andesite associated with hornblende-biotite andesite, showing a fluidal structure. The rock along the Kan Ho and the K'o-i Ho (克伊河) is grayish purple or dark brown, contains phenocrysts of biotite and feldspar, and shows a fluidal structure. The boundary between the andesite and the Cretaceous granite (G3) near Kung-na Shan (熊那山) is probably a fault which strikes northeast.
MESOZOIC	Cretaceous rhyolite 	Rhyolite and lithoidite	Cretaceous rhyolite in the upper reaches of the No-min Ho consists of rhyolite proper in the upper part and lithoidite in the lower part. The rhyolite is dark gray or dark brown, has a porphyritic or fluidal texture, and consists of phenocrysts of quartz, feldspar, biotite, and some hornblende, with a dark gray or dark brown cryptocrystalline groundmass containing microcrystals of biotite. The lithoidite is a cryptocrystalline felsitic rock without phenocrysts. The Cretaceous rhyolite is overlain by flows of Cretaceous andesite and Neogene basalt, and rests on the Jurassic volcanic complex (Mjv), Cretaceous granite and quartz porphyry (qp).
	Cretaceous granite 	Biotite granite, two-mica granite, hornblende granite, porphyritic granite, diorite, quartz diorite, syenite, graphic granite and aplite	Cretaceous granite is exposed in the eastern half of the map area. It occurs as a batholith or laccolith, and consists chiefly of light reddish coarse-grained biotite granite, locally associated with two-mica granite, hornblende granite, porphyritic granite, diorite, quartz diorite, syenite, graphic granite and aplite.
	Quartz porphyry 		Quartz porphyry is exposed near the junction of the No-min Ho and the Shiruteichikan-ka. It is reddish brown or yellowish brown, and consists of a holocrystalline groundmass and phenocrysts of quartz and orthoclase, with some biotite and other colored minerals. It may be a marginal facies of the Cretaceous granite.
	Jurassic volcanic complex (Greenstone complex) 	Andesite porphyry, diorite porphyry, diabase, dolerite, propylite, andesite, sandstone, tuff and breccia; thickness unknown	The Jurassic volcanic complex, or "greenstone complex", is exposed near Bainiörochon along the No-min Ho. It is a complicated assemblage of black, purple, or dark green intermediate igneous intrusives and extrusives, comprising andesite porphyry, diorite porphyry, diabase, dolerite, propylite, andesite, sandstone, tuff, and breccia. The rock at the easternmost exposure, downstream from Bainiörochon, is black compact diorite porphyry showing phenocrysts of feldspar, 2 - 3 mm in size, with occasional olivine phenocrysts, scattered in the groundmass, which is seen under a microscope to consist of feldspar, colored minerals, and glass.
PALEOZOIC	Paleozoic formation 	Metamorphosed sandstone	The Paleozoic formation is exposed in the following two places along the No-min Ho: (1) The formation on the eastern bank of the Orugo-ka consists of a thick dark green phyllitic sandstone with small scales of biotite along the bedding plane. The rock was metamorphosed by the intrusion of the Cretaceous granite. (2) The formation on the dissected terrace along the Tsunaryachi-ka and the south side of the No-min Ho consists mainly of dark green homogeneous sandstone showing columnar jointing, and strikes N 70° W dipping 60° NE. The boundary between the formation and the Cretaceous rhyolite is cut by a fault which strikes NNE and throws to the northwest.

(Column not drawn to scale)

### REFERENCES

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