COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD No. 1962/96

WILMOT POWER DEVELOPMENT GEOPHYSICAL SURVEY.

TASMANIA 1961

by

E. J. POLAK

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ILLUSTRATIONS

SUMMARY

This Record describes seismic refraction and magnetic surveys on the Wilmot Power Development scheme of the Hydro-Electric Commission of Tasmania. The purpose of the surveys was to determine the depth to bedrock, the nature of the bedrock, and the nature of the overburden, on the three units of the scheme, viz. the dam site, the inlet tunnel portal, and the outlet tunnel portal and penstock.

On the dam site the bedrock is Ordovician Moina Sandstone, in which the seismic velocity is 12,000 to 13,000 ft/sec. The maximum depth to bedrock as estimated by the seismic work is 73 ft.

On the inlet tunnel portal the bedrock is Ordovician Gordon Limestone with a velocity of 10,000 to 13,000 ft/sec. The maximum estimate of depth to bedrock is 181 ft.

On the outlet portal and penstock the bedrock is Moina Sandstone in which the velocity is 9000 to 14,000 ft/sec. The maximum estimate of depth to bedrock is 26 ft.

A value of Young's modulus of 5×10^6 lb/in^2 was determined for the Moina Sandstone on the dam site. The drill hole and seismic determinations of the depth to bedrock have been compared, and the discrepancies are discussed.

1. INTRODUCTION

The Wilmot Power Development is a part of the Mersey/Forth/Wilmot Power Development scheme of the Hydro-Electric Commission of Tasmania.

The Commission proposes to erect a dam on the Wilmot River just below the junction of the Iris River with the Lea River (approx. co-ordinates 406893 on the Burnie sheet of the Australia four-mile series, see Plate 1). The impounded water will flow through a tunnel into the Forth River, where a power station will be erected (approx. co-ordinates of the power station location are 412892). The water will be used in several power stations along the Forth River (Cethana, Barrington, Paloona).

In response to an application from the Commission, the Bureau of Mineral Resources, Geology and Geophysics carried out a geophysical survey to determine the nature of the overburden and bedrock and the depth to the bedrock on the sites for the dam, the inlet and outlet portals of the tunnel, and the penstock line.

The surveys were made between 27th February and 30th March 1961. The geophysical party consisted of E.J. Polak (party leader), D.J. Harwood (geophysicist), and J.P. Pigott (geophysical assistant). The Commission provided additional assistants and carried out a topographical survey along the traverse lines.

Table 1 shows the total length of the traverses surveyed by the two geophysical methods.

TABLE 1

Location	Length of traverses (ft)	
	Seismic	Magnetic
Dam site	4300	2200
Inlet portal site	6500	6500
Outlet portal & penstock site	4700	1200
Total	15,500	9900

2. GEOLOGY

The geology of the sites was mapped by Commission geologist Paterson (1960). The general geology shown on Plate 1 is based on the official map of the Geological Survey of Tasmania. The stratigraphy of the area is shown in Table 2.

TABLE 2 (after Paterson, 1960)

Age	Rock type
Quaternary	Alluvium
Tertiary	Basalt
Ordovician	Gordon Limestone Moina Sandstone

The geology of the individual sites will be discussed in later sections.

As used in this Record, the term 'bedrock' refers to unweathered rock, including jointed rock, in a refractor with the highest recorded seismic wave velocity. The term 'overburden' refers to river gravel, clay, talus material, and completely to partly weathered rock, all with a seismic wave velocity of less than 8000 ft/sec.

3. METHODS AND EQUIPMENT

Seismic

The seismic method of exploration depends for its success on the contrast between the velocities of the seismic waves through different rock formations. Seismic velocities are greater in hard, unweathered rocks than in weathered rocks; the seismic velocities in soil and unconsolidated deposits are less than in weathered rocks. The 'method of differences' was used for traverses along the slope, but 'broadside' spreads were used on steep banks. A detailed description of the methods has been given in a previous report to the Commission (Polak and Moss, 1959).

The equipment used in these surveys was an SIE 12-channel refraction seismograph, and TIC geophones with natural frequency of 20 c/s.

Magnetic

The measured magnetic intensity at any point on the Earth's surface is affected by the magnetisation of subsurface rocks. The direction of magnetisation of the rocks is the resultant of two vectors, namely an induced magnetic intensity vector in the approximate direction of the Earth's magnetic field, and a remanent magnetic intensity vector, which may be in any direction. Magnetic measurements can, in some areas, indicate such features as faults or boundaries between formations.

A Watts vertical force magnetic variometer was used in the investigation.

4. DAM SITE

Geology (Plate 2)

The dam site is located on the Wilmot River below the junction of the Lea and Iris Rivers (Plate 1). The valley is narrow with steep sides. Eight drill holes had been put down to investigate the condition of the bedrock.

Drilling results show that the bedrock is Ordovician Moina Sandstone consisting of bands of hard quartzite interbedded with siltstone and sandstone, closely jointed and weathered at joints.

The right bank (looking down-stream) of the river is covered with talus material, except for the rock outcrop near F9.

The left bank of the river consists of rock outcrops. River gravel is found in the river and forms a low river-terrace on the right bank.

Results

The seismic velocities recorded in the dam site area are shown in Table 3. They are interpreted in terms of the geological formations as known from drilling and outcrops.

TABLE 3

Seismic velocity (ft/sec)	Rock type
1000 to 3000	Soil, talus material, and very weathered rock
7000 to 8000	Weathered rock
10,000 to 13,000	Bedrock

The bedrock velocities measured on this site are higher than those at the Barrington (Devils Gate) dam site (Polak, 1962a), suggesting that the rock here is less fractured and jointed.

The depths to bedrock were calculated by the use of apparent velocities obtained from weathering spreads. The depths thus calculated are shown on Plate 3. Table 4 compares the depths to bedrock obtained from drilling with the depths calculated from seismic data.

For a bedrock (on Traverse M) with velocity of about 13,000 ft/sec the velocity of the ground roll was found to be 6500 $\pm$ 500 ft/sec. Assuming a density of 2.60 g/cm^3 and disregarding a small correction caused by a thin weathering layer, this would give a Young's modulus of between 4 x 10^6 and 5 x 10^6 lb/in^2.

Conclusions

The overburden on the dam site consists mainly of river-terrace material near and in the river, of talus material on the right bank of the river, and of jointed and fractured rock of 7000 to 8000-ft/sec seismic velocity. The depth to the 7000 to 8000-ft/sec layer is less than 10 ft wherever measured by drilling or seismic work. Depending on the type of dam, this 7000 to 8000-ft/sec layer may be good enough as a foundation rock if grouting or a similar technique is used. The maximum depth, as estimated by the seismic work, to rock with a seismic velocity of 13,000 ft/sec, and Young's modulus of 4×10^6 to 5×10^6 lb/in^2, is about 73 ft, near station L 10.

TABLE 4

Drill hole No. Station No.	Drilling Results		Seismic Results	
	Rock type	Depth (ft)	Depth (ft)	Velocity (ft/sec)
4531	Talus material	0 - 3	0 - 6	3000
A40	Hard quartzite and sandstone with weathered joints	3 - 37	6 - 28	8000
	as above - less weathered	37 -	28 -	11,000
	Total depth 81 ft			
4532	Quartzite, moderately jointed,		0 - 25	8000
J5	slightly weathered	0 -	25 -	12,000
	Total depth 50 ft			
4533	Hard greywacke, mudstone, siltstone,		0 - 33	8000
J6	moderately jointed, joints stained	0 -	33 -	13,000
	Total depth 100 ft			
4534	Hard quartzite, sand - siltstone,		0 - 20	8000
M10	moderately jointed, joints stained	0 -	20 -	13,000
	Total depth 102 ft			
4535	Hard sandstone, moderately jointed			
J10	joints stained	0 - 17	0 - 38	8000
	Hard quartzite as above	17 -	38 -	13,000
	Total depth 107 ft			
4536	Medium hard sandstone		0 - 18	7000
K9	with vugs	0 -	18 -	13,000
	Total depth 51 ft			
4537	Talus material	0 - 10	0 - 8	3000
K5	Hard greywacke, sandstone	10 - 29	8 - 30	8000
	Hard greywacke, quartzite	29 -	30 -	13,000
	Total depth 50 ft			
4538	Talus material	0 - 4	0 - 6	3000
F12	Weathered sandstone	4 - 10	6 - 23	8000
	Quartzite, moderately weathered	10 -	23 -	11,000
	Total depth 75 ft			

Note to Table 4 : Seismic depths have been corrected to the direction of the drill hole.

5. INLET PORTAL

Geology

The water impounded in the lake above the dam will reach the Forth River trough a tunnel. The inlet to the tunnel will be located near the Oil Moina Bismuth Mine (Plate 1).

Plate 4 shows the geology and the geophysical traverses. The area near the Iris River is covered with alluvium, and the slopes are covered with basalt and conglomerate talus material. Near station C6 is a small outcrop of Gordon Limestone.

The alluvium consists mainly of sand and clayey sand with quartzite and sandstone boulders. In drill hole DDH 4543 near B17 the very low core-recovery to a depth of 83 ft was interpreted as indicating the presence of alluvium to this depth. This section may possibly include some weathered bedrock. In DDH 4539 near A18 the alluvium is 53 ft thick. Along the slope the talus material consists of quartzite boulders and weathered basalt mixed with clay. In the vicinity of the drill holes the bedrock consists of jointed, medium-hard limestone with bands of sandstone and mudstone, and clay-filled cavities. The talus material covering the slopes suggests that farther east from drill holes DDH 4543 and DDH 4539 there is a rock type different from the limestone formation. This formation is probably the Ordovician Moina Sandstone.

Results

Table 5 lists the recorded seismic velocities of the inlet portal area together with an interpretation of these velocities in terms of rock types. The interpretation is based on outcrops and drilling information.

The 10,000 to 13,000-ft/sec bedrock may represent either a limestone or a sandstone. If it represents a limestone, the low velocities suggests that the limestone is moderately to highly porous (Polak, 1962b).

TABLE 5

Seismic velocity (ft/sec)	Rock type
1000 to 1500	Soil with occasional boulders
4000 to 5000	Water-saturated alluvium, sand, and clay
7000 to 9000	Weathered rock
10,000 to 13,000	Bedrock

Plates 5, 6, and 7 show the depths to bedrock, as estimated by the seismic work, in the form of cross-sections.

Table 6 compares the depths to bedrock obtained from drilling with the depths calculated from seismic data.

TABLE 6

Drill hole No. Station No.	Drilling Results		Seismic Results	
	Rock type	Depth (ft)	Depth (ft)	Velocity (ft/sec)
DDH 4539	Alluvium	0 - 53	0 - 5	1000
A18			5 - 50	4000
	Limestone bedrock	53 -	50 - 80	8000
	Total depth 89 ft.		80 -	10,500
DDH 4543	Alluvium	0 - 83	0 - 3	1000
B17			3 - 49	4000
	Limestone bedrock	83 -	49 - 88	8000
	Total depth 95 ft.		88 -	10,000

Near DDH 4543 the depth to weathered bedrock from seismic work is about 49 ft. In drilling, the depth was taken as 83 ft, but this is based on zero core recovery in the alluvial section, which may include weathered bedrock as well as alluvium. An alternative explanation of the discrepancy in the estimated depths to bedrock could be that the drill stem passed through a limestone cavity.

Plates 5, 6, and 7 show also the magnetic profiles along the traverses. The magnetic values increase towards the east. This increase may result from any combination of the following factors :

(1) Change of character of overburden. The overburden may contain an increasing amount of basalt stones or stones from the Moina Sandstone.

(2) The weathered bedrock may contain remnants of weathered basalt.

(3) The bedrock in the eastern part of the survey area may not consist of limestone, but of Moina Sandstone, whose weathered products are also found in the talus material covering the limestone.

The geophysical data suggest the presence of a possible fault or boundary between limestone and Moina Sandstone, passing approximately through stations B30, E6, and A34 (Plates 5, 6, and 7).

Conclusions

The maximum thickness of overburden estimated by the seismic work is about 181 ft near E6. There is an indication of a possible fault or shear zone crossing the area. The bedrock in the western part of the area consists of limestone; in the eastern part the bedrock is possibly Ordovician Moina Sandstone.

6. OUTLET PORTAL AND PENSTOCK LINE

Geology

The portal and penstock line are located on a steep slope over-looking the Forth River Gorge at Cethana. Plate 8 shows the traverse plan and the geology. Eight drill holes have proved that the bedrock in this area consists of hard quartzite interbedded with sandstone, siltstone, and claystone. The bedrock is closely jointed; the joints are slightly weathered. The beds dip 35 to 60 degrees towards the east; in drill hole DDH 4549 the foliation dips 70 to 90 degrees. The area is covered with talus material. The steep slope of the terrain prevents excessive accumulation of talus material, and the greatest thickness found by drilling is 11 ft in DDH 4545.

Results

Table 7 gives an interpretation of seismic wave velocities in terms of rock types, as shown by drillers' logs.

TABLE 7

Seismic velocity (ft/sec)	Rock type
1000 to 2000	Talus material
5300 to 6000	Weathered rock
9000 to 14,000	Quartzite, sandstone, siltstone, closely jointed, joints stained.

The velocity in quartzite on this site is lower than that previously found for similar rocks at other dam sites in Tasmania (Polak, 1957). This fact may be explained by the following mechanism. When overlying rock was removed by erosion, the pressure in the remaining rock decreased, with the result that the joint planes opened up.

Plate 9 shows the seismic cross-sections. Table 8 compares the depths obtained from drilling with the depths calculated from the seismic results.

TABLE 8

Drill hole No. Station No.	Drilling Results		Seismic Results	
	Rock type	Depth (ft)	Depth (ft)	Velocity (ft/sec)
4540 A10	Weathered quartzite	0 - 13	0 - 18	6000
	Bands of sandstone, quartzite, and claystone, closely jointed, thinly weathered	13 -	18 -	10,000
	Total depth 54 ft.			
4541 B10	Talus material	0 - 3	0 - 8	6000
	Weathered quartz sandstone	3 - 5		
	Hard chert, quartzite, conglomerate	5 -	8 -	14,000
	Total depth 50 ft.			
4542 B20	Hard quartzite moderately jointed, limonite stained	0 -	0 - 13 13 -	6000 9000
	Total depth 45 ft.			
4544 A23	Thinly bedded, sheared weathered sandstone	0 - 29	0 - 2 2 - 23	1000 6000
	Hard quartzite, jointed	29 -	23 -	11,000
	Total depth 51 ft.			
4545 B30	Talus material	0 - 11	0 - 12	3000
	Weathered quartz sandstone	11 - 18	12 -	9000
	Quartzite jointed, joints open	18 -		
	Total depth 50 ft.			
4547 G5	Weathered quartzite	0 - 23	0 - 10	6000
	Quartzite, moderately jointed, joints stained	23 -	10 -	10,000
	Total depth 100 ft.			
4549 A19	Hard sandstone and quartzite, sheared, thinly weathered	0 -	0 - 23 23 -	6000 13,500
	Total depth 52 ft.			

Note to Table 8 : Seismic depths have been corrected to the direction of the drill hole

Conclusion:

The overburden consists of talus material and weathered rock, and the maximum estimated thickness of 26 ft (seismic determination) occurs at the bottom of the slope, near A25. Bedrock velocities of 9000 to 14,000 ft/sec indicate that the bedrock is jointed and weathered at the joints.

7. REFERENCES

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POLAK, E.J.	1962a	Barrington (Devils Gate) dam and power station site, seismic refraction survey, Tasmania 1961. Bur. Min. Resour. Aust. Record 1962/66.
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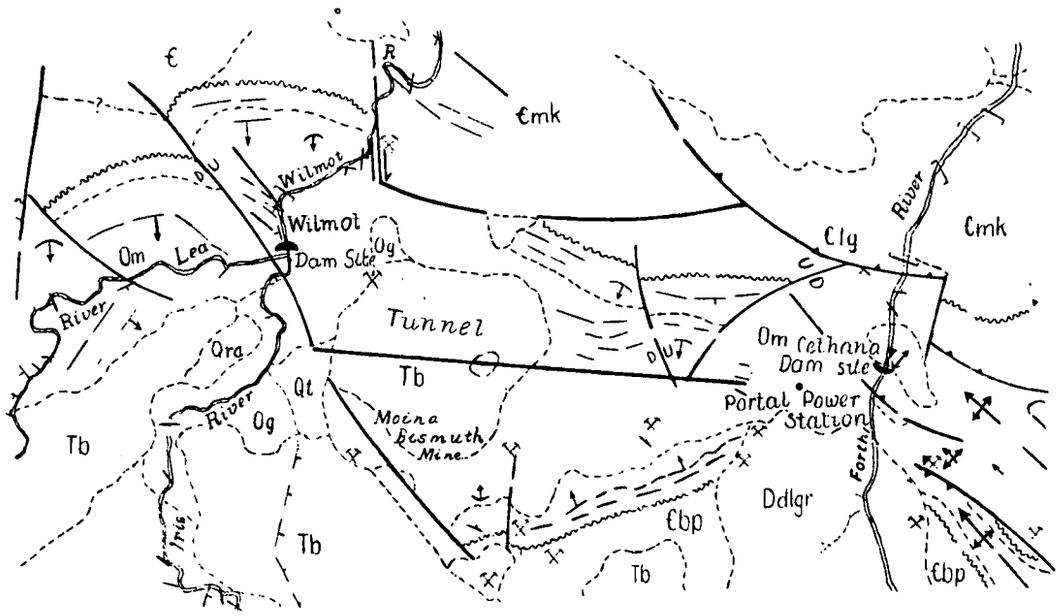
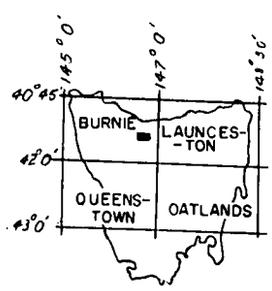
POLAK, E.J. and MOSS, F.J.	1959	Seismic reconnaissance survey at the Hell's Gate dam site, Pieman River, Tasmania. Bur. Min. Resour. Aust. Record 1959/80.



LEGEND

ESTABLISHED BOUNDARY - position approximate			
INFERRED PROBABLE OR INDEFINITE BOUNDARY	----?----	MINE OR PROSPECT	
THRUST FAULT (teeth on upper plate)		STRIKE AND PLUNGE OF MINOR FOLDS	
FAULT WITH DIRECTION OF MOVEMENT	U D	ANTICLINAL AXIS SHOWING DIRECTION OF PLUNGE	
STRIKE AND DIP OF STRATA			
STRIKE OF VERTICAL STRATA		STRIKE AND DIP OF CLEAVAGE	
STRIKE OF BEDS INTERPRETED FROM AIR PHOTOS and/or TRAVERSE INFORMATION		UNCONFORMITY	
		WRENCH FAULT	
UNASSIGNED	€	MINNOW KERATOPHYRE	€mk
GORDON LIMESTONE	Og	TERTIARY BASALT	Tb
MOINA SANDSTONE including CAROL Ck. BEDS	Om	BULL CREEK FORMATION	€bp
DOLCOATH GRANITE	Ddlgr	LORRINNA GREYWACKE	€lg
BASALT TALUS LANDSLIDE DEBRIS	Qt	RECENT ALLUVIUM	Qra



REFERENCE TO AUSTRALIA
4-MILE SERIES

MERSEY/FORTH/WILMOT POWER SCHEME

TASMANIA 1961

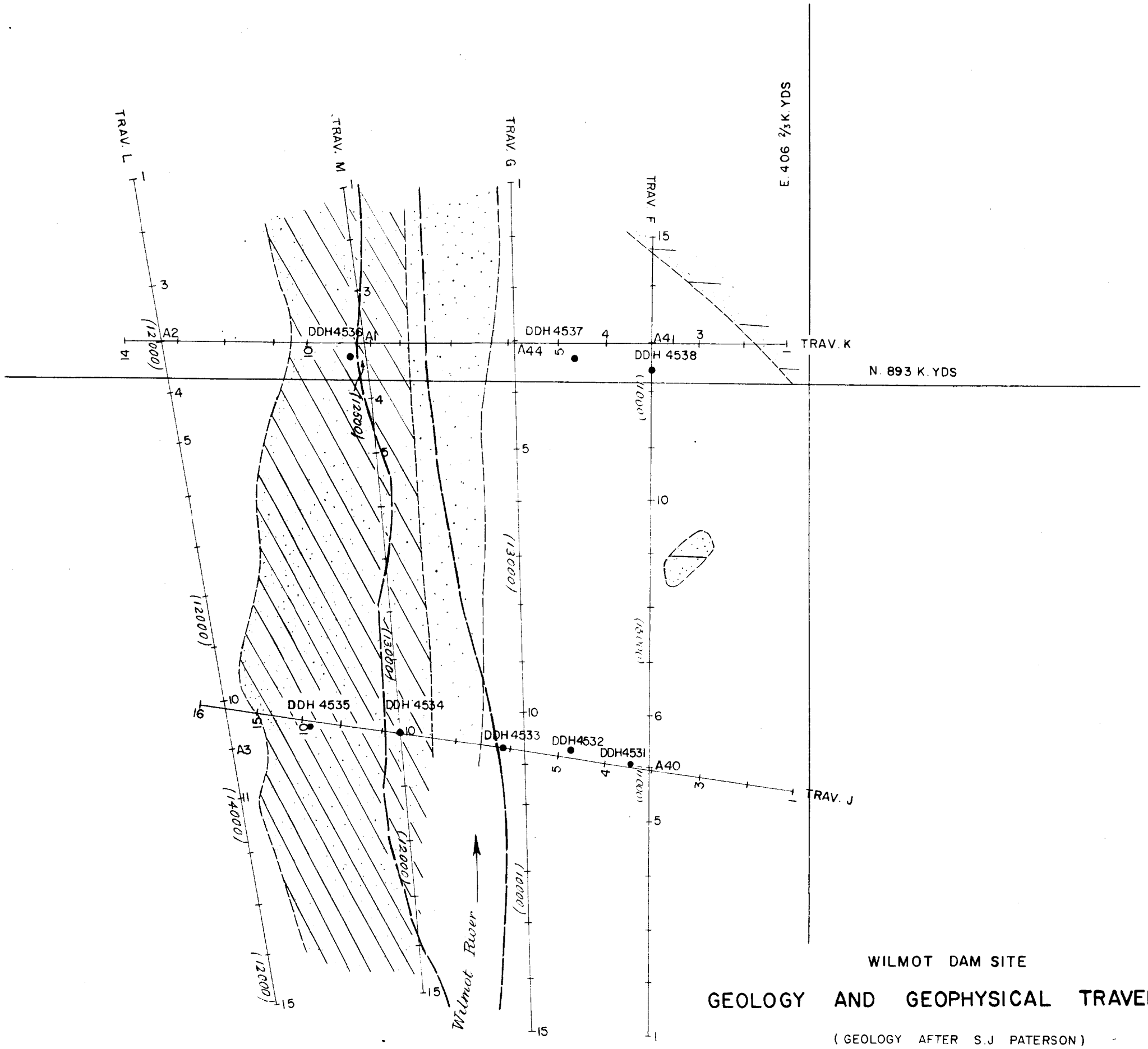
GEOPHYSICAL SURVEY

SCALE IN MILES

1 0 1 2 3

WILMOT AREA
GENERAL GEOLOGY

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS G 368-32
TO ACCOMPANY RECORD No 1962/96



WILMOT DAM SITE

GEOLOGY AND GEOPHYSICAL TRAVERSES

(GEOLOGY AFTER S.J PATERSON)

Based on H.E.C Plan B 1964

LEGEND

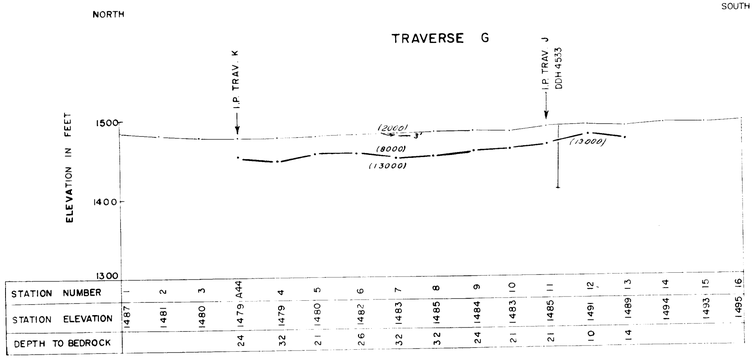
	SOIL and TALUS		QUARTZITE & SANDSTONE
	RIVER TERRACE	DDH 4536 ●	DRILL HOLE
	QUARTZITE	├──┼──┤	GEOPHYSICAL TRAVERSE
		(12000)	SEISMIC VELOCITY, ft/sec
		A40	SURVEY STATIONS

SCALE IN FEET

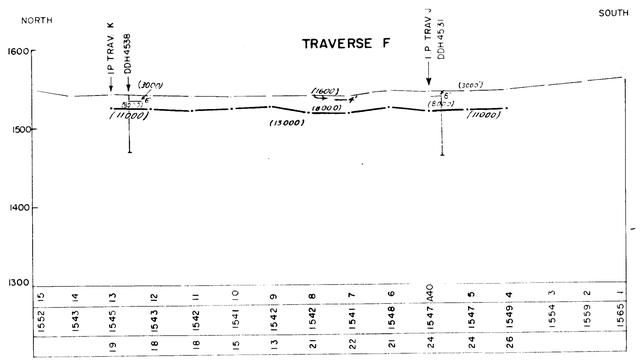
100 0 100 200 300

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS G 368-31

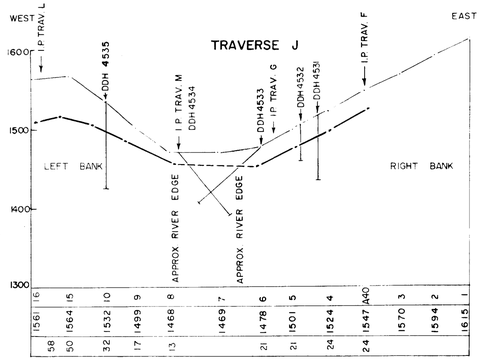
TO ACCOMPANY RECORD No 1962/96



STATION NUMBER	–	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
STATION ELEVATION	1487	1481	1480	1479.A44	1479	1480	1482	1483	1485	1484	1483	1485	1491	1489	1494	1493	1495
DEPTH TO BEDROCK				24	32	21	26	32	32	24	21	21	10	14			

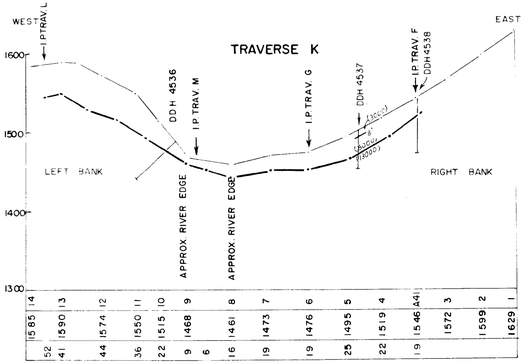


	15	14	13	12	11	10	9	8	7	6	A40	5	4	3	2	1	
1552	1543	1545	1543	1542	1541	1542	1542	1541	1548	1547	1547	1549	1554	1559	1565		
		19	18	18	15	13	21	22	21	24	24	26					



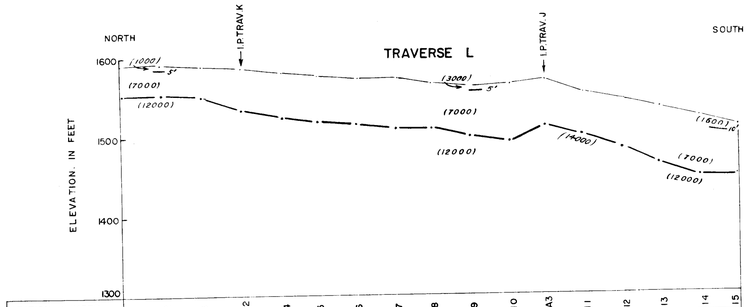
16	15	14	13	12	11	10	9	8	7	6	A40	5	4	3	2	1
1561	1564	1532	1499	1468	1469	1478	1501	1524	1547	1570	1594	1615				
58	50	32	17	13		21	21	24	24							

CALCULATED FROM BROADSIDE SHOTS
DEPTH PLOTTED NORMALLY TO THE SURFACE

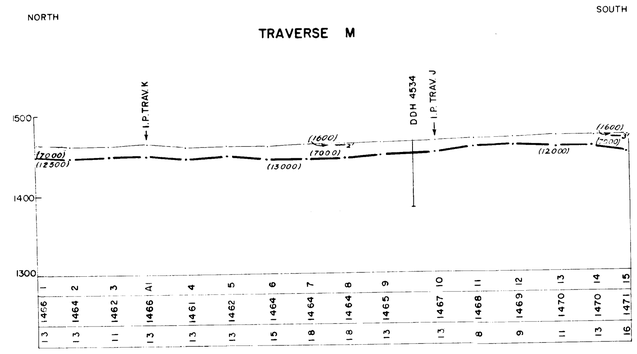


14	13	12	11	10	9	8	7	6	5	4	A41	3	2	1		
1585	1590	1574	1550	1515	1468	1461	1473	1476	1495	1519	1546	1572	1599	1629		
52	41	44	36	22	9	6	19	19	25	22	19					

CALCULATED FROM BROADSIDE SHOTS
DEPTH PLOTTED NORMALLY TO THE SURFACE



STATION NUMBER	1	2	3	A2	4	5	6	7	8	9	10	A3	11	12	13	14	15
STATION ELEVATION	1594	1595	1592	1589	1584	1578	1575	1576	1569	1563	1566	1571	1556	1546	1535	1523	1510
DEPTH TO BEDROCK	38	38	38	52	58	58	58	62	55	62	73	58	55	61	70	75	62



1	2	3	A1	4	5	6	7	8	9	10	11	12	13	14	15	
1456	1464	1462	1466	1461	1462	1464	1464	1464	1465	1467	1468	1469	1470	1470	1471	
13	13	11	13	13	13	15	18	18	13	13	8	9	11	13	16	

LEGEND

(8000)	FORMATION WITH SEISMIC VELOCITY 8000 FT/SEC
— 37'	DEPTH TO FORMATION WITH DIFFERENT SEISMIC VELOCITY
I.P. TRAV. L	INTERSECTION POINT
—·—·—	UNWEATHERED BEDROCK BOUNDARY
A1	SURVEY STATION

HORIZONTAL AND VERTICAL SCALES IN FEET

100 0 100 200 300

BASED ON HEC PLAN A8564 & A8598

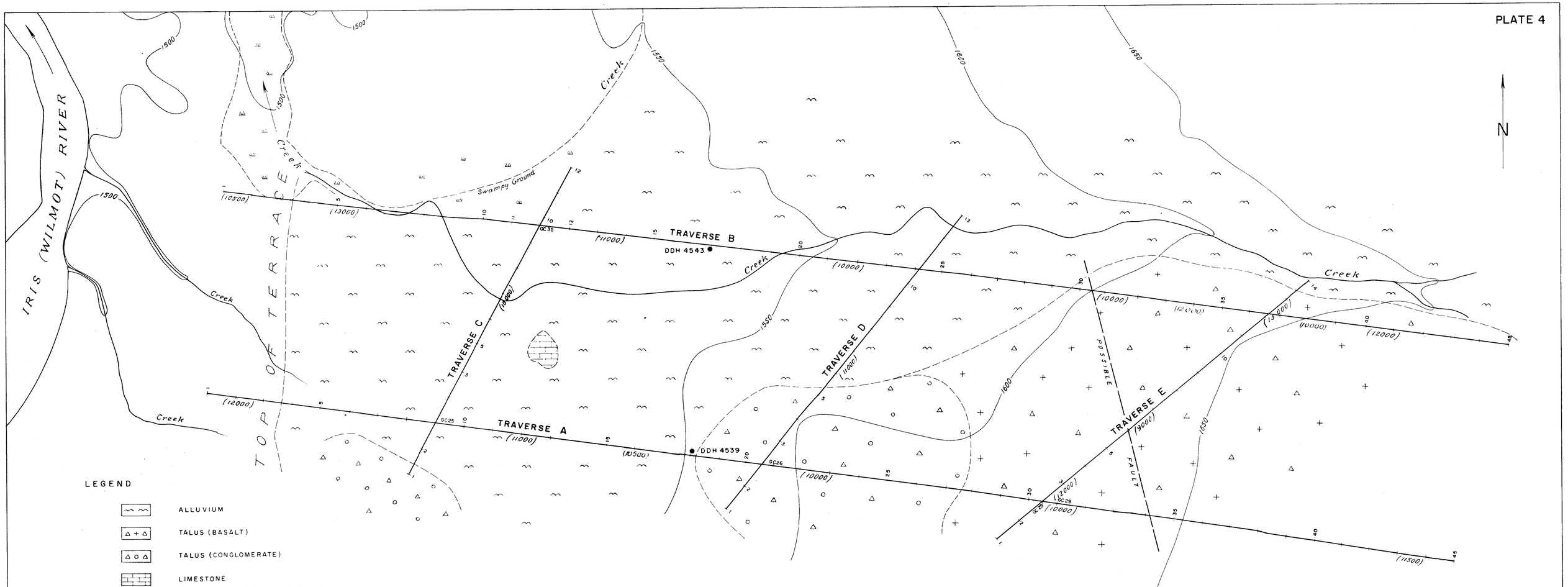
WILMOT DAM SITE

TRAVERSES G, F, J, K, L, & M

SEISMIC CROSS—SECTIONS

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS G368-29
TO ACCOMPANY RECORD No 1962/96

PLATE 4



LEGEND

- ALLUVIUM
- TALUS (BASALT)
- TALUS (CONGLOMERATE)
- LIMESTONE
- DDH 4539 DIAMOND DRILL HOLE No 4539
- GEOPHYSICAL TRAVERSE
- CONTOURS 50 ft INTERVAL
- (12000) SEISMIC VELOCITY, ft/sec

SCALE IN FEET

100 50 0 100 200 300 400

WILMOT INLET PORTAL

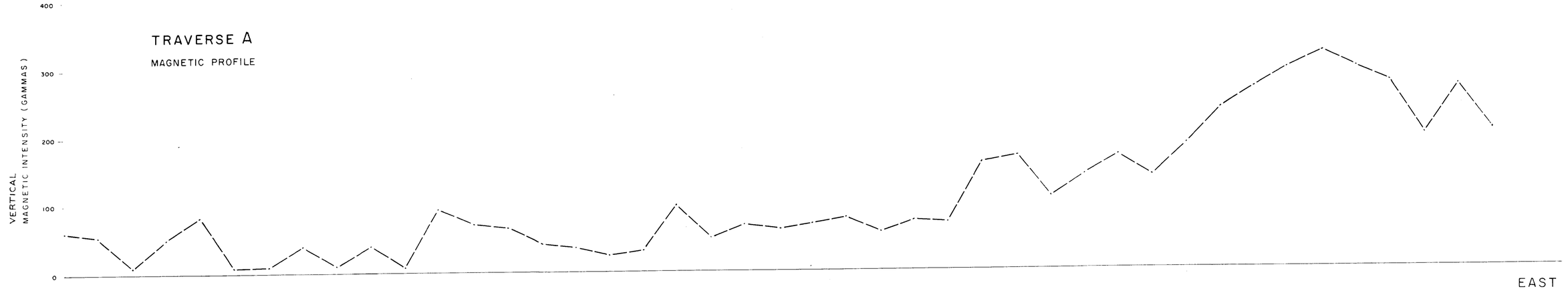
GEOLOGY AND TRAVERSES

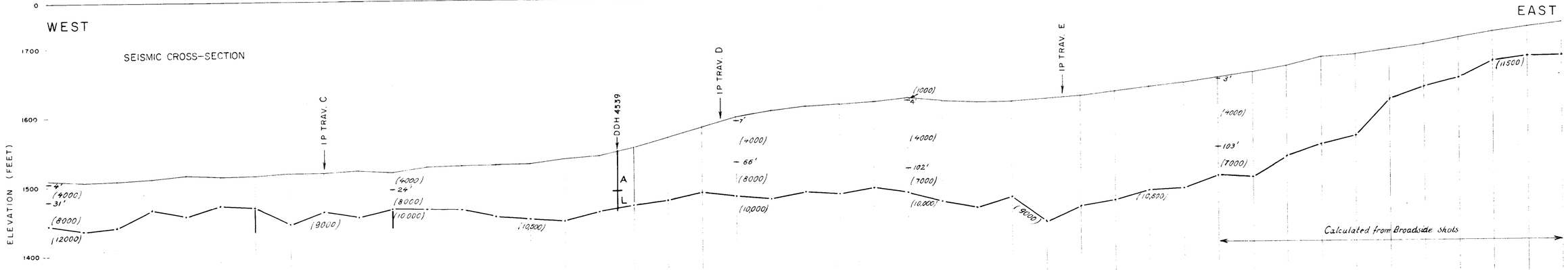
(Geology after S.J. Paterson)

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

G 368-22

TO ACCOMPANY RECORD No. 1962/96





DATUM 1300'

STATION NUMBER	STATION ELEVATION	DEPTH TO BEDROCK
1	1507	65
2	1505	69
3	1507	63
4	1511	42
5	1512	59
6	1512	36
7	1514	44
8	1519	42
9	1517	53
10	1521	66
11	1519	48
12	1527	61
13	1528	61
14	1528	71
15	1521	78
16	1536	82
17	1540	76
18	1564	84
19	1567	90
20	1579	90
21	1594	110
22	1603	126
23	1609	120
24	1612	130
25	1616	122
26	1618	130
27	1616	142
28	1613	150
29	1614	138
30	1617	172
31	1622	160
32	1626	155
33	1631	143
34	1639	152
35	1646	140
36	1655	140
37	1663	132
38	1673	128
39	1678	116
40	1687	73
41	1696	60
42	1704	56
43	1710	40
44	1716	40
45	1722	44

LEGEND

(8000) Seismic velocity ft/sec

−24' Depth to interface

SCALE IN FEET

100 50 0 100 200 300 400

DDH 4539 diamond drill hole

A Alluvium

L Limestone

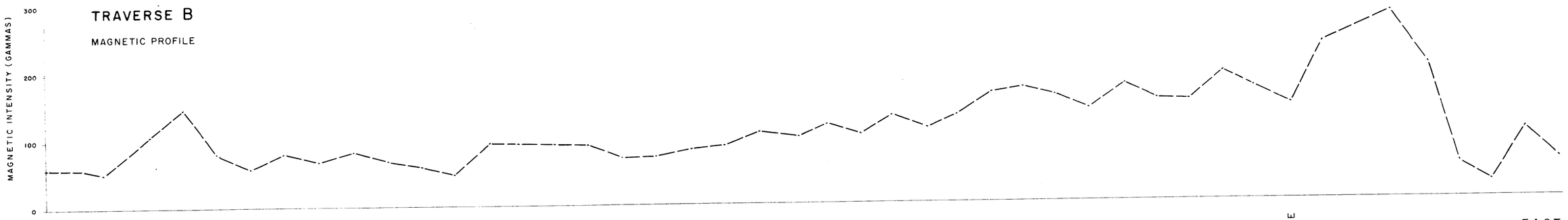
WILMOT INLET PORTAL

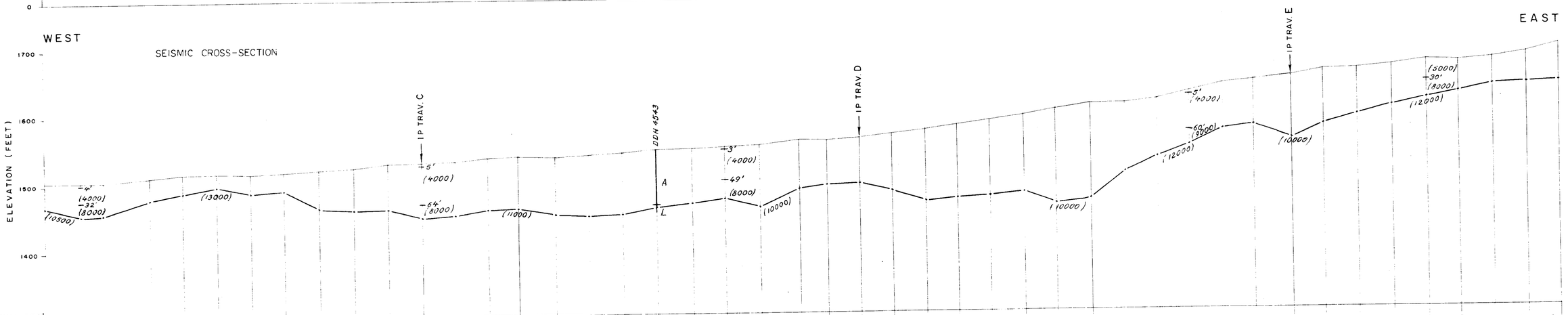
TRAVERSE A SEISMIC CROSS-SECTION AND MAGNETIC PROFILE

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

G 368-20

TO ACCOMPANY RECORD No 1962/96





DATUM 1300'

STATION NUMBER	STATION ELEVATION	DEPTH TO BEDROCK
1	1503	38
2	1503	51
3	1503	44
4	1509	29
5	1512	29
6	1511	17
7	1513	29
8	1514	27
9	1518	58
10	1523	65
11	1527	67
GC35	1529	81
12	1530	81
13	1534	76
14	1536	78
15	1536	88
16	1538	92
17	1541	92
18	1545	88
19	1546	81
20	1548	75
21	1553	94
22	1558	68
23	1557	65
24	1561	68
25	1565	81
26	1571	124
27	1577	108
28	1583	110
29	1590	110
30	1599	140
31	1607	140
32	1606	102
33	1614	87
34	1624	84
35	1634	68
36	1640	65
37	1646	90
38	1654	81
39	1655	68
40	1660	57
41	1666	
42	1663	40
43	1668	36
44	1676	44
45	1683	48

LEGEND

(12000) Seismic velocity ft/sec

-13' Depth to interface

SCALE IN FEET

100 50 0 100 200 300 400

DDH SECTION

A Alluvium

L Limestone

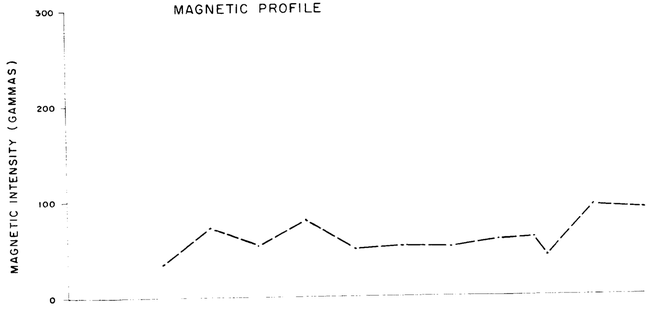
WILMOT INLET PORTAL
TRAVERSE B
SEISMIC CROSS-SECTION AND MAGNETIC PROFILE

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics

G 368-19

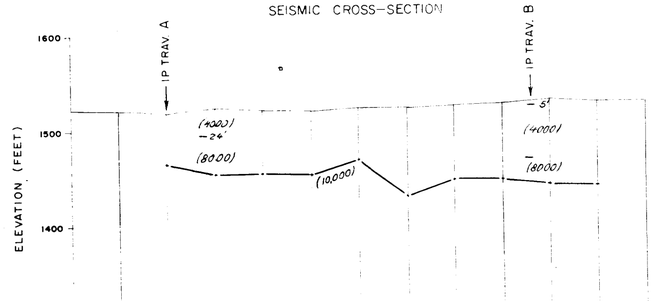
TO ACCOMPANY RECORD No 1962/96

TRAVERSE C
MAGNETIC PROFILE



WEST

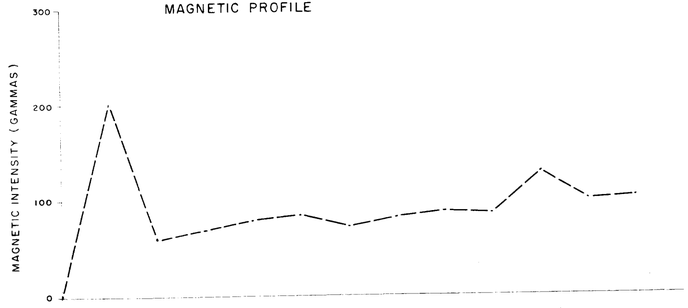
SEISMIC CROSS-SECTION



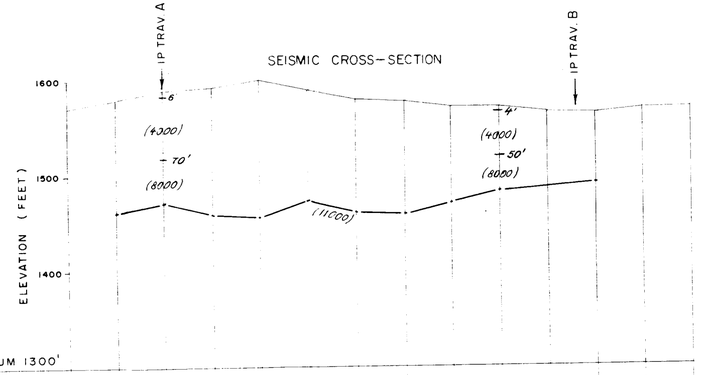
DATUM 1300'

STATION NUMBER 1	2	GC25	3	4	5	6	7	8	9	10	11	12
STATION ELEVATION 1521	1520	1518	1520	1521	1519	1522	1522	1524	1525	1530	1526	1527
DEPTH TO BEDROCK		53	65	65	63	55	93	72	77	88	87	

TRAVERSE D
MAGNETIC PROFILE



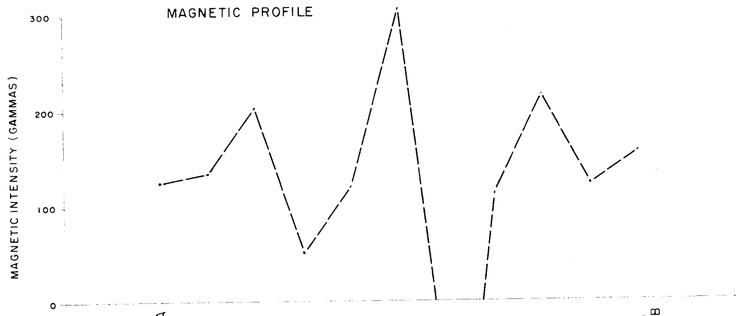
SEISMIC CROSS-SECTION



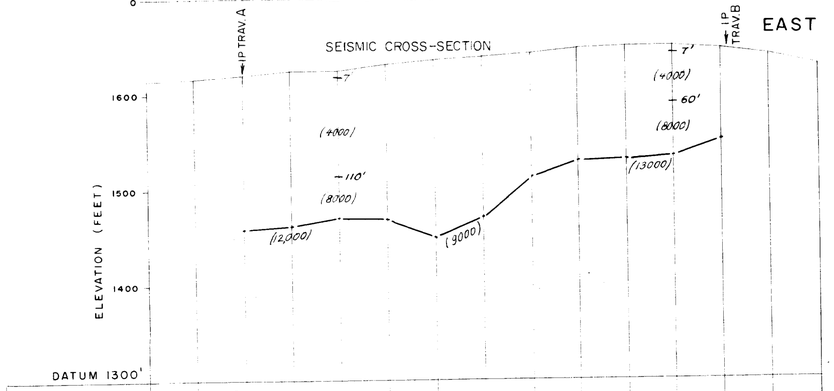
DATUM 1300'

STATION NUMBER 1	2	GC26	3	4	5	6	7	8	9	10	11	12	13
STATION ELEVATION 1549	1578	1587	1591	1599	1586	1576	1575	1567	1567	1563	1562	1567	1565
DEPTH TO BEDROCK	111	111	130	140	112	114	114	94	80	76	72		

TRAVERSE E
MAGNETIC PROFILE



SEISMIC CROSS-SECTION



DATUM 1300'

STATION NUMBER 1	2	GC29	3	4	5	6	7	8	9	10	11	12	13	14
STATION ELEVATION 1616	1616	1619	1622	1626	1630	1634	1639	1642	1645	1646	1648	1645	1639	1628
DEPTH TO BEDROCK		160	160	154	160	181	168	124	116	114	114	93		

LEGEND

(8000) Seismic velocity ft/sec

-24' Depth to interface

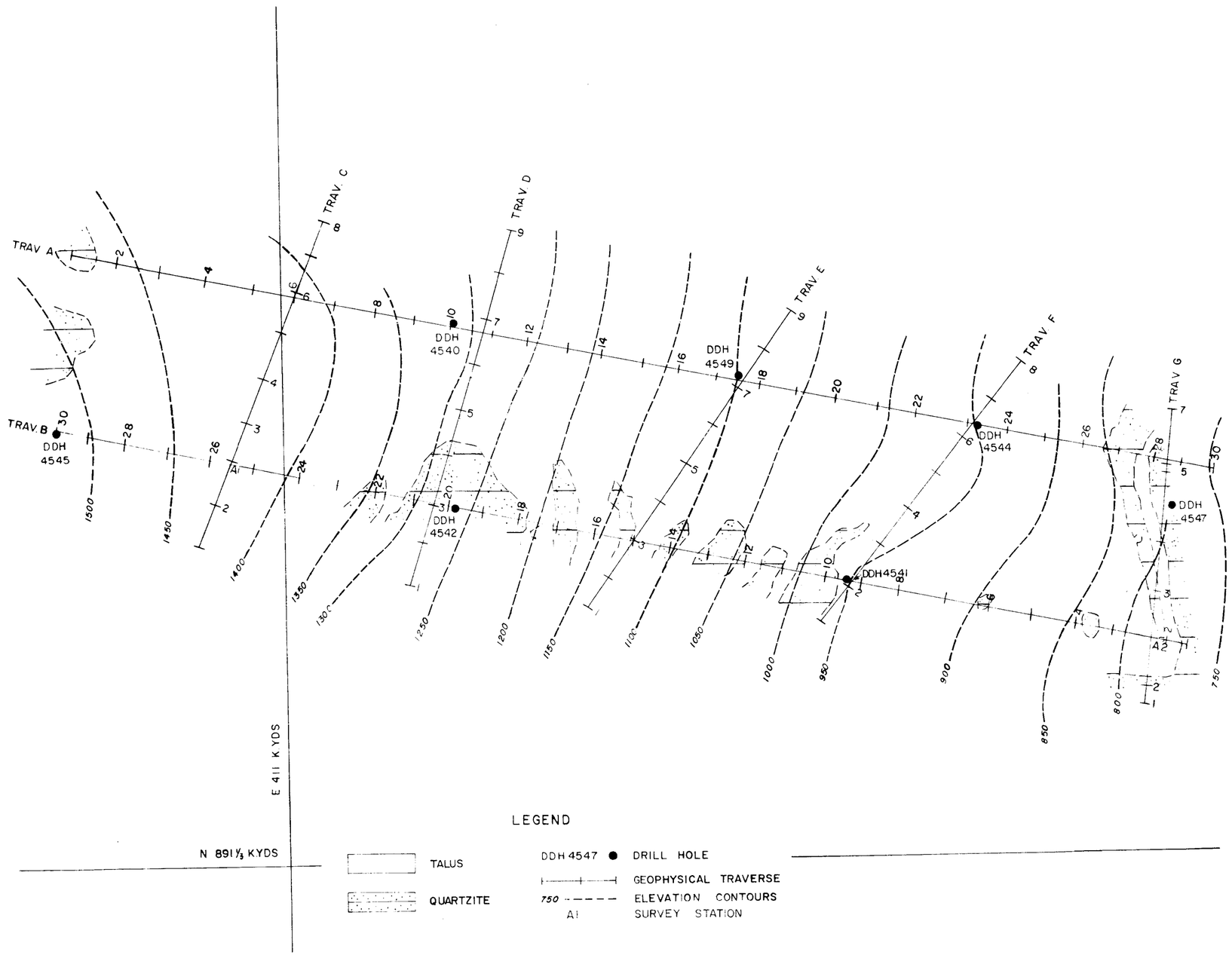
SCALE IN FEET

100 50 0 100 200 300 400

WILMOT INLET PORTAL
TRAVERSE C, D, and E
SEISMIC CROSS-SECTIONS AND MAGNETIC PROFILES

Geophysical Branch, Bureau of Mineral Resources, Geology and Geophysics G 368-21

TO ACCOMPANY RECORD No 1962/96



WILMOT OUTLET PORTAL AND PENSTOCK

GEOLOGY AND GEOPHYSICAL TRAVERSES

(GEOLOGY AFTER S J PATERSON)

Based on H E C Plan S410⅔891

SCALE IN FEET

100 0 100 200 300

LEGEND

TALUS

QUARTZITE

DDH 4547 ● DRILL HOLE

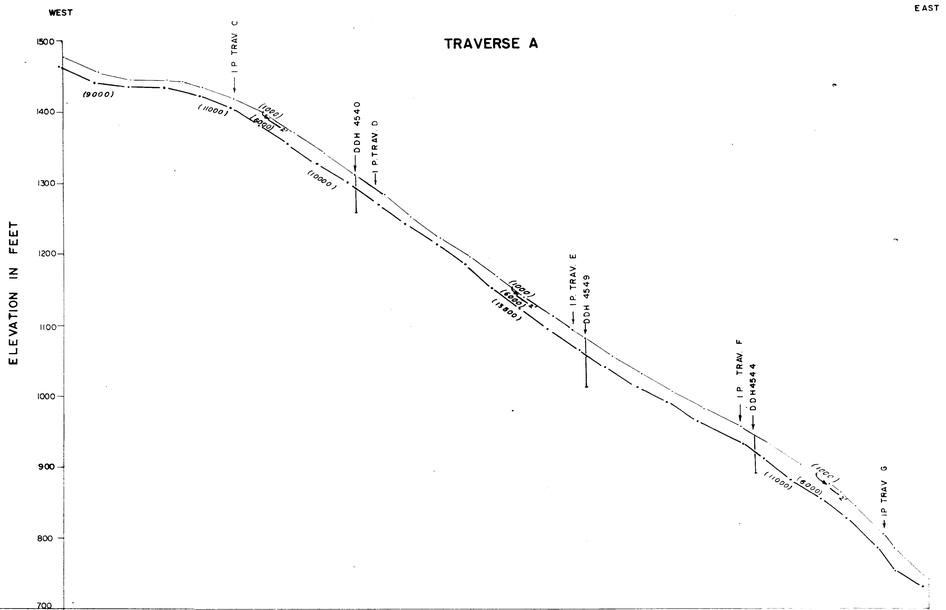
GEOPHYSICAL TRAVERSE

750 ELEVATION CONTOURS

A1 SURVEY STATION

GEOPHYSICAL BRANCH, BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS G368-30

TO ACCOMPANY RECORD No 1962/96



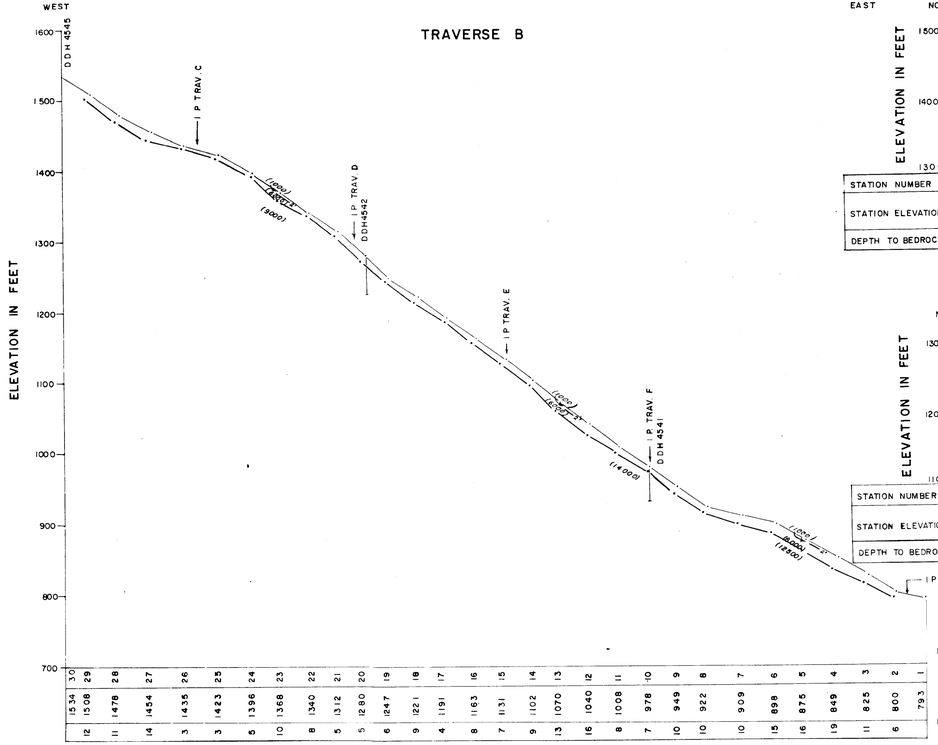
STATION NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
STATION ELEVATION	1479	1458	1446	1446	1437	1419	1398	1373	1344	1314	1285	1255	1226	1199	1170	1141	1114	1084	1056	1031	1007	983	958	931	905	876	844	809	773	740
DEPTH TO BEDROCK	13	14	8	10	12	12	16	17	16	14	15	12	9	14	17	14	20	20	17	20	17	20	16	24	26	25	21	26 21	29	14

BASED ON HEC PLANS 8570—8576

NOTE- DEPTH, PLOTTED NORMAL TO THE SURFACE

100 0 100 200 300

HORIZONTAL AND VERTICAL SCALE IN FEET



STATION NUMBER	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
STATION ELEVATION	1534	1508	1478	1454	1435	1423	1396	1368	1340	1312	1280	1247	1221	1191	1163	1131	1102	1070	1040	1008	978	949	922	909	898	875	849	825	800	793
DEPTH TO BEDROCK	12	11	14	3	3	5	10	8	5	5	6	9	4	8	7	9	13	16	8	7	10	10	10	15	16	19	11	6		

LEGEND

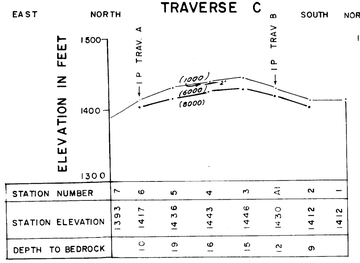
(11,000) FORMATION WITH SEISMIC VELOCITY 11,000 FT/SEC

—— 37' DEPTH TO FORMATION WITH DIFFERENT SEISMIC VELOCITY

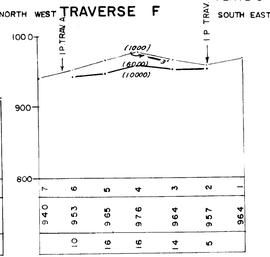
I.P. TRAV.C INTERSECTION POINT

—·— BEDROCK BOUNDARY

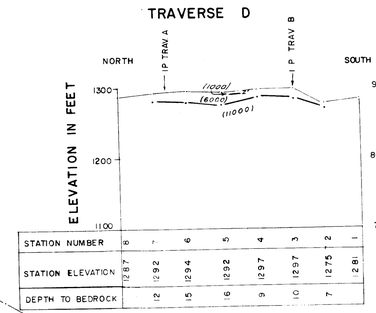
A1 SURVEY STATION



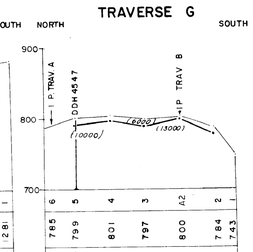
STATION NUMBER	7	6	5	4	3	A1	2	1
STATION ELEVATION	1393	1417	1436	1443	1446	1430	1412	1412
DEPTH TO BEDROCK		10	19	16	15	12	9	



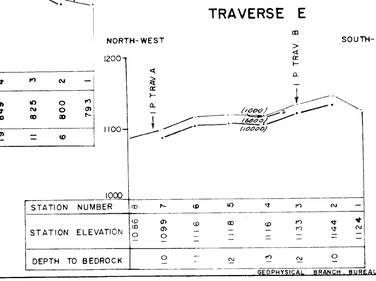
	7	6	5	4	3	2	1
	940	953	965	976	964	957	964
		10	16	16	14	5	



STATION NUMBER	8	7	6	5	4	3	2	1
STATION ELEVATION	1287	1292	1294	1292	1297	1297	1275	1281
DEPTH TO BEDROCK		12	15	16	9	10	7	



	6	5	4	3	A2	2	1
	785	799	801	797	800	784	743
		10	6	8	2	9	



STATION NUMBER	8	7	6	5	4	3	2	1
STATION ELEVATION	1086	1099	1116	1118	1116	1133	1144	1124
DEPTH TO BEDROCK		10	11	12	13	12	10	

WILMOT OUTLET PORTAL

AND PENSTOCK

TRAVERSES A, B, C, D, E, F, G

SEISMIC CROSS-SECTIONS