ISLAMABAD - CHILAS SECTION

GOVERNMENT OF PAKISTAN
MINISTRY OF PETROLEUM AND NATURAL RESOURCES
GEOLOGICAL SURVEY OF PAKISTAN.

GEOLOGICAL ROADLOG

ALONG
THE KARAKORAM HIGHWAY
FROM
ISLAMABAD TO KHUNJERAB PASS

by

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Geological Survey of Pakistan
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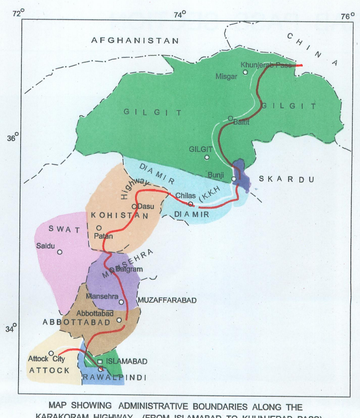
HIGHWAYS GEOLOGICAL MAP SERIES

MAP No: 1- Islamabad to Khunjerab Pass (KKH)



MAP SHOWING ADMINISTRATIVE BOUNDARIES ALONG THE KARAKORAM HIGHWAY. (FROM ISLAMABAD TO KHUNJERAB PASS)

DASU AND KOMILA

Dasu, headquarter of Kohistan district is linked with Komila with a bridge on Indus River. Dasu is the biggest town between Chilas and Besham.

PATAN

Patan sits in a fertile bowl where the Indus is joined by the Chowadara and Palas rivers. This was the centre of the catastrophic earthquake of 1974, in which large scale earthquake triggered landslides buried many villages and caused heavy losses to life and property. A vast amount of relief money was poured in which accounts for new look of the place.

PETROGLYPHS OF CHILAS

Near the KKH check-point is a sign to the Chilas II site. About 1/4 km down a jeep track a huge rock is covered with hunting and battle scenes and Buddist stupas. A common image is the long horned ibex on this rock knoll facing the river are the oldest inscriptions from the first century AD. Other petroglyphs are at Hodur, Thor, and Shatial.

The proposed site of Basha Dam near Chilas.

MAIN MANTLE THRUST (MMT)

The Main Mantle Thrust or the Southern Megashear represents a boundary between the Kohistan Island arc and the Pak- Indian Plate. It spans an area of about 400 sq. km through Diamir,Kohistan, Swat and is exposed on the road bend just before Jijal village. MMT has been folded on the north -south axis anticlinorium with north plunging axis.

BESHAM

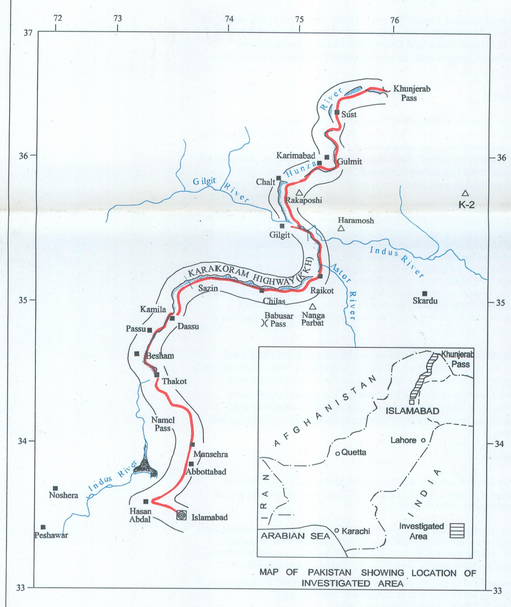
Besham is a midway junction between Rawalpindi and Gilgit. It is a base for visiting the Allai valley in Hazara Kohistan and Swat valley through Shangla Pass.

THAKOT

At Thakot, the KKH crosses the Indus River on an elegant suspension bridge decorated with stone lions. This is the last of the Chinese bridges and may represent the real southern end of the KKH.

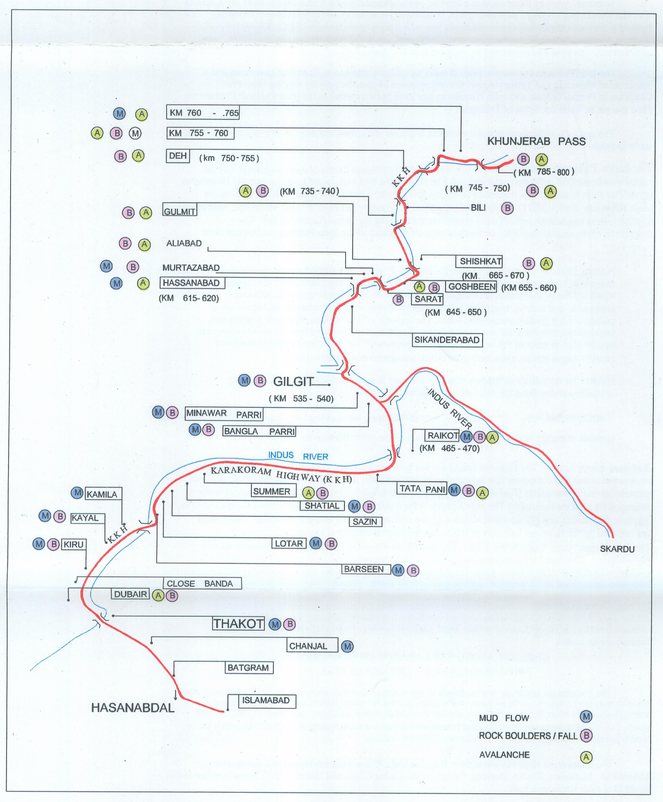
A view of Indo - Pakistan Plate showing intensive folding in MMT zone near Jijal.

A slip circle formed in an active debris slide near Thakot.



MAP OF PAKISTAN SHOWING LOCATION OF INVESTIGATED AREA

MAP SHOWING THE INVESTIGATED AREA ALONG THE KARAKORAM HIGHWAY.



MAP SHOWING SOME OF THE MAJOR LANDSLIDE AREAS ALONG THE KARAKORAM HIGHWAY (Courtesy FWO)

A quarry site in granite exposed along the Mansehra by-pass.

Tanawal Formation vertically exposed between Abbottabad and Mansehra.

MANSEHRA

An important town on the KKH from where roads to Muzaffarabad (AJK) and the Kaghan valley originate.The town is also known for its archeological heritage. There are three big granite boulders on the northern outskirts, on which the Mauryan king Ashoka inscribed a set of ethics over 2200 years ago. Appalled by the sufferings of his military compaign, Ashoka became interested in Buddism and tried to dictate a new morality. The inscription have done better, but they too are fading away.

ABBOTTABAD

Abbottabad is the headquarter of Hazara Division and the biggest town on the KKH. Named after James Abbot, a British officer. Its continuing military importance (home to Pakistan National Military Academy at Kakul and to several elite regiments) has added to the significance of this place. One of the Pakistan 's finest hill station, is an hour away at Thandiani.

MAIN BOUNDARY THRUST (MBT)

It is exposed at the Nicholson Tower in Margalla hills near Islamabad and runs on the southern side of the Margalla hills, which is the principal southern most fault of the Himalayan range. It brings older sedimentary rocks which are deposited before Himalayan deformation over debris eroded from the rising mountains (molasse) and deposited as the Murree and Siwalik formations. At the Margalla hills Mesozoic to Eocene sediments are thrust over Murree Formation.

Tanaki Conglomerate of Abbottabad Formation overlying the Hazara Formation at Khote-de Qabar near Abbottabad.

Samana- Suk limestone of Jurrasic age- a good cement resource at Hasanabdal

A thick laterite band showing an unconformity at the base of Nicholson Tower at Margala Pass near Islamabad.

Margala Pass-a gateway to Islamabad.

Scale 1 : 250,000

Metres 5000 0 5 10 15 Kilometres

Miles 5 4 3 2 1 0 5 10 Miles

DISTANCE CHARTS
(In Kilometres)

	Gilgit	Jugiot	Raikot	Chilas	Harban	Sazin	Lotar	Kalga	Uchar	Chuchang	Komila	Patan	Dubair	Besham	Thakot	Battal	Mansehra	Abbottabad	Hasanabdal	Islamabad
Jugiot	50																			
Raikot	76	26																		
Chilas	137	87	61																	
Harban	195	145	119	58																
Sazin	205	155	129	68	10															
Lotar	232	182	156	95	37	27														
Kalga	245	195	169	108	50	40	13													
Uchar	253	203	177	116	58	48	21	8												
Chuchang	259	209	183	122	64	54	27	14	6											
Komila	265	215	189	128	70	60	33	20	12	6										
Patan	301	251	225	164	106	96	69	56	48	42	36									
Dubair	323	273	247	186	128	118	91	78	70	64	58	22								
Besham	343	293	267	206	148	1348	111	98	90	84	78	42	20							
Thakot	371	321	295	234	176	166	139	126	118	112	106	70	48	28						
Battal	405	355	329	268	210	200	173	160	152	146	140	104	82	62	34					
Mansehra	437	387	361	300	242	232	205	192	184	178	172	136	114	94	66	32				
Abbottabad	463	413	387	326	268	258	231	218	210	204	198	162	140	120	92	58	26			
Hasanabdal	534	484	458	397	339	329	302	289	281	275	269	233	211	191	163	129	97	71		
Islamabad	615	529	503	442	384	374	347	334	326	320	314	278	256	234	208	174	142	116	45	

	Khunjerab	Dih	Bili	Morkhon	Pasu	Shishkat	Karimabad	Murtazabad	Nilt	Jutal	Danyore	Gilgit
Dih	52											
Bili	78	26										
Morkhon	96	44	18									
Pasu	123	71	45	27								
Shishkat	142	90	64	46	19							
Karimabad	172	120	94	76	49	30						
Murtazabad	188	136	110	92	65	46	16					
Nilt	209	157	131	113	86	67	37	21				
Jutal	256	204	178	160	133	114	84	68	47			
Danyore	270	218	192	174	147	128	98	82	61	14		
Gilgit	278	226	200	182	155	136	106	90	69	22	8	

LEGEND

KARAKORAM-ASIAN PLATE

QUATERNARY
- Qal — Alluvium
- Qgf — Glacio - fluvial deposits

CRETACEOUS
- Kkkp — **KARAKORAM BATHOLITH**: Granodiorite with pegmatites and aplites
- Kkgd — Granodiorite and diorite
- Kkkd — Diorite and granodiorite
- Kkhgd — **KHUNJERAB-GRANITIC BELT**: Granodiorite,granite with few aplite and pegmatite dykes
- Kktz — **MAIN KARAKORAM THRUST ZONE**: Ophiolitic melange (Ultramafics,metabasalts, metasediment and turbidites)
- Kcg — **SHANOZ CONGLOMERATE**: Conglomerates having arenaceous and calcareous pebbles and cobbles.

CRETACEOUS TO JURASSIC
- Jgd — **GUJHAL DOLOMITE**: Dolomite and dolomitic limestone with minor slate

PERMIAN
- Pms — **MISGAR SLATES**: Mostly slate with minor quartzite and limestone
- Pph — Phyllite with minor slate, quartzite and limestone
- Pm — Limestone with minor slate and quartzite
- Pmq — Quartzite with minor slate and limestone
- Pkl — **KILIK FORMATION**: Limestone and dolomitic limestone with minor slates
- Pks — Slates
- Pga — **GIRCHA FORMATION**: Argillite interbedded with dolomitic limestone and quartzite

CARBONIFEROUS
- Cps — **PASU SLATES**: Slate with minor quartzite and limestone

PRECAMBRIAN
- PCbgn — **BALTIT GROUP**: Orthogneiss and migmatites with pegmatites and aplites
- PCbm — Lime-silicate marble with paragneiss,pegmatites and aplites
- PCbsc — Phyllitic schist,schists and gneisses (ranging from biotite to sillimanite grade) and marble

KOHISTAN ISLAND ARC

QUATERNARY
- Qal — Alluvium
- Qgf — Glacio-fluvial deposits

TERTIARY
- Tkb — **KOHISTAN BATHOLITH**: Diorite,granite , pegmatite and aplite
- Kkd — Diorite
- Kkt — Tonalite
- Kko — Orthogneiss

CRETACEOUS
- Kcp — **CHILAS COMPLEX**: Diorite
- Kcsgb — Sheared gabbronorite (amphibolite and green schist)
- Kcgb — Gabbronorite, gabbro and diorite
- Kcm — Troctolite (layered) and gabbronorite
- Kcu — Mafic-ultramafic cummulate (dunite,wehrlite,gabbro, gabbronorite and anorthosite)
- Kcs — **CHALT SCHIST**: Schist,slate,phyllite and marble bands
- Kcq — Quartzite
- Krv — **RAKAPOSHI VOLCANIC COMPLEX**: Volcanics, mostly andesite, basalt and tuff metamorphosed into amphibolite with minor metasediments
- Krm — Slate,schist, marble and metavolcanics
- Kts — **THELICHI FORMATION**: Slates, phyllitic schists,green schists and quartzite
- Ktm — Marble
- Kgf — **GILGIT FORMATION**: Schists, paragneisses with minor amphibolites,calc-silicates, granites, pegmatites and aplites

JURASSIC
- Jka — **KAMILA AMPHIBOLITE**: Garnet-bearing amphibolites (massive and sheared)
- Jkb — Garnet-free amphibolites (banded)
- Jjgb — **JIJAL COMPLEX**: Garnet gabbro
- Jjgpy — Garnet pyroxenite
- Jjd — Dunite
- Jjpy — Pyroxenite and serpentinite

INDO-PAKISTAN CONTINENTAL PLATE

QUATERNARY
- Qal — Alluvium

TERTIARY
- Tms — **MURREE FORMATION**: Sandstone and clay with subordinate conglomerate (Early Miocene)
- TPE — **PALEOCENE - EOCENE ROCK UNITS**: Grey limestones with minor marl and shale
- Tll — **LOCKHART FORMATION**: Light to dark grey,nodular limestone (Paleocene)

JURASSIC
- Jsl — **SAMANA SUK FORMATION**: Oolitic grey limestone with interbedded sandstone and shale.

CAMBRIAN
- Cmgr — **MANSEHRA GRANITE**: Porphyritic granite
- Cmgrgn — Granitic gneiss
- Caf — **ABBOTTABAD FORMATION**: Basal conglomerate, limestone,dolomite with cherty bands, at places dolomitic limestone, sandstone, shale.

PRECAMBRIAN
- PCb — **BESHAM GROUP**: Schists,impure quartzite,gneisses mostly cataclastic type; intruded by younger granites and pegmatites, and amphibolitized dykes.
- PCt — **TANAWAL FORMATION**: Quartz-mica schist, phyllitic slates with subordinate white marble bands
- PCh — **HAZARA FORMATION**: Black to khaki slates,brown phyllites, greywackes, siltstone
- PCngn — **NANGA PARBAT GNEISS**: Granitic gneisses (augen and banded gneisses) with minor metasediments

SYMBOLS

- Sharp contact
- Gradational/ Probable contact
- F — Fault
- MKT — Main Karakoram Thrust
- MMT — Main Mantle Thrust
- MBT — Main Boundary Thrust
- Project Boundary
- KKH — Karakoram Highway
- River
- Nala
- Habitation (Town/City)
- Height

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