GOVERNMENT OF MEGHALAYA
DIRECTORATE OF MINERAL RESOURCES

TECHNICAL DATA ON
THE VARIOUS LIMESTONE DEPOSITS OF
MEGHALAYA
1977

EAST KHASI HILLS

1. CHERRAPUNJI -

(i) Location :- In the Mawmluh-Mawsmai Hills South of Lower Cherra, East Khasi Hills.

(ii) Area and extents :- 1.40 sq. km. in the Mawmluh-Mawsmai Hills.

(iii) Physical properties :- The bottom bed limestone is fine grained, hard, light to darkgrey in colour and the top bed grey to brown in colour.

(iv) Chemical analysis :-

CaO%	44.33---53.53
MgO%	0.33---4.21
R2O3	0.31---2.17
AI%	1.43---12.39

Dolomite

CaO%	30.64---35.13
MgO%	16.93---20.53
AI%	0.50---6.20

(v) Resource :- The indicated category resource of limestone and dolomite as reported by G.S.I. in 1962 are 40.0 and 20.0 million tonnes respectively. The State Directorate estimated 3.52 million tonnes of limestone in Mawmluh and 7.78 million tonnes in Mawsmai. The investigation conducted by C.C.I. in 1977 also bring into light a proved category resources of 19.85 million tonnes of limestone. The total proved category resource in Mawmluh-Mawsmai Hills comes to 31.15 million tonnes.

(vi) Nature of the Deposit :- The deposit is of composite nature made up of limestone in the upper part and dolomite in the lower part. There is a transitional zone of dolomitic limestone in between.

(vii) Geology of the area :- In the Mawsmai Hills there are two beds of limestone intervened by calcareous sandstone and shale. The bottom bed ranges from 13.8 to 26.7 m. whereas the top bed is 0.07 to 5.90 m in thickness. In the Mawmluh Hill a maximum thickness of 25.5 m of limestone occurs in the upper part followed by pure dolomite in lower part. The dolomite bed is found to range in thickness from 6.0 to 12.0m average being 9.0m. The limestone belongs to the lower Sylhet Member of Shella formation.

(viii) Reported by :-The deposit was first reported by Geological Survey of India, D.G.M , Assam and C.C.I did
the follow up work

(ix) Remarks :- The limestone was mined by M/S Mawmluh Cherra Cement Company for their factory at Cherrapunji.

2. LAITRYNGEW –

(i)Location :- New Umstew and Mawkma areas of Laitryngew, Khasi Hills, Meghalaya.

(ii) Area and Extent :- Occur as small outcrops in Umstew and Mawkma area of Laitryngew. The band is 7.5 m. thick and traceable for about 150 m. at Umstew Cliff section.

(iii) Physical properties :- High grade limestone.

(iv) Chemical Analysis :-

CaO%	52.02---54.41
MgO%	0.15---2.25
AI%	3.00

(v) Resource :- Not estimated

(vi) Nature of Deposit :- Bedded deposit

(vii) Geology of the area :- The limestone exposed in the vertical scarp sections in the area.Limestone exposures belong to the lower Sylhet limestone member of Shella Formation .

(viii) Reported by :- Geological Survey of India.

3. MAWLONG-ISHAMATI –

(i)Location :- Ishamati, Khasi Hills.

(ii) Area and extent :- 13.75 sq.km. in area ,4(four)limestone bands separated by Sandstone bands are encounterd. Thickness of limestone bands are of the the order of 60.0,12 .0, 21.0 and 71.0 m respectively. Total thickness 244 m including both Sandstone and Limestone.

(iii) Physical properties :- Hard, compact, grey dark grey to bluish grey in colour fine grained and fossiliferous.

(iv) Chemical analysis :-

CaO%	51.91----53.04
MgO%	0.43----4.76
AI2O3%	0.26----1.06
Fe2O3	0.38----0.48
SiO2	0.56----2.78

(v) Resource :- An inferred category resource of 2,166 million tonnes was reported by D.G.M., Assam. GSI has proved 395 million tonnes of resource in the area (Upper Sylhet limestone - 290 m. tonnes and Middle Sylhet limestone - 105 m. tonnes).

(vi) Nature of the deposit :- Bedded deposits of limestone with alternations of sandstone.

(vii) Geology of the area :- All the limestone members i.e. Upper Sylhet (Prang), Middle Sylhet (Umlatdoh) and Lower Sylhet (Lakadong) limestone members of Shella Formation, are encountered in the area. Two beds of limestone are found with an intervening sandstone parting within the Middle Sylhet (Umlatdoh) limestone member which are mentioned above as 2nd and 3rd bed.

(viii) Reported by :- Directorate of Geology and Mining, Assam.

(ix) Remarks :- Drilling is carried out at Mawlong coalfield by D.M.R. for coal and limestone and by Geological Survey of India for the limestone.

4. KOMORRAH –

(i)Location :- Komorrah, Khasi Hills.

(ii) Area and extent :- The total thickness is 415m considering all limestone and sandstone bands only 0.52 sq.km.
area was covered by detailed survey, where only first two limestones bands were considered.

(iii) Physical properties :- The limestone is hard, compact, fine grained and fossiliferous.

(iv) Chemical Analysis :-

CaO%	51.97---54.95
MgO%	0.76---2.98
AI2O3%	0.16---0.56
Fe2O3	0.28---1.11
SiO2	0.46---1.90

(v) Resource :- The indicated category resource is 14.2 million tonnes (only the first two bands) and the category resource proved by drilling is 7.5 million tonnes.

(vi) Nature of the deposit :- Bedded deposits of limestone with sandstone alternations.

(vii) Geology of the area:- Highly south dipping (50^0 -60^0)limestone beds belonging to the Upper Sylhet (Prang) and Middle Sylhet (Umlatdoh)Members of Shella formation are encountered.The dip of the beds becomes gentler in the norther part of the area. The Upper Sylhet limestone member is found in jux aposition with the shales of the younger Kopil formation depicting a fault. This is a parallel fault of the main Dawki fault which lies further south of the area.

(viii) Reported by :- D.M.R., Meghalaya.

(ix) Remarks :- The limestone is quarried and exported to Bangladesh .

5. SHELLA :

(i)Location :- The deposit is located on the west bank of the Umiew river near Shella Bazar.

(ii) Area and extent :- An area of 2.76 sq.km. was covered by detailed mapping where Upper Sylhet (Prang) and
Middle Sylhet (Umlatdoh) limestone Members of the Shella formation were encountered. The Average thickness of the Upper and Middle Sylhet limestone Members are 60m and 20m respectively.The bands are maintaining an easterly strike with a variable dip of 8^0 to 40^0 towards south.

(iii) Physical properties :- Hard, compact, light grey to dark grey in colour.

(iv) Chemical analysis :

CaO%	48.15---53.98
MgO%	0.72----6.85
SiO2	0.38----5.20
AI2O3%	0.48----2.18
Fe2O3	0.28----1.72
SO3	Trace
P2O5	Trace
Na2O	Upto 0.25
K2O	Upto 0.15

(v) Resource :- The total indicated category resource of limestone in Shella area is 180 million tonnes of which 150 million tonnes in the Upper Sylhet limestone and 30 million tonnes in the Middle limestone beds.

(vi) Nature of the area :- Bedded deposit of limestone with sandstone alternation.

(vii) Geology of the area :- Same as Komorrah area.

(viii) Reported by :- Directorate of Mineral Resources, Meghalaya.

(ix) Remark: The Limestone is exported by Lafarge Umiam Pvt . Ltd for their plant at Bangladesh

WEST KHASI HILLS

6. BORSORA :

(i) Location :- Borsore in the West Khasi Hills district is 145 km from Shillong on the north of Indo-Bangladesh International Boundary.

(ii) Area and extent :- Covers an area of 1.5km with an east-westerly extensionalong East-West direction and limestone bearing area is about 1.00 Sq.Km. around Borsora Village.

(iii) Physical properties :- The limestone is light grey in colour (occasionally whitish grey), jointed and highly fractured and occurs as very large dislodged blocks.

(iv) Chemical analysis :-

CaO%	41.86---53.32
MgO%	0.48----6.10
AI2O3%	1.14---6.55
Fe2O3	0.64---5.78
SiO2	0.36---4.52

(v) Resource :- The indicated category resource of limestone inthe above mentioned area is 3.7 million tonnes.

(vi) Nature of the Deposit :- Limestone occurs as a bedded deposit, extending in an east-west direction with low dip toward south and without any appreciable overburden or soil cover.

(vii) Geology of the area :- The limestone bed in the area represents the top Sylhet Limestone Member of the Shella Formation, overlying the coal bearing Sylhet Sandstone Member.

(viii) Reported by :- Directorate of Mineral Resources, Government of Meghalaya, Shillong.

JAINTIA HILLS

7. LUMSHNONG :

(i)Location :- Lumshnong is at 125 Kms. from Shillong along the Shillong – Badarpur road, Jaintia Hills.
Thickness encountered in the boreholes :-

Prang Limestone	92.65
Umlatdoh limestone	39.65
Lakadong limestone	61.80

(ii) Area and extent :- Extends over an area of 76.8 sq.km.

(iii) Physical Properties :- Limestone is hard compact and fine grained,

(iv) Chemical analysis :-

CaO%	40.69---54.67
MgO%	0.20---11.55
SiO2	0.04---17.20
Fe2O3	0.04---3.87
Al2O3	0.05---5.71

(v) Resource :- The inferred category resource of Upper Sylhet Limestone as reported by G.S.I. is 652 million tonnes. D.M.R., Meghalaya, indicated a resource of 291.21 million tonnes for Lower and Middle Sylhet Limestone covering an area of 2.50 sq.km., out of which 154 million tonnes of Limestone was proved over an area of 2.0 sq.km.

(vi) Nature of the deposit :- Bedded deposit, with alternating bands of limestone and sandstone.

(vii) Geology of the area :- The limestone belongs to the Shella formation of the Jaintia Group of Eocene Age. All the three Sylhet limestone members viz. Upper (Prang) Middle (Umlatadoh) and Lower (Lakadong) are present in the area.The younger Kopili formation characterised by alternating bands of Shale and Sandstone,
represents the youngest sediments in the southern part of the area.

(viii) Reported by :- 1. Geological Survey of India first reported the deposit and gave an inferred resource of 652 million tonnes.in the area. 2. D.M.R., Meghalaya initiated the detailed work in the area and indicated and proved category resource as specified above, were established.

(ix) Remarks :- The limestone deposit at Lumshnong is presently mined by three Cement plants in the area.

8. SUTNGA :

(i)Location :- About 10 km from Khliehriat ,the Sub-Divisional Head Quarter of Jaintia Hills.

(ii) Area and extent :- The limestone bearing area is 9.15 m. by 75 m. in extension, (0.07 sq.km.) extended along ENE-WSW direction. Average thickness 15 m.

(iii) Physical properties :- This limestone is hard, compact, fine grained and light to dark grey in colour.

(iv) Chemical Analysis :-

CaO%	48.75---53.09
MgO%	0.72---3.41
R2O3%	0.48---5.40
AL%	1.08---3.78

(v) Resource :- The indicated category resource is 2 million tonnes.

(vi) Nature of the deposit :- A narrow elongated outlier.

(vii) Geology of the area :- The deposit is an outlier of the Lower (Lakadong) Sylhet Limestone Member which rests over the Lower Sylhet (Therria) Sandstone member of Shella formation.

(viii) Reported by :- Geological Survey of India.

9. NONGKHLIEH :

(i)Location :- Nongkhlieh is 8 km. south of Sutnga and 17 kms. from Khliehriat (at Jowai-Badarpur Road), Jaintia Hills.

(ii) Area and extent :-: Covers an area of 4.01 sq.km. and the thickness range from 130m to 135m, as encountered in the borehole drilled by D.M.R., Meghalaya.

.

(iii) Physical properties :- Hard, compact; find grained limestone. Light grey to dark grey in colour.

(iv) Chemical analysis :- (As per G.S.I's report, 1966-67)

CaO%	40.46---53.88
MgO%	0.36---7.12
SiO2%	0.16---10.00
Fe2O3%	0.07---4.91
Al2O3%	0.16---6.37

(v) Resource :- The inferred category resource is 600 million tonnes over an area of 4.1 sq. km. Proved category resource is 400 million tonnes (168 m.t. in the north block & 127 million tonnes in the middle & 115 million in the south block over an area of 2.1 sq.km.

(vi) Nature of deposit :- Bedded deposit. Lower part is of higher grade than the middle and upper part.

(vii) Geology of the area :- All the three Members of limestone of the Shella formation,Upper (Prang),Middle(umlatdoh)and lower (Lakadong) became one single limestone band which can be determined on the evidence of the fossil contents. The limestone rests on Lower (Therria) Sandstone Member and is overlain by younger Kopili Formation.

(viii) Reported by :- D.M.R., Meghalaya for inferred category resource and G.S.I. for indicated category resource.

10. LAKADONG :

(i)Location :- In between Hari and Prang rivers, Jaintia Hills

(ii) Area and extent :- (Strike length, width, thickness, etc.) : covers an area of 26sq.kms.

(iii) Physical Properties :- This limestone is hard, compact, fine grained and light to dark grey in colour.

(iv) Chemical Analysis :-Umlatdoh Limestone

CaO%	42.27---53.89
MgO%	1.25----5.58
SiO2	0.14---3.12
Fe2O3	0.26---1.59
Al2O3	0.22---2.61

(v) Resource :- The inferred category resource is 780 million tonnes.

(vi) Nature of the area :- Bedded deposit.

(vii) Geology of the area :- The limestone belongs to Lower Sylhet(Lakadong) Limestone Members of Shella Formation of Eocene age . Thin outlayers of Middle Sylhet (umlatdoh)limestone is also encountered separated by Middle Sylhet(lakadong) sandstone Member.interbedded with Middle Sylhet sandstone member.

(viii) Reported by :- First reported by Geological Survey of India.followed by D.M.R

11. SYNDAI :

(i)Location :- 40kms. .S.W. of Jowai along Jowai-Muktapur road, Jaintia Hills.

(ii) Area and extent :- The deposit occurs as narrow belt around Unlari and Syndai village covering an area of 2.0864 sq.kms. and the thicness of the limestone varies from 15m to 20m.

(iii) Physical properties :- Limestone is hard and compact but towards the base it is found to be intercalated with some calcareous shale partings.

(iv) Chemical analysis :-

	Cement grade Limestone	Dolomitic Limestone
CaO%	42.00 -- 49.6	34.00 -- 40.34
MgO%	0.56 -- 2.07	5.90 -- 16.13
Fe2O3%	1.73 -- 2.31	0.42 -- 0.60
Al%	6.11 -- 13.90	3.20 -- 9.60

(v) Resource :- The inferred category resource is as follows (in a area of 2.08 sq.km.)
(1) 26.05 million tonnes. Cement grade
(2) 69.80 million tonnes. Dolomitic limestone

(vi) Nature of deposit :- Bedded type of deposit.

(vii) Geology of the area :- The limestone belongs to the Lower Sylhet(Lakadong) Limestone Member of Shella formation of Eocene age. The lower portion of limestone is dolomitic limestone.

(viii) Reported by :- D. M.R., Meghalaya

12. NONGTALANG :

(i)Location :- Nongtalang, Jaintia Hills.

(ii) Area and extent :- Covers an area of about 10 sq.kms.

(iii) Physical properties :- Similar to the limestone at Syndai.

(iv) Chemical analysis :-

CaO%	46.33
MgO%	3.51
AI%	9.07

(v) Resource :- Not estimated.

(vi) Nature of deposit :- Bedded type of deposit.

(vii) Geology of the area :- An outlier of Sylhet limestone member of Shella Formation of Eocene age.

(viii) Reported by :- Geological Survey of India.

WEST GARO HILLS

13. DARRANG-ERA-ANING –

(i) Location :- Near Nangwalbibra and extends from Darrang-Era-Aning in the east to Pathargithim, in the west.

(ii) Area and extent :- Covers an area of 1.94 sq. kms. Average thickness of upper band is 15 m and lower one is 3m.

(iii) Physical properties :- Upper zone is argillaceous in character.

(iv) Chemical analysis :-

CaO%	38.00---51.35
MgO%	0.55---4.04
SiO2	0.66---6.61
Fe2O3	0.43---5.28
Al2O3	0.24---27.05

(v) Resource :- The total indicated category resource is 47.7 million tonnes, out of which the top band contains 37.70 million tonnes and the lower band contains 10.02 million tonnes.

(vi) Nature of deposit :- Bedded deposit.

(vii) Geology of the area :- The limestone belongs to upper Sylhet(Siju) limestone Member of Shella Formation over lying the Sylhet Sandstone Member. The limestone bands of the top bed of limestone are interbedded with calcareous shale and the lower bed is devoid of calcareous shale.

(viii) Reported by :- Directorate of Mineral Resources, Meghalaya.

14. SIJU-ARTHEKA

(i)Location :- Situated at 118 kms. from Dudhnai along Dudhnai Baghmara road.

(ii) Area and extent :- Covers an area of 5.70 sq.kms. Limestone occurs on both side of Simsang river. Maximum thickness 90m (Average 60m).

(iii) Physical properties :- The limestone is hard, greenish grey in colour, upper part is marly.

(iv) Chemical analysis :-

CaO%	46.90
MgO%	1.72
Fe2O3%	0.47
Al2O3%	2.69

(v) Resource :- The indicated category resource is 229 million tonnes, out of which 27 million tonnes of cement grade limestone is proved by drilling.

(vi) Nature of deposit :- Bedded deposit (one compact band of limestone)

(vii) Geology of the area :- The limestone belongs to Upper Sylhet (Siju) Limestone Member of the Shella fomation of Jaintia Group. The limestone rests conformably on the coal bearing Sylhet Sandstone (Tura) member and is overlain by Kopili Formation.

(viii) Reported by :- First reported by D.G.M., Assam, D.M.R., Meghalaya established category resource while Mineral Exploration Corporation limited established the proved category resource..

(ix) Remarks :- The limestone is suitable for Cement manufacture.