



**Particulars of Borehole logging of Exploratory Boreholes drilled by GSI for Phosphorite in Nimbli Block, District Jaisalmer, Rajasthan
(Extracted from Geological Report of GSI FS 1968-69 & 1969-70)**

Borehole No.B-32

R.L. at Collar: 258.35m

Date of Commencement: 22.08.69

Date of Completion: 13.10.69

Depth Drilled:24.25m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Core Lithology	Remarks
0.00	0.70	0.70	93	Sand	
0.70	1.45	0.75	93	Limestone greyish white to brownish, friable	
1.45	1.50	0.05	100	Limestone with phosphorite bands 1mm to 3mm thick	
1.50	2.00	0.50	90	Shale with limestone bands yellowish white to greyish (phosphorite occurs as 1mm to 3mm bands)	
2.00	3.55	1.55	87	Limestone leached with shale bands phosphorite occurs as thin irregular bands	
3.55	9.65	6.10	63	Shale, whitish to yellowish brown with thin phosphorite bands	Dip 60° betteen 6.05 + 6. 55 m.
9.65	11.25	1.60	84	Shale, brown to yellowish with thin phosphorite bands	
11.25	11.70	0.45	89	Shale	
11.70	15.05	3.35	82	Shale, yellowish to brownish with thin phosphorite bands	
15.05	15.35	0.30	83	Shale, greyish to yellowish with thin phosphorite bands	
15.35	15.95	0.60	90	Phosphorite, Core obtained as pieces	
15.95	16.90	0.95	79	Phosphorite with few shale bands	
16.90	17.30	0.40	75	Phosphorite	
17.30	18.35	1.05	82	Phosphorite	
18.35	19.45	1.10	96	Shale whitish with thin phosphorite bands	
19.45	20.35	0.90	94	Shale whitish with thin phosphorite bands	
20.35	21.45	1.10	96	Shale with phosphorite bands	
21.45	22.45	1.00	95	Shale whitish to reddish with phosphorite bands	
22.45	23.25	0.80	96	Reddish to Whitish clay	
23.25	23.75	0.50	92	Shale, with phosphorite bands	
23.75	24.25	0.50	96	Sandstone fine grained	
				True Thickness: 4.21m; Weighted average: 16.87% P ₂ O ₅	

**Borehole No.B-33**

R.L. at Collar: 258.30m
Date of Commencement: 31.08.69
Date of Completion: 06.09.69

Depth Drilled:30.00m
Angle with horizon at Collar: Vertical
Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.70	1.70	100	Sand, Kankar	
1.70	2.00	0.30	10	Sand, Kankar	
2.00	4.85	2.85	95	Shale, yellowish at places calcareous	
4.85	5.10	0.25	80	Limestone, leached with shale bands	
5.10	7.60	2.50	96	Shale, yellow, grey, micaceous	
7.60	8.20	0.60	90	Shale, with calcareous, phosphatic band (2 cm).	
8.20	14.45	6.25	85	Shale, yellow, brown, grey	
14.45	14.95	0.50	90	Shale with thin phosphatic bands	
14.95	16.60	1.65	90	Shale	
16.60	17.00	0.40	87	Shale with a thin phosphatic bands	
17.00	17.50	0.50	90	Shale pale reddish brown	
17.50	18.25	0.75	86	Shale with veins of phosphorite	
18.25	19.25	1.00	94	Shale with veins of phosphorite	
19.25	19.85	0.60	92	Phosphorite with shale bands	
19.85	20.70	0.85	90	Shale with strings of phosphorite	
20.70	21.70	1.00	95	Shale with veins and stringers of phosphorite	
21.70	22.05	0.35	94	Shale with phosphorite upto about 22.00m rest phosphorite, dip - vertical	
22.05	22.65	0.60	92	Phosphorite with minor shale bands	
22.65	23.10	0.45	88	Phosphorite	
23.10	23.90	0.80	94	Phosphorite upto about 23.35 rest shale with thin lenticles or veins of phosphorite	
23.90	26.50	0.90	88	Phosphorite shale interbanded	



From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
24.80	25.30	0.50	80	Phosphorite, shale interbanded, dip - vertical	
25.30	26.50	1.20	88	Phosphorite shale interbanded	
26.50	26.90	0.40	87	Shale, yellowish brown to grey, thinly laminated	
26.90	27.30	0.40	87	Sandstone grey medium to coarse grained, leached, fractured	
				True Thickness: 1.56m; Weighted average: 18.47% P_2O_5	

**Borehole No.B-34**

R.L. at Collar: 256.65m

Date of Commencement: 07.09.69

Date of Completion: 13.09.69

Depth Drilled:31.30m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	0.90	0.90	100	Sand and Clay	
0.90	1.00	0.10	90	Limestone, yellowish	
1.00	3.60	2.60	89	Shale, pale brownish to yellowish, calcareous at places, arenaceous	
3.60	3.95	0.35	93	Limestone, yellowish to brownish	
3.95	9.55	5.60	90	Shale greyish to reddish, micaceous thinly laminated with calcareous veins	
9.55	21.90	12.35	96	Shale, greyish to reddish brown, thinly laminated with calcareous veins at places	Dip varies from 40° to 45°
21.9	22.35	0.45	93	Shale micaceous with thin veins of phosphorite	
22.35	27.90	5.55	70	Shale, micaceous, reddish brown with bands of phosphorite, less than 3mm	
27.9	28.30	0.40	90	Shale, yellowish to reddish with stringers of phosphorite near the base	
28.3	28.70	0.40	87	Shale upto 28.33m Lower portion phosphorite	
28.7	29.20	0.50	84	Phosphorite	
29.2	29.55	0.55	98	Shale with bands of phosphorite upto 1 cm.	
29.55	29.75	0.20	95	Phosphorite	
29.75	29.85	1.00	98	Phosphorite	
29.85	31.30	1.45	67	Sandstone, fine grained, calcareous, lower portion micaceous siltstone	
				True Thickness: 1.096m; Weighted average: 14.30% P ₂ O ₅	

**Borehole No.B-35**

R.L. at Collar: 254.43m

Date of Commencement: 14.09.69

Date of Completion: 17.09.69

Depth Drilled:25.50m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.00	0.50	100	Sand	
1.00	2.00	1.00	100	Shale with Kankar	
2.00	2.75	0.75	96	Limestone, shaly reddish brown to yellowish	
2.75	3.20	0.45	92	Shale, brown calcareous and arenaceous	
3.20	3.80	0.60	85	Limestone shaly	
3.80	6.90	3.10	97	Shale, variegated, micaceous	
6.90	7.12	0.22	92	Limestone shaly	
7.12	9.00	1.88	92	Shale calcareous	
9.00	9.65	0.65	92	Limestone shaly	
9.65	12.75	3.10	100	Shale, calcareous	
12.75	14.85	2.10	98	Shale, calcareous with thin bands of phosphorite	
14.85	21.35	6.50	96	Shale, white to purplish with thin phosphorite bands often grades to siltstone	
21.35	22.70	1.35	91	Shale, with thin bands of phosphorite from 22.20m	
22.70	23.25	0.55	82	Phosphorite with fes shale bands	
23.25	24.00	0.75	93	Shale with phosphorite bands	
24.00	24.28	0.28	96	Phosphorite with fes shale bands	
24.28	25.50	1.22	76	Sandstone, medium to coarse grained	
				True Thickness: 1.485m; Weighted average: 11.01% P2O5	

**Borehole No.B-36**

R.L. at Collar: 252.07m

Date of Commencement: 18.09.69

Date of Completion: 19.09.69

Depth Drilled:17.00m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.00	1.00	Nil	Sand	
1.00	3.20	2.20	94	Limestone, shaly, reddish to grey with few shale bands	
3.20	3.45	0.25	80	Shale, brownish, calcareous	
3.45	5.95	2.50	88	Limestone, yellowish to brownish with vugs and few shale bands	Shale intersevted between 4.70 to 5.30m
5.95	7.10	1.15	93	Shale, yellowish, calcareous, with thin phosphorite bands	
7.10	7.16	0.06	98	Limestone, leached	
7.16	10.35	3.19	93	Shale, yellowish to whitish, with few stringers of phosphorite	Phosphorite Intersected between 7.16 to 7.20m
10.35	10.95	0.60	92	Shale with thin bands of phosphorite	
10.95	11.45	0.50	90	Phosphorite	
11.45	12.45	1.00	90	Phosphorite with few shale bands	
12.45	13.20	0.75	100	Phosphorite upto 13.05m rest shale with phosphorite bands	
13.20	13.40	0.20	100	Shale	
13.40	14.40	1.00	85	Shale upto 13.70m rest phosphorite with shale bands	
14.40	15.00	0.60	92	Phosphorite interbanded with shale	
15.00	15.60	0.60	100	Shale with few thin bands of phosphorite	
15.60	17.00	1.40	86	Sandstone medium to coarse grained	
				True Thickness: 3.102m; Weighted average: 11.19% P2O5	

**Borehole No.B-37**

R.L. at Collar: 249.26m

Date of Commencement: 20.09.69

Date of Completion: 22.09.69

Depth Drilled:20.40m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.00	1.00	Nil	Sand	
1.00	1.50	0.50	100	Limestone pale brownish to dark brown with kankar	
1.50	2.65	1.15	98	Kankar	
2.65	3.75	1.10	100	Limestone shale with Kankar	
3.75	4.50	0.75	96	Shale variegated	
4.50	6.35	1.85	94	Siltstone and shale with few limestone bands	
6.35	11.45	5.10	97	Shale, micaceous, calcareous at places grades to siltstone interbedded with few limestone bands	
11.45	12.03	0.58	90	Limestone, shaly	
12.03	14.65	2.62	86	Shale with few thin bands of phosphorite	Dip horizontal 13.60m
14.65	16.50	1.85	91	Shale	
16.50	18.55	2.05	93	Shale with thin bands of phosphorite	
18.55	19.15	0.60	100	Shale	
19.15	19.50	0.35	91	Phosphorite with shale bands	
19.50	19.90	0.40	100	Phosphorite with shale bands	
19.90	20.00	0.10	95	Phosphorite	
20.00	20.40	0.40	87	Sandstone, medium to coarse grained	
				True Thickness: 1.108m; Weighted average: 16.58% P ₂ O ₅	

**Borehole No.B-38**

R.L. at Collar: 259.89m

Date of Commencement: 22.09.70

Date of Completion: 13.10.70

Depth Drilled:39.41m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.00	1.00	Nil	Sand	
1.00	4.55	3.55	91	Limestone, shaly yellowish vuggy with interbedded shale	
4.55	5.45	0.90	92	Shale, whitish and calcareous	
5.45	9.10	3.65	83	Limestone, shaly with thin bands of shale	
9.10	9.80	0.70	85	Shale whitish to brownish, with thin limestone bands	
9.80	15.65	5.85	81	Shale, whitish to brownish, calcareous	
15.65	17.05	1.40	75	Shale, whitish to brownish, calcareous	
17.05	27.89	10.84	74	Shale, whitish to brownish, calcareous	
27.89	28.36	0.47	98	Shale, ferruginous	
28.36	31.23	2.87	91	Shale, whitish to brownish, calcareous	
31.23	34.53	3.30	95	Shale, whitish with thin phosphorite bands	
34.53	35.78	1.25	92	Shale, whitish with thin phosphorite bands	
35.78	36.12	0.34	98	Phosphorite with shale bands	
36.12	37.26	1.14	92	Phosphorite with shale bands	
37.26	38.47	1.21	91	Phosphorite with shale bands	
38.47	39.41	0.94	91	Sandstone fine grained	
				True Thickness: 1.66m; Weighted average: 15.06% P ₂ O ₅	

**Borehole No.B 40**

R.L. at Collar: 259.08m

Date of Commencement:

Date of Completion:

Depth Drilled:47.00m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	2.50	2.50	Nil	Sand	
2.50	7.80	5.30		Shale, whitish to greyish, micaceous and calcareous	Dip horizontal at 4.66m at 7.50 and 50°
7.80	11.05	3.25	100	Shale, whitish to greyish, micaceous and calcareous	
11.05	18.10	7.05	99	Shale, whitish to greyish, micaceous and calcareous	Dip 75° at 12.00m 47° at 15m 45° 16.60m
18.10	20.95	2.85	95	Shale, whitish to greyish, micaceous and calcareous	
20.95	21.35	0.40	100	Shale with thin stringers of phosphorite	Dip 70° at 18.40m
21.35	32.35	11.00	93	Shale, whitish, micaceous and calcareous	Phosphorite bands about 2m.
32.35	33.80	1.45	96	Shale, micaceous, phosphatic	
33.80	36.80	3.00	96	Shale, micaceous with few thin phosphorite bands	
36.80	38.10	1.30	98	Shale micaceous with thin phosphorite bands	
38.10	39.25	1.15	100	Shale micaceous with thin phosphorite bands	Dip 75° between 39.25m
39.25	40.40	1.15	100	Shale micaceous with thin phosphorite bands	
40.40	42.05	1.65	98	Phosphorite with few shale bands	
42.05	43.15	1.10	99	Phosphorite	Dip 80-85° at 42. 10m
43.15	44.55	1.40	100	Phosphorite with few shale bands	
44.55	45.10	0.55	100	Phosphorite upto 44.70 lower portion phosphatic shale, whitish	
45.10	46.20	1.10	91	Phosphorite with shale band	
46.20	47.00	0.80	99	Sandstone fine grained	
				True Thickness: 1.71m; Weighted average: 14.56% P2O5	

**Borehole No.B-42**

R.L. at Collar: 261.92m

Date of Commencement: 05.11.69

Date of Completion: 08.11.69

Depth Drilled:16.22m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	0.30	0.30	Sludge	Sand	
0.30	2.30	2.00	63	Limestone with Kankar	
2.30	3.65	1.35	89	Shale whitish calcareous	
3.65	8.05	4.40	94	Brownish to whitish shale	Dips horizontal at 3.75 & 5.15m
8.05	9.65	1.60	97	Shale whitish with few thin phosphorite bands	
9.65	11.15	1.50	87	Phosphorite with shale bands	
11.15	12.45	1.30	98	Phosphorite	
12.45	13.32	0.87	98	Phosphorite	
13.32	15.17	1.15	89	Phosphorite	
15.17	15.29	0.12	100	Shale, whitish	
15.29	16.22	0.93	99	Sandstone fine grained	
				True Thickness: 4.73m; Weighted average: 16.58% P ₂ O ₅	

**Borehole No.B-43**

R.L. at Collar: 263.75m

Date of Commencement: 07.11.69

Date of Completion: 14.11.69

Depth Drilled:19.10m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	5.10	5.10	95	Shale brownish calcareous	Dip horizontal between 1.85m to 2.05m but changes to about 45° near 4.50m
5.10	9.55	4.45	95	Shale whitish thin stringer of phosphorite seen between 5.75m and 6.30m. Dip about 50°	
9.55	12.95	3.40	99	Shale, whitish to chocolate coloured. The phosphorite stringers seen between 9.55m to 10.00m	Dip varies from about 45° to 90°
12.95	13.50	0.55	95	Phosphorite with shale bands	
13.50	14.30	0.80	96	Phosphorite with shale bands	
14.30	15.55	1.28	99	Phosphorite with shale bands few shale bands	Dips about 87° seen between 16.05m to 16.40
15.55	16.50	0.40	99	Phosphorite	
16.50	16.95	0.45	99	Phosphorite	
16.95	17.40	0.45	100	Sandstone shale	
17.40	19.10	1.70	97	Sandstone, fine grained core fractured, calcareous	
				True Thickness: 2.38m; Weighted average: 15.32% P ₂ O ₅	

**Borehole No.B-44**

R.L. at Collar: 255.87m

Date of Commencement: 10.11.69

Date of Completion: 15.11.69

Depth Drilled:27.50m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.40	1.40	Sludge	Sand with limestone pieces	
1.40	2.75	1.35	99	Shale brownish with grey limestone bands	
2.75	6.90	4.15	95	Shale whitish to brownish	
6.90	12.25	5.35	80	Shale whitish to brownish	
12.25	16.50	4.25	96	Shale whitish to brownish	Dip varies from 50° to 60°
16.50	18.05	1.55	90	Shale whitish to brownish	Dip varies from 50° to 60°
18.05	20.15	2.10	98	Shale with thin bands of phosphorite	Dip 70° at 14.70m
20.15	20.65	0.50	100	Shale with phosphorite bands	
20.65	22.45	1.80	94	Phosphorite with shale bands	
22.45	23.40	0.95	100	Phosphorite with few shale bands	
23.40	24.50	1.10	100	Phosphorite	
24.50	25.75	1.25	95	Phosphorite	
25.75	26.00	0.25	98	Phosphorite upto 25.80m, rest shale phosphatic	
26.00	27.50	1.50	92	Sandstone fine grained	
				True Thickness: 1.52m; Weighted average: 15.13% P ₂ O ₅	

**Borehole No.B-45**

R.L. at Collar: 249.04m

Date of Commencement: 15.11.69

Date of Completion: 23.11.69

Depth Drilled:31.60m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.40	1.40	Sludge	Sand with limestone pieces	
1.40	3.00	1.60	53	Shale whitish	
3.00	4.10	1.10	100	Limestone, with Kankar	
4.10	4.50	0.40	99	Sandstone, calcareous	
4.50	5.35	0.85	95	Shale, brownish	
5.35	7.40	2.05	94	Limestone grey with shale bands	Dip 50° between 7 and 7.40m
7.40	15.65	8.25	96	Shale yellowish to brownish micaceous and calcareous	Dip 40° between 10.00m and 10.____m
15.65	22.50	6.85	96	Shale, yellowish to brownish micaceous and calcareous	Dip nearing vertical between 16.00° at 23.15m
22.50	23.80	1.30	98	Shale, yellowish to reddish	Dip 60°
23.80	24.40	0.60	99	Shale with thin bands of phosphorite towards base	
24.40	26.25	1.85	97	Shale, brownish to yellowish with thin phosphorite bands	
26.25	27.00	0.75	99	Shale, yellowish with phosphorite bands	
27.00	27.70	0.70	91	Phosphorite with shale bands	Dip 60°
27.70	28.75	1.05	93	Phosphorite with few shale bands	
28.75	29.60	0.85	96	Phosphorite	
29.60	30.15	0.55	96	Phosphorite with few shale bands	
30.15	31.60	1.45	98	Sandstone, fine grained, core fractured	
				True Thickness: 1.58m; Weighted average: 15.41% P ₂ O ₅	

Borehole No.B-46

R.L. at Collar: 266.18m

Date of Commencement: 03.12.69

Date of Completion: 13.12.69

Depth Drilled:23.50m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	0.80	0.80	Sludge	Sand	
0.80	2.20	1.40	96	Shale with pieces of Kankar and phosphorite	
2.20	3.00	0.80	96	Shale, whitish	
3.00	4.05	1.05	99	Shale with phosphorite bands	
4.05	4.75	0.70	96	Shale with phosphorite bands	
4.75	5.80	1.05	96	Phosphorite with shale bands	
5.80	7.10	1.30	98	Shale, micaceous whitish with few phosphorite bands	Dip vertical at 6.50 m.
7.10	8.30	1.20	99	Shale, micaceous whitish with few phosphorite bands	
8.30	9.50	1.20	99	Shale, whitish to yellowish with thin phosphorite bands	
9.50	10.70	1.20	97	Phosphorite upto 9.75m, rest whitish shale thin phosphorite bands	Dip vertical at 10.50 m.
10.70	12.10	1.40	97	Shale, whitish with thin phosphorite bands	
12.10	13.15	1.05	99	Phosphorite with shale bands	
13.15	15.00	0.85	90	Phosphorite with few shale bands	
15.00	16.05	1.05	95	Phosphorite with shale bands	
16.05	17.30	1.25	92	Phosphorite with shale bands	Dip vertical between 16.45
17.30	17.90	0.60	96	Phosphorite	
17.90	18.60	0.70	96	Phosphorite upto 18.30, rest whitish shale	
18.60	19.40	0.80	96	Shale, whitish with phosphorite bands	
19.40	20.10	0.70	71	Shale, whitish to yellowish	
20.10	20.45	0.35	98	Sandstone, fine grained	
20.45	23.50	3.05	46	Sandstone, fine grained	
				True Thickness: 1.52m; Weighted average: 12.86% P ₂ O ₅	

Borehole No.B-47

R.L. at Collar: 264.12m

Date of Commencement: 14.12.69

Date of Completion: 31.12.69

Depth Drilled:25.50m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	0.75	0.75	40	Kankar	
0.75	4.00	3.25	93	Limestone with Kankar, weakly phosphatic	Dip about 60° horizontal
4.00	5.30	1.30	78	Shale whitish, calcareous with thin phosphorite bands	Dip about 80°
5.30	6.00	0.70	90	Shale with phosphorite bands	Dips nearing vertical
6.00	6.90	0.90	85	Shale with few phosphorite bands upto 6.58m rest phosphorite	
6.90	7.80	0.90	94	Phosphorite upto 7.05m, rest shale with thin phosphorite bands	
7.80	8.80	1.00	94	Shale with shale bands	
8.80	9.95	1.15	89	Shale with shale bands	
9.95	10.75	0.80	92	Shale with shale bands	
10.75	11.85	1.10	91	Shale with shale bands	
11.85	12.70	0.85	83	Shale with shale bands	
12.70	13.10	0.40	97	Shale with shale bands	
13.10	13.45	0.35	91	Shale with shale bands	
13.45	14.65	1.20	93	Shale with shale bands	
14.65	16.00	1.35	97	Shale with shale bands	
16.00	17.20	1.20	97	Phosphorite	
17.20	18.20	1.00	97	Phosphorite	Dips high about 88°
18.20	19.30	1.10	96	Phosphorite with shale bands	
19.30	20.55	1.25	94	Phosphorite with shale bands	
20.55	21.45	0.90	57	Phosphorite with shale bands	
21.45	22.30	0.85	53	Phosphorite with shale bands	
22.30	23.15	0.85	87	Phosphorite with shale bands	
23.15	23.45	0.30	97	Shale, yellowish with few thin phosphorite bands	
23.45	24.85	1.40	88	Shale, yellowish phosphatic	
24.85	25.50	0.65	92	Sandstone, fine to medium grained	
				True Thickness: 3.40m; Weighted average: 16.28% P ₂ O ₅	

**Borehole No.B-48**

R.L. at Collar: 257.98m

Date of Commencement: 01.01.70

Date of Completion: 03.01.70

Depth Drilled:10.90m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.00	1.00	Sludge	Sand	
1.00	3.05	2.05	99	Kankar with vugs	
3.05	4.05	1.00	92	Phosphorite with Kankar	
4.05	5.30	1.25	100	Phosphorite	Dip about 30°
5.30	6.10	0.80	96	Phosphorite	Dip about 12° between 6.80 to 7.0m
6.10	7.25	1.15	99	Phosphorite with few shale bands	
7.25	8.05	0.80	95	Phosphorite	
8.05	8.85	0.80	95	Phosphorite	
8.85	9.55	0.70	100	Phosphorite upto 9.25 rest whitish shale	
9.55	10.28	0.73	100	Shale, whitish	
10.28	10.90	0.62	100	Sandstone, medium grained with fractures	
				True Thickness: 4.04m; Weighted average: 18.92% P ₂ O ₅	

**Borehole No.B-49**

R.L. at Collar: 254.35m

Date of Commencement:

Date of Completion:

Depth Drilled:12.25m

Angle with horizon at Collar:

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	0.80	0.80	Sludge	Sand	
0.80	1.00	0.20	100	Kankar	
1.00	2.20	1.20	99	Limestone Phosphatic	
2.20	3.20	1.00	97	Phosphorite	
3.20	3.90	0.70	90	Phosphorite, shows, Kankar formation	
3.90	4.65	0.75	83	Phosphorite	
4.65	5.45	0.80	84	Phosphorite	
5.45	6.50	1.05	94	Phosphorite	
6.50	7.40	0.90	100	Phosphorite	
7.40	8.55	1.15	100	Phosphorite	
8.55	9.20	0.65	92	Phosphorite with few shale bands	
9.20	9.94	0.74	94	Phosphorite, banded with few shale bands	
9.94	12.25	2.31	97	Sandstone, medium grained, weakly phosphatic	
				True Thickness: 5.07m; Weighted average: 17.00% P ₂ O ₅	

**Borehole No.B-54**

R.L. at Collar: 248.79m

Date of Commencement: 11.03.70

Date of Completion: 20.03.70

Depth Drilled: 46.50m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.50	1.50	Sludge	Sand	Borehole has passed through basla strata (below phosphorite horizon)
1.50	4.00	2.50	57	Kankar with few quartz pebbles	
4.00	5.00	1.00	81	Sandstone, fine grained pebbly	
5.00	5.50	0.50	100	Sandstone, medium grained	
5.50	9.50	4.00	95	Shale, micaceous and grey	Dip 45° at 10m
9.50	11.50	2.00	95	Sandstone, micaceous fine grained	Dip 45° at 15m
11.50	16.00	4.50	97	Sandstone, shaly	Dip bands to be us about 6°
16.00	22.50	6.50	96	Sandstone, shaly, well bedded	Dip 14° at 23m
22.50	25.50	3.00	95	Sandstone, shaly with veins of calcite	Dip about 20° at 28m
25.50	28.00	2.50	96	Siltstone	
28.00	45.40	17.40	96	Alterating bands of shale and fine grained sandstone	
45.40	46.50	1.10	56	Shale, black	

Borehole No.B-56

R.L. at Collar: 246.43m

Date of Commencement: 11.01.70

Date of Completion: 30.01.70

Depth Drilled: 54.90m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.50	1.50	Sludge	Sand	
1.50	2.50	1.00	99	Kankar	
2.50	19.65	17.15	97	Dolomite, with calcite veins, vugs and Kankar at places, weakly phosphatic between 9.70m to 10.40m	Dip about 55° at 11.00m
19.65	26.70	7.05	96	Shale, brownish micaceous	Dip varies from 12° to 15° at 26.75m
26.70	33.80	7.10	96	Shale, brownish micaceous	Dip 20° between 28.35m to 29.05m
33.80	37.30	3.50	98	Siltstone brownish micaceous	Weakly phosphatic
37.30	41.20	3.90	88	Shale, grey micaceous with few thin band of phosphorite	Dip about 70° between 39.40m to 40.30m
41.20	43.20	2.00	98	Siltstone grey micaceous with few thin bands of phosphorite	
43.20	45.10	1.90	91	Siltstone grey to purple micaceous	Dip about 70° between 43.20m to 43.90m
45.10	47.25	2.15	88	Shale grey micaceous with thin bands of phosphorite	Dip about 55° between 45.10m to 46.26m
47.25	48.25	1.00	74	Shale grey micaceous with thin bands of phosphorite	
48.25	49.55	1.30	99	Shale grey micaceous with thin bands of phosphorite	
49.55	51.30	1.75	84	Phosphorite between 49.55m to 50.10m Rest shale with thin bands of phosphorite	
51.30	52.75	1.45	84	Shale, whitish micaceous with thin bands of phosphorite	
52.75	54.25	1.50	80	Shale whitish upto 53.25m Rest phosphorite	
54.25	54.90	0.65	97	Sandstone, fine grained	
				True Thickness: 1.69m; Weighted average: 9.8% P ₂ O ₅	

Borehole No.B-57

R.L. at Collar: 252.86m

Date of Commencement: 31.01.70

Date of Completion: 10.02.70

Depth Drilled: 54.30m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.00	1.00	Sludge	Sand	
1.00	3.90	2.90	98	Shale, brownish and micaceous	
3.90	7.85	3.95	97	Siltstone, variegated	Dip about 40°
7.85	10.35	2.50	98	Shale, brownish and micaceous	
10.35	11.40	1.05	100	Alternating bands of whitish and brownish siltstone	
11.40	15.65	4.20	97	Shale, brownish with few purple bands	
15.65	17.40	1.75	98	Siltstone, brownish	
17.40	19.50	2.10	95	Siltstone, brownish within phosphorate bands	
19.50	21.80	2.30	95	Siltstone grey with thin phosphorite bands	
21.80	22.50	0.70	90	Shale, micaceous	Not Sampled
22.50	24.10	1.60	96	Shale, micaceous with thin phosphorite bands	
24.10	25.70	1.60	94	Phosphorite upto 24.70m Rest micaceous shale	
25.70	26.20	0.50	62	Shale, micaceous	Not Sampled
26.20	26.70	0.50	98	Shale, micaceous	
26.70	27.70	1.00	95	Shale, micaceous	Dip about 60°
27.70	28.70	1.00	100	Shale, micaceous with thin bands of phosphorite	Dip about 70°
28.70	29.80	1.00	93	Shale, micaceous	
29.80	30.80	1.00	95	Shale, micaceous upto 30.08m Rest Phosphorite	
30.80	30.85	0.05	95	Phosphorite	
30.85	31.20	0.35	100	Shale	
31.20	31.70	0.50	97	Phosphorite	
31.70	33.05	1.35	97	Shale, micaceous and brown	Not Sampled
33.05	35.30	2.25	84	Phosphorite, banded	Dip 50° between 33.85m and 34.20m
35.30	37.75	2.45	99	Shale, brownish, micaceous	
37.75	40.75	3.00	97	Shale, with few phosphorite bands	



ANNEXURE-III-A/21

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
40.75	43.25	2.50	98	Shale, micaceous with phosphorite bands	Dips about 20° variable
43.25	45.25	2.00	99	Phosphorite, with micaceous shale bands	
45.25	46.05	0.80	99	Shale, whitish	
46.05	48.25	2.20	89	Shale, with phosphorite bands	
48.25	49.50	1.25	72	Phosphorite upto 49.30m Rest fine grained sandstone	
49.50	50.30	0.80	67	Sandstone, fine grained	
				True Thickness: 3.05m; Weighted average: 11.34% P ₂ O ₅	

**Borehole No.B-58**

R.L. at Collar: 262.99m

Date of Commencement: 11.02.70

Date of Completion: 26.02.70

Depth Drilled: 58.10m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	0.65	0.65	Sludge	Sand	
0.65	7.40	6.75	93	Limestone, yellowish	
7.40	10.40	3.00	97	Limestone, grey with Kankar at Places	
10.40	11.55	1.15	98	Limestone, yellowish and shaly	
11.55	13.35	1.80	94	Limestone, grey	
13.35	13.50	0.15	100	Shale, yellowish	
13.50	29.00	15.50	97	Limestone, grey with few shale bands	
29.00	31.35	2.35	99	Siltstone, yellowish to grey micaceous	
31.35	43.75	12.40	91	Siltstone, variegated and micaceous	
43.75	47.25	3.50	96	Shale, variegated	
47.25	50.30	3.05	83	Shale, whitish and yellowish with thin phosphorite bands	
50.30	51.10	38.00	85	Shale with thin phosphorite bands	
51.10	51.60	0.50	98	Phosphorite with thin shale bands	
51.60	52.40	0.80	87	Shale with thin bands of phosphorite	
52.40	53.30	0.90	87	Shale upto 52.53m Rest phosphorite	
53.30	53.90	0.60	93	Shale with phosphorite bands upto 53.68m Rest phosphorite	
53.90	54.90	1.00	79	Shale with phosphorite bands	
54.90	56.15	1.25	77	Phosphorite with thin shale bands	
56.15	56.80	0.65	98	Phosphorite with thin shale bands	
56.80	57.35	0.55	90	Shale, yellowish with thin phosphorite bands	
57.35	58.10	0.75	79	Sandstone, fine grained	
				True Thickness: 2.14m; Weighted average: 11.73% P ₂ O ₅	

**Borehole No.B-59**

R.L. at Collar: 258.10m

Date of Commencement: 27.02.70

Date of Completion: 08.03.70

Depth Drilled: 29.95m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	2.00	2.00	Sludge	Sand	
2.00	2.50	0.50	100	Limestone, yellowish	
2.50	3.50	1.00	100	Shale, yellowish	
3.50	8.60	5.10	94	Limestone, shaly yellowish with vugs	Dip varies from 60° to 90°
8.60	10.75	2.15	96	Shale, whitish to brownish	Dips steep
10.75	12.80	2.05	96	Shale, whitish to brownish with few ferruginous bands	
12.80	16.25	3.45	99	Shale, yellowish to white	Dip 60° at 12.90m
16.25	21.45	5.20	99	Shale whitish, well banded with few ferruginous bands	Dip 58° at 18.35m
21.45	23.85	2.40	94	Shale, whitish with thin bands of phosphorite	
23.85	24.35	0.50	84	Shale, micaceous phosphatic	
24.35	25.60	1.15	89	Shale, micaceous with bands of phosphorite	
25.60	26.75	1.15	94	Shale, micaceous with bands of phosphorite	
26.75	27.58	0.63	97	Shale, micaceous with bands of phosphorite	
27.58	28.20	0.62	96	Phosphorite	
28.20	28.30	0.10	90	Shale, pink	
28.30	28.90	0.60	90	Phosphorite upto 28.44 Rest shale with phosphorite bands	
28.90	29.40	0.50	88	Phosphorite with few shale bands	
29.40	29.95	0.55	93	Sandstone, fine grained	
				True Thickness: 0.96m; Weighted average: 11.51% P ₂ O ₅	



ANNEXURE-III-A/24

Borehole No.B-62

R.L. at Collar: 247.63m

Date of Commencement: 22.03.70

Date of Completion: 24.03.70

Depth Drilled: 9.50m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	2.00	2.00		Soil with bounders	
2.00	5.50	3.50		Sand with pieces of limestone and sandstone	
5.50	6.00	0.50	68	Pieces of limestone and quartz	
6.00	6.50	0.50	92	Shale	
6.50	7.50	1.00	99	Shale Shale upto 6.80m. Rest Phosphorite	
7.50	8.28	0.78	96	Phosphorite	
8.28	9.50	1.22	84	Sandstone, fine grained with ferruginous encrustations and shale towards base	

Borehole No.B-63

R.L. at Collar: 252.33m

Date of Commencement: 22.03.70

Date of Completion: 20.04.70

Depth Drilled: 91.65m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	0.50	0.50	Sludge	Sand	
0.50	1.50	1.00	Sludge	Shale chocolate coloured	
1.50	3.00	1.50	87	Shale, micaceous and variegated	
3.00	6.00	3.00	86	Siltstone, variegated grade into fine grained sandstone	Dip about 45°
6.00	12.00	6.00	94	Sandstone, fine grained at places shaly	
12.00	15.00	3.00	95	Sandstone, very fine grained with few shale bands	Grades into dolomitic limestone
15.00	31.10	16.10	95	Limestone, dolomitic, grey at places brownish	
31.10	34.00	2.90	99	Limestone, grey to dolomitic at places shaly, with calcite along cracks	
34.00	41.50	7.50	92	Limestone, grey to brown, micaceous	
41.50	44.50	3.00	97	Siltstone, grey to brown banded micaceous	Dip 45° at 42m
44.50	51.05	6.55	97	Shale, micaceous brown	
51.05	53.50	2.45	97	Alternative, bands of brown and black shale	
53.50	54.00	0.50	100	Shale, carbonaceous and micaceous	
54.00	54.50	0.50	98	Shale, brownish and micaceous	
54.50	55.50	1.00	87	Alternating bands of brownish and micaceous black shale	
55.50	70.50	15.00	89	Shale, micaceous, carbonaceous weakly phosphatic at places	Dip 35° at 70m
70.50	80.50	10.00	94	Shale, micaceous, carbonaceous, phosphatic towards base	
80.50	85.50	5.00	76	Shale, micaceous, carbonaceous, phosphatic at places	Dip 35° between 81.10m and 81.70m
85.50	88.59	3.09	77	Shale, arenaceous upto 85.65m. Rerst fine grained sandstone	
88.59	90.35	1.76	78	Shale, carbonaceous non phosphatic	
90.35	90.65	0.30	66	Sandstone, fine grained with stringers of black shale upto 90.50. Rest carbonaceous shale	
90.65	91.65	1.00	98	Shale, carbonaceous with thin bands of fine sandstone	

**Borehole No.B-65**

R.L. at Collar: 252.25m

Date of Commencement: 22.04.70

Date of Completion: 15.05.70

Depth Drilled: 91.80m

Angle with horizon at Collar: Vertical

Bearing: -

From (m)	To (m)	Run (m)	Recovery%	Rock Description	Remarks
0.00	1.50	1.50	Sludge	Sand	
1.50	3.50	2.00	77	Sandstone, fine grained at places ferruginous	
3.50	4.15	0.65	98	Siltstone, micaceous	
4.15	4.76	0.61	98	Sandstone, fine grained	
4.76	7.50	2.74	79	Siltstone, variegated	
7.50	11.50	4.00	87	Sandstone fine to medium grained with few ferruginous bands	
11.50	14.50	3.00	93	Siltstone, with white and red bands	
14.50	18.50	4.00	88	Limestone, grey with vugs and few shale bands	
18.50	24.20	5.70	96	Limestone, shaly	
24.20	25.00	0.80	98	Limestone, shaly with thin phosphorite bands towards base	
25.00	26.80	1.80	98	Shale	
26.80	29.00	2.20	99	Sandstone, with few shale bands	Dip 33°
29.00	34.90	5.90	97	Alternating bands of brown and red siltstone micaceous	
34.90	36.25	1.35	95	Sandstone, micaceous fine grained with few shale bands	
36.25	42.90	6.65	99	Siltstone, micaceous, brownish	
42.90	45.74	2.84	94	Limestone, shaly grey	
45.74	69.13	23.39	87	Limestone, dolomitic grey with cracks filled with secondary calcite, at places	
69.13	73.22	4.09		Siltstone, micaceous brownish	
73.22	85.20	11.98	67	Shale, grey with carbonaceous bands	Weakly phosphatic at the beginning and between 83.50m and 85.20m
85.20	91.80	6.60	86	Shale, grey with carbonaceous bands	