PATTERN C

MUDDY SHORE

FACET NO. : C_1

LOCATION : North-West of Jambuda

GEOREF : 41 J/2

DATE : March, 1977

NAME : Backshore Mudflat

COMPILER : Geology Department M.S. University Baroda.

Morphology

The facet occupies an intermediate position in the landscape, a little higher than the high water line, and extending all along the coastline except where the coast is rocky. It comprises almost a soil covered plain, the depth of the soil varying from few cm to a metre or more.

Surfacial deposit

Surface is covered with a fine grained soil. Depth of the soil cover varies from a few cm to more than a metre. The top is dry while the soil immediately below (2-3 cm) is wet. Upper surface is whitish because of salt encrustation, while the lower wet surface is dark gray and sticky. The soil is of transported type and deposited from the surrounding areas - both from land as well as sea.

Water regime

The lower portion of the facet remains wet throughout the year. Surface layer of 2-3 cm dries during summer. The facet is flooded by high tides, only during the rainy season. Soil being finegrained, it holds water but develops no vegetation on the surface.

Associated Features

Position in landscape : Intermediate to surrounding terrain.

Soil : Transported, dark gray, homogenous, finegrained.

Vegetation: No vegetation

Land use : Being inundated by sea water during rainy seasons, it finds of no use.

Genesis : Formed by the deposition of soil due to tidal inundation.

Airphoto Interpretation Aids

The feature being very small can be identified only with the help of magnifying lens used in mirror stereoscope; recognised as light gray toned line parallel to coastline.

Comments and Reference

Facet is present in the Toposheet Nos. 41 J/2, F/3, F/7, B/15, F/11, F/14 and F/15. Bounded by foreshore on seaward side and land on other side. Difficult to walk over when wet, and generally non-trafficable for heavy vehicles.

FACET NO. : C_2 NAME : Foreshore Mudflat

LOCATION : West of Valsura

GEOREF : 41 J/2 COMPILER : Geology Department M.S. University Baroda.

DATE : March, 1977

Morphology

The facet occupies intermediate position in the surrounding landscape, and lies between high and low water lines; hence remains saturated with sea water. The mudflat deposits are dissected by a number of channels, creeks, and nars. Surface is smooth with only micro-undulations.

Surfacial deposits

The facet itself comprises a mud deposit; the mud is dark gray, fine grained. When wet, it is so sticky and plastic that it can be rolled into small threads of 1 mm diameter and 2-3 cm length. Sometimes, the mud is locally mixed with sand from the landward side.

Water regime

The facet is under influence of sea water inundation, and remains saturated with tidal water throughout the year. It is exposed only briefly to sunlight during low tides. External and internal drainages are good.

Associated Features

Position in landscape : Fairly low in comparison to the surrounding landscape.

Soil : Transported, homogeneous dark gray coloured, mostly fine grained, sometimes mixed with sand particles.

Vegetation: Rich growth of mangroves in patches. Mangroves are associated with other small water plants.

Land use : A waste land.

Genesis : The facet is formed by a constant deposition and rearrangement of sediments, mainly clay and mud carried by rivers and tidal currents and waves.

Airphoto Interpretation Aids

The facet is recognised by deep gray tone adjacent to water line. Rill markings may appear near the water line. Generally, dissected by nars, creeks and channels.

Comments and Reference

Facet is present in Toposheet Nos. 41 J/2, 41 F/3, F/7, B/15, F/11, F/14, and F/5; bounded by water line on seaward side and light gray toned backshore on landward side. Surface is smooth finegrained muddy. Difficult to walk over and nontrafficable by any type of vehicle. Normally inaccessible, except during high tides when small boats can ply.

FACET NO. : C_3 NAME : Nar or Tidal Channel

LOCATION : North West of Jambuda

GEOREF : 41 J/2 COMPILER : Geology Department M.S. University Baroda.

DATE : March, 1977

Morphology

These are narrow tidal inlets (20-30 m wide) extending 5 to 10 km inland, cutting across the backshore and foreshore zones. Tidal water enters during high tide and recedes during low tide. These have been called as tidal rivers also. Their courses are irregular and braided. Channel walls 1 to 3 m high are almost vertical and cliff like. Most of these channels terminate in the Gulf of Kutch.

Surfacial deposits

This facet is carried out on mudflats which are alluvial deposits. It shows negative reliefs hence it's features are depositional.

Water regime

The facet is saturated with sea water, Soil is covered with water during high tides, and the excess of water flows back during the low tides. No vegetation is found in the channel.

Associated Features

Position in landscape : Occupying lowest position in the surrounding landscape.

Soil : Transported, homogeneous, dark gray coloured fine grained clayey.

Vegetation: No vegetation in the channel course.

Land use : Bigger and deeper channels are used by local fishermen for navigating barges boats and during high tide.

Genesis : Represents extension of stream courses on a submerging coast.

Airphoto Interpretation Aids

The facet shows dark gray toned branching lines landward side, giving a tree like appearance on light gray toned background. The banks of the channels are smooth, and surface drainage well defined. At the landward end muddy channel bottoms are seen.

Comments and Reference

The facet is present in the Toposheet Nos. 41 J/2, F/15, F/14 and F/7. Being muddy, difficult to walk over and nontrafficable for vehicles. Bigger and deeper channels are navigable during high tide.

FACET NO. : C_4 NAME : Mudflat with Mangroves

LOCATION : South of Sachana

GEOREF : 41 J/2 COMPILER : Geology Department M.S. University Baroda.

DATE : March, 1977

Morphology

The facet occupies the inter-tidal zone. It has a gentle slope towards the Gulf. Being dissected by a network of tidal channels, it forms interchannel isolated patches and these patches support a profuse growth of mangroves. The intensity of mangroves concentration varies from place to place. Surface is exposed to sun during the low tide and is covered by water during the high tide.

Surfacial deposit

The whole facet is formed by the deposition of alluvial mud. The alluvium is transported either from land or brought from the seaward side. It's thickness varies from a few metres to about 10 m. The mud deposits are not trafficable during the low tide periods.

Water regime

Facet remains saturated with saline water, it is inundated during high tide, but the excess water is drained back during the low tide. Being in tidal zone never gets dried.

Associated Features

Position in landscape : At a higher level than Nars, but lower than the mudflat (Backshore) facet.

Soil : Transported, homogeneous, dark gray finegrained.

Vegetation : Characteristic growth of mangroves on surface.

Land use : No use

Genesis : Water-lain depositional feature.

Airphoto Interpretation Aids

Surface because of mangrove vegetation shows dark gray toned patches against the light gray toned patches of mudflat. Dissected by tidal channels. Surface looks smooth and plain.

Comments and Reference

Facet is present in the Toposheet Nos. 41 J/2, F/14, F/15, F/11, F/7, F/3. Depth of mud varies from place to place. Inaccessible to both foot or by vehicles.

FACET NO. : C_5 NAME : Mudflat with Mud Cracks

LOCATION : North of Khijadia

GEOREF : 41 J/2 COMPILER : Geology Department M.S. University Baroda.

DATE : March, 1977

Morphology

The facet occupies intermediate position in the surrounding landscape, and lies in the backshore zone. The surface is very smooth and plain, and being dry, develops irregular cracks. Width of these cracks near the surface varies between 3 to 5 cm which extend downward upto 15 to 20 cm and gradually taper out. The blocks enclosed by cracks are triangular to polygonal in shape, with areas of about 200 to 300 sq.cm.

Surfacial deposits

Alluvial deposits formed due to tidal floods caused by storms during monsoon; made of up fine clays and dust particles mixed with rock fragments, sand, organic matter like plant roots, stems, leaves, animals etc.

Water regime

The facet gets flooded and becomes wet during monsoon, and then remains moist throughout the year. Surface portion may dry in fair weather. Devoid of external or internal drainage. Some times perched water is present below the surface.

Associated Features

Position in landscape : Intermediate in the surrounding landscape.

Soil : Finegrained, homogeneous, light to dark gray.

Vegetation: Barren; no vegetation due to high salinity; unfit for cultivation.

Land use : Wasteland.

Genesis : Formed by deposition of mud during tidal floods caused by storms during monsoon.

Airphoto Interpretation Aids

The facet shows a medium to dark gray tone; shape is irregular; surrounded by land and foreshore mudflats; total absence of drainage.

Comments and Reference

Present in Toposheet Nos. 41 J/2, F/11, F/14, F/15 etc. bordered by relative higher land on one side and foreshore mudflat with mangrove vegetation on other side. Trafficable, when dry, both for pedestrians and vehicles.

FACET NO. : C_6

NAME : Mudflat with rock waste

LOCATION : Sikka Coast Near Jetty

GEOREF : 41 F/15

COMPILER : Geology Department M.S. University Baroda.

DATE : March, 1977

Morphology

The facet lies in the intertidal zone and occupies an intermediate position in the surrounding landscape. The surface is strewn with scattered rock fragments, boulders and pebbles; it is quite smooth and shows micro undulations along with rill like tidal water draining channels. It shows a very gentle seaward slope.

Surfacial deposits

The surface is covered with mud and clay, with spread of rock fragments. It's thickness varies from few cm to a few meters. At places, deposits are dissected by water channels.

Water regime

Being under tidal influence, the facet remains saturated with sea water throughout the year. Depressions hold surface water after recession of tide. External and internal drainage are good.

Associated Features

Position in landscape : Intermediate in the surrounding landscape.

Soil : Transported, heterogeneous dark to medium gray coloured. Grain size varying from fine to coarse

Vegetation: The facet is barren except for some water plants that are seen sticking to the boulders and larger pebbles.

Land use : Wasteland, highly saline soil.

Genesis : Transported soil and clay with rock fragments either from land or sea, are deposited in the tidal zone. Main transporting agents are sea waves and tidal currents.

Airphoto Interpretation Aids

The facet is recognised by a medium to light gray tone. Tidal channels are seen cutting through it. Shape is irregular elongated parallel to the coastline. Surrounded by dark toned mud flat and very light gray toned land border.

Comments and Reference

Facet is present in the Toposheet Nos. 41 F/6, F/7, F/11, F/14, F/15 and J/2; associated with rocky as well as muddy shorefaces. Total absence of vegetation. Could be walked over with difficulty, but nontrafficable for vehicles.

FACET NO. : C_7

LOCATION : South West of Sikka

GEOREF : 41 F/15

DATE : March, 1977

NAME : Mudflat with Ripple Marks

COMPILER : Geology Department M.S. University Baroda.

Morphology

The facet occupies intermediate position in the landscape. It is under influence of wave and tidal currents and its furface is characterised by asymmetrical ripple marks . Typical undulations, such that the depressions are filled with course sand particles while crests are of fine grained material. The extension of the ripple marks is parallel to the coastline. The amplitude of the ripple undulations is 1-2 cm and wave lengths are 4 to 10 cm; crest axis is curved with lengths of 10-20 cm.

Surfacial deposits

The facet itself is a depositional feature. Sediments brought by currents and high tides are laid on the rocky platform. During lowtide due to receding currents surface developes ripple marks.

Water regime

The facet remains saturated throughout the year as it is under the influence of tides. Excess water gets collected in depressions. Bottom being hard rock very little water percolates downward. Drainage channels are absent.

Associated Features

Position in landscape : Intermediate in the surrounding landscape.

Soil : Transported, heterogeneous, dark gray coloured; grain size varying from fine to coarse.

Vegetation: The facet is barren. No vegetation.

Land use : It is a wasteland affected by turbulant sea currents.

Genesis : Sediments carried by waves and tidal currents are deposited in the upper foreshore zone on a hard rocky platform. Ripple marks are restricted to the mud flat portion nearer to the rocky basement, where the mud thickness is less.

Airphoto Interpretation Aids

Airphotos do not show any ripple structures of the surface. A plain dark gray tone is seen on the airphotos.

Comments and Reference

Facet is present on the Toposheet Nos. 41 F/15, J/2, F/11. The surface is easy to walk over. The mud thickness being small resting over the hard rock platform, it is trafficable by sturdy vehicle.