

GOVT. GRAMYA BHARTI COLLEGE

HARDIBAZZAR

NEWSA HILLS

CHHATTISGARH

GEOLOGICAL FIELD WORK

SUBMITTED BY:

RAHUL KAIWART

PREETI LAHRAY

HITESH CHANDRA

SURAJ LAL

LATA KAIWART

SHILPA KAUSHIK

ANNU PATELAY

MUKUND KAIWART

SUBHAM GUPTA

M.SC. 2nd SEM GEOLOGY (2019-2020)

S.K.CHANDRAKAR


USHA CHATURVEDY

H.O.D. (Geology)

Assistant Professor(Geology)



DEPARTMENT OF GEOLOGY
GOVERNMENT GRAMYA BHARTI COLLEGE, HARDIBAZAR, KORBA (CG)

प्राचार्य
शा.स. ग्राम्य भारती महाविद्यालय
हार्डी बाजार (उ.ग.)

ACKNOWLEDGEMENT

We are thankful to our head of department Prof. S.K. CHANDRAKAR for his co-operation & guidance during field work.

We are indebted to our principal Dr. T.D. VAISHANAV for his moral & encouragement during our study period.

CERTIFICATE-II

This is to certify that shri/Ku..... All students has submitted the report entitled "GEOLOGICAL EXCURSION" around Hardibazar, Newsa Hills of Chhattisgarh state. A comprehensive report is submitted in partial fulfillment of M.Sc. II semester as per new UGC Syllabus.

Place :Hardi Bazar

External Examiner

Date :

Professor in charge :

Head of Department: Prof. S.K. Chandrakar

Principal : Dr. T.D. Vaishnav



प्राचार्य
शास्त्र.शास्त्र भारतीय महाविद्यालय
हर्दी बाजार (छ.प्र.)

CONTENT

CHAPTER

Introduction

- Geological study of Newsa Hills, Hardibazar

GEOLOGICAL STUDY OF NEOSA HILL HARDI BAZAR

GEOLOGICAL SITES:

There are following geological sites around Neosa Hills

Location 1: Lilagarh River, Near water bund.

The site is situated 3 KM south west of Hardi bazaar. Here we observed dolerite intrusion between phyllite structure with orientation of rocks 110° E to 270° W. The structure have flow fold present and joints perpendicular to direction of orientation. The dolerite is medium grained, dark colored, mainly consisting of clinopyroxene and calcic plagioclase.

Location 2: Near SV Power Plant.

This site also shows dolerite intrusion between phyllite structure with orientation of rocks 120° E to 300° W. The structure is exposed here, therefore, the outcrop is dismantled by erosion process. The dolerite is medium grained, dark colored, mainly consisting of clinopyroxene and calcic plagioclase.

Location 3: Foot Hills of Neosa Hills

This site also shows dolerite intrusion between phyllite structure with orientation of rocks 120° E to 300° W. This site shows maximum folding having plain schistosity. Here bedding joints are also visible with pinching swelling. The fold present is recumbent fold. The dolerite is medium grained, dark colored, mainly consisting of clinopyroxene and calcic plagioclase.

Location 4: Neosa Hills

This site also shows dolerite intrusion between phyllite structure with orientation of rocks 120° E to 300° W. This site shows minimum folding having plain schistosity. Here intrusions of Silica veins took place last.

Location 5: Behind Neosa Hills

This site also shows dolerite intrusion between phyllite structure with orientation of rocks 120° E to 300° W. This site shows minimum folding having plain schistosity. This site is the best example of visible contact point of phyllite and dolerite. Foliation is also present at this site.



IGNEOUS INTRUSION



FOLDING



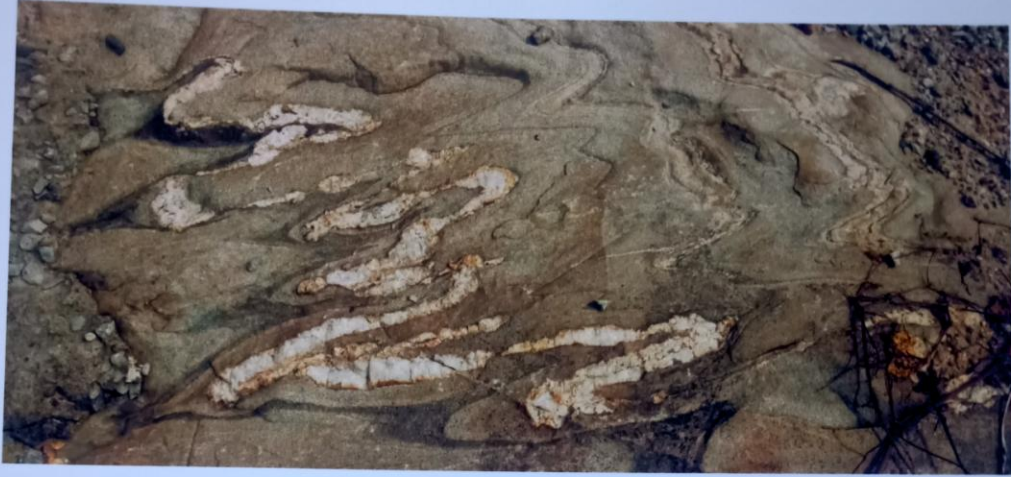
OVERLAPPING



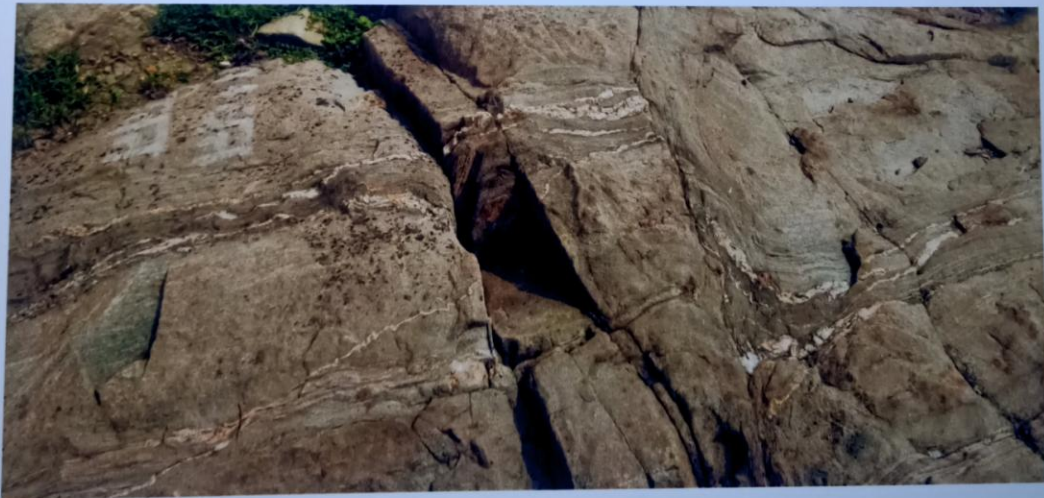
OVERTURNED FOLD

DOLERITE

1. COLOUR : Mesocratic
2. SP. GRAVITY : High
3. TOUGHNESS : Compact
4. GRAIN SIZE : Inequigranular (Aphaneric)
5. GRAIN SHAPE : Subhedral
6. INTERRELATIONSHIP : Inequigranular
7. MINERAL COMPOSITION :
 - a. ESSENTIAL MINERAL
 - i. Orthoclase : Colour-Pink, 2 Set Cleavage
 - b. ACCESSORIES MINERAL
 - i. Quartz
 - ii. Mica
8. ROCK : Type – Plutonic
9. GROUP : Over Saturated
10. SUB GROUP : Acidic
11. SP. PROPERTIES : Abundance of Orthoclase, Inequigranular Texture
12. LOCALITY : Neosa Hills, Dist-Korba, Chhattisgarh



FOLDING



IGNEOUS INTRUSION



IGNEOUS INTRUSION



GEOLOGY:

Lower gondwana coal field witness many igneous intrusions in them. These intrusions are either dikes or sill in their mode of emplacement petrologically, almost every intrusion is of **doleritic** nature. Contacts of such intrusions are most striking. They are charred & make "Jhawa Stones". One such aread in vicinity is named as Neosa Hills, a typical metamorphic & igneous intrusive zone.

STRUCTURE:

The above locations show following structure:

1. Dolerite Rock which is of Igneous origin having dark colour and fine grained texture. Inequigranular prophyritic works as igneous intrusion between two rock bodies of phyllite which is fine grained foliated metamorphic rock form by dynamothermal metamorphism.
2. Flow Fold which is accompanied by rock flowage where rock material flows into crest and trough. There by causing thinning of arms and thickening of beds.
3. Bedding Joints oriented parallel to bedding plains in sedimentary rocks which is metamorphised into metamorphic rock.
4. Silica veins formed in the last stage of compaction of igneous rocks.
5. Foliation which is parallel arrangement of platy or flaky minerals brought about by recrystallization, during regional metamorphism.
6. Schistosity is foliation of sist.
7. Sill which is a sheet like igneous body which runs parallel to bedding plain.
8. Dyke which is a wall like igneous body that cuts across the strata.

CONCLUSION:

From the study of given location we come to conclusion that the location have igneous intrusion of dolerite between two metamorphic bodies of phyllite. Location also have presence of flow fold. Bedding joints are also present at some locations with pinching swelling. Presence of schistosity plain is very common at nearly all location. Orientation of rock is nearly 120° E to 300° W. Joints are perpendicular to direction of orientation. Folding is maximum at location 3 and minimum at location 4 and 5. Silica veins are also visible in the last 3 locations.



DEFINITION AND PROPERTIES OF GRANITE ROCK

A coarse grained crystalline plutonic rock with granular texture consisting essentially of quartz (20-40%). Alkali feldspar and very commonly a mica, biotite/muscovite

GRANITE

1. COLOUR : Leucocratic
2. SP. GRAVITY : High
3. TOUGHNESS : Compact
4. GRAIN SIZE : Coarse to Medium
5. GRAIN SHAPE : Subhedral
6. TEXTURE : Hypidiomorphic
7. INTERRELATIONSHIP : Equigrainular
8. MINERAL COMPOSITION :
 - a. ESSENTIAL MINERAL
 - i. Quartz : Hardness - 7, Lusture -Virtuous, Form-Crystalline
 - ii. Orthoclase : Colour-Pink, 2 Set Cleavage
 - iii. Hornblende : Colour – Dark Green, Lusture – Sub Vitreous
 - b. ACCESSORIES MINERAL
 - i. Biotite : Colour – Black, Lusture – Pearly, 1 Set Cleavage
 - ii. Magnetite : Colour – Blue, Lusture – Sub-Metallic, For-Cubic
 - iii. Tourmalline : Colour-Black, Hardness-7, Form-Tabular
9. ROCK : Type – Plutonic
10. GROUP : Sub Saturated
11. SUB GROUP : Acidic
12. SP. PROPERTIES : Abundance of Quartz & Orthoclase, Equigrainular Texture



