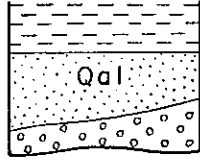
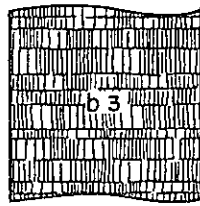
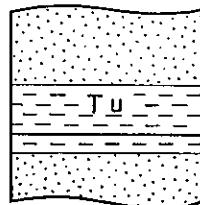
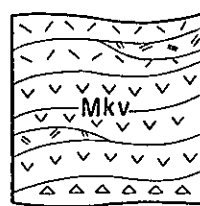
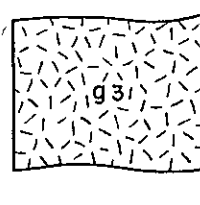
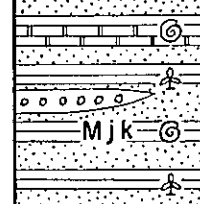
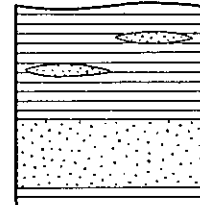
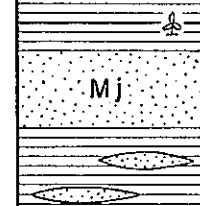
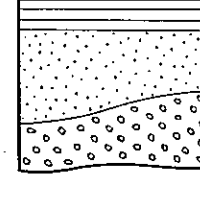
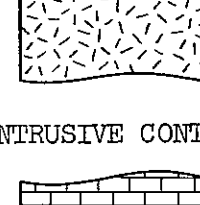
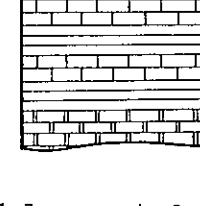


GEOLOGIC COLUMN AND UNIT DESCRIPTION

AGE	ROCK UNIT	LITHOLOGY; THICKNESS WHERE KNOWN	UNIT DESCRIPTION	ECONOMIC VALUE											
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 Amur River and its tributaries.	<p><u>Gold</u></p> <p>Placer gold occurs along the Amur, the Osezhina, the Burgali, the Alma and the Ol'ga Rivers. The Jurassic-Cretaceous formation, the Jurassic formation and the pre-Jurassic granite in the vicinity of the gold localities are locally intruded by many gold-bearing quartz veins of post-Jurassic to Cretaceous age. Some of the gold mines are being worked.</p>											
	Quaternary basalt	 Olivine basalt, andesite and tuff	The Quaternary basalt along the Osezhina and the Pravaya Burinda Rivers includes olivine basalt, andesite and their tuffs, according to Soviet geologists (NALIVKIN, 1955).												
	Neogene formation	 Sandstone, shale and lignite; thickness unknown	The Neogene formation, covering the terraces on the banks of the Amur River, consists of white soft sandstone, clayey shale and lignite. Soviet geologist define it as a Pliocene continental deposit.												
TERTIARY	Cretaceous volcanic complex	 Acidic, intermediate and basic effusives	The Cretaceous volcanic complex is exposed near Promyslovyy and along the Kitichi River. It consists of acidic, intermediate and basic effusive rocks including andesite and rhyolite occurring as flows.												
	Cretaceous granite	 Granite, granodiorite and quartz diorite	Cretaceous granite, consisting of granite, granodiorite and quartz diorite, is sporadically exposed in the U.S.S.R. Soviet geologists define it as the Jurassic to Lower Cretaceous acidic intrusives.												
	Jurassic-Cretaceous formation	 Clay slate, shale, sandstone, conglomerate and marl; thickness unknown	The Jurassic-Cretaceous formation is widely exposed along the Amur River. It consists of clay slate, shale and sandstone, locally accompanied by conglomerate and marl. Plant fossil-bearing beds often alternate with animal fossil-bearing beds. Soviet geologists define it as the Upper Jurassic to Lower Cretaceous in age. The formation near Albazino and Pereamykino yields the following fossils identified by A. I. KHALPONIN in 1929 (UCHINO 1935): <i>Pseudomonotis cf. echinata</i> Sow., <i>Gresslya cf. peregrina</i> Phill., <i>Gresslya cornbrash</i> Lyc., <i>Mucula</i> sp., <i>Lucina striatula</i> Bur(?), <i>Lucina crassa</i> Mar. et Lyc., <i>Cyrena</i> sp., <i>Cyrena lamella</i> Yokoyama, <i>Vermulites cf. trigonellaris</i> Schoth., <i>Myocites</i> sp., <i>Podozamites lanceolatus</i> L. et H., <i>Equisetites columnaris</i> Brongn. It is known that the affinities of Upper Jurassic plants are found in the Lower Cretaceous in Siberia.												
	Jurassic formation	 Clay slate, shale and conglomerate; thickness unknown	The Jurassic formation, distributed along the Amur, the Urkan and the Kerak Rivers, consists of clay slate, shale, sandstone and conglomerate. Soviet geologists divided the formation along the Bol'shoy Never into two parts, the Upper Jurassic and the Lower to Middle Jurassic. The formation is a continental deposit and especially fossiliferous on the south bank of the Amur River. The plant fossils, collected near K'ai-k'u-k'ang (開庫康) and Hsiu-shui Shan (秀水山) were identified by IVANOW (1899), SCHMIDT (1884) and others as follows:												
	Pre-Jurassic granite	 Granite, granodiorite and quartz diorite	Pre-Jurassic granite near Magdagachi consists of granite, granodiorite and quartz diorite. Soviet geologists call it Paleozoic acidic intrusives. The granite, overlain by the Jurassic-Cretaceous formation, the Cretaceous volcanic complex and the Neogene formation, intrudes the Middle Paleozoic formation and is intruded by the Cretaceous granite.												
MESOZOIC	Jurassic formation	 Clay slate, shale and conglomerate; thickness unknown	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">FILICES</th> <th style="width: 33%;">CYCADACEAE</th> <th style="width: 33%;">CONIFERAE</th> </tr> </thead> <tbody> <tr> <td><i>Thyrsopteris prisca</i> (Eichw.) <i>Dicksonia concinna</i> Hr. <i>D. saportana</i> Hr. <i>D. longifolia</i> Hr. <i>D. glehniana</i> Hr. <i>D. acutiloba</i> Hr. <i>Adiantites schmidtianus</i> Hr. <i>A. amurensis</i> Hr. <i>Asplenium whitbiense</i> Brngn. <i>A. var. tenue</i> Brngn. <i>A. (Cladophlebis) argutulum</i> Hr. <i>A. spectabile</i> Hr. <i>A. distans</i> Hr. <i>Taeniopteris parvula</i></td> <td><i>Cycadites gramineus</i> <i>Anomozamites</i> (Nilsson) <u>schmidti</u> Hr. <i>A. acutilobus</i> Hr. <i>A. angulatus</i> Hr. <i>Pterophyllum helmersianum</i> Hr. <i>P. seminovianum</i> Hr. <i>Podozamites lanceolatus</i> (L. & H.) <i>P. var. intermedius</i> <i>P. var. eichwaldi</i> Schpr. <i>P. var. distans</i> <i>P. var. minor</i> <i>P. plicatus</i> Hr. <i>P. ensiformis</i> Hr. <i>P. glehnianus</i> Hr.</td> <td><i>Phoenicopsis speciosa</i> Hr. <i>P. latior</i> Hr. <i>P. angustifolia</i> Hr. <i>Baiera longifolia</i> (Brngn.) <i>B. pulchella</i> Hr. <i>B. palmata</i> Hr. <i>Ginkgo flabellata</i> Hr. <i>G. Sibirica</i> Hr. <i>Czeckanowskia rigida</i> Hr.</td> </tr> <tr> <td style="text-align: center;">EQUISETACEA</td> <td></td> <td style="text-align: center;">ABETINAE</td> </tr> <tr> <td></td> <td><i>Equisetum</i> sp.</td> <td><i>Pinus</i> (<i>Pityophyllum</i>) <u>norden-skiöldi</u> Hr.</td> </tr> </tbody> </table> <p><i>Asplenium whitbiense</i> is the most common species of fern, and <i>Baiera longifolia</i> and <i>Czeckanowskia rigida</i> predominate among conifer species.</p>	FILICES	CYCADACEAE	CONIFERAE	<i>Thyrsopteris prisca</i> (Eichw.) <i>Dicksonia concinna</i> Hr. <i>D. saportana</i> Hr. <i>D. longifolia</i> Hr. <i>D. glehniana</i> Hr. <i>D. acutiloba</i> Hr. <i>Adiantites schmidtianus</i> Hr. <i>A. amurensis</i> Hr. <i>Asplenium whitbiense</i> Brngn. <i>A. var. tenue</i> Brngn. <i>A. (Cladophlebis) argutulum</i> Hr. <i>A. spectabile</i> Hr. <i>A. distans</i> Hr. <i>Taeniopteris parvula</i>	<i>Cycadites gramineus</i> <i>Anomozamites</i> (Nilsson) <u>schmidti</u> Hr. <i>A. acutilobus</i> Hr. <i>A. angulatus</i> Hr. <i>Pterophyllum helmersianum</i> Hr. <i>P. seminovianum</i> Hr. <i>Podozamites lanceolatus</i> (L. & H.) <i>P. var. intermedius</i> <i>P. var. eichwaldi</i> Schpr. <i>P. var. distans</i> <i>P. var. minor</i> <i>P. plicatus</i> Hr. <i>P. ensiformis</i> Hr. <i>P. glehnianus</i> Hr.	<i>Phoenicopsis speciosa</i> Hr. <i>P. latior</i> Hr. <i>P. angustifolia</i> Hr. <i>Baiera longifolia</i> (Brngn.) <i>B. pulchella</i> Hr. <i>B. palmata</i> Hr. <i>Ginkgo flabellata</i> Hr. <i>G. Sibirica</i> Hr. <i>Czeckanowskia rigida</i> Hr.	EQUISETACEA		ABETINAE		<i>Equisetum</i> sp.	<i>Pinus</i> (<i>Pityophyllum</i>) <u>norden-skiöldi</u> Hr.
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Middle Paleozoic formation	 Limestone, clay slate, shale, mudstone and marly shale; thickness unknown	The Middle Paleozoic formation, consisting of limestone, clay slate, shale, mudstone and marly shale, is sporadically exposed in the northern half of the map area. The formation is divided by Soviet geologists into the following units: the undifferentiated Middle Paleozoic (Pm), the undifferentiated Devonian (Pmd), the Lower to Middle Devonian (Pmdl), and the Silurian (Pms).													
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		(Column not drawn to scale)													

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