

Line D

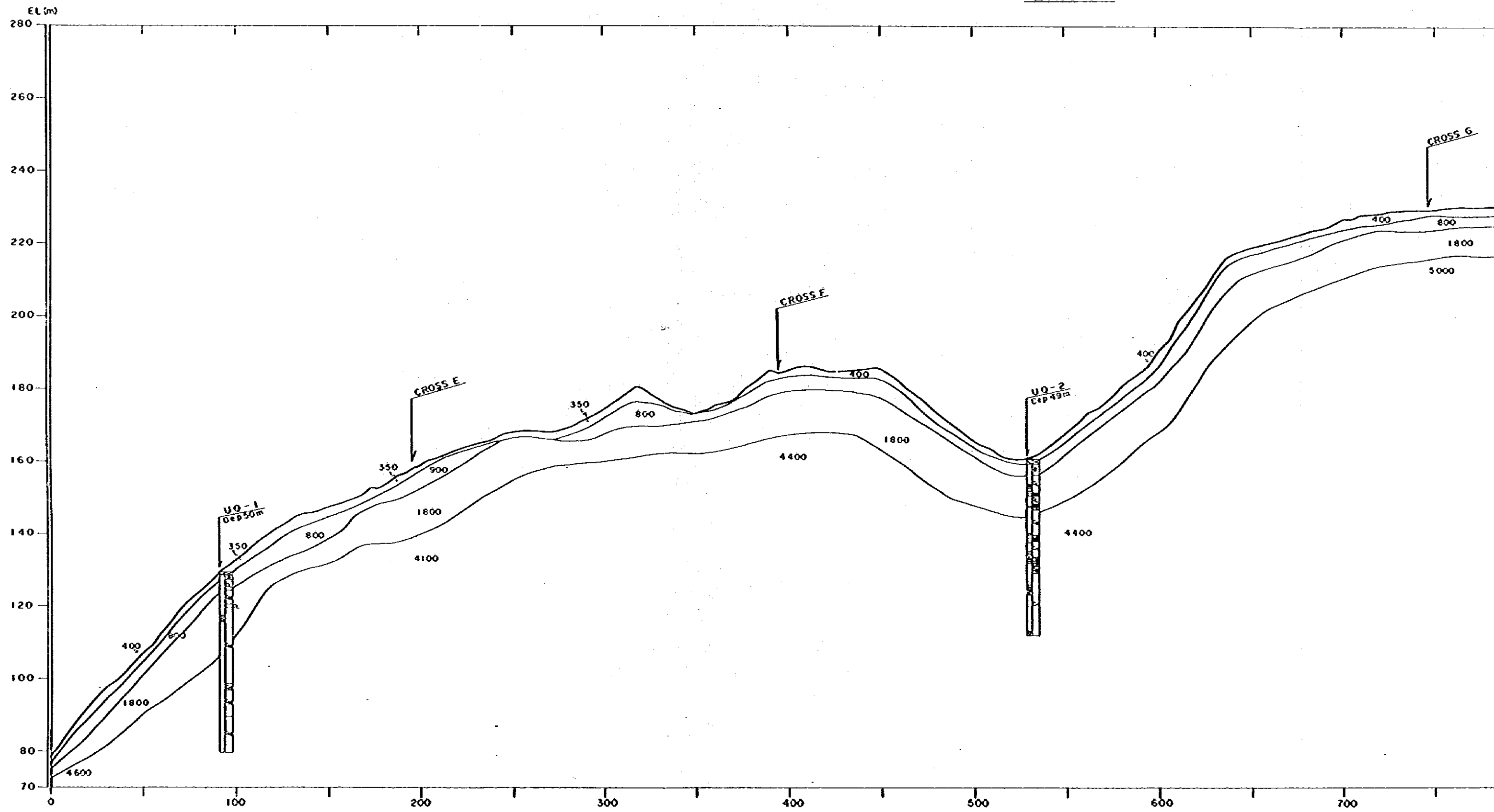
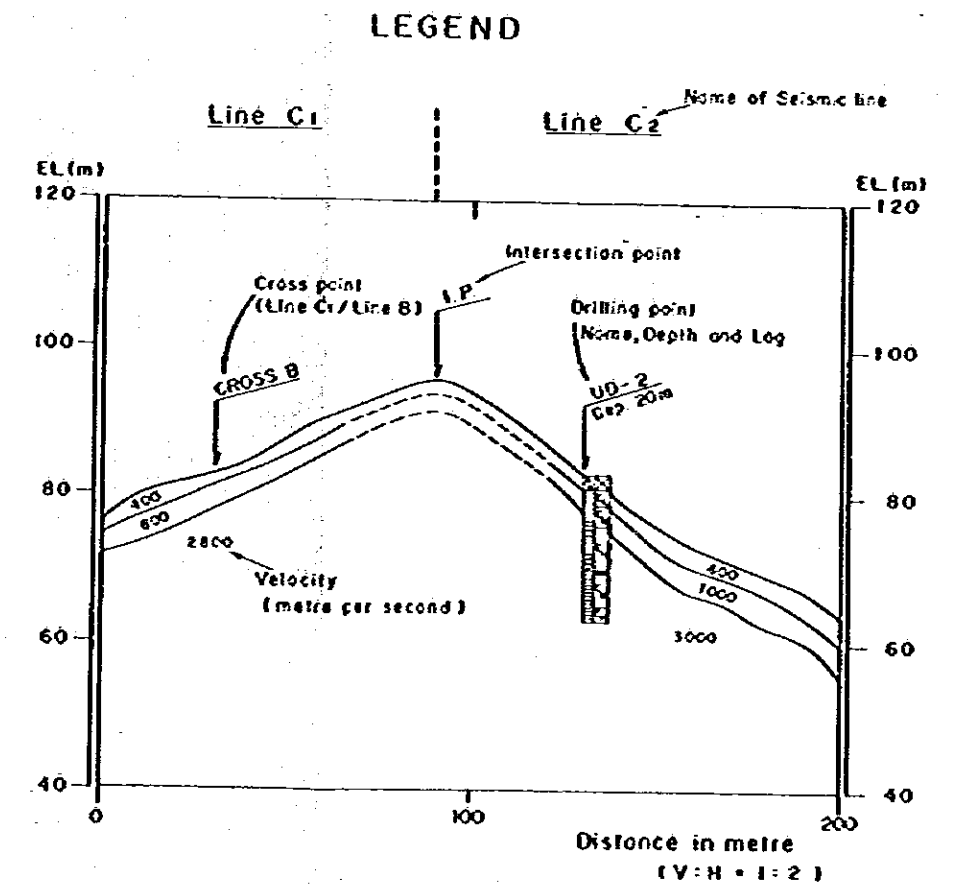
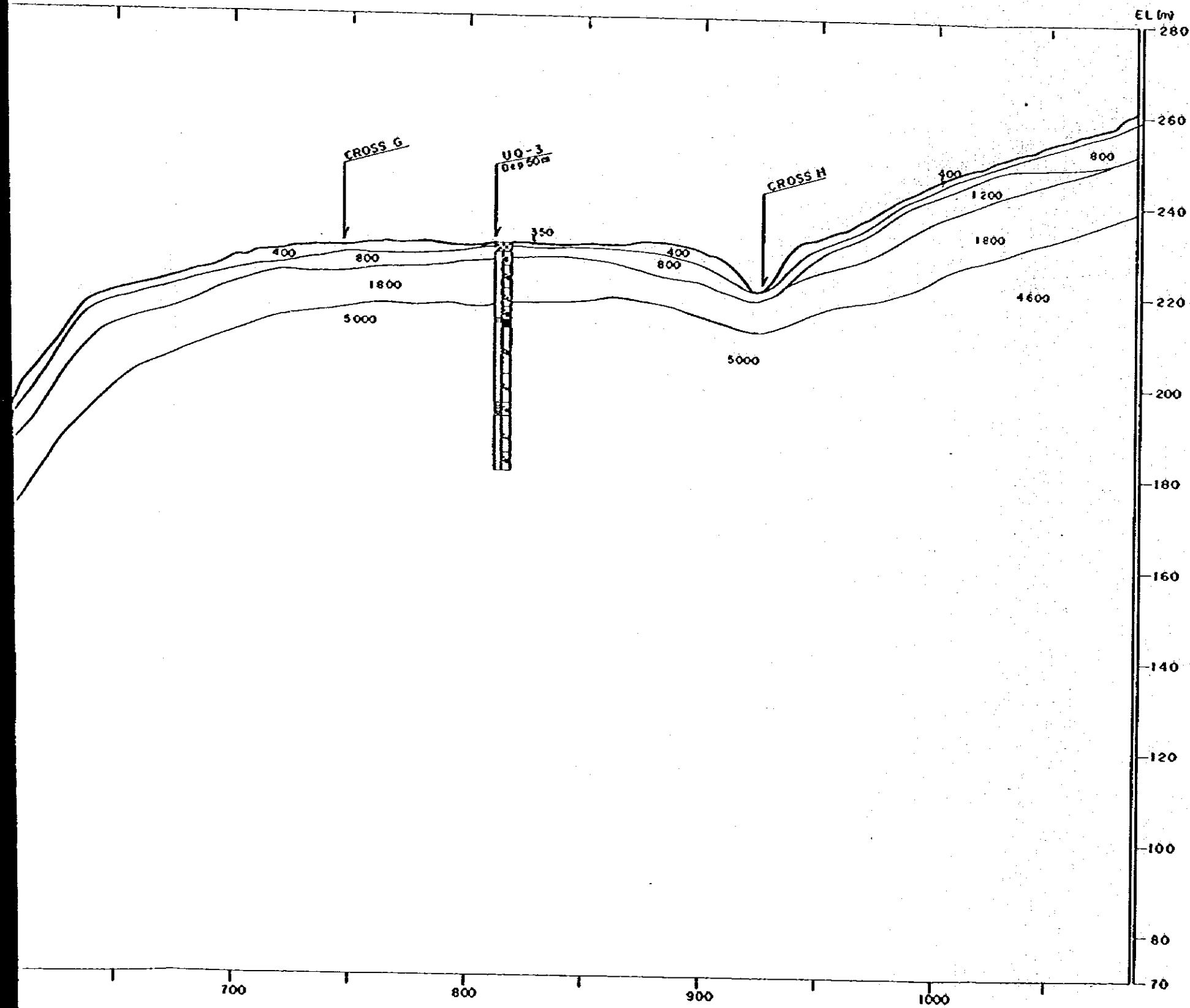


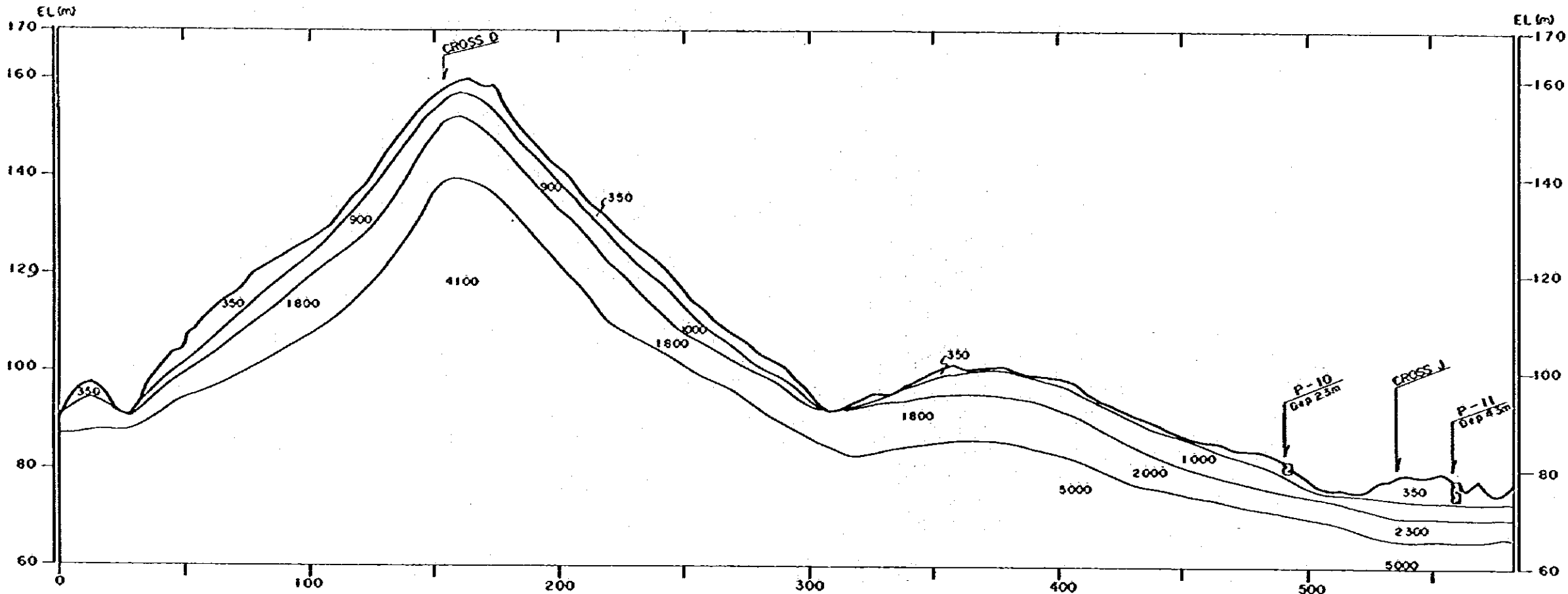
Fig. 4.14.1
SEISMIC PROSPECTING



Mark of Sample		Rock Classification	
	Talus Deposits		Excellent
	Stratum of Predominantly Sandstone		C _H
	Stratum of Predominantly Shale		C _w
	Conglomerate		C _L
	Alternation of Sandstone and Shale		D
			Fractured Zone

Line D
(Upper Quarry Area)

Line E



Line F

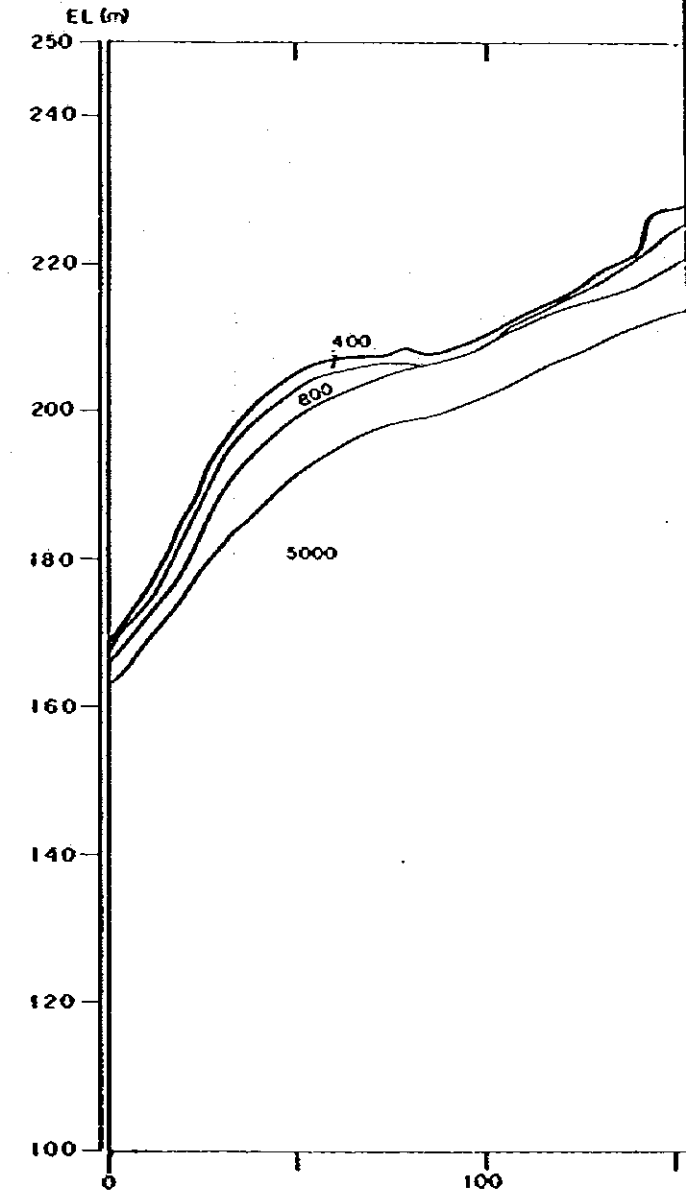
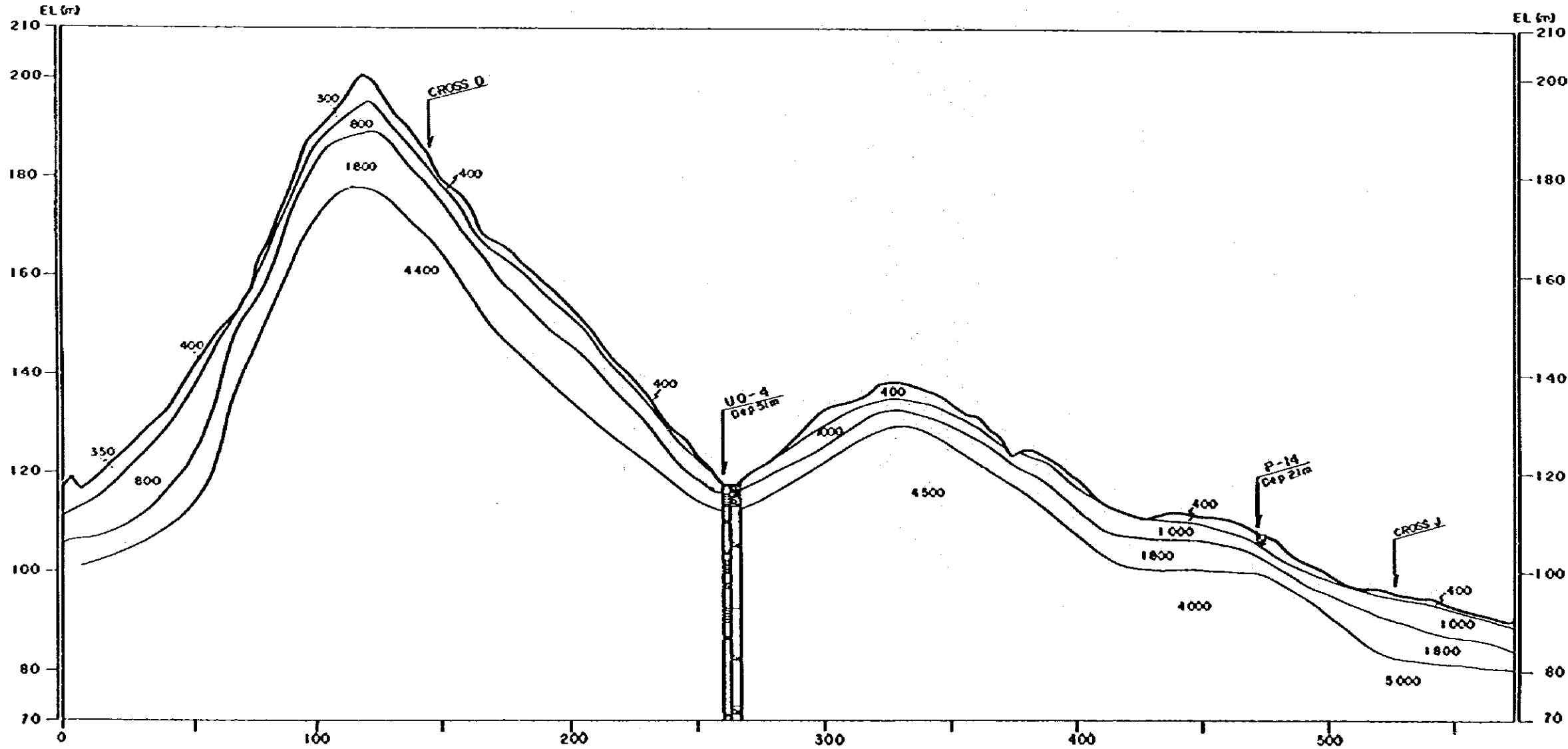
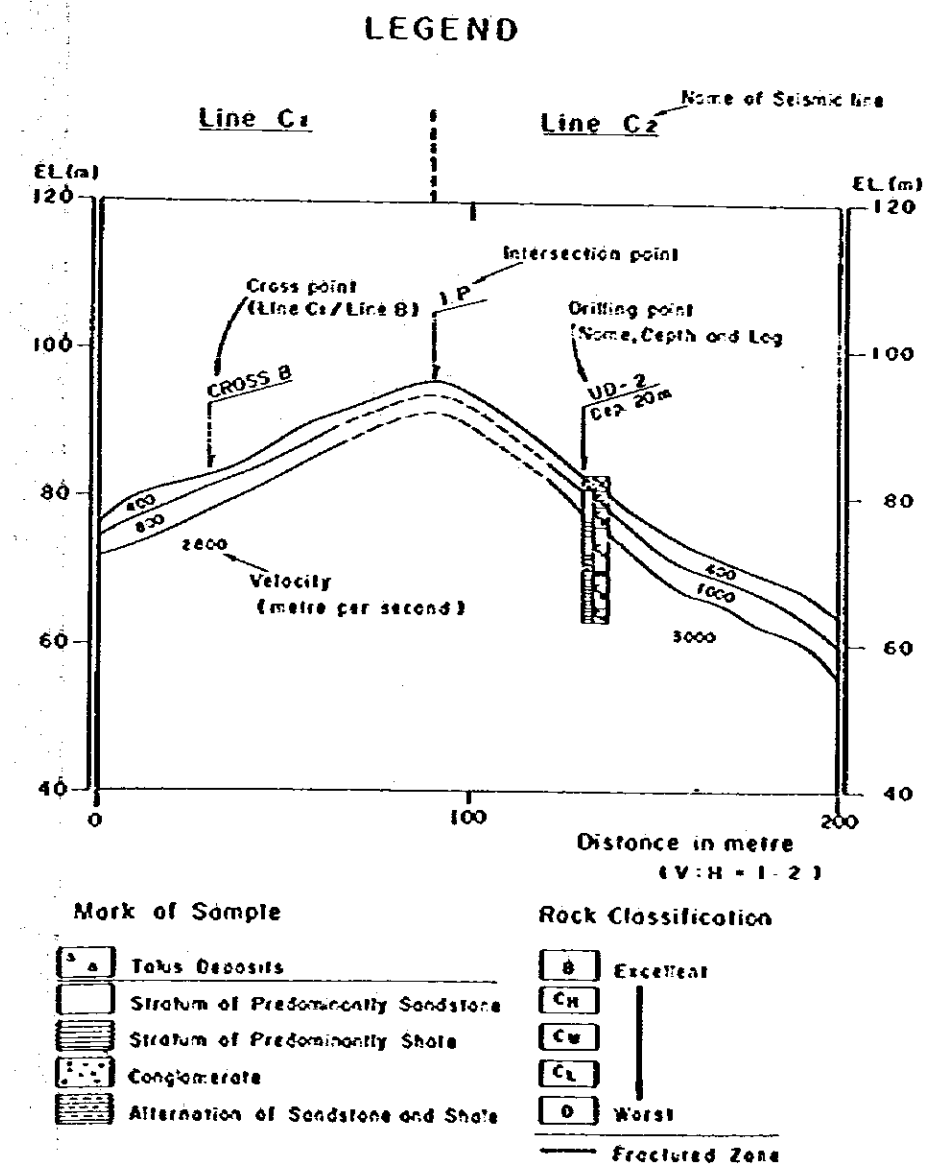
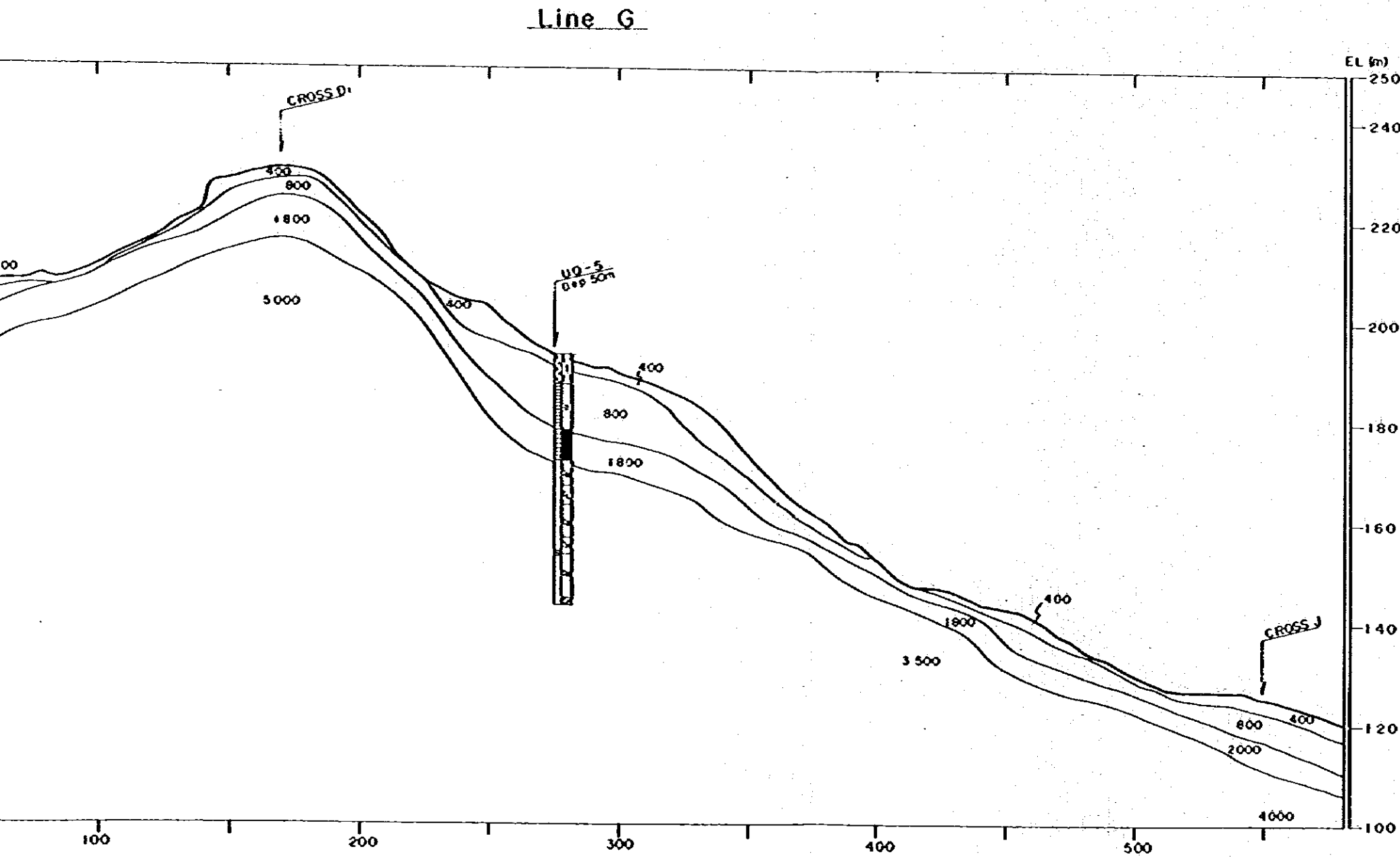
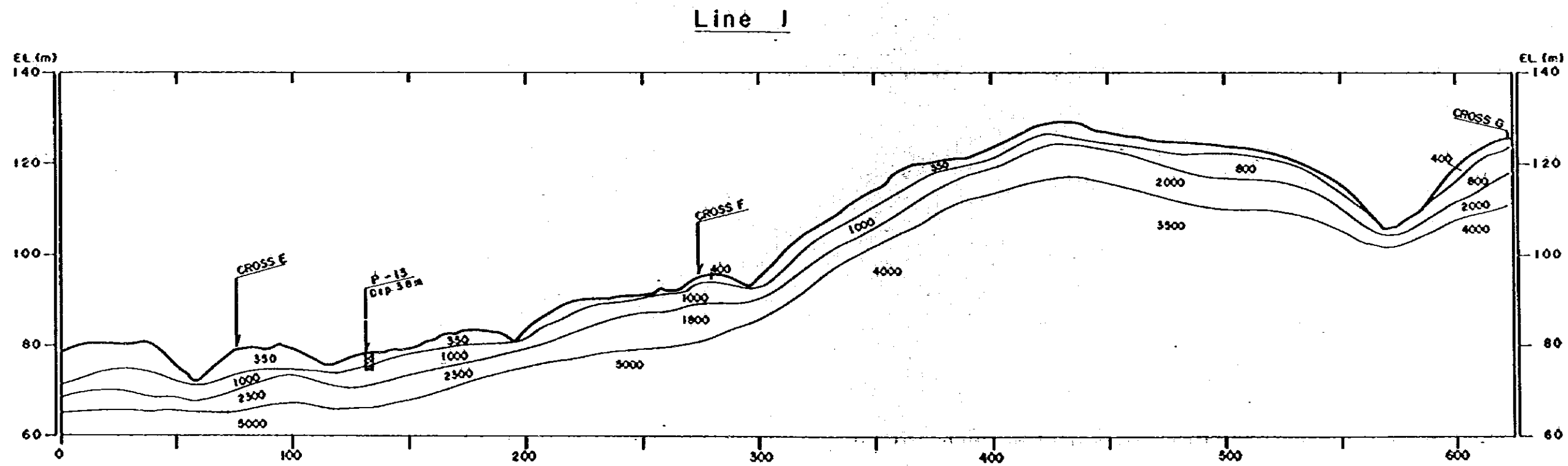
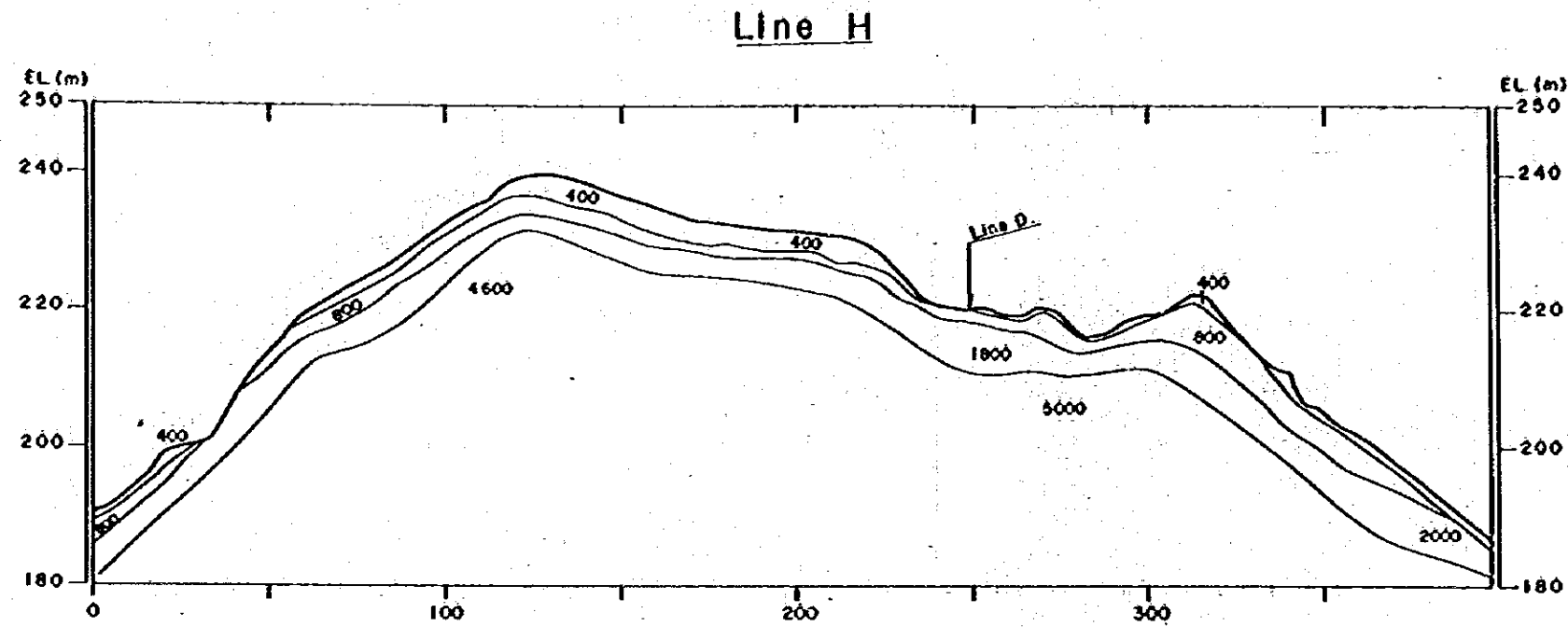


Fig. 4.14.2
SEISMIC PROSPECTING

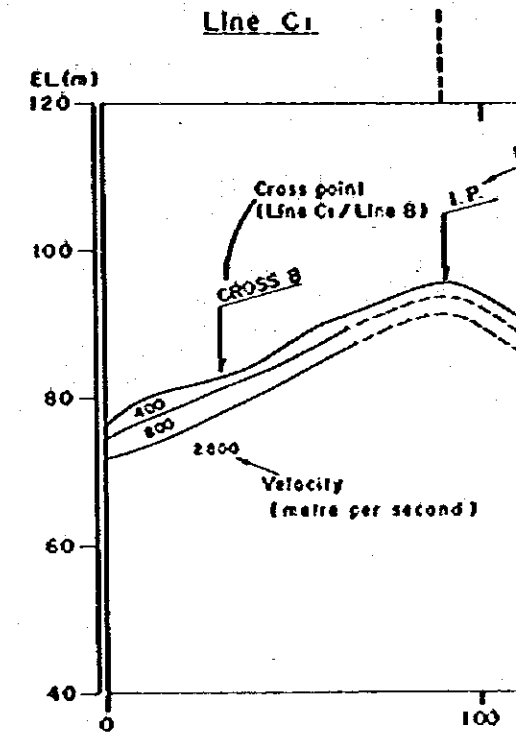


Line E, F, G,
(Upper Quarry Area)

Fig. 4.14.3
SEISMIC PROSP



LEGEND



Mark of Sample

- Talus Deposits
- Stratum of Predominantly Sandstone
- Stratum of Predominantly Shale
- Conglomerate
- Alternation of Sandstone and Shale

Line H, I
(Upper Quarr)

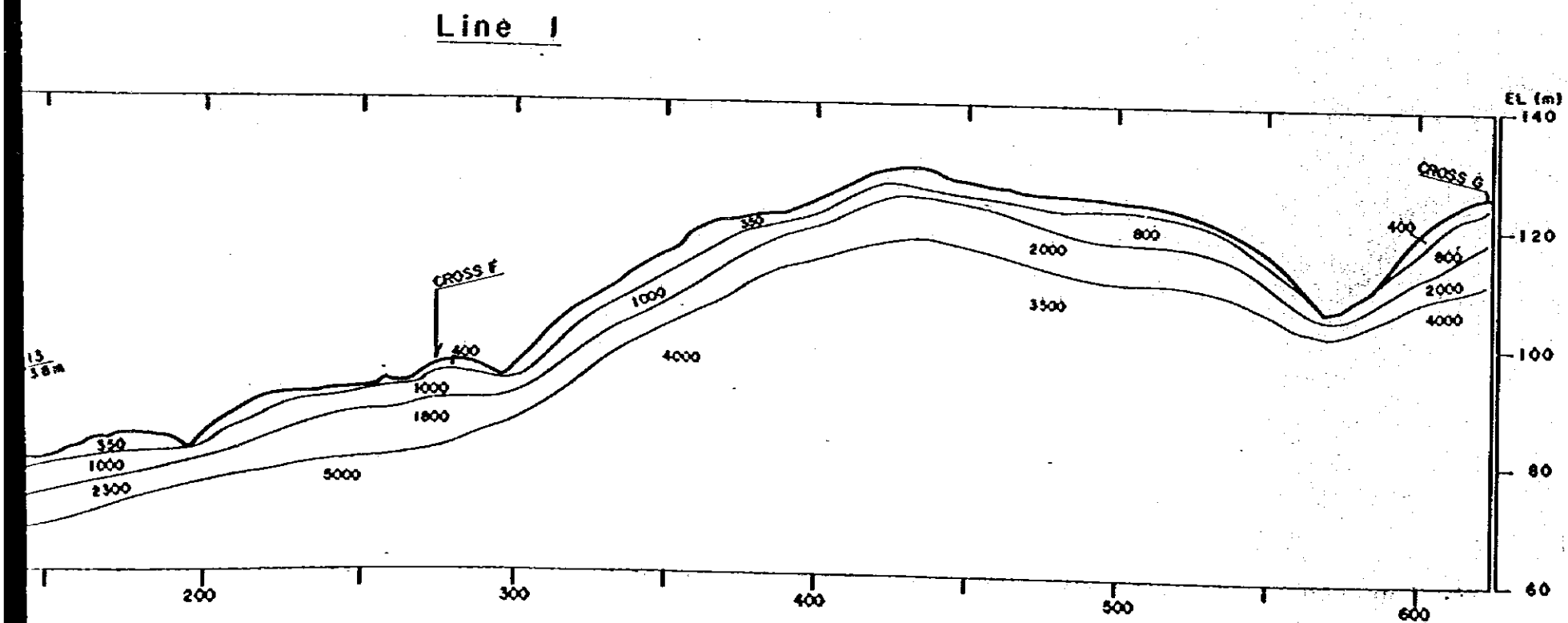
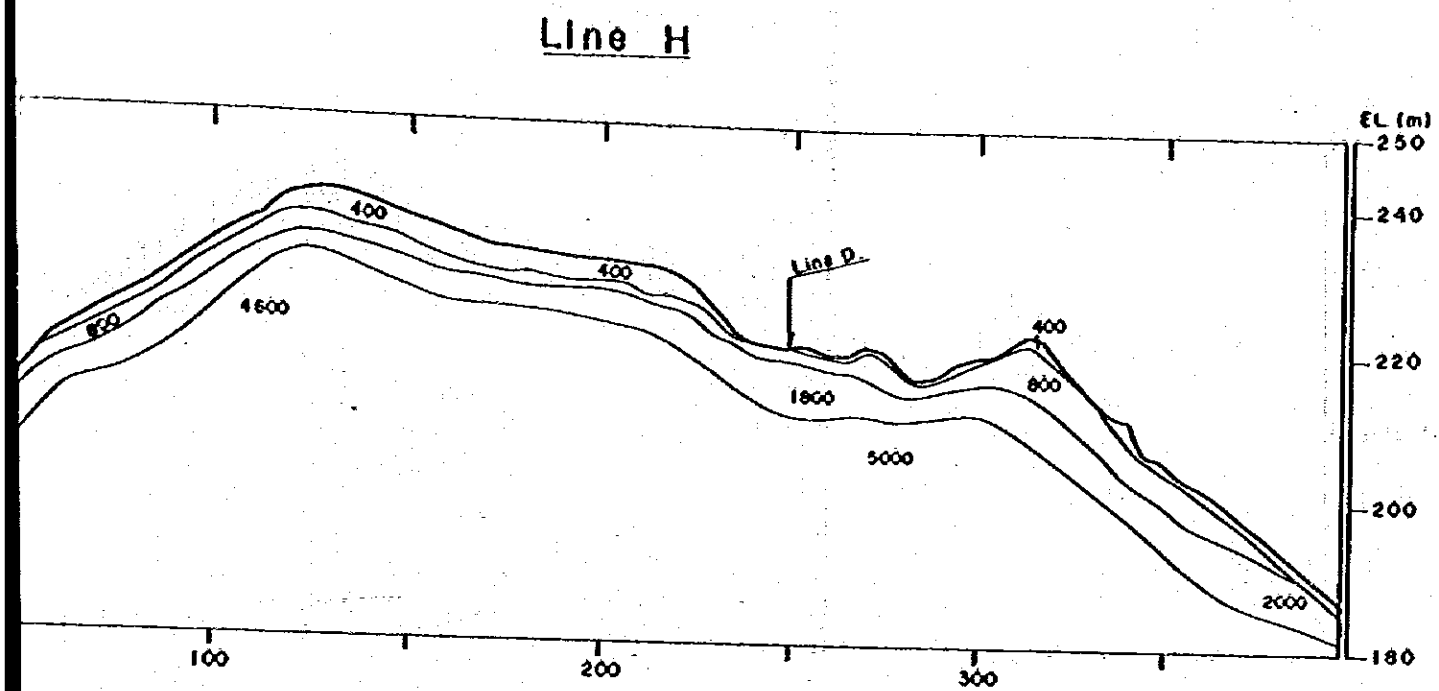
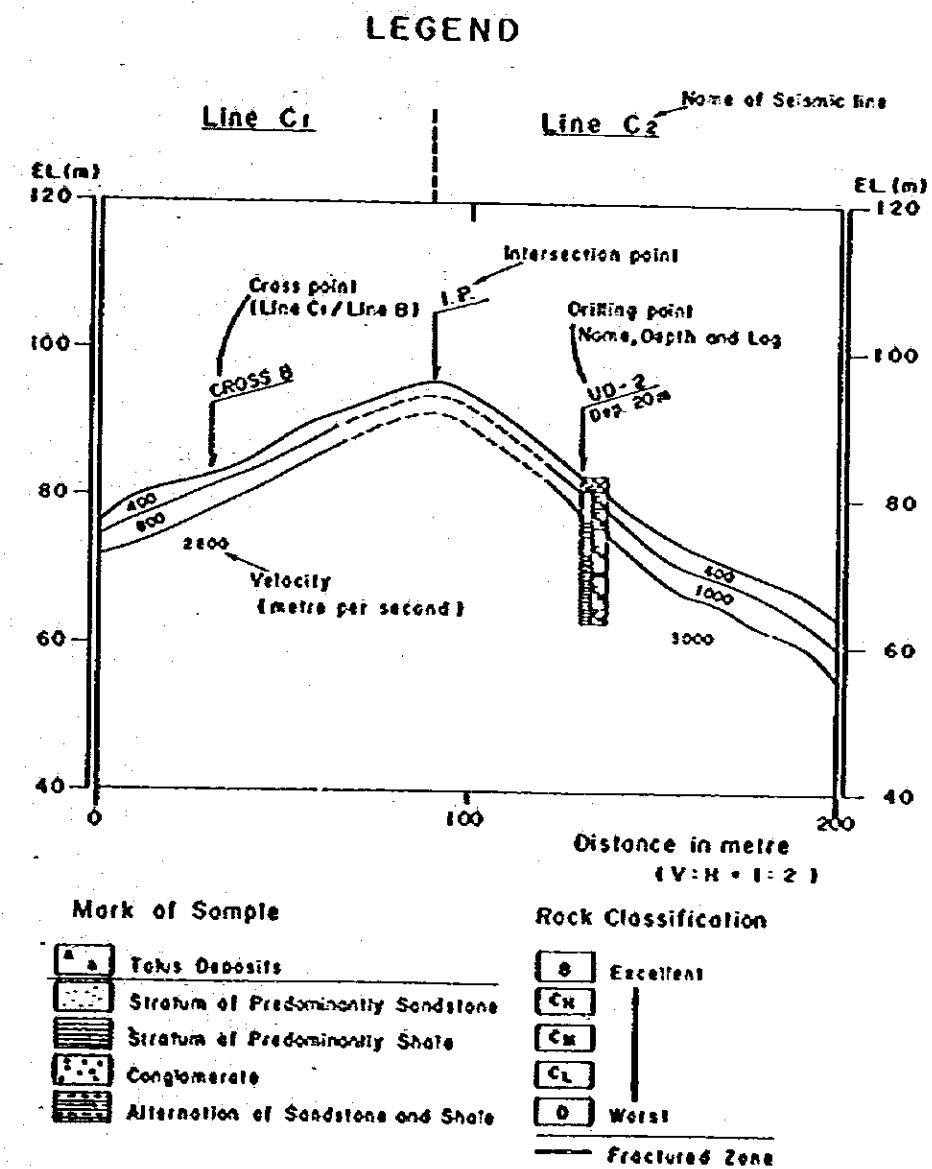
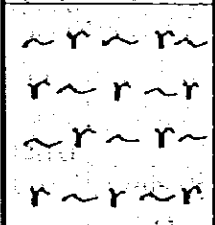
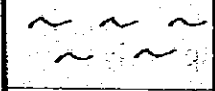
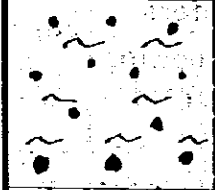



Fig. 4.14.3
SEISMIC PROSPECTING



Line H, I
(Upper Quarry Area)

FIG. 4.15.1 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO. P - 1 (SITE A)

LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
	0.5	Top soil including organic materials.	Unsuitable
	1.0	There is no visible decaying organic matter, although penetrated by tree roots	
	1.5	Residual soil including completely weathered fragments and boulders.	Suitable
	2.0	Completely weathered shale, showing clearly the fabric of the parent rock. When disturbed by excavation, the material crumbles to fragments.	

* Sampling point for soil test

FIG. 4.15.2 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO. P - 2 (SITE A)

LOG	DEPTH (m)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
		Top soil including organic materials.	Unsuitable
	0.5	There is no visible decaying organic matter, although penetrated by tree roots.	
	1.0	Residual soil including completely weathered fragments and boulders.	Suitable
	1.5	Completely weathered shale, showing clearly the fabric of the parent rock.	

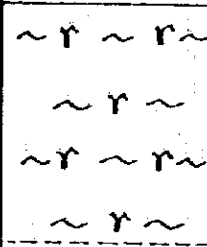
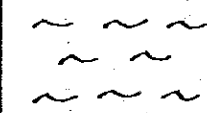
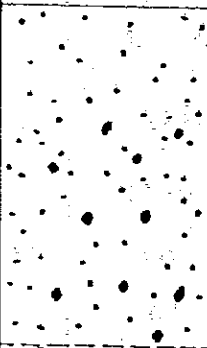


* Sampling point for soil test

Fig. 4.15.3 TEST PIT HOLE - GEOLOGICAL LOG
(A SITE)
HOLE NO. P - 3 (SITE A)

LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
P-3(1)*	0.0 - 1.0	Top soil including organic materials and tree roots	Unsuitable
P-3(2)*	1.0 - 3.0	Talus deposits consisting of debris, sand, silt and clay. The debris has been completely weathered. When hit by a hammer, it crumbles to sand. The size of debris ranges from 5cm to 8 cm.	Suitable
P-3(3)*	3.0 - 4.5	Completely weathered sandstone, showing clearly the fabric of the parent rock. When disturbed by excavation, the material crumbles to sand.	

* Sampling point for soil test

FIG. 4.15.4 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO. P-4 (SITE A)

LOG	DEPTH (E)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
	0.5	Top soil including organic materials.	Unsuitable
	1.0	There is no visible decaying organic matter, although penetrated by tree roots.	
	1.5	Residual soil including completely weathered sandstone fragments and boulders.	Suitable
	2.0		
	2.5	Completely weathered sandstone. When disturbed by excavation, the material crumbles to sand.	

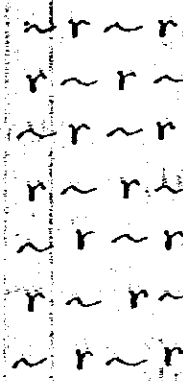
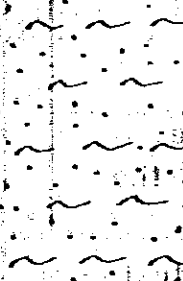

* Sampling point for soil test.

FIG. 4.15.5 TEST PIT HOLE - GEOLOGICAL LOG

(A 3118)

HOLE NO. P-5

(SITE A)

DEPTH (M)	LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
P-5(1)*		0.5 1.0	Top soil including organic materials and tree roots	Unsuitable
P-5(2)*		1.5 2.0 2.5	Talus deposits consisting of sand, silt and clay.	Suitable
P-5(3)*		3.0 3.5 4.0 4.5 5.0	<p>Talus deposits consisting of boulder, sand, silt and clay.</p> <p>The boulder has been completely weathered. When disturbed by excavation, it crumbles to sand.</p> <p>The size of the boulders range from 40 cm to 50 cm.</p>	Suitable

* Sampling point for soil test

Fig.4.15.6 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO. P - 6 (SITE A)

LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
~ r ~ r ~ ~ r ~ r ~ r ~ r	0.5	Top soil including organic materials	Unsuitable
~ ~ ~ ~ ~ ~ ~ ~ ~	1.0	Reddish Brown silty soil, penetrated by tree roots.	
P-6(1) * • • • • • • • • • • • •	1.5	Residual soil including completely weathered shale fragments.	Suitable
P-6(2) * • • • • • • • • •	2.0	Completely weathered shale, showing clearly the fabric of the parent rock.	

* Sampling point for soil test

FIG. 4.15.7 TEST PIT HOLE - GEOLOGICAL LOG

(A) HOLE NO. P-7 (SITE A)

LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
~r~r~ ~r~ ~r~r~	0.5	Top soil including organic materials	Unsuitable
o o o o o o o o o	1.0	Terrace deposits, penetrated by tree roots	
o o o o o o o o o	1.5	Terrace deposits consisting of gravel, sand, silt and clay. The gravel has been highly weathered.	Suitable
••••• ~••••• •••••	2.0	Residual soil including completely weathered shale fragments	
/// /// ///	3.0	Completely to highly weathered shale. There are some cracky zones in the shale.	

P-7(1)*

P-7(2)*

P-7(3)*

* Sampling point for soil test

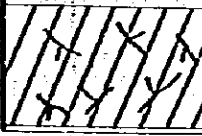
Fig.4.15.8 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO. P - 8 (SITE A)

LOG	DEPTH (m)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
	0.5	Top soil including organic materials and tree roots.	Unsuitable
P-8(1) *	1.5	Residual soil including completely weathered shale fragments. The fragments are broken into pieces by hand.	Suitable
P-8(2) *	2.0	Completely to highly weathered shale.	Unsuitable
		Moderately weathered shale hard and cracky.	

* Sampling point for soil test.

FIG. 4.15.9 TEST PIT HOLE - GEOLOGICAL LOG

HOLE NO. P-9 (SITE A)

LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
~ r ~ ~ r ~		Top soil including organic materials	Unsuitable
• ~ • ~ • ~ • ~	0.5	Residual soil penetrated by tree roots.	
• ~ • ~ • ~ • ~	1.0	Residual soil and completely weathered shale. When hit by a hammer, the material crumble easily to sand.	Suitable
P-9(1) * • ~ • ~	1.5		
P-9(2) * • ~ • ~	2.0		
	20	Completely weathered shale, showing clearly the fabric of parent rock.	

* Sampling point for soil test

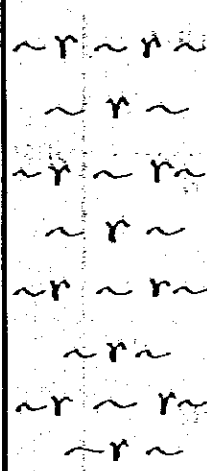
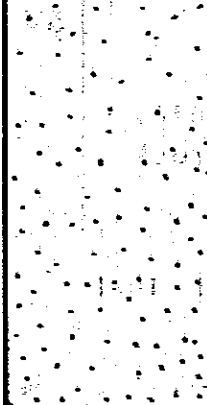
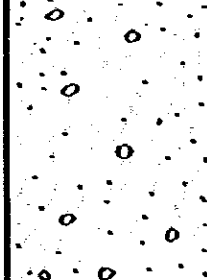
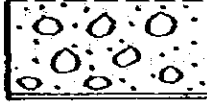
FIG. 4.15.10 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO. P-10 (SITE B)

LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
P-10(1)*	~ r ~ r ~	Top soil including organic materials. It consists mainly of silt and clay.	Unsuitable
	r ~ r ~ r		
	~ r ~ r ~		
	r ~ r ~ r		
	~ r ~ r ~		
	r ~ r ~ r		
P-10(2)*	~ r ~ r ~	Talus deposits consists of debris, sand, silt and clay. The debris has been completely weathered, so that it is broken into pieces by hand	Suitable
	~ r ~ r ~		
	~ r ~ r ~		
	~ r ~ r ~		

* Sampling point for soil test

FIG. 4.15.11 TEST PIT HOLE - GEOLOGICAL LOG

HOLE NO. P - 11 (SITE B)

LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
	0.5 1.0 1.5	Terrace deposits consisting mainly of sand. They contain a great deal of organic materials.	Unsuitable
	2.0 2.5 3.0	Terrace deposits consisting mainly of sand, silt and clay.	
	3.5 4.0	Terrace deposits consisting of small gravel, sand, silt and clay. The small gravels are interspersed among the other materials.	Suitable
		Terrace deposits consisting mainly of gravels which have been completely weathered.	

P-11(2)*

P-11(3)*

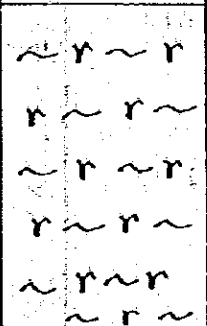
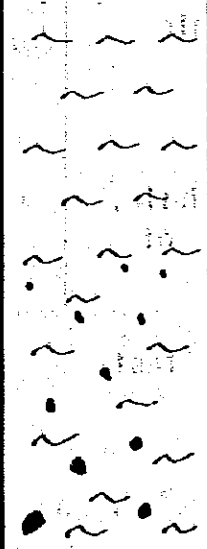
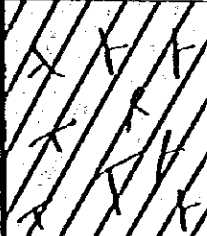
* Sampling point for soil test

FIG.4.15.12 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO, P-12 (SITE B)

LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
~ r ~ r ~ r ~ r ~ r ~ r ~ r	0.5	Top soil including organic materials	Unsuitable
~ ~ ~ ~ ~ ~ ~ ~ ~	1.0	Residual soil penetrated by tree roots	
P-12(1)*	1.5	Residual soil including completely weathered shale fragments	Suitable
P-12(2)*	2.0	Completely weathered shale, showing the fabric and crack of the parent rock	

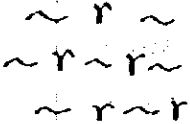
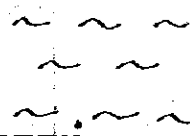
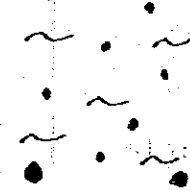
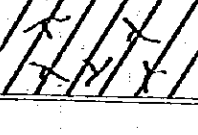
* Sampling point for soil test

Fig. 4.15.13 TEST PIT HOLE - GEOLOGICAL LOG
 HOLE NO. P-13 (SITE B)

LOG	DEPTH (m)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
	0.5 1.0	Top soil consisting of sand, silt, clay and organic material.	Unsuitable
	1.5 2.0 2.5 3.0	Residual soil including completely weathered shale fragments. The fragment is brown in colour and very soft.	Suitable
	3.5	Completely weathered shale showing the fabric and crack of the parent rock	

* Sampling point for soil test

Fig.4.15.14 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO. P - 14 (SITE B)

LOG	DEPTH (M)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
	0.5	Top soil including organic materials	Unsuitable
	1.0	Residual soil consisting of clay and silt	Suitable
	1.5	Residual soil including completely weathered shale fragments.	
	2.0	Completely weathered shale, showing clearly the fabric of the parent rock.	

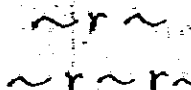
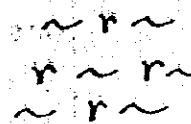
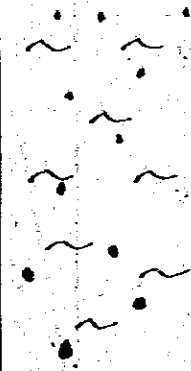
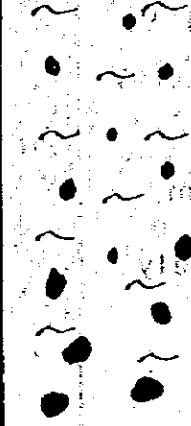
P-14(1)*

P-14(2)*

* Sampling point for soil test

FIG. 4.15.15 TEST PIT HOLE - GEOLOGICAL LOG

(U. 1712) HOLE NO. P-15 (SITE B)

DEPTH (M)	LOG	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
		Top soil including organic materials	Unsuitable
0.5		Talus deposits consisting of silt and clay	
1.0 1.5 2.0		Talus deposits consisting mainly of completely weathered shale fragments. The fragments crumble to sand and clay, when hitted by a hammer.	Suitable
2.5 3.0 3.5		The size of the fragments ranges from 10 cm to 20 cm.	

P-15(2)*

P-15(3)*

* Sampling point for soil test

Fig.4.15.16 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO. P-16 (SITE B)

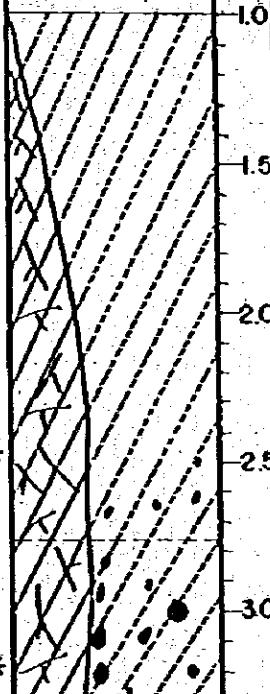

LOG	DEPTH (E)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
~ r ~ ~ r ~ r ~ ~ r ~ ~ r ~ r ~ ~ r ~	0.5 1.0	Top soil including organic material and tree roots	Unsuitable
~ r ~ r ~ r ~ r ~	1.0	Talus deposits penetrated by tree roots	
• ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~	1.5 2.0	Talus deposits including completely weathered shale fragments. The fragments are broken by hand	
• ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~ • ~	2.5 3.0 3.5 4.0	Talus deposits consisting of boulder, sand, silt and clay. The size of the boulders range from 10 cm to 20 cm. They have been completely weathered, so that they crumbles to sand when disturbed by excavation.	Suitable

P-16(2)*

P-16(3)*

* Sampling point for soil test

Fig.4.15.17 TEST PIT HOLE - GEOLOGICAL LOG
HOLE NO. P-17 (SITE B)

LOG	DEPTH (E)	GEOLOGY	ASSESSMENT FOR CORE MATERIALS
~ r ~ ~ r ~ r ~ ~ r ~ ~ r ~ r ~ ~ r ~	0.5	Top soil including organic materials and tree roots.	Unsuitable
	1.0 1.5 2.0 2.5	Completely weathered sandstone and shale, showing clearly the fabric of the parent rock. However, the rock has almost turned into residual soil by weathering	Suitable
	3.0	Completely weathered sandstone and shale, including weathered sandstone fragments	

* Sampling point for soil test

5. GEOLOGY OF THE LOWER SITE

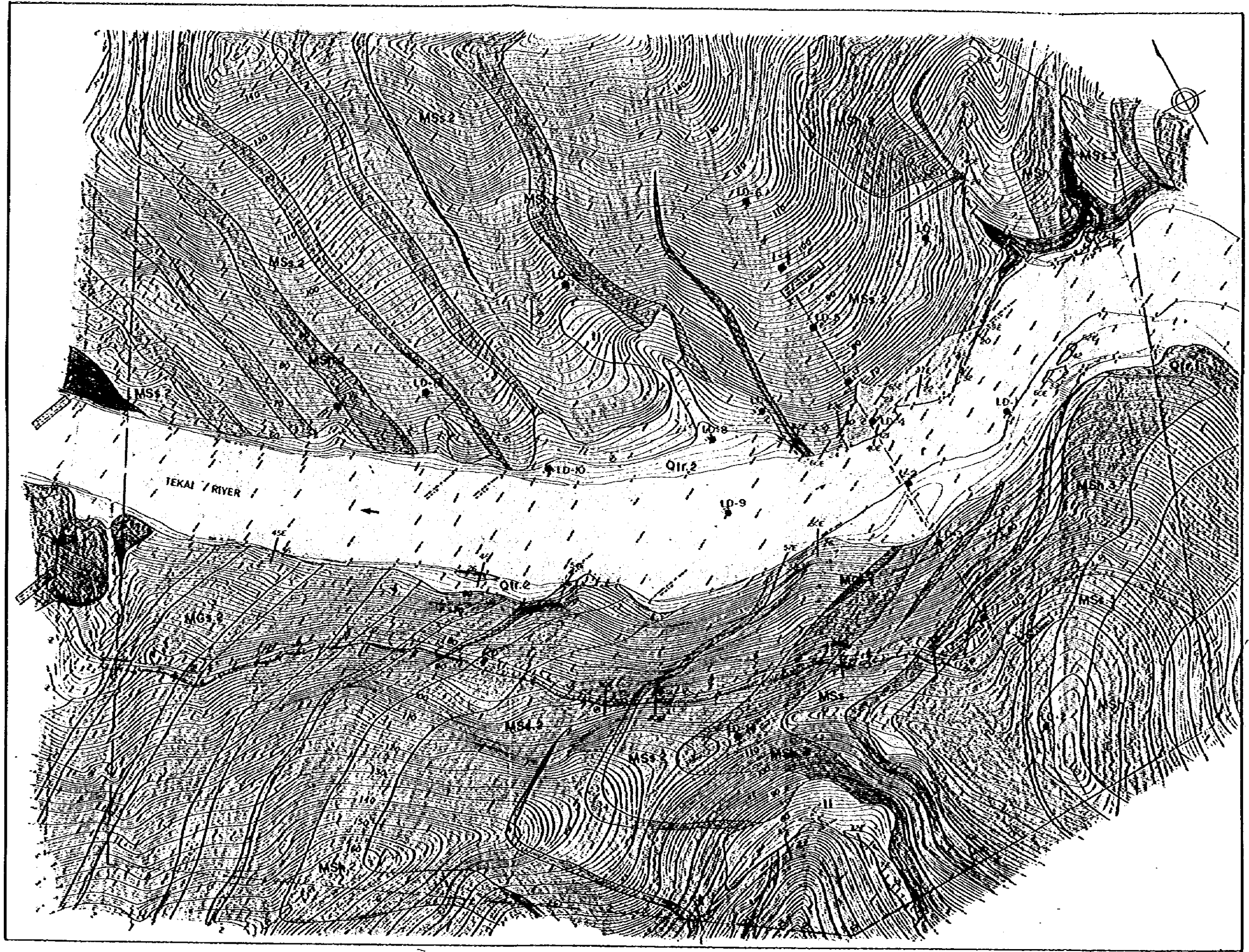


Fig.5.1 LITHOLOGIC MAP OF LOWER TEKAI DAM SITE



LEGEND

GEOLOGICAL AGE		COLOR	SYMBOL	FORMATION	LITHOLOGY
CENOZIC	QUATERNARY	[Stippled pattern]	r	River Bed Deposits	Mainly quartz sand including silt and gravel.
		[White pattern]	II	Talus Deposits	Mainly breccia including sand and clay.
		[Stippled pattern]	Qtr.2	Terrace Deposits	Mainly fine sand including silt and clay containing organic material.
		[Dark stippled pattern]	Qtr.1		Mainly clayey sand including gravel and clay.
MESOZIC	UPPER JURASSIC	[Light stippled pattern]	MSh.3	Mangking sandstone	Purplish/Purplish red shale interbedded with purplish fine sandstone.
		[White pattern]	MSs.3		Predominantly quartzose sandstone and sandstone.
		[Dark stippled pattern]	MaI.2		Alternation of sandstone and shale.
		[Medium stippled pattern]	MSh.2		Mainly grayish shale and purplish shale interbedded with sandy shale and silty shale.
		[Light stippled pattern]	MSs.2		Predominantly quartzose sandstone and sandstone interbedded with shale and shaly sandstone.
		[Dark stippled pattern]	MSh.1		Dark grey/Greyish shale.

— 40°
21

Strike and dip of stratum.

LD-1 ~ LD-14



Borehole point and borehole No. carried out in 1982.

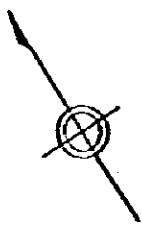
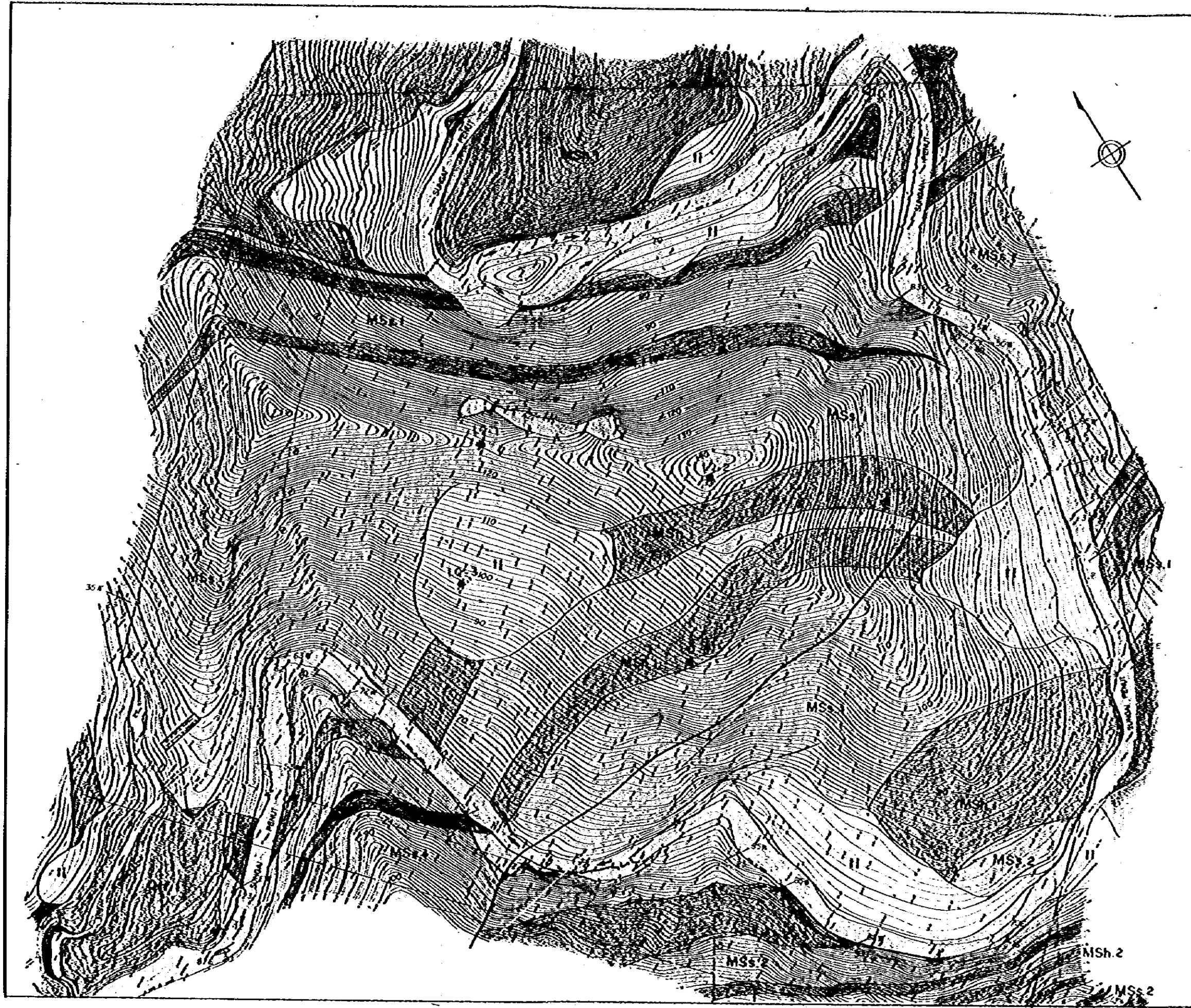
L-1 ~ L-4



Borehole point and borehole No. carried out in 1981.

SCALE 1 : 2,000

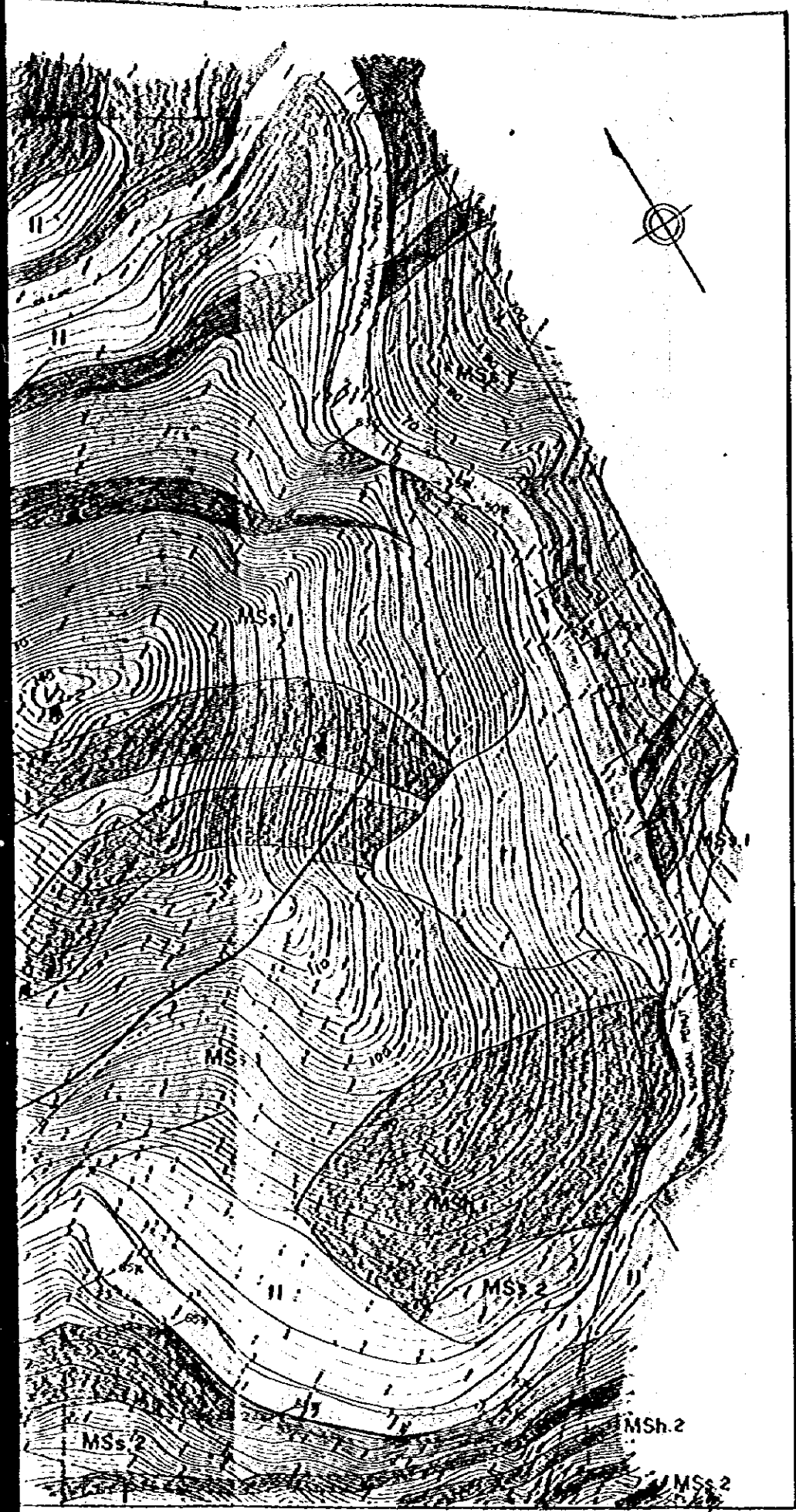




SCALE



Fig.5.2 LITHOLOGIC MAP OF LOWER TEKAI QUARRY AREA
(SITE.C)



LEGEND

GEOLOGICAL AGE		COLOR	SYMBOL	FORMATION	LITHOLOGY
CENOZOIC	QUATERNARY	[Stippled pattern]	r	River Bed Deposits	Mainly quartz sand including silt and gravel.
		[Horizontal line pattern]	II	Talus Deposits	Mainly bréccia, including sand and clay.
		[Dotted pattern]	Qtr.1	Terrace Deposits	Mainly clayey sand, including gravel containing orgnic material.
MESOZOIC	UPPER JURASSIC	[Dark grey pattern]	MSh.2	Mangking Sandstone	Mainly greyish shale Purplish shale interbedded with sandy shale and silty shale.
		[Light grey pattern]	MSs.2		Predominantly quartzose sandstone and sandstone.
		[Dark grey pattern]	MSh.1		Dark-grey/Greyish shale interbedded with siltstone and fine sandstone.
		[Light grey pattern]	MSs.1		Mainly quartzose sandstone and sandstone interbedded with shale and shaly sandstone.

Strike and dip of stratum.

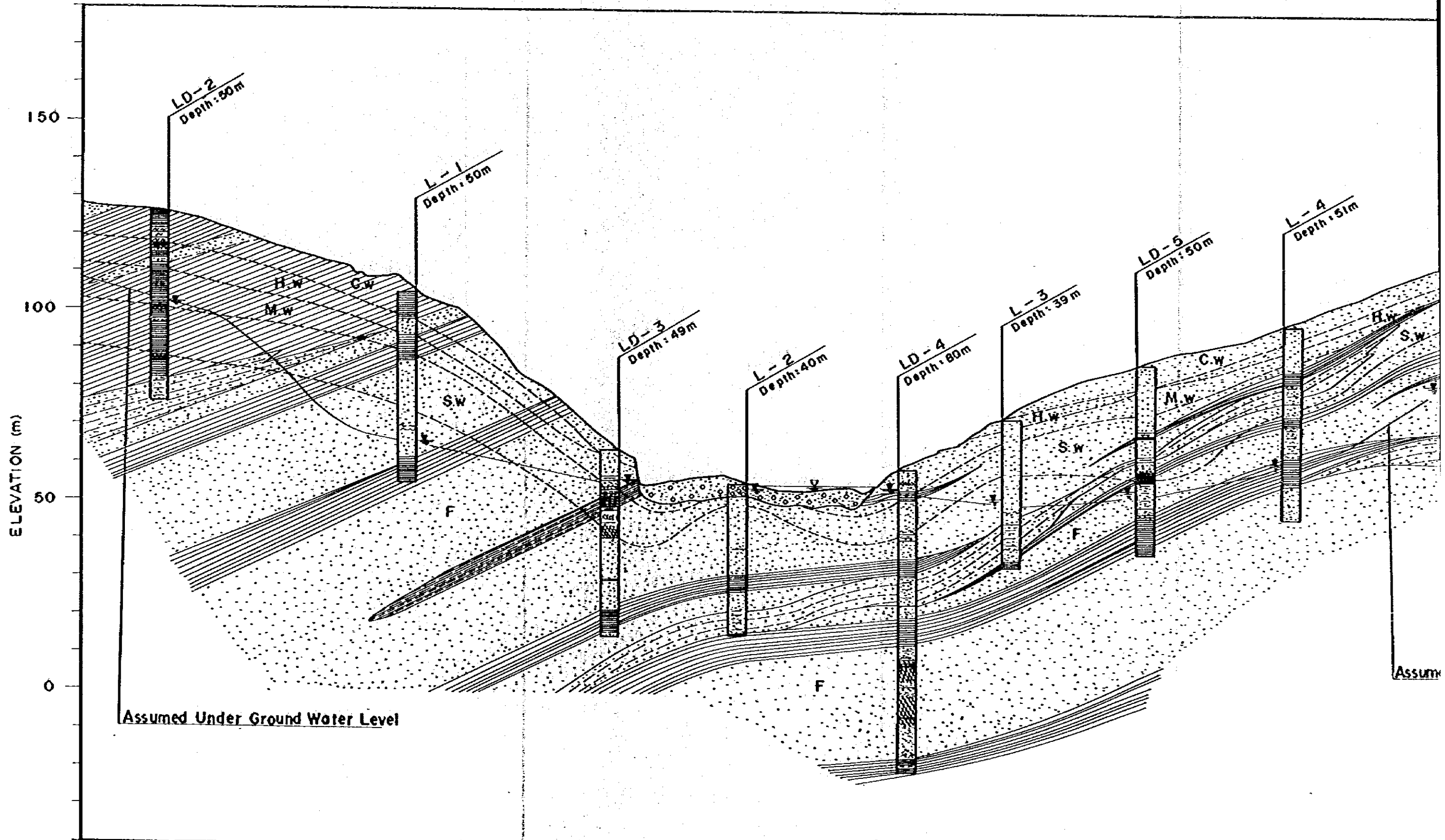
Strike and dip of fault.

Borehole point and borehole No. carried in 1982.

SCALE 1 : 2,000

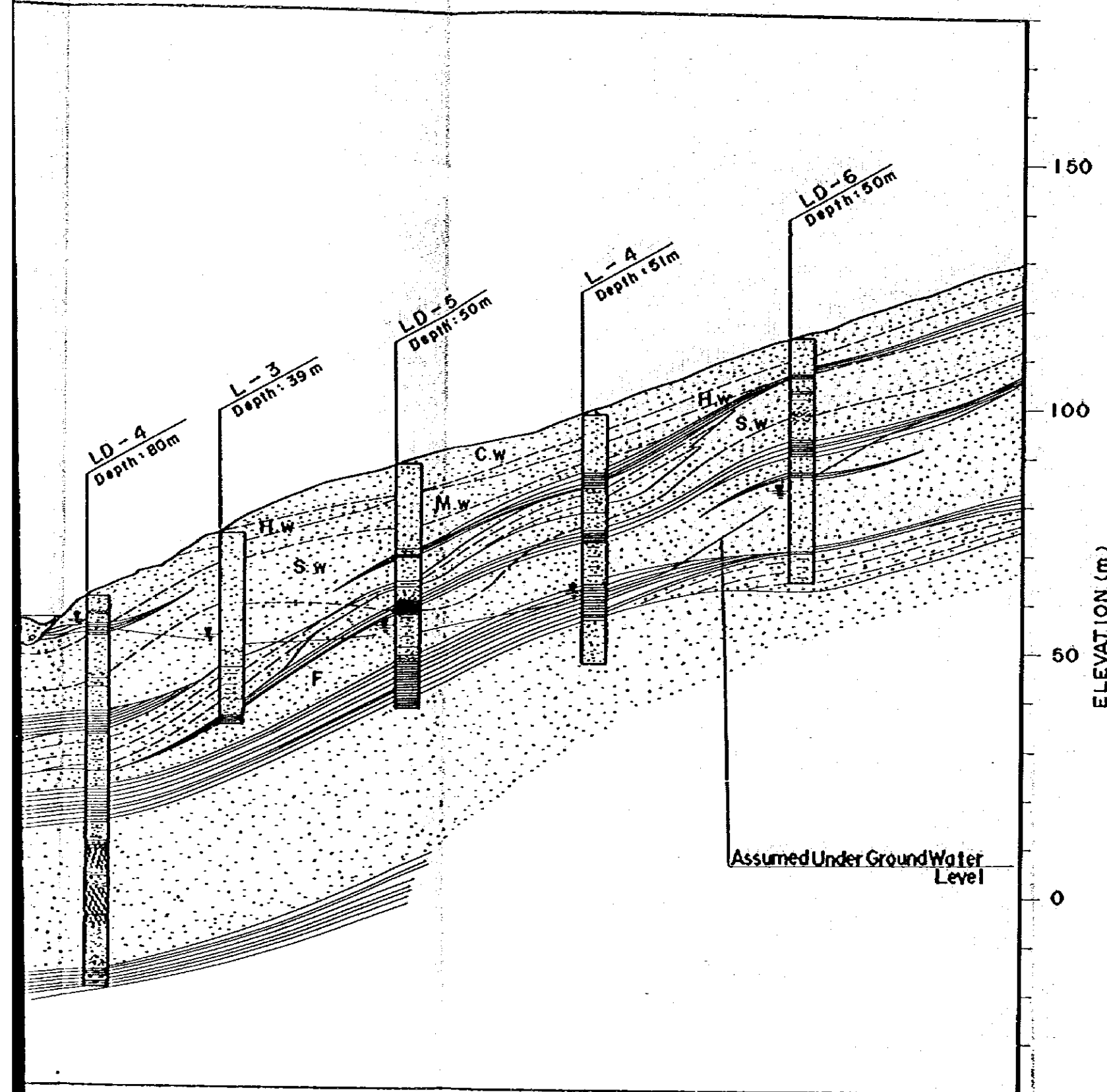


Fig.5.3 LITHOLOGIC PROFILE OF LOWER TEKAI DAM SITE
 (Scale 1 : 1,000)



F LOWER TEKAI DAM SITE

Scale 1:1,000



LEGEND

- LD-2/L-1 — Hole No. Carried out in 1982
- LD-2/L-1 — Hole No. Carried out in 1981
- Mainly quartzose sandstone, Sandstone with shale layer
- Shale and mudstone
- Silty shale
- Shaly sandstone
- Sandy shale
- Alternation of sandstone and shale
- Fractured zone, with clay
- Cracky zone
- Clay
- Gravel and sand
- Under ground water level
- Mainly quartzose sandstone, Sandstone with shale layer
- Mainly shale, with silty shale, sandy shale
- Shaly sandstone
- Alternation of sandstone and shale
- River bed deposits, gravel and sand
- C.w Completely weathered zone
- H.w Highly weathered zone
- M.w Moderately weathered zone
- S.w Slightly weathered zone
- F. Fresh zone



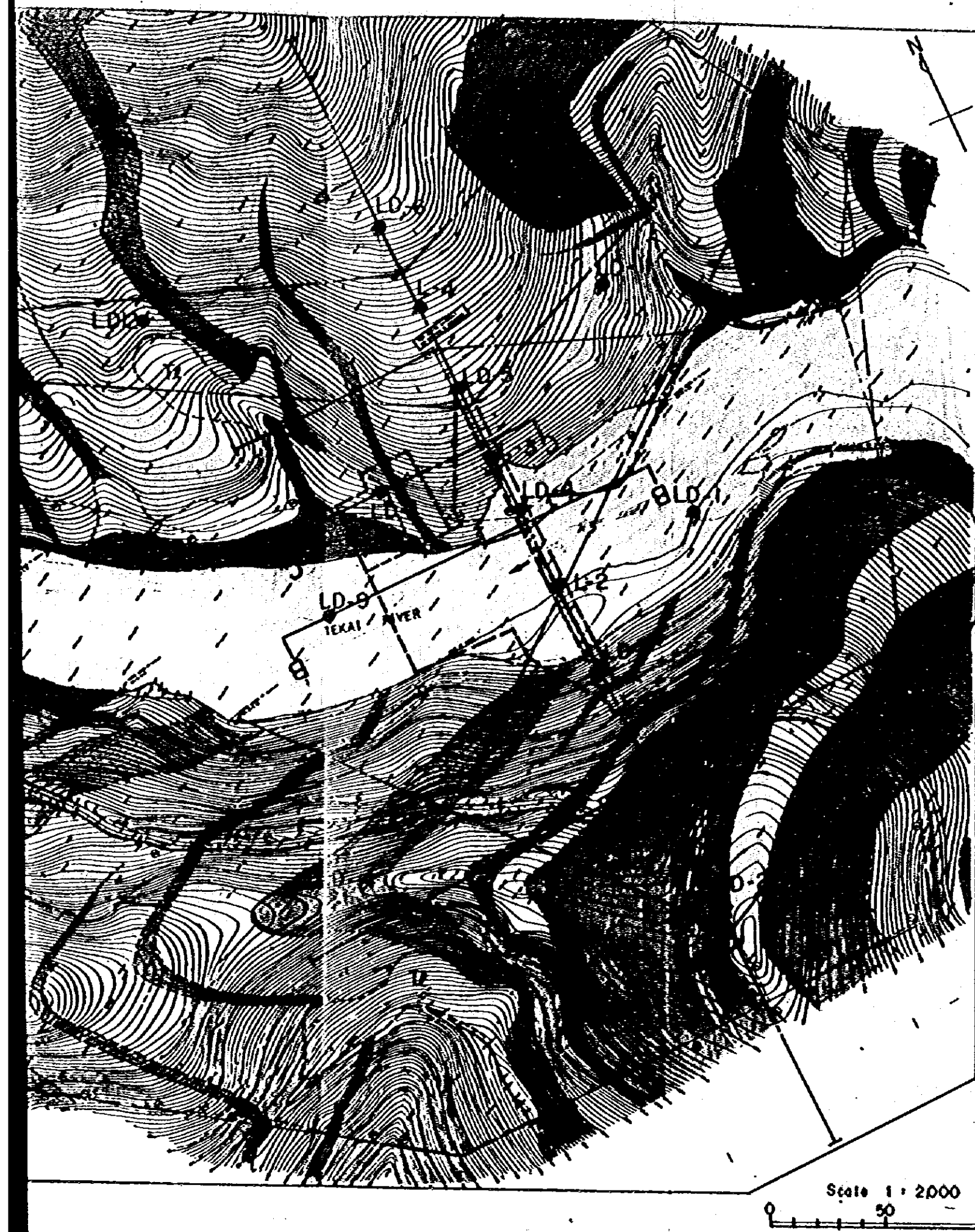
Scale 1 : 2000
0 50

Fig.5.4 GEOLOGICAL MAP OF LOWER TEKAI DAM

LEGEND

GEOLOGICAL AGE		COLOR	FORMATION	NAME OF STRATUM
CENOZOIC	QUATERNARY	[Stippled pattern]		River Bed Deposits
		[Dotted pattern]		Talus Deposits
		[Horizontal line pattern]		Terrace Deposits.
MESOZOIC	UPPER JURASSIC	[White pattern]	Mangking Sandstone	Stratum of Predominantly Sandstone
		[Dark grey pattern]		Stratum of Predominantly Shale
		[Stippled pattern]		Alternation of Sandstone and Shale

- Drilling point and hole number.
- Seismic prospecting line
- A — A Geological profile line.
- A - A Dam axis
- B - B Overflow section.
- C - C Power station.



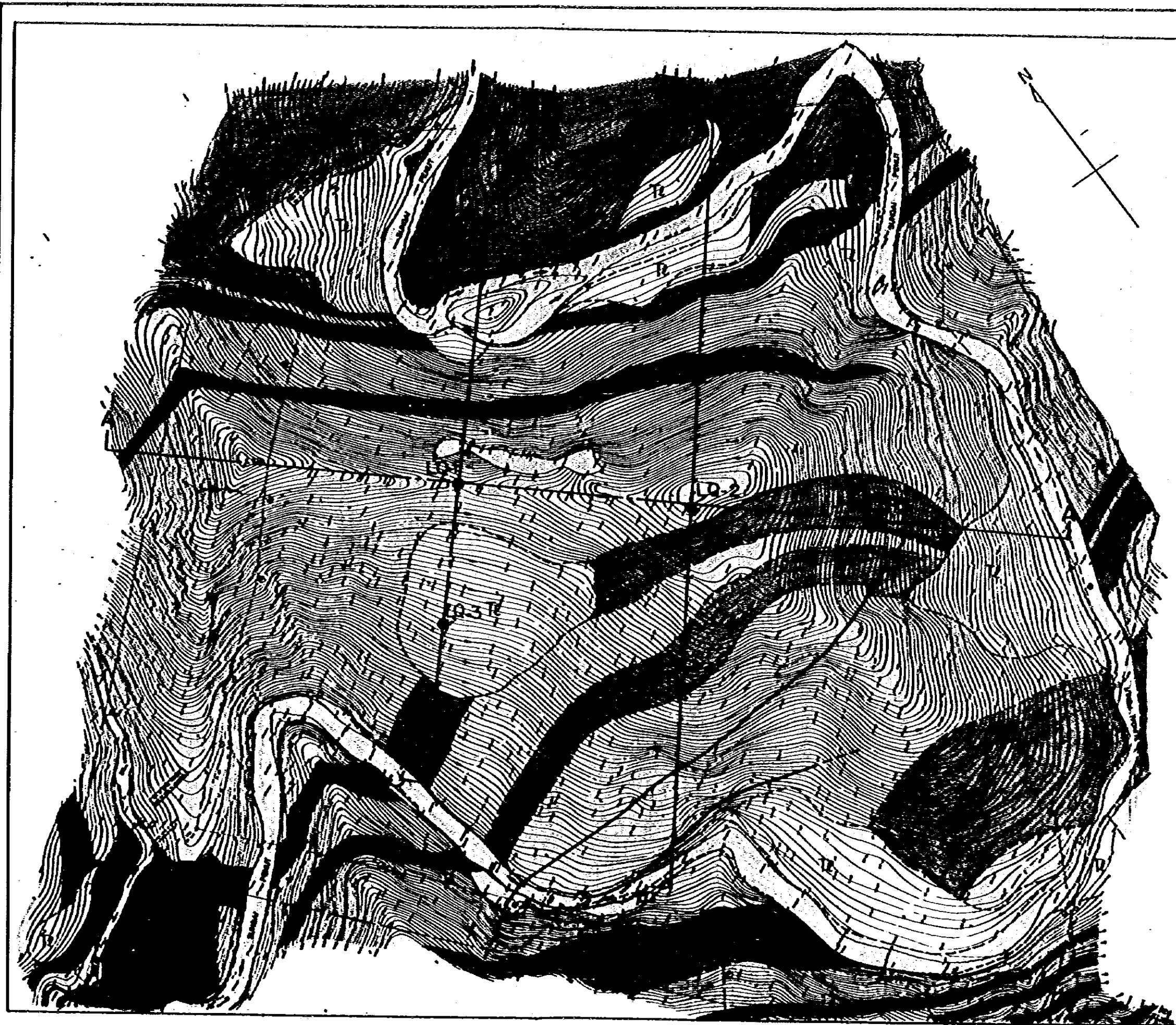
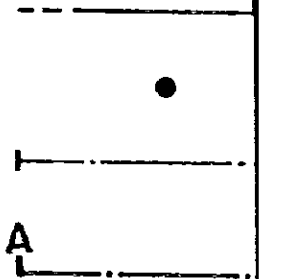


Fig.5.5 GEOLOGIC

GEOLOGICAL A	
CENOZOIC	QUATERNARY
MESOZOIC	UPPER JURASSIC



Scale 1:2000





Fig.5.5 GEOLOGICAL MAP OF LOWER TEKAI QUARPY AREA (SITE.C)

LEGEND

GEOLOGICAL AGE	COLOR	FORMATION	NAME OF STRATUM
CENOZOIC QUATERNARY	[Stippled pattern]		River Bed Deposites.
	[Dotted pattern]	T ₂	Talus Deposites.
	[Dark grey pattern]		Terrace Deposites.
MESOZOIC UPPER JURASSIC	[Light grey pattern]	Mangking Sandstone	Stratum of Predominantly Sandstone.
	[Dark grey pattern]		Stratum of Predominantly shale.

- Fault
- Drilling point and hole number
- Seismic prospecting line
- A-----A Geological profile line

Scale 1:2000

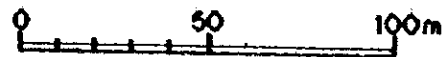
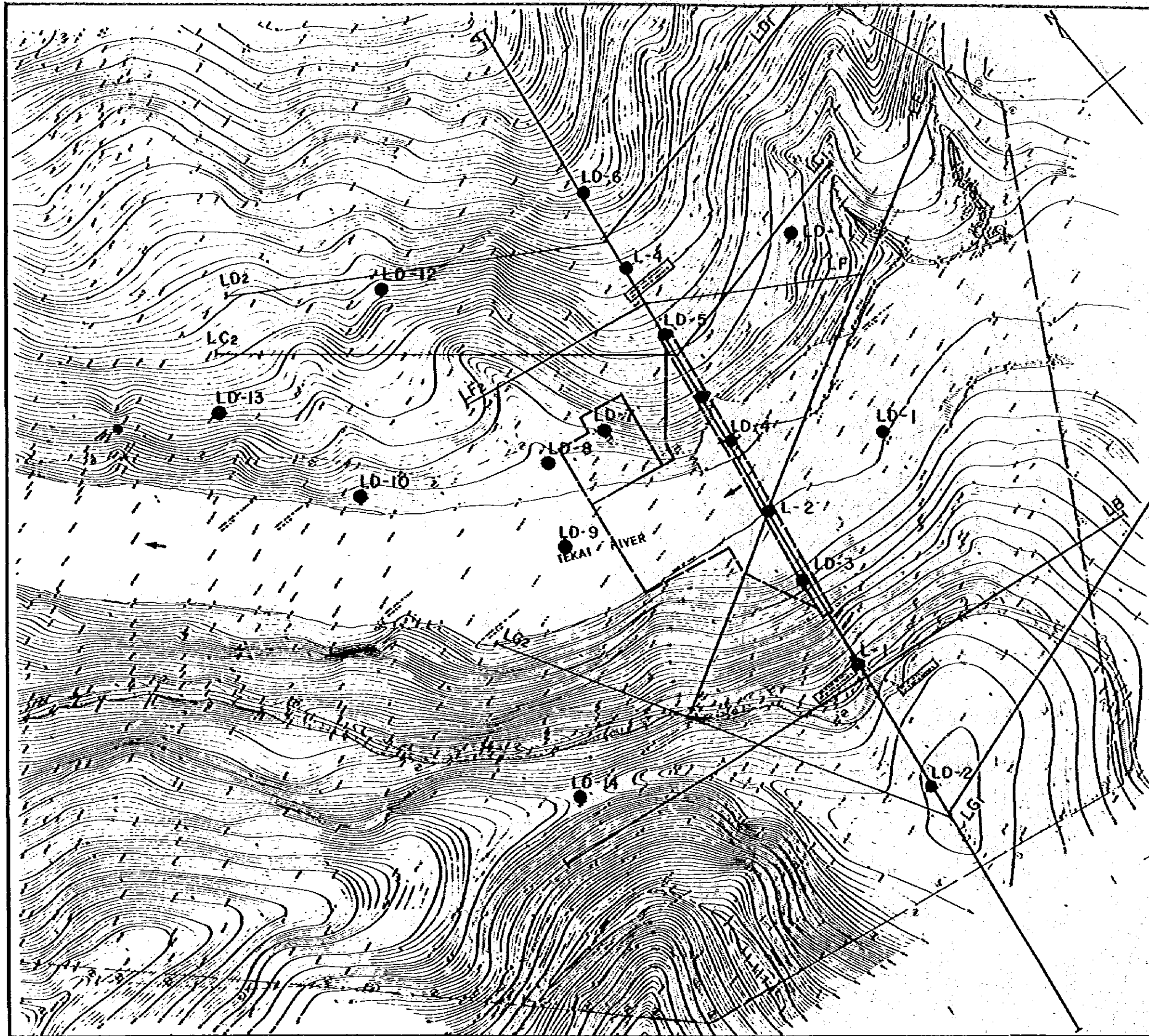


Fig.5.6 LOCATION MAP OF LOWER TEKAI DAM SITE



LEGEND

- LD-1~LD-14 Drilling point and hole No. Carried out in 1982
- L-1~L-4 Drilling point and hole No. Carried out in 1981
- LA~LG Seismic prospecting line Carried out in 1981

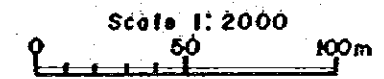
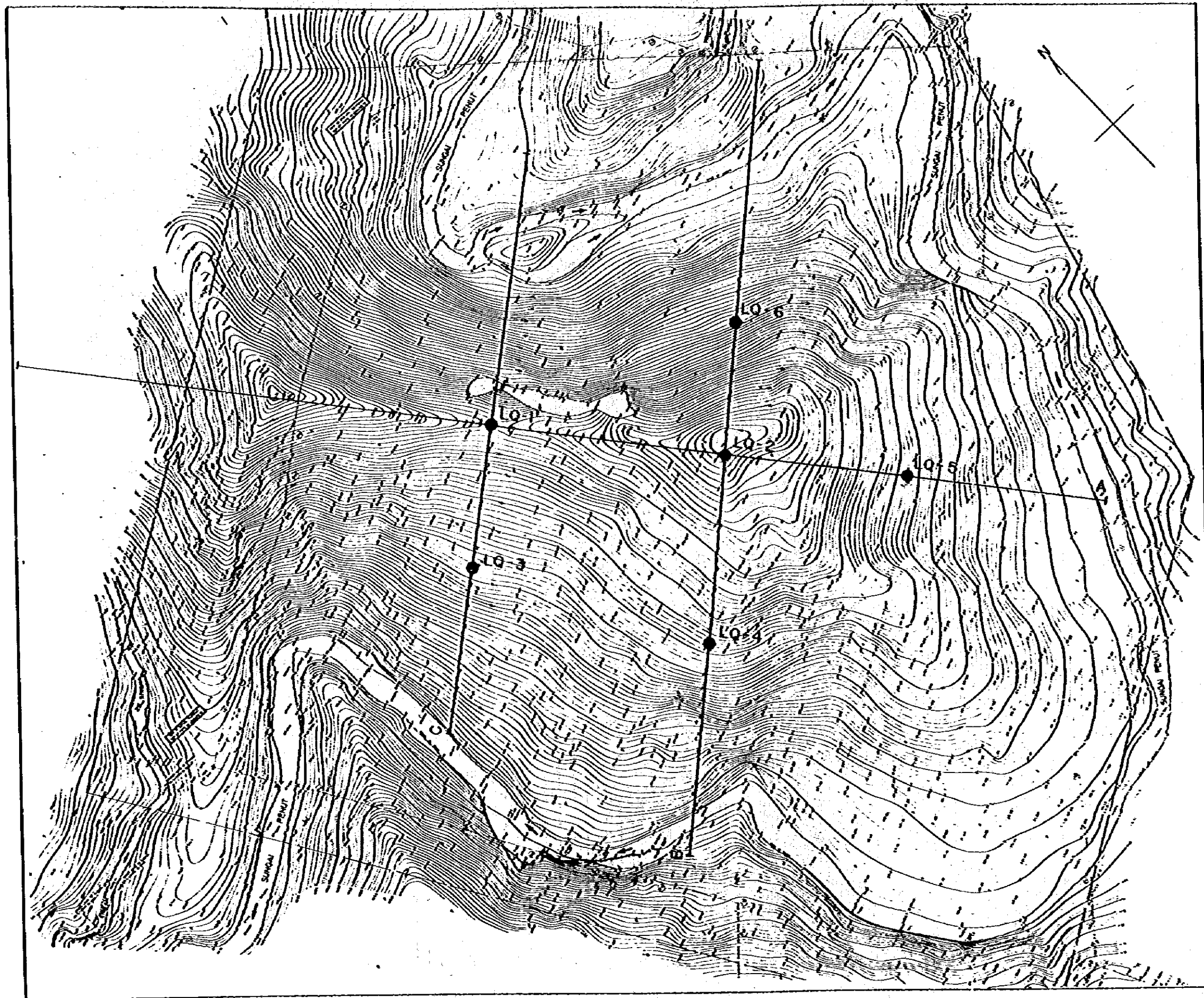


Fig.5.7 LOCATION MAP OF LOWER TEKAI QUARRY AREA (SITE C)



LEGEND

- LQ-1~LQ-6 Drilling point and hole No. Carried out in 1982
- A~C Seismic prospecting line Carried out in 1982

