

# **A Geological Tour Report**

**On**

**Visit to Verinag (Anantnag)**

***SUBMITTED***

***BY***

**B.Sc. 5<sup>th</sup> SEMESTER (GEOLOGY) STUDENTS**

***SUPERVISED***

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**GOVT. DEGREE COLLEGE KULGAM**

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## **ACKNOWLEDGEMENT**

*“In the name of Almighty Allah, the most Gracious, the most Beneficent and the most merciful”*

*First and foremost, Alhamdulillah praises and thanks to Allah, the Almighty, for His showers of blessings throughout our processes to complete this one day field survey successfully.*

*In our endeavor of carrying out this one day field survey, we the students of B. Sc. 5<sup>th</sup> semester (Geology) are truly honored to express gratitude to our supervisors/teachers **Dr. Mohammad Subzar Malik**, Lecturer (Geology) academic arrangement and **Dr. Jahangeer Afzal**, Assistant Professor & Head, Department of Geography & Geology, GDC Kulgam.*

*We are highly thankful to **Prof. Dr. Manzoor Ahmad Lone**, our worthy Principal Govt. Degree College Kulgam for giving us permission to conduct this one-day geological field survey at Verinag, Anantang district. We also extend our gratitude to **Dr. Aijaz Ahmad Wani**, Assistant Professor Department of Physics & Incharge tours, GDC Kulgam for providing us transport facility during this one-day field survey.*

*We also extend our gratitude to **Dr. Masoon Ahmad Beigh & Mr. Rafi Ahmad Bhat**, Lecturer Academic arrangement department of Geography GDC Kulgam, for guiding us during this field survey.*

**Date:**

**Students of B.Sc. 5<sup>th</sup> semester (Geology)**

**Place**

# GOVT. DEGREE COLLEGE KULGAM

DEPARTMENT OF GEOLOGY

## Detailed Tour Report (2022)



**Group Photograph in College campus**

## **1.0 Introduction**

The fieldwork for various sciences is very important and of extreme importance for the genuine understanding of the subject. Geology is among the one subject, which keeps considerable position in the field of observation. Geology is primarily a field subject and it is a job of geologists to explore and learn things practically by visiting to field not by sitting in labs and classrooms. Geological fieldwork helps to students to learn the things practically in the field and generate new ideas. Geological fieldwork boosts the knowledge and confidence of the students by visualizing the things and conducting the experiments in the field. It provides a platform to students to learn things closely in practical way. Field observations opens the new doors, clear the concepts and inculcate interest among students in the subject. Further, Geological fieldwork lets us acquire first-order data and information about the subject.

In this connection students of department of geology, Govt. degree college Kulgam has conducted a one-day geological tour to Verinag and adjoining areas on 17/06/2022. During the tour students have learn lot of things about the subject. The main aim of the tour was:

- To study the geology & geomorphology of the area
- To explore the various structural features of rocks in the area
- To understand the various physical processes (natural & anthropogenic) operating in the area.

## **2.0 Basic concepts**

### **2.1 Field study**

This is the primary way of obtaining geological knowledge by visiting to any area and study about rock outcrops and their associated structures by making notes and

drawings/sketches. During field study, a person is coming in direct contact with the different rock outcrops, rock structures and examine them visually. In field study, a person obtains primary information about the rocks and their structural features by visual inspection and by taking physical measurements such as dip, strike and thickness of rock beds etc. that is not possible while sitting in laboratory. Thus, field study provides an opportunity to students to gain the practical knowledge about the subject by studying the various physical and chemical aspects of the rocks in their natural environment of deposition.

## **2.2 Field Geology**

When rocks and rock materials are investigated in their natural setting and in their mutual relations to one another, the study is called field geology. Field geology seeks to describe and explain the surface and subsurface structural features of the earth.

## **3.0 Geological tools used in the field study**

### **3.1 Brunton Compass**

A Brunton compass is a specialized instrument used widely by those needing to make an accurate degree and angle measurements in the field. It is used to get directional degree measurements such as dip and strike of the bedding rocks in the field through use of the Earth's magnetic field.



**Brunton compass**

### **3.2 Geological Hammer**

A geological hammer is the most commonly used field tool, which consists of a flat square head on one end, with either a chisel or a pick head at the other end used for splitting and breaking rocks for taking of rock samples in the field.



**Hammer**

### **3.3 Measuring Tape**

A Nylon type-measuring tap has been used in the field for measuring the true & vertical thickness of rock layers and length of rock out crops and rock structures.



**Measuring tape**

## **4.0 Study Area**

Anantnag district is southern-most district of Kashmir province separated from the Jammu Province by the mighty Pir- Panjal Range & connects both the regions by the famous Jawahar Tunnel. The district with its headquarters at Anantnag forms the southern part of Kashmir valley and is located between  $33^{\circ} 17' 20''$  and  $34^{\circ} 15' 30''$  North latitude and between  $74^{\circ} 30' 15''$  and  $75^{\circ} 35' 00''$  East longitude and is covered by SOI Degree sheet no. 43 K, N, O. The district is bounded by Poonch district in the west, Srinagar district in the North & Kargil district in the North East and Doda district in the East, by Pulwama district in the North West and Rajouri & Udhampur districts in the South & South East. The district is approachable NH IA and is interconnected by metaled roads from all parts of the Valley.

### **4.1 A brief description about the visited area (Verinag)**

Verinag is a town famous for the Verinag spring and Mughal garden in Anantnag district of the union territory of Jammu and Kashmir, India. It is a notified area committee with tehsil status (Shahabad Bala Verinag) and is about 26 kilometers away from Anantnag and approximately 78 kilometers southeast from Srinagar, which is the summer capital of the union territory of Jammu and Kashmir. Verinag spring is the main source of River Jehlum, which is known as Vyeth in local language that flows throughout the valley of Kashmir and finally enters into Pakistan-administered Kashmir. It is located at the foot of Pir Panjal mountain range covered by pine trees and evergreen plants.

### **4.2 Geographical location**

Verinag is located between  $33.55^{\circ}$  North latitude &  $75.25^{\circ}$  East longitude. It has an average elevation of 1,851m (amsl). This town is located near Banihal pass of Pir-Panjal mountain range. The Major towns/cities located near this place are Anantnag, Kokernag, Achabal and Qazigund.



### **4.3 Geology**

The different rock formations exposed in the district (Anantnag) ranges in age from Cambrian to Quaternary. A brief description about the various litho units present in the area has been taken from the Central Ground Water Board; Ground Water Information Booklet of Anantnag District is as follows:

- Alluvium- Clay, Silt and sand of Recent age
- Upper Karewa- Alternate greenish sandy and grey clay bed layers with calcareous Laminae of Plio-pleistocene age.
- Lower Karewa- Clay (bluish grey) & Conglomerates with coarse to fine sand (greenish in colour) alternate with grey sandy clays. Lignite and peat material of Plio- Pleistocene age.
- Panjal Trap- Agglomeratic slates, grits and effusive rocks of Permo-Carboniferous age.

### **4.4 Climate**

In Verinag, the climate is warm and temperate. There is significant rainfall throughout the year in Verinag. Even the driest month still has a lot of rainfall. According to Koppen climate classification, climate of Verinag is classified as Humid subtropical climate (Cfa). The average annual temperature in Verinag is 13.4 °C. About 1,043 mm of precipitation falls annually. The driest month is November with 35 precipitation. Most precipitation falls in March, with an average of 162 mm. The warmest month of the year is July with an average temperature of 22.7 °C. In January, the average temperature is 1.4 °C. It is the lowest average temperature of the whole year. The difference in precipitation between the driest month and the wettest month is 127 mm. The average temperatures vary during the year by 21.3 °C (Climate-Data.org.).

#### **4.5 Approaching roads (how to approach Verinag)**

Verinag can be approached via road by taking National Highway 1A, between Jammu and Srinagar. It lies at a distance of 6–8 km from National Highway 1A. Verinag Feeder Road Jawahar Tunnel Omoh Road and Lower Munda Verinag Road connect it to National Highway 1A. Verinag is also connected by road to Anantnag and Srinagar. Anantnag is 24 km and Srinagar is 78 km away from Verinag. It also has a link to Kokernag through Batagund Village. Nearest railway station is Hillar Shahabad that lies at a distance of 5 km from Verinag.



**A beautiful view of Verinag Spring**

#### **5.0 Field Measurements**

##### **Dip**

Dip of rock strata/bed is defined as the maximum angle of inclination of that makes a rock layer/bed with horizontal surface. During field study measurement of dip of rock beds were taken at various locations by using Brunton compass (**Photograph**

**1)**



**Photograph 1:** Showing measurement of Dip of rocks in the field



**Photograph 2:** Showing inclination of rock beds in the field



**Photograph 3:** Showing vertical rock bedding in the field



**Photograph 4:** Showing an Open Joint in a rock



(a)



(b)

**Photograph 5 (a & b):** Showing weathering in rocks



**Photograph 6:** Showing inclined rock layers with eroded surfaces

## 6.0 Conclusion and Recommendations

The present study remarks that a pilot geological survey of the Verinag and adjoining area that was completed successfully. During this survey visual examination about the local geology and the associated structural features of rocks were done by using of various field tools. The various structural features of rocks mapped in the field includes; dip, strike, folds, joints and fractures. In the area, it has been observed that exposed rocks (outcrops) are severely affected by natural processes like weathering & erosion and by anthropogenic activities such as stone quarrying/mining. In the area, rocks are intensively weathered and eroded by natural agents and are mined for construction purpose. However, it has been seen that rock beds are strongly dipping (inclined), which are very prone to physical and chemical weathering. However, steep slope of the rocks also increase the chances of landslides in the area. Thus, it is recommended that proper care of the area must be taken in order to prevent the area from any natural disaster. Further illegal mining of rocks should be stopped in order to save these valuable rocks from exploitation as well as to prevent environment degradation.

