A NOTE ON LANDSLIDE INCIDENCE ALONG OLD IMPHAL-UKHRUL ROAD (NEW HEAVEN - LAMLANG GATE SECTION), UKHRUL DISTRICT, MANIPUR

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With reference to local media report published in the "The People's Chronicle" dated 6th August, 2018 and headlined "Ukhrul villages cut off after heavy landslide", a three member team from Geological Survey of India, SU: Manipur-Nagaland, GSI Imphal Office carried out a field visit along the old Imphal - Ukhrul road section on 7th August, 2018. The 42 point detailed geo-parametric attributes of the landslide occurred along New Heaven-Lamlang Gate section of Imphal – Ukhrul road are given below:-

Data sheet for preliminary investigation of landslide along New Heaven – Lamlang Gate section of Old Imphal – Ukhrul road, Ukhrul District, Manipur

Sl. no	Field	Description
1	Slide No. (LS No.)	*MAN/UKL/83L01/2018/008*
2	State	*Manipur*
3	District	*Ukhrul*
4	Toposheet *No.*	*83L/01*
5	Name of the slide	*New Heaven Slide*
6	NH/SH/Locality	*Old Imphal – Ukhrul road*
7	Latitude	*24°59'34.4"*
8	Longitude	*94°13'50.1"*
9	Length	*45 m*
10	Width	*12 m*
11	Height	*40 m*
12	Area	*--m^2*
13	Depth	*--m*
14	Volume	*--m^3*
15	Run out distance	*10 m*
16	Type of Material	*Rock*
17	Type of movement	*Slide*
18	Rate of movement	*Moderate*
19	Activity	*Active*
20	Distribution	*Enlarging*
21	Style	*Single*
22	Failure mechanism	*Shallow planar failure*
23	History	*Exact date of the occurrence of the slide is not known, however the villagers narrated its occurrence during the first week of July, 2018*
24	Geomorphology	*The area is represented by highly dissected, rugged, NNE-SSW trending alternate synclinal hill ridges and anticlinal valleys showing a 2nd order topography. Landslide occurs at western steep flank (hill slope of 60° toward 230° at sliding zone) of NNE-SSW trending hill ridge.*
25	Geology	*Intercalation of shale, siltstone and sandstone of Disang Group*
26	Structure	*Western flank of NNE-SSW trending hill ridge showing dipping bed 53°*

		towards 125° (Easterly). Three prominent joint sets in the sliding area are measured i.e. J_1 - 65° dipping towards 110°, J_2 - 68° dipping towards 040° and J_3 - 66° dipping towards 240°. The hill slope at the sliding zone is 60° towards 230°. However, Joints do not play a major role in the slide which is indicated by stereographic analysis of joint sets (Fig. 2)
27	Landuse/Landcover	*Eastern upslope portion of the sliding area is represented by thick to moderate vegetation. However, the sliding zone is represented by moderate to sparse vegetation.*
28	Hydrological condition	*Flowing during rainy season. NE-SW trending Thoubal River is flowing at downslope of the sliding zone.*
29	Triggering Factor	*Excessive rainfall*
30	Death of persons	*Nil*
31	People affected	*Nil*
32	Livestock loss	*Nil*
33	Communication	*Old Imphal – Ukhrul Road totally blocked by the landslide.*
34	Infrastructure	*Nil*
35	Agriculture/ Forest/Barren	*Generally, the area is represented by forest of thick to moderate vegetation. Terrace cultivations are observed at western flank of NE-SW flowing Thoubal River.*
36	Geo-scientific Causes	*i. Presence of topographic break in slope at upslope portion of the slide* *ii. Water flowing down from the upslope portion slow down at the topographic break and saturates the materials at downslope due to water percolation.* *iii. Lack of support indicated by the presence of another break in slope at the middle part of the slope (Fig. 3A).*
37	Remedial measures	*i. Immediate removal of debris material which block the road (Old Imphal – Ukhrul road).* *ii. The newly developed nala (running along the middle part of the slide) be made functional clearing the debris material and making a proper drainage system.* *iii. Geometrical modification of slope at suitable places of the slope.* *iv. Plantation of fast growing wide spread rooted short height plants on the affected slopes.*
38	Remarks, if any	-
39	Photos, sketch of plan & section of the slide	*Enclosed [Fig. 1-7]*
40	Summary/Abstract	*Landslide occurred at New Heaven – Lamlang Gate section of Old Imphal – Ukhrul road totally blocked the road which affect the villagers in their normal communication and transportation in the road. The area is represented by highly dissected, rugged, NNE-SSW trending alternate synclinal hill ridges and anticlinal valleys showing a 2^{nd} order topography. Intercalation of shale, siltstone and sandstone of Disang Group dipping 53° towards 125° (Easterly) are the exposed lithology in the area. Three prominent joint sets i.e. J_1 - 65° dipping towards 110°, J_2 - 68° dipping towards 040° and J_3 - 66° dipping towards 240° are observed in the area. However, joints do not play a major role in the slide (Fig.2)*
41	Pdf	*Enclosed*
42	Landslide category	*II*

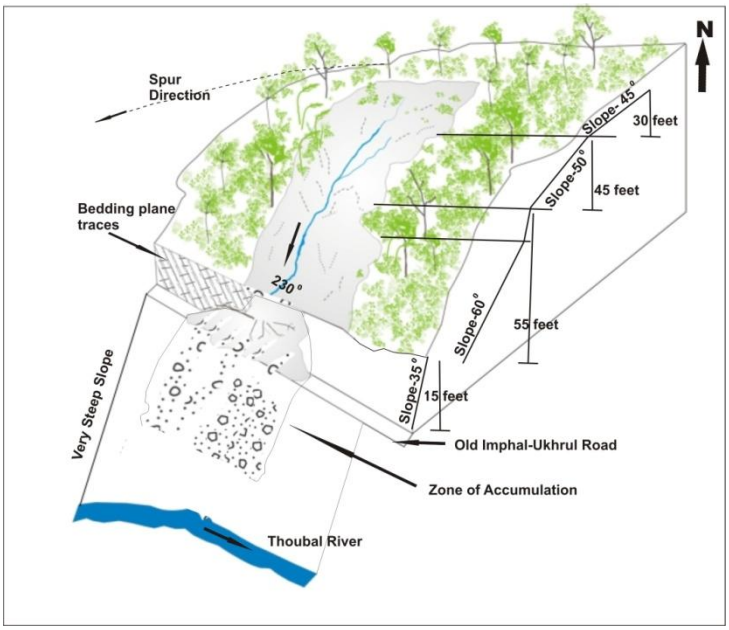

Fig. 1: Schematic block diagram of the landslide along New Heaven- Lamlang Gate section of Old Imphal – Ukhrul road.

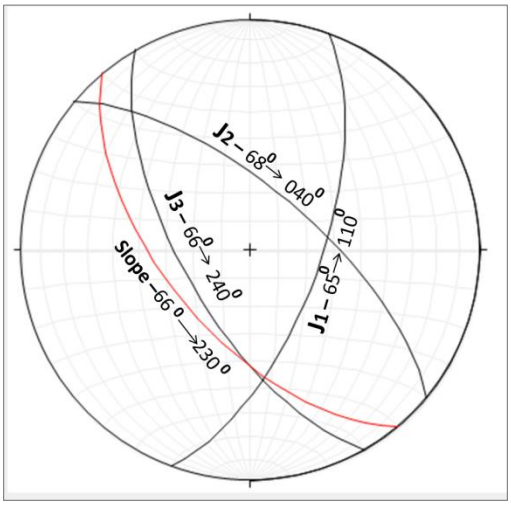

Fig. 2: Stereo plot of geological field data of the landslide.

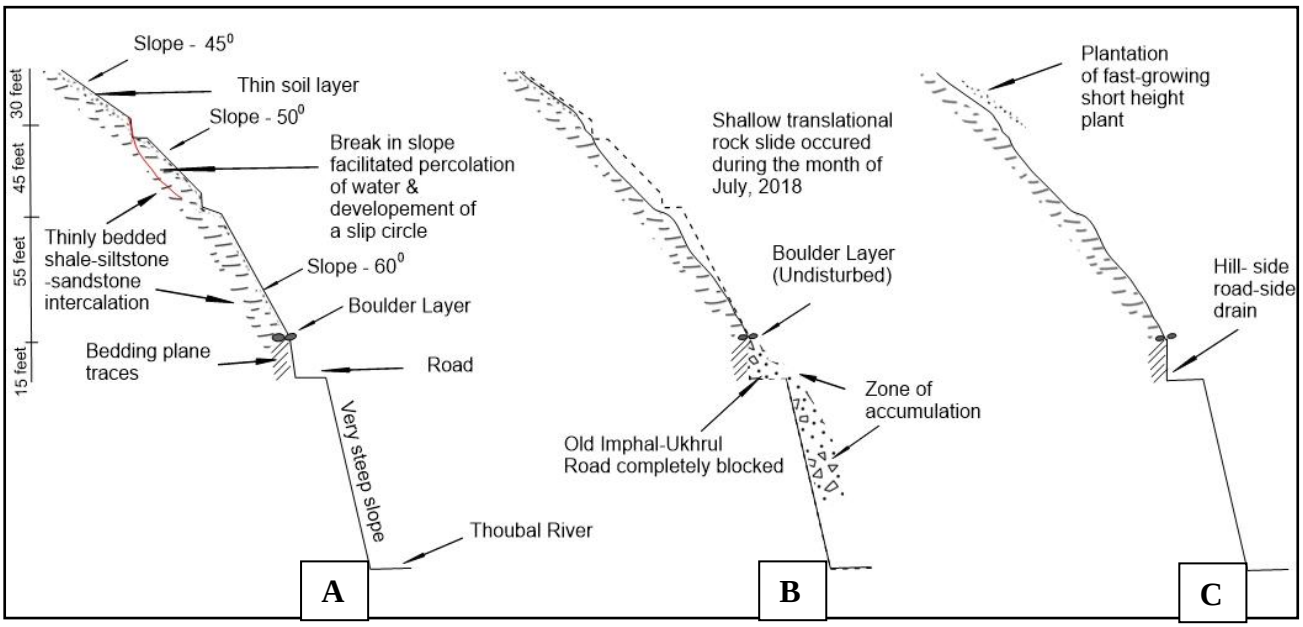

Fig. 3: Schematic section showing the slope configuration related to pre and post stages of the landslide.

Fig. 4: A view of the landslide along New Heaven - Lamlang Gate section of Old Imphal – Ukhrul road.

Fig. 5: Photograph showing sectional view of the landslide.

Fig. 6: Photograph showing total road blockage of New Heaven – Lamlang Gate section of Old Imphal – Ukhrul road.

Fig. 7: Photograph showing highly jointed and weathered shale – siltstone – sandstone intercalation at the site of the landslide.