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CHAPTER IV

GROUND TRUTH

4.1 GENERAL :

The previous chapters II and III indicated that the remote sensed data and their analysis are found to be useful to recognise and demarcate lava flows & geomorphic units such as lineaments and drainage. Although one of the significance of remote sensing technique is to present precise various thematic maps, it is most essential to visit the area for number of reasons as :

- 1) to confirm the recognised features.
- 2) to identify the unrecognised features or objects
- 3) to study small scale features which are not exhibited on the images.
- 4) to collect the samples.
- 5) to measure and record the structural data as planar features (fractures, contacts etc).
- and 6) to take photographs of significant features.

Thus field work of short duration is essential not only to confirm the remotely sensed interpreted data but to add more information. Thus ground truth is nothing but the ground observations and measurements carried along selected traverses.

4.2 PLANNING OF THE FIELD WORK :

Before starting the field work, the traverses of the field work was planned by considering both regional

and large scale maps, prepared by using ~~sat~~ satellite imagery and aerial photographs respectively. Since the preliminary maps are ready, the period of field checks are limited (Compton 1962, Pandey 1987). Generally the field work is planned to visit the selected places along few traverses. The field work was arranged in the area along two short traverses, one along east-west direction (road connecting Sillod and Kannad town passing through Pishor village) and other perpendicular to the first traverse which is west of Pishor along which a short brighter linear feature was not interpreted on digitally analysed image.

4.3 SILENT FEATURES OF FIELD CHECKS & MAPPING:

The main objects of our field work was to verify lithounits, geomorphic units, lineaments and their link with ground-water occurrence and to identify the unrecognised features on the image. The attention was also given to study and record small scale features & to collect the representative samples.

The field work was planned based on the preliminary thematic maps, which were prepared by using images. The sampling and mapping of field associations have been carried with

preliminary maps and topographic maps of scale 1 : 50,000. The field procedure suggested by Compton (1962) have been followed. Branton compass was used to measure the planar features.

4.4 GEOMORPHIC FEATURES IN THE FIELD :

The traverses taken along the east west direction (Silled to Kannad road) indicate the following observations:

4.4 -1 Landforms:

- 1) The area constitute high ground and valley of Anjan river.
- 2) The high ground show distinct geomorphic features then as flat topped table land i.e. mesa landform (Plate 4.1) such physiographic topography represent terraces. The top edge of the mesa outcrop is nearly horizontal (Plate 4.2) which suggest the top surface of lava flows and are perfectly horizontal.
- 3) The small isolated hills which are rounded at the top represents the butte landforms(Plate 4.3).

4.4 -2 Slopes :

Three types of slopes are observed in the study are namely, a) Steep slope b) Concave slope and 3) Convex slope.

- a) Steep Slope : These are seen where the top of the landforms having massive basaltic lava flows with vertical joints (Plate 4.3).
- b) Concave Slope : Such slope is generally seen where the contact between the flow is such that the top flow is lying on the older flow with soft lithounits as red beds. (Plate 4.2).
- c) Convex slope : Such slope occur where individual lava flows gradually graded into massive basalt to red bed or pink zeolitic basalt.

4.4 -3 Fractures :

These are the weak planes which are easily found on the massive basaltic traps. Mostly the fractures are vertical (Plate 4.3). Although the trend of these fractures is mainly east-west, the fractures in other direction are also seen. The straight stream courses have been recognised on the image

are conformed as fracture lineaments by the presence of fractures parallel to the stream course.

4.5 VALLEY FILL AND GROUND WATER OCCURRENCE :

A narrow valley of Anjan river is visited at few places. It is interesting to note that the Anjan river valley is observed under cultivation (Plate 4.4). The number of dug & bore wells with good ground water are recorded in the adjacent area. The thickness of soil profile in the dug wells varies from 3 metres to 10 metres. The upper layer of the soil profile is black cotton soil, which is graded gradually into silty soil, Kankar bearing sandy soil. Such profile was also observed in the trench which is excavated across Anjan river in north-west direction of Pishor village (Plate 4.5). This trench is a part of the earthen dam being constructed and named as 'Palshi Medium Project'. The bore data in this area indicates that the loose material below the sandy soil constitute sandy accumulation alongwith pebbles of 1 cm. to 2.5cm. diameter. The very high percolation of groundwater is recorded in this trench. The thickness of sandy layer with pebbles is about 3 metres. The maximum alluvial fill recorded in some bores at the central part of

the Anjan river is about 14 metre. Below the alluvial fill the bed rock is constituted of pink zeolitic basalt, which comprise spherical to spheriodal, vesicular and amygoidoidal structures.

Dug wells are not recorded in the high ground areas as hills, ridge etc., while less number of wells with moderate re^{ch}arange of ground water are found in the moderately dissected areas.

4.6 LITHOLOGY:

The rock which are found in the study area are basalts, which occur in the form of thick layers of lava flows. These lava flows extend aeriually tens of kilometers. Three lava flows have been recognised in the study area (Plate 4.1). Two adjacent lava flows are seperated by red beds or pink zeolitic basalt (Plate 4.6). Thus the area is constituted of three types of lithounits as a)massive basalt b)pink zeolitic basalt and 3)red beds.

a) Massive basalts :

These are hard compact, fine grained basalts which

are black grey in colour. The tabular masses of basalt are either lying on the red beds or on pink zeolitic basalts. At some places the massive basalt graded into pink zeolitic to red beds. Some of the basalts are constituted at vesicular and amygoidoillal structures.

b) Pink Ze-olitic Basalt :

These are fine grained pink to violet coloured basalt (Plate 4.6). Generally these are porous rocks and constituted of vesicular and amygoiloidal structures, which are spherical and spheroidal in shape (Plate 4.7). The secondary minerals occuring in the amygoiloidal are quartz, zeolite and calcite.

c) Red Beds :

These are fine to medium grained, red coloured and constituted of soft clayey material which is found below the massive basalt lava flows. The contact between these two is of chilled material which is very hard and compact.

4.7 FILED IN CHECK OF UNRECOGNISED FEATURES ON THE IMAGES;

A distinct, short brighter linear feature was unidentified on FCC image. A field traverse was made W-SW

of Pishor to study the linear feature which was unindentified by using satellite images. It is found that, at this location an earthern dam of 'Palshi Medium Project' is under progress. The length of this dam is about 2 Kms. Thus the linear brighter features seen on the satellite image but not on aerial photograph is the earthern dam in progress across the Anjan river. The lighter tone is due to the excavated sandy material from the trench of the dam.