

PATTERN A
DECCAN TRAP

Water regime

Wet during rainy season and for the rest of the year, remains dry. Soil particles hold water to allow growth of the grass at places for a short period after monsoon.

Associated Features

Position in landscape : Highest in the landscape

Soil : Residual, homogeneous, black cotton type medium to fine-grained.

Vegetation : Only the growth of grazing grass on the hill tops.

Land use : Barren but could be cultivated.

Genesis : Formed of extrusive basic igneous rocks; the present topography is an erosional feature.

Airphoto Interpretation Aids

In the airphoto, with help of magnifying lens under mirror stereoscope, the facet appears oval in shape and shows a dark gray tone and is devoid of good external drainage. Only larger hills shows a radial drainage pattern, drainage channels relatively deep and narrow.

Comments and Reference

The facet is recognised in Toposheet Nos. 41 J/2, J/4, F/8, F/11, F/12, F/15, F/16, J/3, but its presence is only sporadic. It typically marks higher elevation than the surrounding features.

FACET NO. : A₂ NAME : Hill top
(barren)
LOCATION : North of Shekhpatt
GEOREF : 41 J/3 COMPILER : Geology Department
M.S. University
Baroda.
DATE : March, 1977



Morphology :

The facet occupies the highest position in the surrounding landscape; the maximum height is 48 m above MSL. Top is rough, irregular and covered with weathered fragments of basaltic rock, the surface partly weathered to form murum, presence of soil in small depressions.

Surfacial deposit :

Soil cover is observed only in depressions and in flat areas, the soil being of residual type derived from the underlying rock. The thickness of soil varies from 2 to 10 cm.

Water regime

The facet remains dry throughout the year, and becomes wet only during the monsoon. The rocky surface gets dried immediately after rains, while the soil covered patches remain wet for some days.

Associated Features

Position in landscape : Highest in the landscape.

Soil : Residual, homogeneous, black cotton, medium to fine grained.

Vegetation : Only some growth of grass is sporadically seen on the top.

Land use : Barren

Genesis : The topography is due to the activities of agents of denudation on jointed and bedded basaltic rocks.

Airphoto Interpretation Aids

Facet appears convex on airphotos, shows a dark gray tone, shape rounded, sometimes oval or elongated. Surface is barren devoid of big trees and geological structures, no drainage; no land use. Hill tops are recognised lighter grey tone as compared to the gray tone of hill slopes.

Comments and Reference

The facet is present in the Toposheet No. 41 J/3, 41 J/4, F/8, F/11, F/12, F/15, F/16. It comprises a barren inaccessible terrain, quite difficult to walk over. Its surface is marked by micro-undulations.

FACET NO. : A₃ NAME : Hill slope
(barren)
LOCATION : West of Shekhpatt
GEOREF : 41 J/3 COMPILER : Geology Department
M.S. University
Baroda.
DATE : March, 1977



Morphology

The facet occupies the region between hill tops and low plain ground; comprises an inclined surface; the angle of slope varies from steep (70°) to almost 25° . Steeper hill slopes are rocky, while the gently inclined slopes are covered with soil. Inclined soil surface is concave, and dissected by stream channels. Rocky surfaces of the slopes are barren, while the soil surface have some growth of grass and bushes.

Surfacial deposit

Gentler hill slopes are formed by the deposition of debris transported from the top of the hill. The rocky slopes are without any surface deposits.

Water regime

Soil particles hold good amount of water, and hence the soil covered slope remains wet during rainy season; while the rocky slopes being impervious, all the rain water is drained and its surface dries immediately.

Associated Features

Position in landscape : Lower than hill top and higher than the general landscape.

Soil : Transported, heterogeneous, black cotton, coarse to fine grained.

Vegetation : Grass, shrubs, bushes.

Land use : Nil

Genesis : Formed by collapse of rocky material from cliffs and by accumulation of debris near the foot hill.

Airphoto Interpretation Aids

On the airphotos, the facet shows light gray tone, presence of drainage channels and vegetation. Sloping character is easily recognised on stereopairs. Shape is almost circular surrounding the hill top.

Comments and Reference

The facet is present in the Toposheet Nos. 41 J/3, 41 J/4, F/16, J/2, F/15, F/11, F/12, F/8 etc. is smooth and concave easy to walk over. If more gentle it is motorable, can be cultivated, retains water for longer time in the form of soil water. Good internal and external drainage.

FACET NO. : A₄ NAME : Hill Slope
(vegetated)
LOCATION : North-East of Valsura COMPILER : Geology Department
M.S. University
Baroda
GEO REF : 41 J/2
DATE : March, 1977



Morphology

Occupies intermediate position. The facet comprises a rugged surface with 20°-30° general slope. At places, vertical cliffs of $\frac{1}{2}$ to 1 m are present. Total height of the facet varies between 7-10 m.

Surfacial deposits

The surface is covered with soil which is underlain by murum or partly weathered trap, thickness of soil cover varying from 10 cm to 30 cm; underlying murum or partly weathered trap has a depth of 5 to 15 cm. At places this depth increases upto 40 cm.

Water regime

The lower layer it remains wet during the monsoon, whereas the surface becomes dry immediately after rains.

Associated Features

Position in landscape : Intermediate in the surrounding landscape, typically surrounding the hills and high land.

Soil : Soil is partly transported and partly residual; black cotton, dark gray coloured, medium to fine grained.

Vegetation : Thick growth of Babul, Cactus and other isolated trees accompanied by grass constitute the vegetation.

Land use : Being thickly forest, passage through it is difficult, on account of slope, cultivation is not possible.

Genesis : The facet is formed by erosion of elevated trap hills by the action of agents of denudation, and the accumulation of the debris near the foot of the hills.

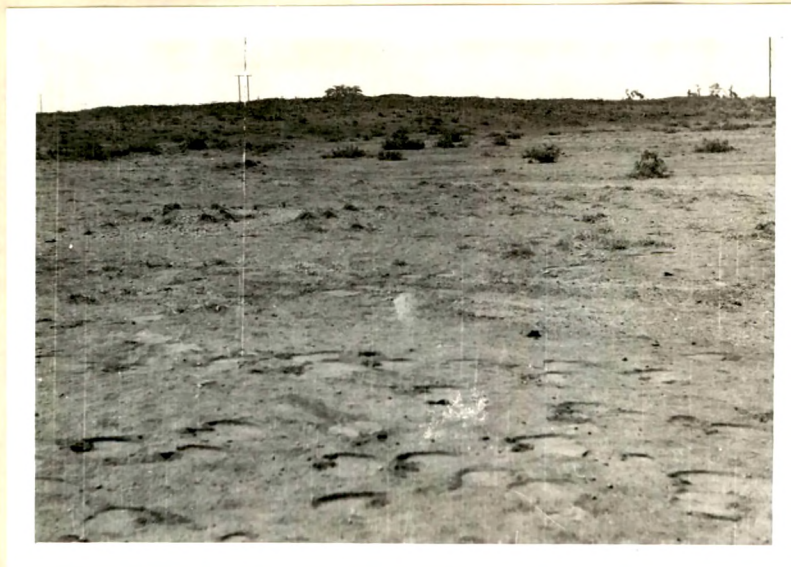
Airphoto Interpretation Aids

Being covered by patches of thick vegetation, it shows dark gray tone on airphotos. Shape is circular. Surface is sloping, with good external and internal drainage.

Comments and Reference

Facet is present in the Toposheet Nos. 41 J/4, F/16, J/3 F/15, F/11, F/12, F/8, F/2 etc. Being covered with vegetation mainly bushes and trees, it is difficult to walk over and is non-motorable.

FACET NO. : A₅ NAME : Gently Sloping Plain
Ground
LOCATION : South of Sachana
GEOREF : 41 J/2 COMPILER: Geology Department
M.S. University
Baroda.
DATE : March, 1977



Morphology

Occupying the largest area of the pattern, this facet has a very gentle slope of 1 in 200, with widely scattered stream channels; terrain very monotonous, surface is partly covered with soil and partly comprises rocky weathered basalt.

Surfacial deposits

Soils in cultivated areas have depths upto 30 to 40 cm. In other areas, the soil cover is only 6-10 cm deep, containing pieces of rock as large as 10-15 cm size and usually covered with grass. This soil and murum are of residual type and derived from the underlying trap rock.

Water regime

The facet remains wet during the rainy season. Soil particles hold water between inter-granular spaces and facilitate the growth of grass. Some time after monsoon, the soil starts drying up and then remains dry for the rest of the year.

Associated Features

Position in landscape : Intermediate

Soil : Residual, homogeneous, black cotton, medium to fine grained.

Vegetation : Only grass with some shrubs.

Land use : Cultivation in patches.

Genesis : Formed by the denudation of basalt mainly by atmospheric agencies.

Airphoto Interpretation Aids

The facet shows light gray tone, with patches of dark toned vegetation. Presence of stream and river channels as light toned lines. Geometrically regular, generally rectangular patches of various tones of agricultural land are the characteristic features of the facet.

Comments and Reference

Facet is present in the Toposheets Nos. 41 J/2, J/3, J/4, F/11, F/12, F/13, F/14, F/15, F/16, B/15, B/16 etc. The plain ground is easy to walk over, motorable in fair weather. Most of the land is cultivated. Rivers and streams show meandering courses and shallow wide channels.

Surfacial deposits

Rocky banks contain no surfacial deposits while the alluvial banks are covered with clayey material.

Water regime

The facet is seasonally flooded, and in pre and postmonsoon periods, it remains dry.

Associated Features

Position in landscape : Low

Soil : Brown clayey matter mixed with rock fragments.

Vegetation : Rocky banks are barren, while soil banks full of bushes, small trees and grasses. Trees are Acacia arabica, Azadirachta indica (Nim). Bushes are mostly thorny.

Land use : This facet occurs all along the coastline and is a wasteland.

Genesis : Erosion of land by water currents.

Airphoto Interpretation Aids

Facet shows light gray tone than the surrounding cultivated land; always associated with river course which is easily recognised on the airphotos. Slopes may be vertical or inclined and discontinuous; dark gray toned thick vegetation along the river course. Rocky bank shows a lighter shade of gray than the alluvial banks.

Comments and Reference

This facet is present in the Toposheets Nos. 41 J/2, J/3, J/4, F/11, F/12, F/13, F/14, F/15, F/16, B/15, B/16 etc. The vertical banks are non trafficable. The steeper banks also difficult to walk over.

FACET NO. : A₇ NAME : River Bed
(Rocky-Sandy)

LOCATION : South West of
Shekhpatt

GEOREF : 41 J/3 COMPILER : Geology Department
M.S. University
Baroda.

DATE : March, 1977



Morphology

It is a drainage feature. The bed surface is rocky, rough, irregular and at most places covered with sands, width varies from place to place upto a maximum of 100 m. Gradient of the channel is generally 1 : 500 or less.

Surfacial deposits

The river bed is covered with coarse to fine sand at places with some rock pieces of the size of 8 to 10 cm with relative concentration of coarse sand in the upstream parts.



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Water regime

The facet is seasonally flooded for a short time. After the monsoon, the channels contain water till the month of January. Later on, the water is found only below the sand cover.

Associated Features

Position in landscape : Lowest position in the surrounding landscape.

Soil : Thin sandy cover at most places.

Vegetation: During January and February, cucumber and water melons are grown in the sandy patches.

Land use : Sandy bed is used for cultivation.

Genesis : Erosion of trappean area and deposition by the seasonal running water.

Airphoto Interpretation Aids

Seen as light gray toned, narrow strip, running irregularly with bends and curves. The water bearing areas show medium to dark gray tone, sandy surfaces show very light gray tone.

Comments and Reference

Facet is present in the Toposheets Nos 41 J/2, J/3, J/4, F/11, F/12, F/13, F/14, F/15, F/16, B/15, P/16 etc. The smooth surface with hard bedrock is trafficable, whereas rugged rock surface and sandy surface is nontrafficable by vehicles. It is distinguished from other facets by its narrow, irregular zig-zag appearance on the airphotos.

FACET NO. : A₈ NAME : River Bed
(Alluvial Vegetated)
LOCATION : West of Vadinar
GEOREF : 41 F/11 COMPILER : Geology Department
M.S. University
Baroda.
DATE : March, 1977



Morphology

The facet occupies the lowest position in the surrounding landscape; shows smooth undulations with general slope in down stream directions. Slopes are very gentle and always covered with a fine soil. Middle portion has fairly thick growth of vegetation of grass and bushes of 30-40 cm height. These bushes are surrounded by grazing grass.

Surfacial deposits

The bed surface is formed of fine dark gray soil; this soil is mainly of transported variety. Depth of the soil increases from river bank towards the centre from 4 cm. to as much as 20-25 cm. The underlying material is Murum (weathered trap rock) and sand at places.

Water regime

The facet remains saturated during rainy season. The soil holds water and remains wet for several months after monsoon. In summer, the uppermost layer becomes dry but the lower part remains moist.

Associated Features

Position in landscape : Lowest in the surrounding landscape.

Soil : Transported, heterogeneous dark gray coloured, fine to medium grained clayey soil mixed with sand.

Vegetation: Bushes and shrubs remain green throughout the year. Grass grows in monsoon, but gets dried in summer.

Land use : Facet can be cultivated, but generally not; used for animal grazing.

Genesis : Alluvial sediments carried by flowing water and deposited in the channel.

Airphoto Interpretation Aids

Clearly distinguished on the airphotos by its narrow, dark gray toned irregular and discontinuous strip following the channel course.

Comments and Reference

Facet is present in the Toposheet Nos. 41 J/2, J/3, J/4, F/11, F/12, F/13, F/14, F/15, F/16, B/15, B/16 etc. Vegetation is ever green, consisting mainly of grass and small bushes. Notable in fair weather but slushy in monsoon.

Surfacial deposit

No significant erosion or deposition takes place, except around the small depression where medium to fine grained sand may accumulate just near the backshore point.

Water regime

Facet remains dry throughout the year, water flows during rains only.

Associated Features

Position in landscape : Occupies lowest region of each facet on which it is flowing.

Soil : No soil in the channel; lower part has sand.

Vegetation : No vegetation in the channel.

Land use : Facet is barren.

Genesis : Channels resulting due to a very mild erosive action of water.

Airphoto Interpretation Aids

Facet is present in the areas of high elevation where streams originate, shows a light gray tone and easily recognised on the airphotos as a thread like light toned line. In the hilly area, these form either radial or dendritic drainage patterns.

Comments and Reference

Facet is common in Toposheet Nos. 41 J/4, F/16, F/12, J/3, F/11, F/15, F/16, F/8, B/16, B/15 etc. Streams being shallow, banks are sloping and trafficable to vehicles, sometimes easy to cross over mostly in fair weather.

FACET NO. : A₁₀ NAME : Stone Quarry
LOCATION : North West of Hapa
Railway Station
GEOREF : 41 J/3 COMPILER : Geology Department
M.S. University
Baroda.
DATE : March, 1977



Morphology

It is a man-made feature. The trap material is quarried for building and construction purposes. Quarry depths vary from a few m to 25 m. The lateral continuity extends from a few m to a km or so. Most of these quarries have been haphazardly developed.

Surfacial deposits

The surface is rocky, strewn with angular rock fragments ranging in size from small rock chips to 1/2 m. Transported fine grained material is characteristically absent.

Water regime

Facet remains dry for most of the year but during monsoon, rain water accumulates in the depression.

Associated Features

Position in landscape : Below the general ground level.

Soil : No soil

Vegetation: No vegetation

Land use : Material is taken out for building and construction purposes.

Genesis : A man made feature.

Airphoto Interpretation Aids

Facet being very small is difficult to identify on airphotos. Some big quarries can be recognised with the help of magnifying lens of the stereoscope. Bottom surface and shape are irregular, walls are almost vertical. The quarries are light gray tone in contrast to the surrounding agricultural land which is smooth plain and dark gray toned.

Comments and Reference

Facet is common in Toposheets Nos. 41 J/2, J/3, F/14, F/15, F/7, F/8, F/4 etc. It is identified by its irregular shape, isolated depressions in the smooth surrounding ground with no relation to any drainage system. External and internal drainage is absent.

FACET NO. : A₁₁

NAME : Stony
Wasteland

LOCATION : South of Jamnagar
Aerodrome

COMPILER : Geology Department
M.S. University
Baroda.

GEOREF : 41 J/3

DATE : March, 1977



Morphology

It is a barren land occupying a slightly higher position in the surrounding landscape; has varying dimensions from a few m to some km. Surface is covered with rock debris consisting of fragments of different sizes, generally angular to subangular.

Surfacial deposits

A very thin layer of residual reddish brown soil covers the facet. Being at a higher level, it comprises an erosional feature.

Water regime

The thin soil layer covering the facet holds only a small amount of water, which gets dried immediately on exposure. The facet is thus wet during rainy season only and remain dry for the rest of the year.

Associated Features

Position in landscape : Slightly higher than surrounding landscape.

Soil : Residual, heterogeneous, reddish-brown mixed type.

Vegetation : Growth of grass during monsoon. Sometimes scattered bushes also grow.

Land use : Nil

Genesis : An erosional feature, due to the atmospheric weathering.

Airphoto Interpretation Aids

Facet shows light gray tone, as compared to the surrounding agricultural land which is dark gray toned. Irregular shape, absence of drainage pattern and lack of vegetation are the characteristic features. Sometimes, an ill-defined stream channel may cut across the facet.

Comments and Reference

Facet is common in Toposheet Nos. 41 J/2, J/3, F/14, F/15, F/7, F/8, J/4, F/11, F/12, F/13, F/16, B/15 and B/16. A barren land of irregular shape with rock debris strewn all over and scattered bushes, devoid of well defined drainage channels. Trafficable by heavy and study vehicles only.

FACET NO. : A₁₂ NAME : Ridge
 LOCATION : West of Sapar Village
 GEOREF : 41 F/15 COMPILER : Geology Dept.
 DATE : March, 1977 M.S. University
 Baroda



Morphology

Extends NE-SW uninterrupted^{ly} for nearly 11 km between the villages Meghpar to Sapar. Another extends NW-SE for 3 km from West of Bed to 1 km SE of Sapar. Its height ranges from 10 m to 38 m above MSL. The top is convex elongated, mostly barren with grass and cactus at some places. Slopes are gently concave with slope angles between 25° - 30° .

Surfacial deposits

Surface is covered with soil, derived from the underlying rock by weathering. Soil cover on top, a few cm only while near a foot, of the ridge, it is more than 2-3 m. Rock fragments of varying sizes are strewn all over the facet.

Water regime

The top soil layer may hold some water for very small duration immediately after the rains, but the soil cover along the foothill may remain wet for longer periods during the monsoon. The rest of year it remains dry.

Associated Features

Position in landscape : Highest in surrounding landscape.

Soil : Residual type soil, heterogeneous, dark gray coloured mixed with rock pieces.

Vegetation: Grass and cactus with some scattered bushes.

Land use : No use; foothill slopes can be cultivated.

Genesis : Differential erosion of harder dykes within basalts.

Airphoto Interpretation Aids

Being a very distinct morphological feature, it is easily recognised on the airphotos. An elevated ridge shows two slopes opposite to each other. Sometimes ridge slopes show incipient surface drainage.

Comments and Reference

Facet is present in the Toposheet Nos. 41 F/15, F/16, F/11, F/12; has gentle and smooth slopes hence easily accessible by light vehicles.