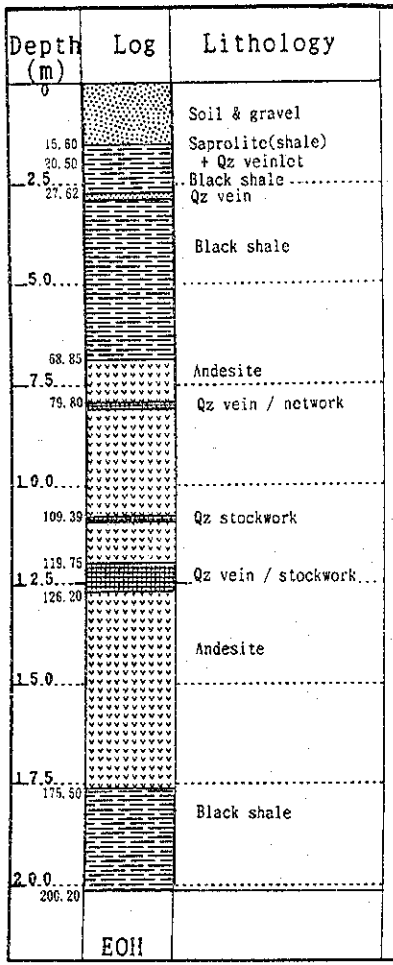
2-5 Discussions

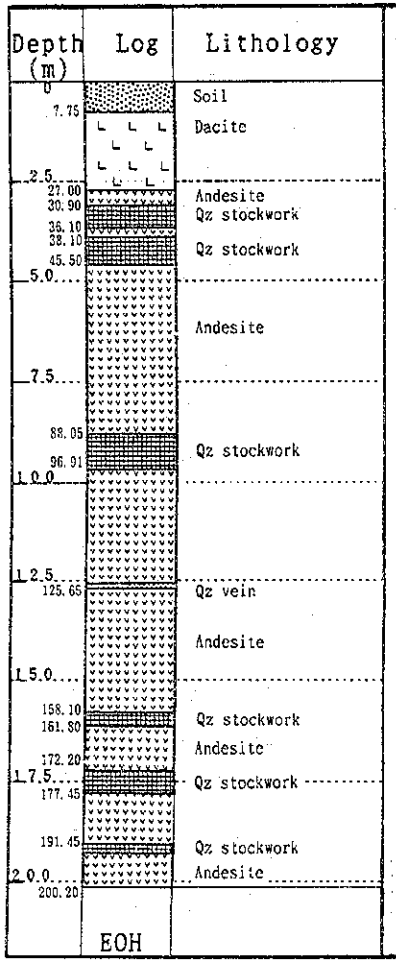
The results of MJT-9 mean a couple of possibilities; the target horizon is much deeper than expected, the trend of quartz stockwork system is different from that which have been interpreted by surface indications, or mineralized zone is dislocated by faults. The occurrence of an alteration mineral assemblage -- quartz-chlorite-calcite -- indirectly shows that the drill hole MJT-9 intersected a halo of gold-quartz mineralization. Only one short drill hole was tried in the middle reaches of S. Bone zone in this phase. It has not been sufficient for testing the mineralization in this zone.



ASSAY RESULTS OF ORE SAMPLES (MJT-6)

Sample No.	Depth From	Depth To	Width m	Au g/t	Ag g/t	Cu %	Pb %	Zn %	Fe %	Description
BD6-1	15.60	16.60	1.00	0.06	<2	0.008	0.003	0.016	4.71	Quartz stockwork
BD6-2	16.60	17.60	1.00	0.08	<2	0.011	0.023	0.018	6.60	Quartz stockwork
BD6-3	17.60	18.60	1.00	0.11	<2	0.009	0.013	0.019	5.76	Quartz stockwork
BD6-4	18.60	19.60	1.00	0.14	<2	0.008	0.006	0.016	6.26	Quartz stockwork
BD6-5	19.60	20.50	0.90	0.11	<2	0.008	0.003	0.022	4.92	Quartz stockwork
BD6-6	27.62	28.05	0.47	0.06	<2	0.003	0.025	0.017	1.44	Quartz vein
BD6-7	79.80	80.23	0.43	<0.02	<2	0.010	0.003	0.022	2.02	Quartz stockwork
BD6-8	103.75	103.87	0.12	<0.02	<2	0.004	0.001	0.004	4.01	Quartz vein
BD6-9	109.39	109.44	0.05	0.03	<2	0.186	0.001	0.072	7.00	Quartz veinlet
BD6-10	109.55	109.76	0.21	0.02	<2	0.100	0.001	0.497	1.90	Quartz vein
BD6-11	116.24	116.60	0.36	<0.02	<2	0.038	0.001	0.133	2.49	Quartz vein
BD6-31	119.75	119.88	0.13	0.06	2	0.003	<0.001	0.005	4.09	Quartz stockwork
BD6-32	119.88	120.00	0.12	35.68	4	0.004	<0.001	0.009	3.19	Quartz stockwork
BD6-33	120.00	120.10	0.10	1.60	2	0.006	0.001	0.012	3.40	Quartz stockwork
BD6-34	120.10	120.35	0.25	1.66	2	0.015	0.001	0.015	6.23	Quartz stockwork
BD6-13	120.35	120.75	0.40	0.11	2	0.127	0.001	0.015	4.39	Quartz stockwork
BD6-29	120.75	121.25	0.50	0.03	<2	0.038	<0.001	0.058	2.52	Quartz stockwork
BD6-14	121.60	121.67	0.07	<0.02	<2	0.030	<0.001	0.121	1.93	Quartz stockwork
BD6-15	121.76	121.80	0.04	<0.02	<2	0.109	0.002	0.103	5.43	Quartz stockwork
BD6-16	121.88	121.94	0.06	<0.02	<2	0.023	0.001	0.059	4.85	Quartz stockwork
BD6-17	122.27	122.34	0.07	<0.02	<2	0.122	<0.001	0.194	4.63	Quartz stockwork
BD6-18	122.43	122.47	0.04	<0.02	<2	0.012	0.001	0.047	4.74	Quartz stockwork
BD6-19	122.50	122.60	0.10	<0.02	<2	0.041	0.002	0.041	1.07	Quartz stockwork
BD6-20	122.62	122.70	0.08	<0.02	<2	0.012	<0.001	0.047	1.22	Quartz stockwork
BD6-21	123.62	123.67	0.05	<0.02	2	0.004	0.001	0.012	3.34	Quartz stockwork
BD6-22	123.79	123.88	0.09	<0.02	2	0.011	<0.001	0.050	2.33	Quartz stockwork
BD6-23	124.44	124.51	0.07	0.12	2	0.022	0.002	0.044	10.25	Quartz stockwork
BD6-24	124.60	124.70	0.10	<0.02	<2	0.008	<0.001	0.015	2.54	Quartz stockwork
BD6-25	124.80	124.90	0.10	<0.02	2	0.003	0.001	0.009	2.11	Quartz stockwork
BD6-26	125.30	126.20	0.90	<0.02	<2	0.057	0.001	0.088	0.90	Quartz vein
BD6-27	130.30	130.45	0.15	<0.02	<2	0.033	0.001	0.017	0.34	Quartz vein
BD6-28	135.68	135.73	0.05	<0.02	<2	0.004	<0.001	0.003	3.53	Quartz veinlet
BD6-30	198.40	198.53	0.13	<0.02	<2	0.002	0.001	0.002	0.93	Quartz vein

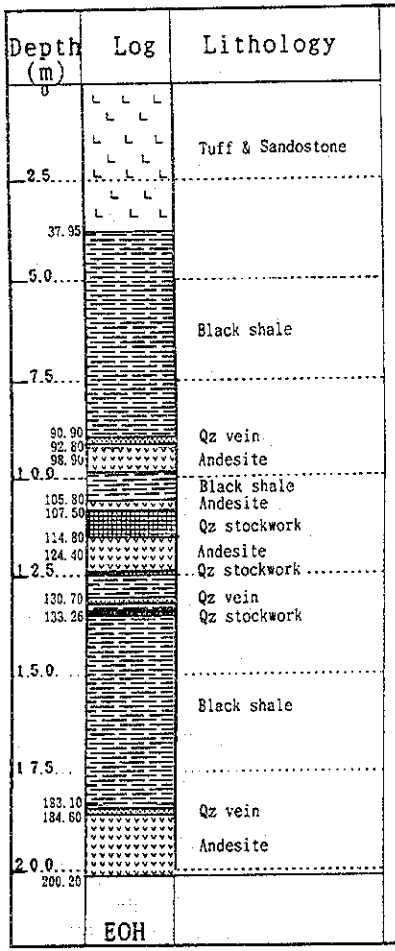
Fig. 2-9 Summary of Drill Logs and Assay Results of Core Samples(MJT-6)



ASSAY RESULTS OF ORE SAMPLES (MJT-7)

Sample No.	Depth From	Depth To	Width m	Au g/t	Ag g/t	Cu %	Pb %	Zn %	Fe %	Description
BD7-1	30.90	31.90	1.00	<0.02	4	0.005	0.001	0.014	6.79	Quartz stockwork
BD7-2	31.90	32.60	0.70	<0.02	2	0.006	0.001	0.018	6.88	Quartz stockwork
BD7-3	33.30	34.30	1.00	<0.02	2	0.033	0.002	0.012	5.25	Quartz stockwork
BD7-4	34.30	35.30	1.00	<0.02	2	0.017	0.001	0.010	7.22	Quartz stockwork
BD7-5	35.30	36.10	0.80	<0.02	2	0.006	0.001	0.011	5.24	Quartz stockwork
BD7-6	38.10	39.10	1.00	0.05	<2	0.004	0.001	0.013	6.40	Quartz stockwork
BD7-7	39.10	40.10	1.00	<0.02	2	0.003	0.001	0.016	6.11	Quartz stockwork
BD7-8	40.10	41.10	1.00	0.02	2	0.023	0.001	0.049	6.01	Quartz stockwork
BD7-9	41.10	42.10	1.00	0.05	2	0.067	0.001	0.075	6.44	Quartz stockwork
BD7-10	42.10	43.10	1.00	<0.02	2	0.007	0.001	0.015	4.82	Quartz stockwork
BD7-11	43.10	43.50	0.40	<0.02	2	0.009	0.001	0.011	5.21	Quartz stockwork
BD7-12	44.50	45.50	1.00	<0.02	2	0.022	0.001	0.010	4.09	Quartz stockwork
BD7-13	88.05	88.09	0.04	<0.02	<2	0.005	<0.001	0.007	3.89	Quartz veinlet
BD7-14	89.68	89.70	0.07	<0.02	<2	0.020	<0.001	0.003	2.26	Quartz veinlet
BD7-15	90.30	91.30	1.00	<0.02	<2	0.004	0.001	0.006	5.49	Quartz stockwork
BD7-16	91.30	92.30	1.00	0.05	2	0.001	0.002	0.006	6.12	Quartz stockwork
BD7-17	92.30	93.30	1.00	0.11	2	0.009	0.001	0.008	6.64	Quartz stockwork
BD7-18	93.30	94.40	1.10	0.08	2	0.002	0.001	0.007	6.88	Quartz stockwork
BD7-38	94.70	96.00	1.30	0.05	<2	0.011	0.001	0.008	7.28	Clayey zone
BD7-19	96.00	96.05	0.05	0.02	<2	0.004	<0.001	0.006	6.56	Quartz veinlet
BD7-20	96.05	96.55	0.50	0.86	<2	0.002	0.001	0.005	5.19	Quartz stockwork
BD7-21	96.55	96.76	0.21	28.55	4	0.002	<0.001	0.004	3.49	Quartz vein
BD7-22	96.76	96.91	0.15	56.61	8	0.004	0.001	0.007	3.39	Quartz stockwork
BD7-23	125.65	125.95	0.30	<0.02	<2	0.068	0.001	0.043	1.79	Quartz vein
BD7-24	134.20	134.75	0.55	<0.02	<2	0.061	<0.001	0.006	3.87	Quartz stockwork
BD7-25	151.85	152.40	0.55	<0.02	2	0.003	<0.001	0.007	5.59	Quartz stockwork
BD7-26	158.10	158.35	0.25	0.03	2	0.019	0.001	0.018	4.36	Quartz stockwork
BD7-40	160.75	160.80	0.05	0.25	6	5.090	0.001	0.162	26.00	Quartz stockwork
BD7-27	161.40	161.80	0.40	<0.02	2	0.598	<0.001	0.033	5.68	Quartz stockwork
BD7-28	164.25	164.60	0.35	<0.02	<2	0.045	<0.001	0.006	4.43	Quartz stockwork
BD7-29	164.80	165.60	0.80	<0.02	<2	0.22[illegible]	0.001	0.021	5.62	Quartz stockwork
BD7-30	165.60	166.10	0.50	<0.02	<2	0.264	0.001	0.028	6.44	Quartz stockwork
BD7-31	172.20	172.30	0.10	<0.02	4	1.090	0.001	0.023	6.70	Quartz stockwork
BD7-32	172.70	172.80	0.10	<0.02	<2	0.021	<0.001	0.008	6.14	Quartz stockwork
BD7-33	173.55	174.30	0.75	<0.02	2	0.357	<0.001	0.042	8.27	Quartz stockwork
BD7-34	174.30	175.00	0.70	<0.02	<2	0.096	<0.001	0.033	5.92	Quartz stockwork
BD7-35	176.95	177.45	0.50	<0.02	<2	0.118	<0.001	0.678	5.12	Quartz stockwork
BD7-36	191.45	192.05	0.60	0.06	<2	0.009	0.001	0.014	4.19	Quartz stockwork
BD7-37	192.05	192.65	0.60	<0.02	<2	0.027	0.006	0.015	6.77	Quartz stockwork
BD7-39	192.65	193.45	0.80	0.02	<2	0.008	0.001	0.014	6.77	Quartz stockwork

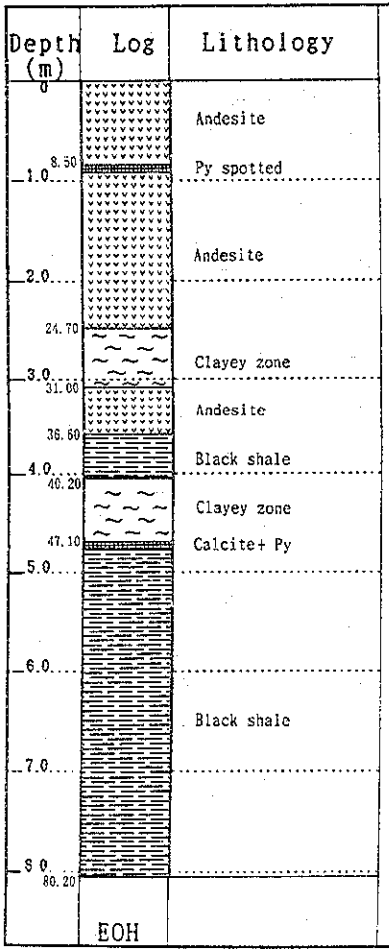
Fig. 2-9 Summary of Drill Logs and Assay Results of Core Samples(MJT-7)



ASSAY RESULTS OF ORE SAMPLES (MJT-8)

Sample No.	Depth From	Depth To	Width m	Au g/t	Ag g/t	Cu %	Pb %	Zn %	Fe %	Description
BD8-1	67.00	67.50	0.50	0.03	<2	0.008	0.004	0.013	5.88	Quartz stockwork
BD8-2	90.90	91.04	0.14	<0.02	<2	0.003	0.001	0.007	2.10	Quartz vein
BD8-3	107.50	107.73	0.23	<0.02	<2	0.014	<0.001	0.013	2.10	Quartz stockwork
BD8-4	107.73	108.70	0.93	<0.02	<2	0.021	<0.001	0.009	2.19	Quartz stockwork
BD8-5	108.70	109.30	0.60	0.19	18	4.870	0.004	0.198	10.35	Quartz stockwork
BD8-6	109.30	110.30	1.00	<0.02	2	0.437	<0.001	0.021	3.79	Quartz stockwork
BD8-7	110.30	111.05	0.75	0.06	<2	0.009	0.001	0.069	2.84	Quartz stockwork
BD8-8	111.27	111.90	0.63	<0.02	<2	0.122	0.001	0.009	1.86	Quartz stockwork
BD8-9	112.05	112.30	0.25	<0.02	4	0.858	0.001	0.043	5.17	Quartz stockwork
BD8-10	112.30	112.85	0.55	<0.02	2	0.544	0.001	0.022	3.36	Quartz stockwork
BD8-11	112.98	113.20	0.22	<0.02	<2	0.011	<0.001	0.009	4.73	Quartz stockwork
BD8-12	113.38	113.83	0.45	<0.02	2	0.024	0.001	0.006	1.62	Quartz stockwork
BD8-13	113.90	114.44	0.54	<0.02	2	0.142	0.001	0.009	3.68	Quartz stockwork
BD8-14	117.63	117.87	0.24	0.08	2	0.018	<0.001	0.006	4.87	Quartz stockwork
BD8-15	118.20	119.10	0.90	0.08	<2	0.025	<0.001	0.027	3.49	Quartz stockwork
BD8-16	122.85	123.33	0.48	0.08	2	0.008	0.001	0.010	5.20	Quartz stockwork
BD8-17	124.40	124.57	0.17	0.17	2	0.012	0.001	0.004	3.62	Quartz stockwork
BD8-20	130.70	130.77	0.07	0.42	2	0.016	0.016	0.047	7.14	Quartz veinlet
BD8-21	133.26	133.92	0.66	14.31	2	0.037	0.002	0.019	4.94	Quartz stockwork
BD8-22	136.80	137.22	0.42	<0.02	4	0.117	0.001	0.018	3.11	Quartz stockwork
BD8-23	137.32	137.50	0.18	0.09	<2	0.004	<0.001	0.041	2.64	Quartz stockwork
BD8-24	182.05	182.55	0.50	0.03	<2	0.003	<0.001	0.006	3.45	Quartz stockwork
BD8-25	183.02	183.55	0.53	<0.02	<2	0.002	0.001	0.009	2.44	Quartz stockwork
BD8-26	184.60	185.35	0.75	0.06	4	1.510	0.001	0.105	5.59	Quartz vein
BD8-29	199.80	200.20	0.40	<0.02	<2	0.011	<0.001	0.003	3.87	Quartz stockwork

Fig. 2-9 Summary of Drill Logs and Assay Results of Core Samples(MJT-8)



ASSAY RESULTS OF ORE SAMPLES (MJT-9)

Sample No.	Depth From	Depth To	Width m	Au g/t	Ag g/t	Cu %	Pb %	Zn %	Fe %	Description
BD9-1	8.50	8.65	0.15	<0.02	<2	0.010	<0.001	0.009	5.94	Pyrite spotted
BD9-2	9.10	9.30	0.20	<0.02	<2	0.025	<0.001	0.010	3.87	Pyrite spotted
BD9-3	47.10	47.30	0.20	<0.02	<2	0.006	0.003	0.015	6.03	Calcite-Py network
BD9-4	69.00	69.10	0.10	<0.02	<2	0.002	0.008	0.008	3.66	Qz-calcite network
BD9-11	69.75	69.80	0.05	<0.02	<2	0.003	0.008	0.013	7.29	Qz-calcite network
BD9-5	72.85	73.25	0.40	<0.02	<2	<0.001	<0.001	0.001	2.85	Silicified zone
BD9-6	77.40	77.55	0.15	<0.02	2	0.004	0.003	0.013	4.67	Qz-calcite network
BD9-7	78.50	78.65	0.15	<0.02	<2	0.003	0.003	0.013	6.27	Qz-calcite network
BD9-8	79.80	79.95	0.15	<0.02	2	0.005	0.003	0.013	4.70	Qz-calcite network

Fig. 2-9 Summary of Drill Logs and Assay Results of Core Samples(MJT-9)

Chapter 3 Malela-Pongo Zone

3-1 Introduction

The Malela-Pongo mineralized zone occurs at an area between S. Malela and S. Pongo, situated at the northeastern side of the ridge which lies between S. Karataun and S. Pongo. The altitude of the zone ranges from 350 m up to 650 m above sea level. The geologic setting is similar to that of the Tondoratte zone.

The extensive development of quartz veins was found during semi-detailed geological survey in the first phase. Detailed survey comprising grid soil survey and rock-chip sampling was conducted in the second phase. Significant soil anomalies of Au (up to 708 ppb) and basemetals were delineated in this area. A couple of significant gold values was also obtained from rock-chips in this zone.

Based on the results of the second phase exploration, this zone was designated for one of the gold targets in the third phase exploration. Three lines of shallow trenches were dug in this zone in the third phase.

3-2 Geology and Mineralization of the Zone

The geology of the Malela-Pongo area is mainly composed of alternating beds of shale, siltstone, and andesite of the Latimojong Formation. Dacitic tuff and lava of the Barupu Tuffs occur at high altitudes above 600 m.

Gold mineralization was recognized in andesite and black shale at S. Malela. Massive quartz veins of up to 3 m in width and associated quartz stockworks are extensively developed along S. Malela. The trend of quartz veins changes variously. The dominant direction is NNW at S. Malela. Quartz shows characteristically thick, massive features, and commonly contains a small amount of sulphide minerals.

Quartz veins and quartz-pyrite networks were caught at the branch creeks of S. Pongo in the second phase survey. Two kinds of vein systems -- NNE with W dip and E-W with N dip -- were distinguished in this area.

3-3 Trenching

3-3-1 Survey Method

Three lines of shallow trenches were excavated by traditional hand-digging method in the Malela-Pongo area. They cross the Au anomaly area of soil samples for 159.90 m in total length. Two lines of trenches MT-1 and MT-2 were dug at the northeastern side of S. Malela. They aimed at testing some of the significant quartz veins cropped out along S. Malela. Another trench MT-3 was dug at the southwest of a branch creek of S. Pongo where distinctive Au anomalies of soil samples (708 ppb Au, etc.) were detected.

One side of trench walls was sketched at a scale of 1:100. Samples of quartz veins and adjoining alteration zones were collected, crashed, then panned out for examining sulphide minerals and gold in the field. Samples were taken for ore assay. A total of 21 samples for ore assay was obtained from trenches.

The details of the trenches are listed in the following table:

Trench No.	Locality	Elevation	Azimuth	Length	No. of Samples
MT-1	NE of S.Malela	485 m	320 °	55.70 m	8 pcs
MT-2	ditto	432	280	59.20	6
MT-3	SW of S.Pongo	430	345	45.00	7
Total				159.90 m	21 pcs

Samples were also taken from some localities along the wall of the new road construction sites in this area. The outline of such road cutting is as follows:

MT-4	Upper Reaches	595 m	350 °	17.20 m	4 pcs
MT-5	of	603	350	5.00	1
MT-6	S. Malela	610	350	25.50	6
Total				47.70 m	11 pcs

Table 2-20 Assay Results of Trench Samples in the Malela-Pongo Zone

Sample No.	Width m	Au g/t	Ag g/t	Cu %	Pb %	Zn %	Fe %	Description
W-2	0.25	0.05	2	0.185	<0.001	0.199	4.82	MT-1, 26.4-26.65m, Qz in And
W-4	5.50	<0.02	2	0.014	<0.001	0.112	7.85	MT-1, 16.0-21.5m, And+Qz veinlet
W-6	4.50	0.03	2	0.018	<0.001	0.149	8.35	MT-1, 6.5-11.0m, And+Qz veinlets
W-7	2.00	<0.02	2	0.017	<0.001	0.165	7.70	MT-1, 4.5-6.5m, Alt And+Qz veins
W-8	2.60	<0.02	2	0.335	<0.001	0.066	3.67	MT-1, 2.5-5.1m, Qz vein
W-9	1.50	<0.02	2	0.018	<0.001	0.080	7.21	MT-1, 0.0-1.5m, Alt And+Qz veins
W-10	0.45	<0.02	2	0.773	<0.001	0.017	4.54	MT-1, 0.25-0.7m, Qz vein
W-11	1.20	<0.02	2	0.014	0.002	0.094	7.38	MT-1, 0.7-1.9m, Alt And
W-14	3.50	<0.02	2	0.016	0.001	0.111	8.05	MT-2, 32.5-36.0m, And+Qz veinlets
W-15	1.00	<0.02	2	0.009	<0.001	0.017	7.65	MT-2, 31.8-32.8m, And+Qz veinlets
W-16	2.50	<0.02	2	0.013	<0.001	0.088	7.95	MT-2, 29.0-31.5m, And+Qz veinlets
W-17	1.50	<0.02	2	0.008	<0.001	0.097	7.47	MT-2, 25.0-26.5m, Alt And+Qz vnlets
W-19	3.90	<0.02	2	0.014	<0.001	0.145	8.30	MT-2, 12.0-15.9m, Alt And+Qz vnlets
W-25	6.00	<0.02	2	0.007	0.001	0.026	7.74	MT-2, 17.0-23.0m, And
W-26	4.50	<0.02	<2	0.015	0.001	0.009	6.52	MT-3, 0.0-4.5m, And
W-27	2.50	<0.02	<2	0.041	0.001	0.008	4.91	MT-3, 4.5-7.0m, Alt And+Qz stockwk
W-29	5.00	0.02	<2	0.012	<0.001	0.009	6.18	MT-3, 12.0-17.0m, Alt And+Qz stockwk
W-32	1.00	0.08	<2	0.027	0.001	0.007	5.44	MT-3, 27.0-28.0m, Alt And+Qz stockwk
W-34	4.00	0.12	<2	0.007	0.001	0.008	7.47	MT-3, 33.0-38.0m, And
W-35	4.00	0.17	<2	0.010	<0.001	0.009	7.49	MT-3, 38.0-42.0m, Saprolite
W-36	3.00	<0.02	<2	0.005	<0.001	0.010	6.35	MT-3, 42.0-45.0m, Saprolite+Qz stkwk
W-37	5.00	<0.02	<2	0.042	0.001	0.011	2.34	MT-4, 0.0-5.0m, Massive Qz vein
W-38	5.00	<0.02	<2	0.016	0.001	0.005	1.95	MT-4, 5.0-10.0m, Massive Qz vein
W-39	3.00	0.20	2	0.011	0.001	0.064	6.46	MT-4, 10.0-13.0m, Alt And+Qz vnlets
W-40	2.00	0.12	<2	0.029	0.001	0.032	6.45	MT-4, 13.0-15.0m, Alt And+Qz vnlets
W-41	5.00	0.11	2	0.012	0.003	0.012	8.94	MT-5, 0.0-5.0m, Saprolite+Qz vnlets
W-42	5.00	0.08	2	0.010	0.002	0.024	8.28	MT-6, 0.0-5.0m, Saprolite
W-43	5.00	0.44	2	0.016	0.002	0.036	9.45	MT-6, 5.0-10.0m, Saprolite+Qz vnlets
W-44	5.00	0.12	2	0.010	0.002	0.030	10.70	MT-6, 10.0-15.0m, Saprolite+Qz vnlets
W-45	2.00	0.05	2	0.010	<0.001	0.028	10.40	MT-6, 15.0-17.0m, Saprolite+Qz vnlets
W-46	4.00	0.28	2	0.026	0.001	0.025	6.44	MT-6, 17.0-21.0m, Saprolite+Qz vnlets
W-47	4.00	0.05	2	0.013	0.001	0.051	8.44	MT-6, 21.0-25.0m, Saprolite+Qz vnlets

※ Details of assay same as in Table 2-17

3-3-2 Geologic Profile of Trenches

The geologic profile of trenches MT-1, 2 and 3 generally consists of thin top soil, saprolite, and weathered andesite. Top soil layer is generally composed of brown to brownish grey soil with occasional thin humes on the top of the layer. It contains subangular to subrounded gravels of dacitic/andesitic rocks. Quartz gravels were sometimes found at the bottom of the soil. Saprolite and weathered andesite underlie the soil layer. Quartz veinlets and stockworks containing pyrite, chalcopyrite, limonite and malachite sometimes occur in weathered bedrock.

The geologic profile of road cutting consists of tuff and volcanic rock on the top, and weathered andesite at the bottom. Tuff had been eroded in some location, and volcanic rock just overlies the andesitic basement. The upper units belong to the Barupu Tuffs. Andesite below the Barupu Tuffs is highly fractured and weathered. Magnetite and limonite commonly fill the fractures.

3-3-3 Mineralization

In MT-1, several quartz veins and quartz stockworks were caught in andesite. Two massive quartz veins occur in the trench; 0.25 ~ 0.70 m (0.45 m, N65°E, 53°NW) and 26.40 ~ 26.65 m (0.25 m, N70°E, 50°S). Veins are composed of massive, sugary quartz containing pyrite, chalcopyrite, limonite, and malachite. A quartz stockwork zone, which is accompanied by the dissemination of pyrite and chalcopyrite, occurs in the trench at 2.50 ~ 5.10 m (2.60 m). The surrounding andesite is strongly silicified. Kaolinization was recognized around this zone. Another zone of quartz veinlets and networks occur sporadically between 10 m and 20 m in the trench. They have various trends, but commonly show a gentle dipping.

Only few quartz veinlets were caught in MT-2. Pyritization was recognized within altered andesite in the trench.

Two minor zones of quartz veinlets were found in MT-3; 5.00 ~ 5.55 m, and 36.80 ~ 45.00 m. Both zones contain a small amount of limonite and malachite. The latter zone occurs in reddish brown earthy saprolite below weathered andesite.

A massive quartz, about 10 m wide, was caught at the wall of new road

cutting named MT-4. White quartz is hosted by andesite. Quartz veinlets are developed in the surrounding altered andesite, in which limonite is strongly disseminated. A coarse carat of gold grain was found in the limonitic part collected from this zone.

Several quartz veins crop out along the road construction sites named MT-5 and MT-6 in the Malela-Pongo area. Most of these veins show flat dipping. Pyrite and limonite are disseminated in saprolite. Some significant gold values up to 0.44 g/t Au were obtained from these samples.

Sketches of trenches are shown in PL. 2. Assay results are listed in Table 2-20.

3-4 Discussions

Two lines of shallow trenches were dug at the northern side of S. Malela for prospecting some of the significant outcrops of quartz veins. Another trench was exploited at the southwest of S. Pongo for examining an Au anomaly detected in this area during soil survey in the second phase. In these trenches, a series of quartz veins and silicified zones, which contain a small amount of pyrite and chalcopyrite, were excavated. The mode of occurrence of auriferous quartz-sulphide mineralization in this area resembles to that of in the Tondoratte zone.

Samples were taken from trenches, and provided for chemical analysis. Several samples showed significant values of Au, though low level. It was interpreted that gold was leached out from near-surface weathered zone just like in the Tondoratte zone.

The surface indication of gold mineralization was looked for at the same period of trenching work, and some interesting indications were newly discovered within the Malela-Pongo area.

PART III
CONCLUSIONS AND RECOMMENDATIONS

PART Ⅲ CONCLUSIONS AND RECOMMENDATIONS

Chapter 1 Conclusions

In this phase, geological drilling, trenching and some follow-up survey were carried out at three promising mineralized zones in the Batuisi prospect. As a result of these works, the following conclusions are obtained.

(1) Three holes of 200 m in depth each were drilled at the Tondoratte zone. They aimed at the vertical extensions of some of the most significant gold indications defined by the previous survey. Numerous quartz veins and quartz stockworks with the dissemination of sulphide minerals were encountered in every hole nearly at the right depths which have been expected in the drilling programme. Several interesting intersections of gold, up to 40.22 g/t Au at 36 cm in width, were obtained. The existence of ore-grade gold minerization in the depth below the surface showings, that was predicted in the second phase, was confirmed. On the basis of these results, the potential of gold resources in this area is thought to be high.

(2) Two distinctive zones of auriferous quartz stockworks were found at the middle reaches of S. Bone zone within a geochemical gold anomaly detected in the second phase. A couple of significant gold values was obtained from some of grab samples collected during the surface investigation prior to drilling. One short hole, 80 m deep, was drilled to test one of the quartz stockwork zones. The results were disappointing. However the work this year has not been sufficient for the evaluation of this mineralized zone. Further drilling to follow up the surface indications is necessary in this area.

(3) A series of quartz veins and silicified zones, which contains a small amount of pyrite and chalcopyrite, was excavated in trenches at the Malela-Pongo zone. At the same period, surface indications of gold mineralization were looked for at the upper reaches of S. Malela and S. Pongo where the Quaternary volcanic rocks lie over the mineralized horizon. Some exposures were newly found and investigated within this zone. The results this year show that the mode of occurrence of quartz veins/stockworks is similar to the Tondoratte zone. It probably corresponds to the northeastern extension of the Tondoratte mineralized zone.

(4) As a result of exploration for three years, gold mineralization which is

represented by the distribution of extensive outcrops of quartz veins and quartz stockworks and outlined by the distribution of distinctive geochemical anomalies has been confirmed in the Batuisi prospect. The type and condition of gold mineralization in the prospect was discussed on the basis of petrology, mineralogy, hydrothermal alteration and fluid inclusion studies. It was interpreted that the gold-bearing quartz veins and quartz stockworks were formed under mesothermal conditions. The gold mineralization is hosted by andesite and shale of the Cretaceous Latimojong Formation. The prospect is located on the western flank of an anticlinorium formed by the emplacement of the Mamasa granite which is exposed several kilometers to the south of the Prospect. This geological settings is probably a crucial factor for the formation of gold-bearing quartz veins. Gold was thought to be depleted in the shallow part by the lateritic weathering process. Ore-grade gold was returned from the lower part of oxidized zone below 100 m from the surface.

(5) The grade of gold intersections caught at the Tondoratte zone this phase is significant. However they are rather narrow. The maximum width among three holes at a cut-off grade of 1 g/t Au is 66 cm (14.31 g/t). The question whether it is a small scale mineralization or there may exist a bigger orebody in another place is open to further discussion. The surface indications are distributed within an area of 2,500 m (NE-SW) x 1,500 m (NW-SE), centered at the top of the ridge near Tondoratte and extending from the middle reaches of S. Tarawa and S. Bone up the northeastward to the Malela-Pongo area. The scale appears to be medium from their indications. Based on these considerations, it is concluded that the driling in the third phase has not been sufficient for the full-evaluation of the mineralization. Drilling exploration is still necessary in the Batuisi prospect. The confirmation of the scale and structure of gold mineralization has been carried over to the next stage

Chapter 2 Recommendations for the Future Exploration

It is recommended that the mineralized zone defined by the third phase survey in the prospect would be fully drill-tested in the future exploration. The purpose of the exploration must be bilateral; ① to make an evaluation of the entire mineralized zones which are delineated by the surface indications, ② to follow-up the Tondoratte zone in order to investigate the details of grade distribution and structure.

The major promising locations for drilling are listed below. The depth of drill holes must be deep enough to penetrate the oxidized zone.

① Southwest of MJT-7 at the Tondoratte zone

② At the middle reaches of S. Tarawa

③ At the upper reaches of S. Bone

④ At the middle reaches of S. Bone

⑤ At the top of the ridge near Tondoratte

⑥ Northeast of S. Malela

⑦ Southwest of S. Pongo

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REFERENCES

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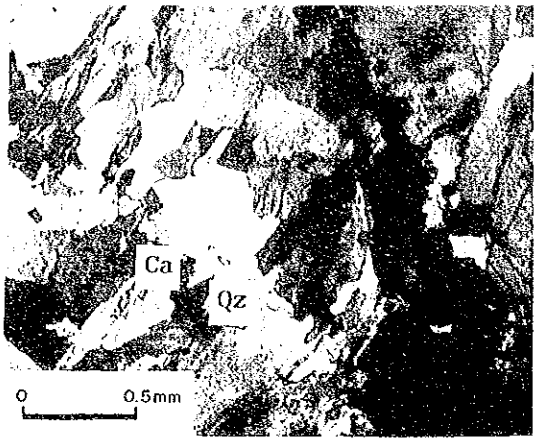
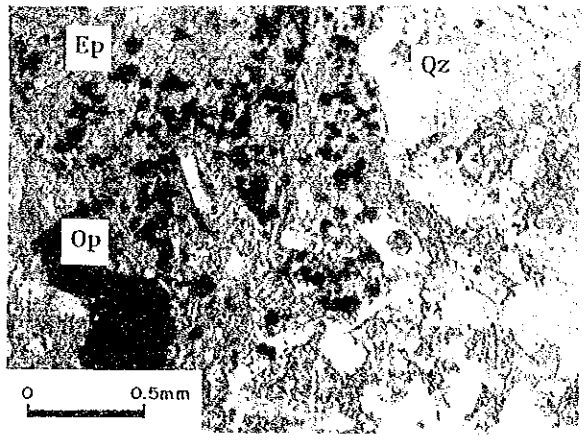
PHOTOGRAPHS

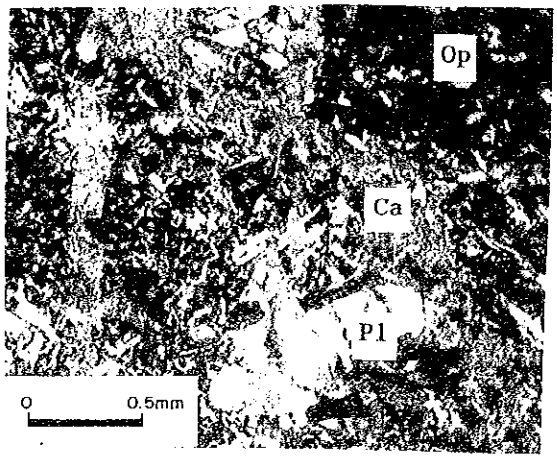
Photo.1 Photomicrographs of Thin Sections



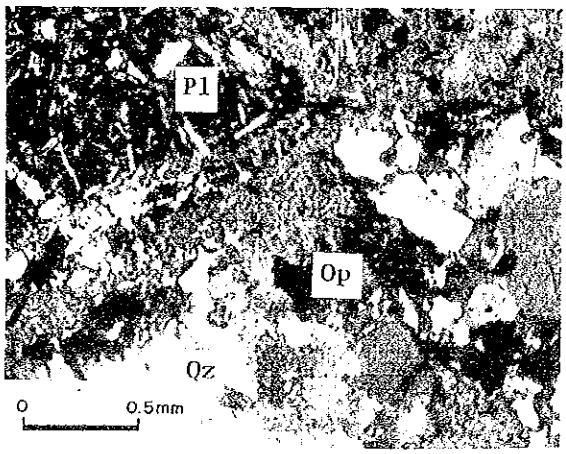
Rock Name : Qz Veinlet
Sample No : BD6-28T
Locality : MJT-6 (135.70m)
(Crossed Nicol)



Rock Name : Qz Vein
Sample No : BD7-15T
Locality : MJT-7 (91.20m)
(Open Nicol)



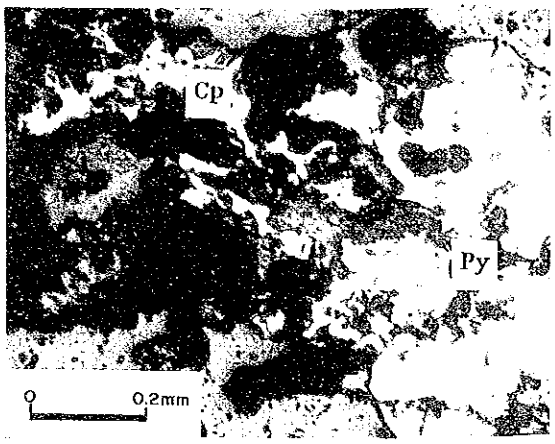
Rock Name : Andesite (Klv)
Sample No : BD8-19T
Locality : MJT-8 (126.60m)
(Crossed Nicol)



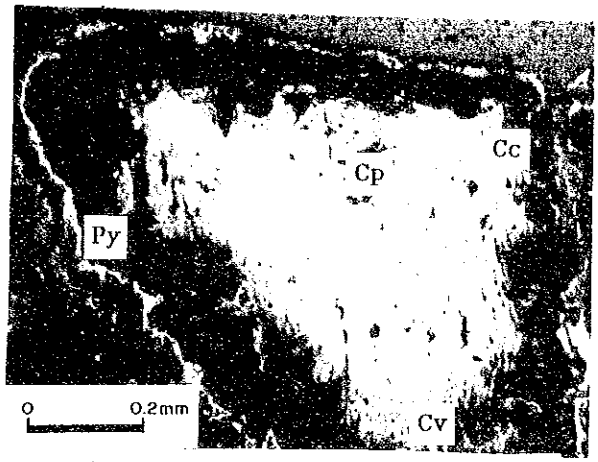
Rock Name : Andesite (Klv)
Sample No : BD9-1T
Locality : MJT-9 (8.55m)
(Crossed Nicol)

Abbreviations: Qz;Quartz, Pl;Plagioclase, Ca;Calcite, Ep;Epidote
Op;Opaque Ore Mineral

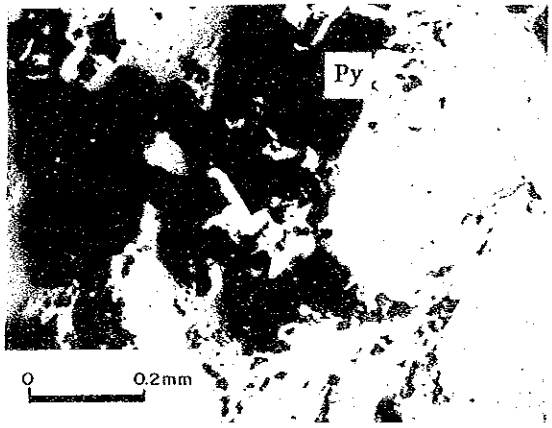
Photo.2 Photomicrographs of Ores



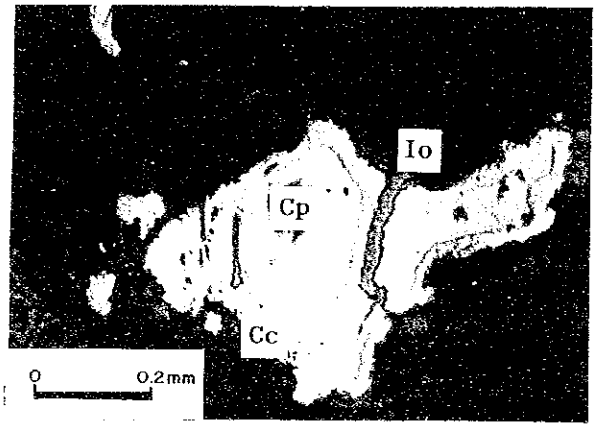
Minerals : Py-Cp
Sample No : BD6-13P
Locality : MJT-6 (120.60m)
(Open Nicol)



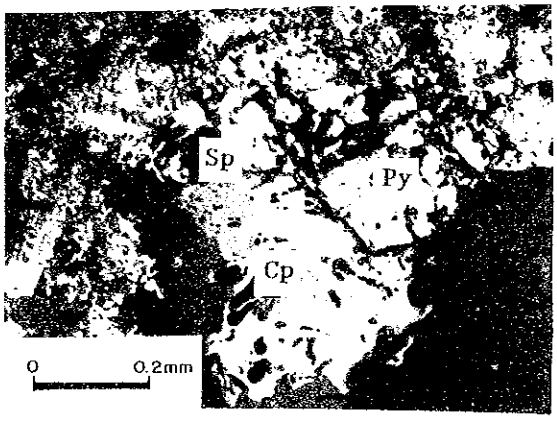
Minerals : Py-Ap-Cp-Sp-Cv-Cc-Io
Sample No : BD7-24P
Locality : MJT-7 (134.40m)
(Open Nicol)



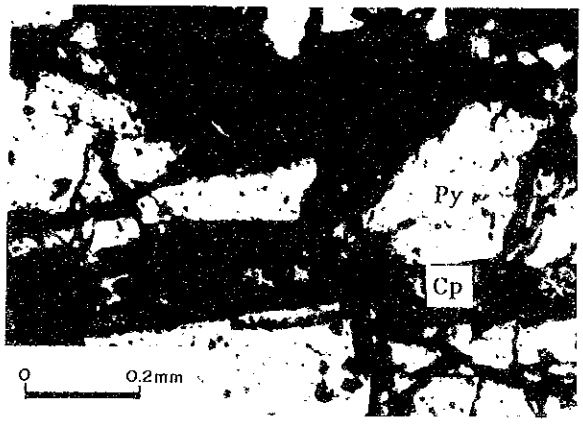
Minerals : Py-Io
Sample No : BD7-21P
Locality : MJT-7 (96.60m)
(Open Nicol)



Minerals : Cp-Py-Sp-Cv-Cc-Io
Sample No : BD7-34P
Locality : MJT-7 (174.43m)
(Open Nicol)



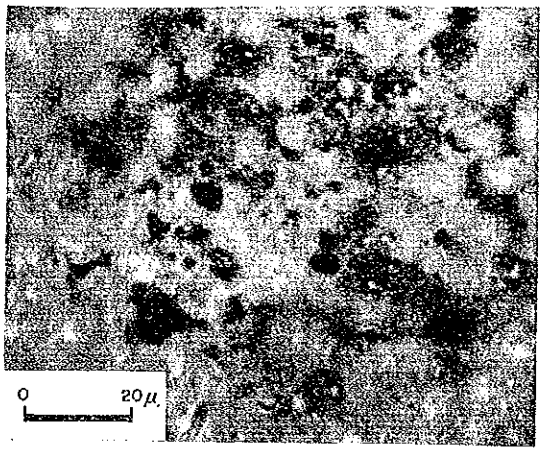
Minerals : Py-Cp-Ap-Sp
Sample No : BD8-5P
Locality : MJT-8 (108.90m)
(Open Nicol)



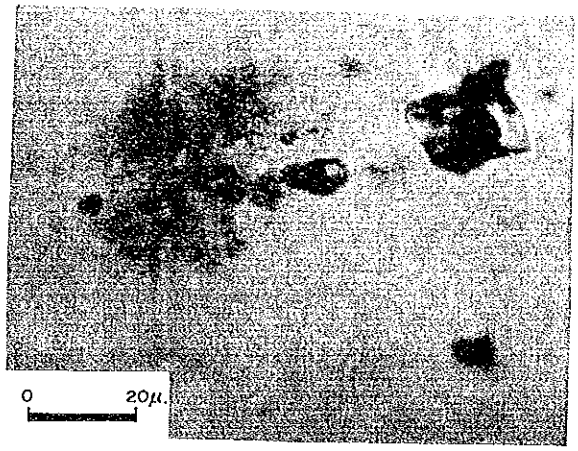
Minerals : Py-Cp-Sp-Io
Sample No : BD8-21P
Locality : MJT-8 (133.80m)
(Open Nicol)

Abbreviations: Py;Pyrite, Cp;Chalcopyrite, Ap;Arsenopyrite, Sp;Sphalerite
Ga;Galena, Cv;Covelline, Cc;Chalcocite, Io;Iron Oxide

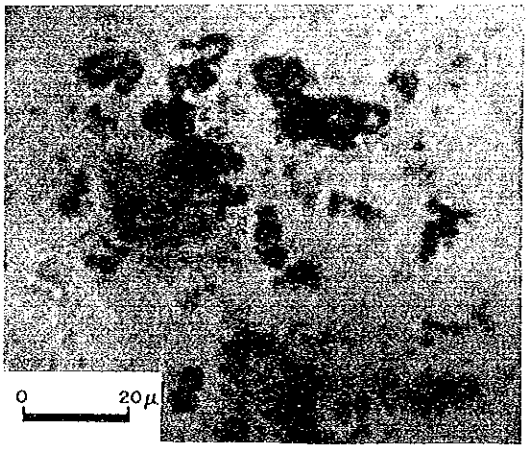
Photo.3 Photomicrographs of Fluid Inclusions



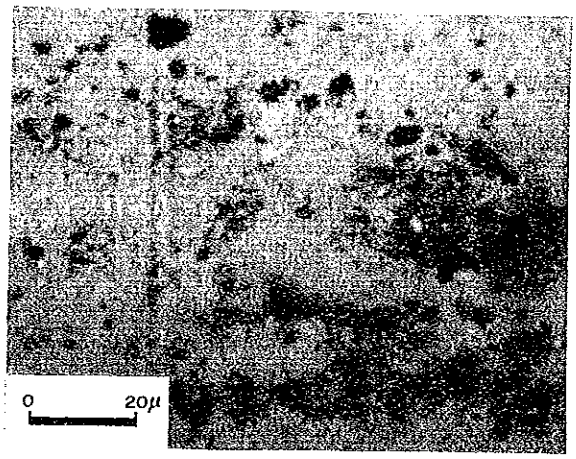
Inclusion : Two-phase
Sample No : BD6-6F
Locality : MJT-6 (27.80m)



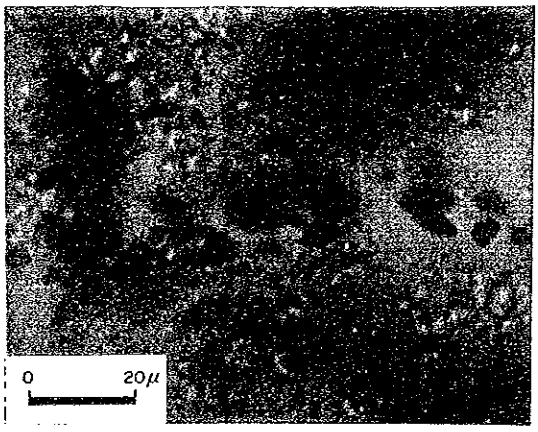
Inclusion : Two-phase
Sample No : BD6-24F
Locality : MJT-6 (124.65m)



Inclusion : Two-phase (Poly?)
Sample No : BD7-29F
Locality : MJT-7 (165.30m)



Inclusion : Two-phase
Sample No : BD8-3F
Locality : MJT-8 (107.60m)

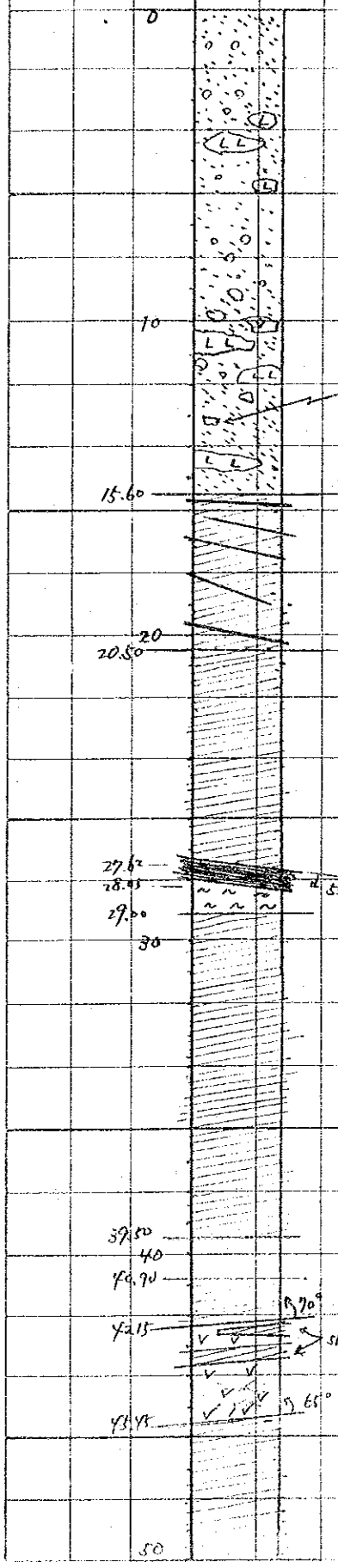


Inclusion : Two-phase
Sample No : BD8-28F
Locality : MJT-8 (192.40m)

APPENDIX

鉱脈名 MJT-6 (1) 地表

No.



0 ~ 15.60
soil & gravel
l. brown ~ brownish grey soil
gravel { dacite
andesite
Qz (rare)

Qz fragment in brownish grey soil & gravel zone

15.60 ~ 20.50
yellow brown saprolite (originally shale)

15.60 ~ 20.50
white Qz vein(let) × 5本
wd = 0.7 ~ 1.5 cm
Limo & Py associated (m)
(Qz stockwk zone)

20.50 ~
black shale
massive.
Qz segregation veinlets
Py patchy imp

28.05 ~ 29.00
clayey (core not recovered)

29.00 ~ 42.15
black shale
massive
Qz veg veinlets
Py patchy imp

27.62 ~ 28.05 (43cm)
white Qz vein
Limo imp (w)

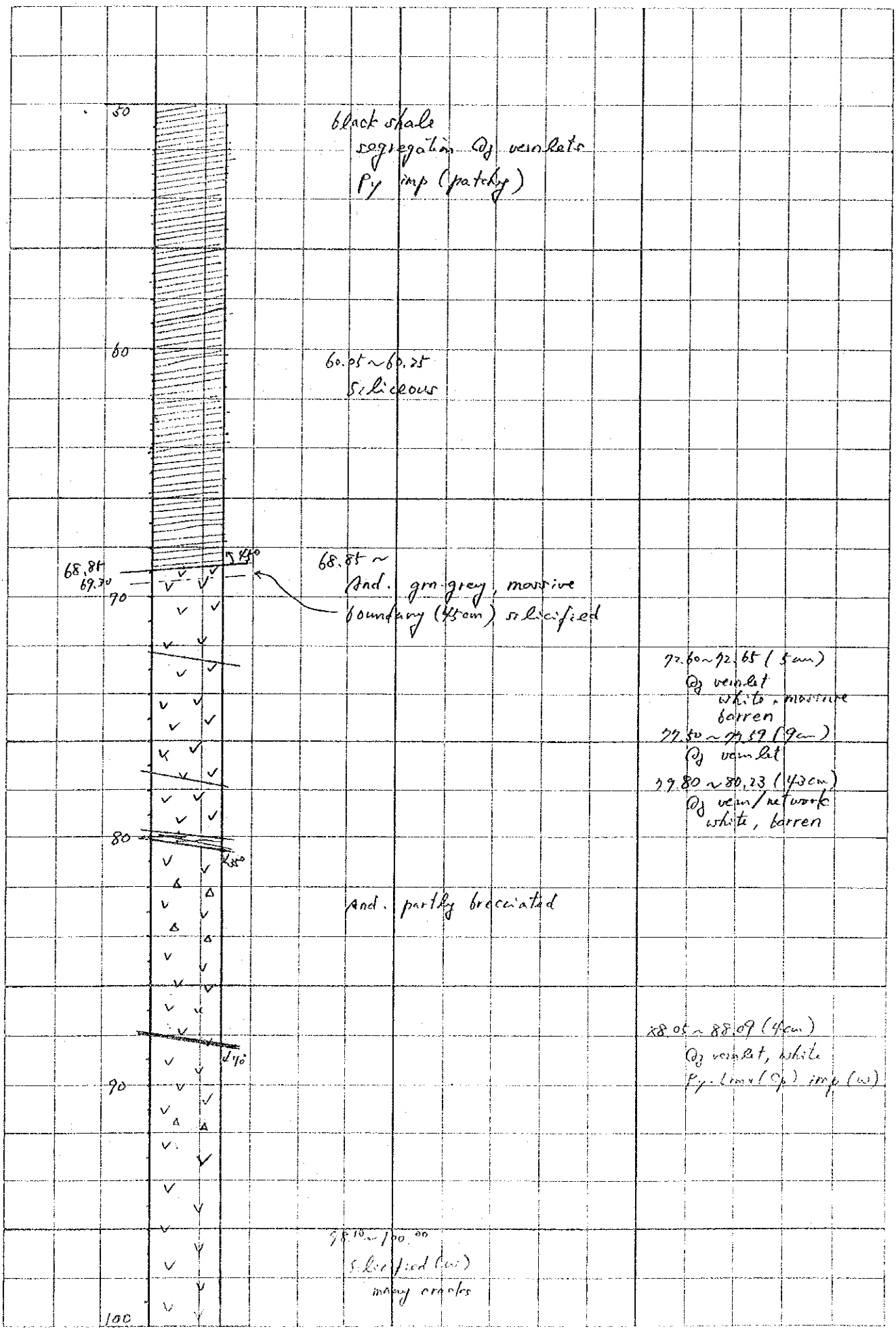
39.50 ~ 40.90
core not recovered

42.15 ~ 43.45
And
p.grn glassy
prof.Sy hydrothermal

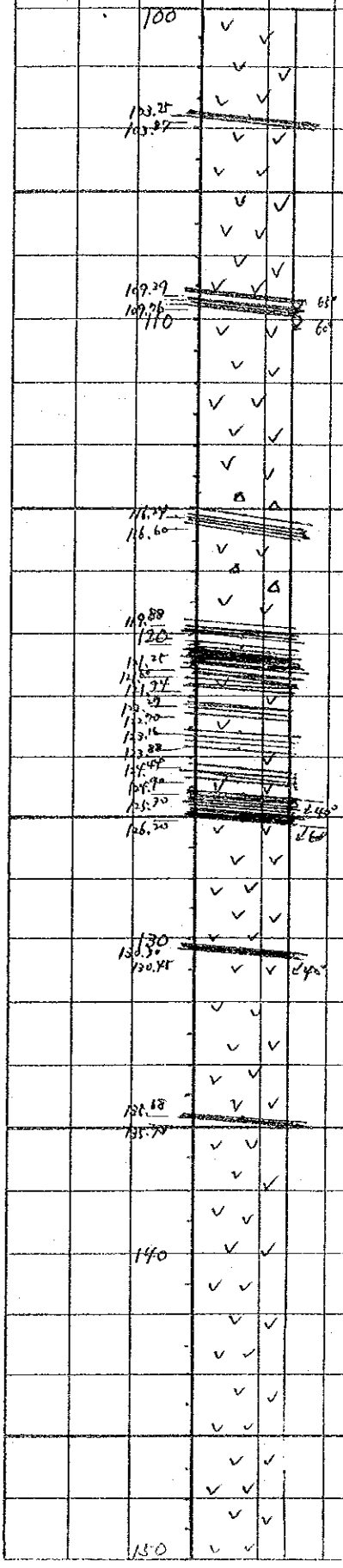
43.45 ~ 68.85
black shale

鉱脈名 MJT-6 (2) 地並

No.



鉱脈名 MJT-6 (3) 地並 No.



pale grn massive And.

gra-grey And brecciated

l. grn-grey And silicified

l. grn-grey And massive partly silicified

103.35 ~ 103.87 (12cm)
white Qz vein
Py (Limo) imp (w)

109.39 ~ 109.84 (5cm)
white Qz veinlet
Py diss (patchy) (s)

109.55 ~ 109.76 (21cm)
white Qz vein
Py (Limo) diss (m)
(along fractures)

116.24 ~ 116.60 (36cm)
white Qz vein
Py (Ap?) diss (m)

119.88 ~ 124.90
Qz stockwork zone

119.88 ~ 120.10 (22cm)
Qz stockwork, Py diss

120.35 ~ 121.25 (90cm)
Qz stockwork
white Qz 細粒
Py (Cp) diss (s)

121.60 ~ 121.99 (39cm)
Qz stockwork
Py diss (m)

122.27 ~ 122.90 (63cm)
Qz stockwork

123.16 ~ 123.88 (72cm)
Qz stockwork (weak)

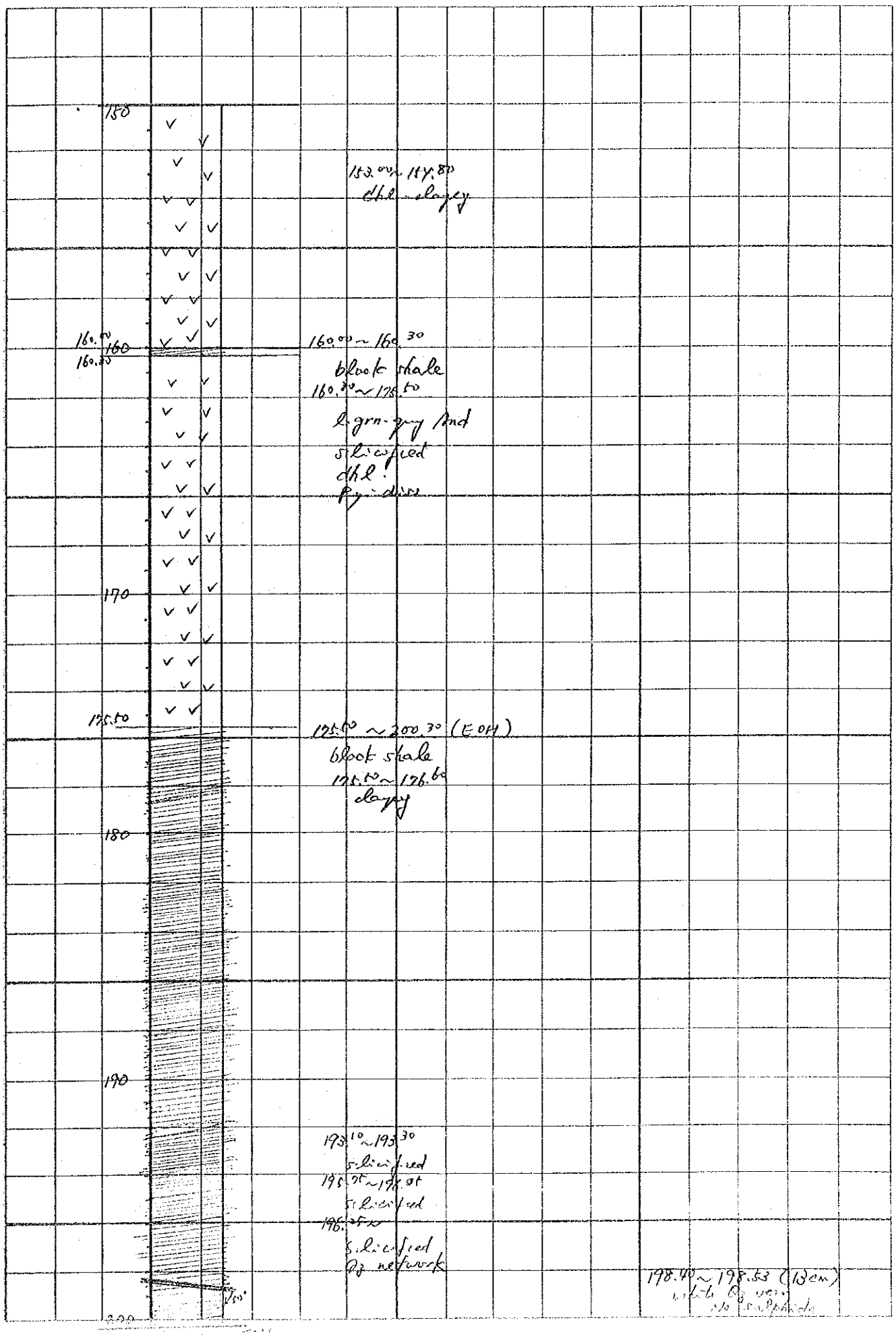
124.44 ~ 124.90 (46cm)
Qz stockwork
Py diss (wa-m)

125.90 ~ 126.20 (30cm)
white Qz vein
massive Py (Cp) diss (w)

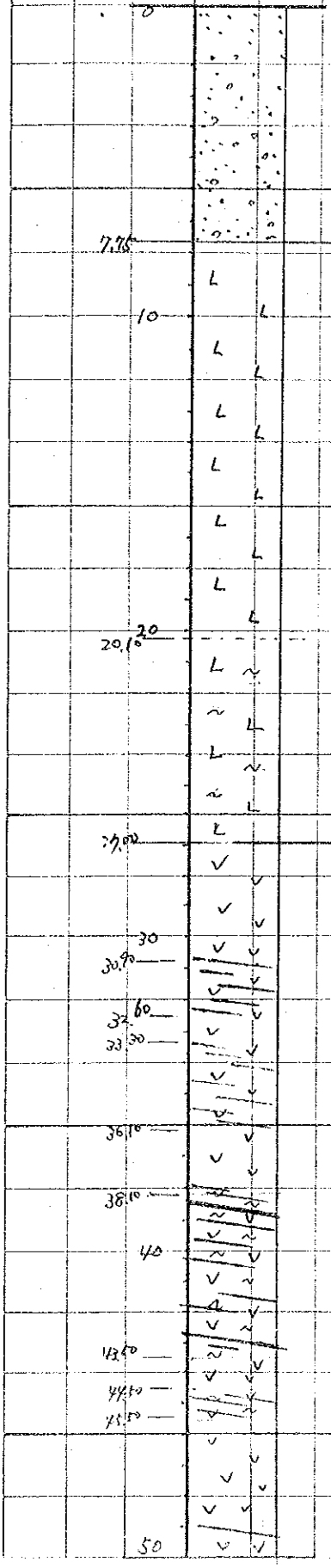
130.30 ~ 130.45 (15cm)
white Qz vein, massive

135.68 ~ 135.73 (5cm)
white Qz veinlet
Py imp (m)

鉱脈名 MJT-6 (4) 地並 No.



鉱脈名 MJT-7 (1) 地並 No.



0 ~ 7.75
yellow-brown soil

7.75 ~ 20.10
Dc, grey

20.10 ~ 27.00
Dc (boulder), brown grey

27.90 ~ 27.85
And, brown grey
weathered

27.85 ~ 32.60
grey And, massive
weathered

32.60 ~
grey And, glassy
partly brecciated

grey And, massive
partly brown
Qz veinlet (2~4mm)

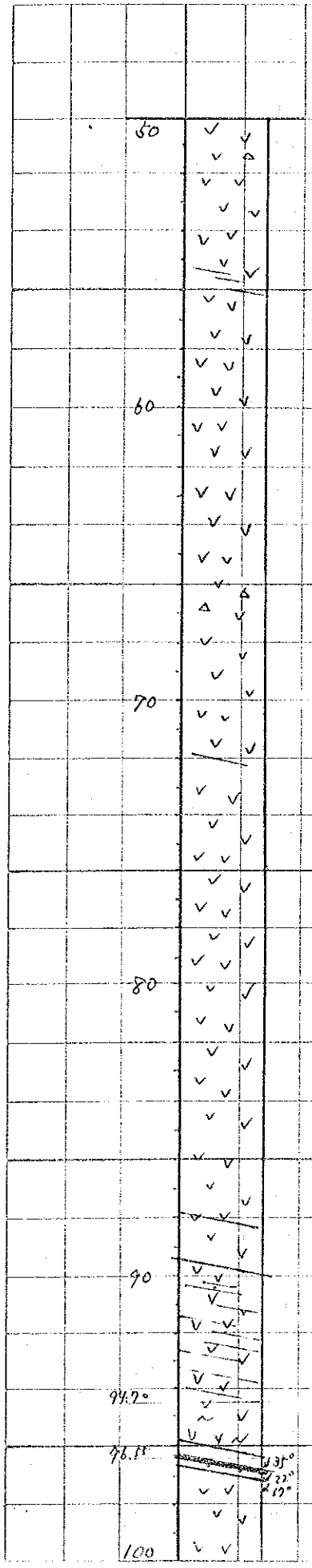
30.90 ~ 32.60
white Qz veinlets nodules
wd = 0.5 ~ 2cm, Limo(w)
(Qz stockwork zone)

33.30 ~ 38.10
Qz stockwork zone
Qz 0.5 ~ 2cm white
Py diss (w)

38.10 ~ 43.50
Qz stockwork zone
Qz 0.5 ~ 4cm
clayey
Py diss (w)

44.50 ~ 45.50
clayey, Qz veinlet
Py imp (w)

鉱脈名 MJT-7 (2) 地表 No.



grey ~ grn-grey mud. massive
partly brecciated

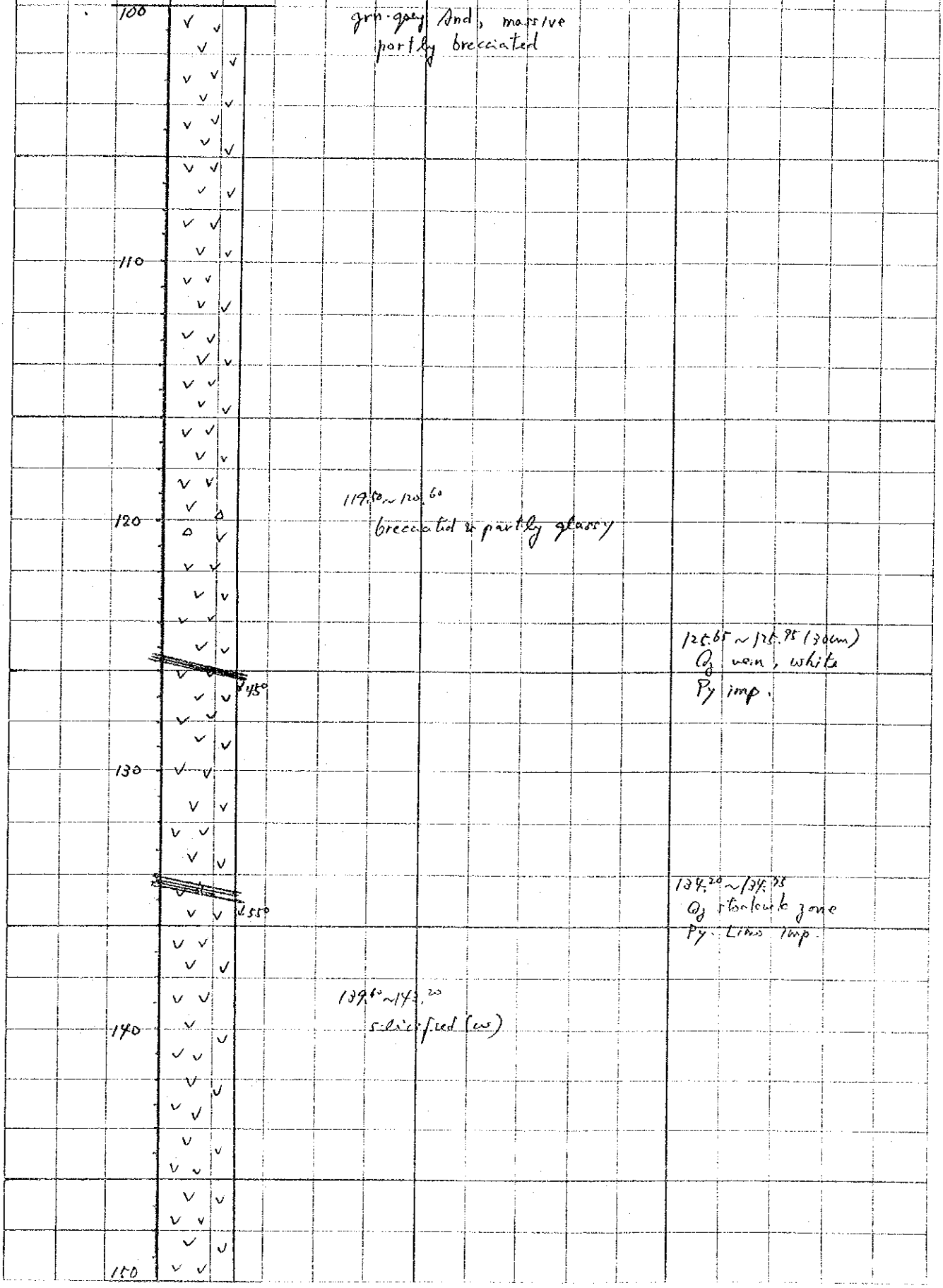
partly glassy

94.70 ~ 96.15 earthy, brownish
(originally glassy)

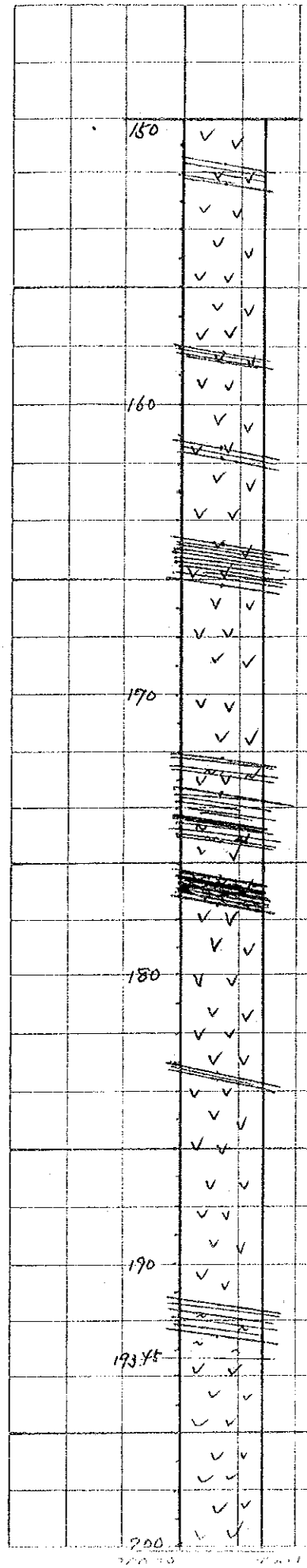
88.05 ~ 88.09 (4cm)
Q_3 veinlet, Py. Limo(n)
89.63 ~ 89.70 (7cm)
Q_3 veinlet
90.35 ~ 90.50
Q_3 veinlet / network zone
wd-0.2 ~ 2cm, Py diss
96.00 ~ 96.04 (4cm)
Q_3 veinlet, Py(m)
96.15 ~ 96.35 (21cm)
96.76 ~ 96.91 (15cm)
Q_3 vein/stockwk
Py (m)

鉱脈名 MJT-7 (3) 地並

No.



鉱脈名 MJT-7 (4) 地並 No.



grn-grey band, massive
partly brecciated

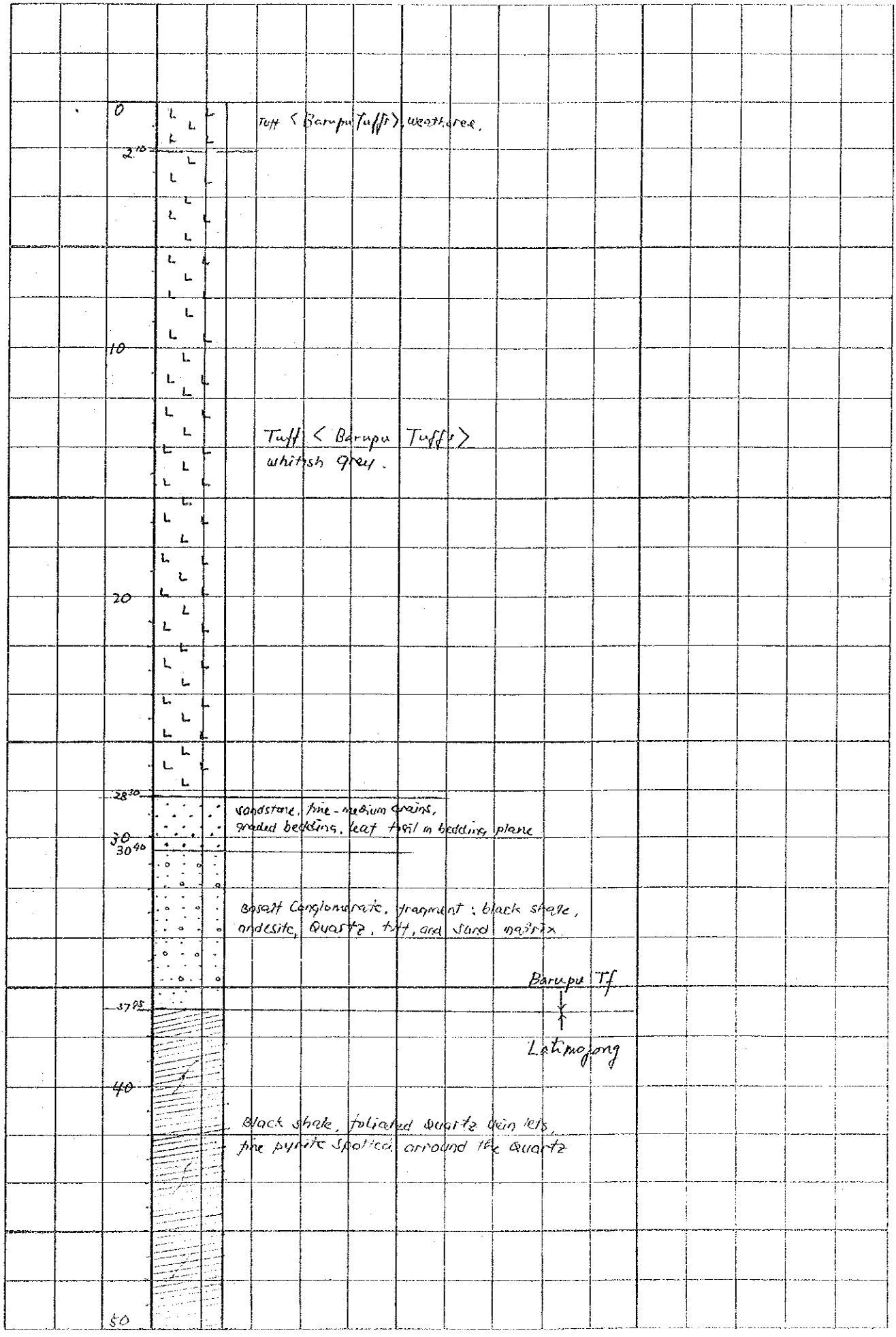
151.85 ~ 152.40
Qz stockwk zone
Py imp (ω)

158.10 ~ 158.35
Qz stockwk zone
Py. Cp imp (ω)
161.40 ~ 161.80
Qz stockwk zone
Py. Cp. Ap imp (m~r)
164.25 ~ 164.60
Qz stockwk zone
Py (ω)
164.80 ~ 166.10
Qz stockwk zone,
Py imp (m) brownish earthy
172.20 ~ 172.30
Qz stockwk, Py. Limo(r)
172.70 ~ 172.80
Qz stockwk, clayey
173.55 ~ 175.00
Qz stockwk zone
Partly clayey
Py. Limo, Malachite imp
176.40 ~ 177.57
Qz stockwk zone
And brecciated & Qz filled
Py imp (m)
183.25 ~ 183.41
Qz network, barren

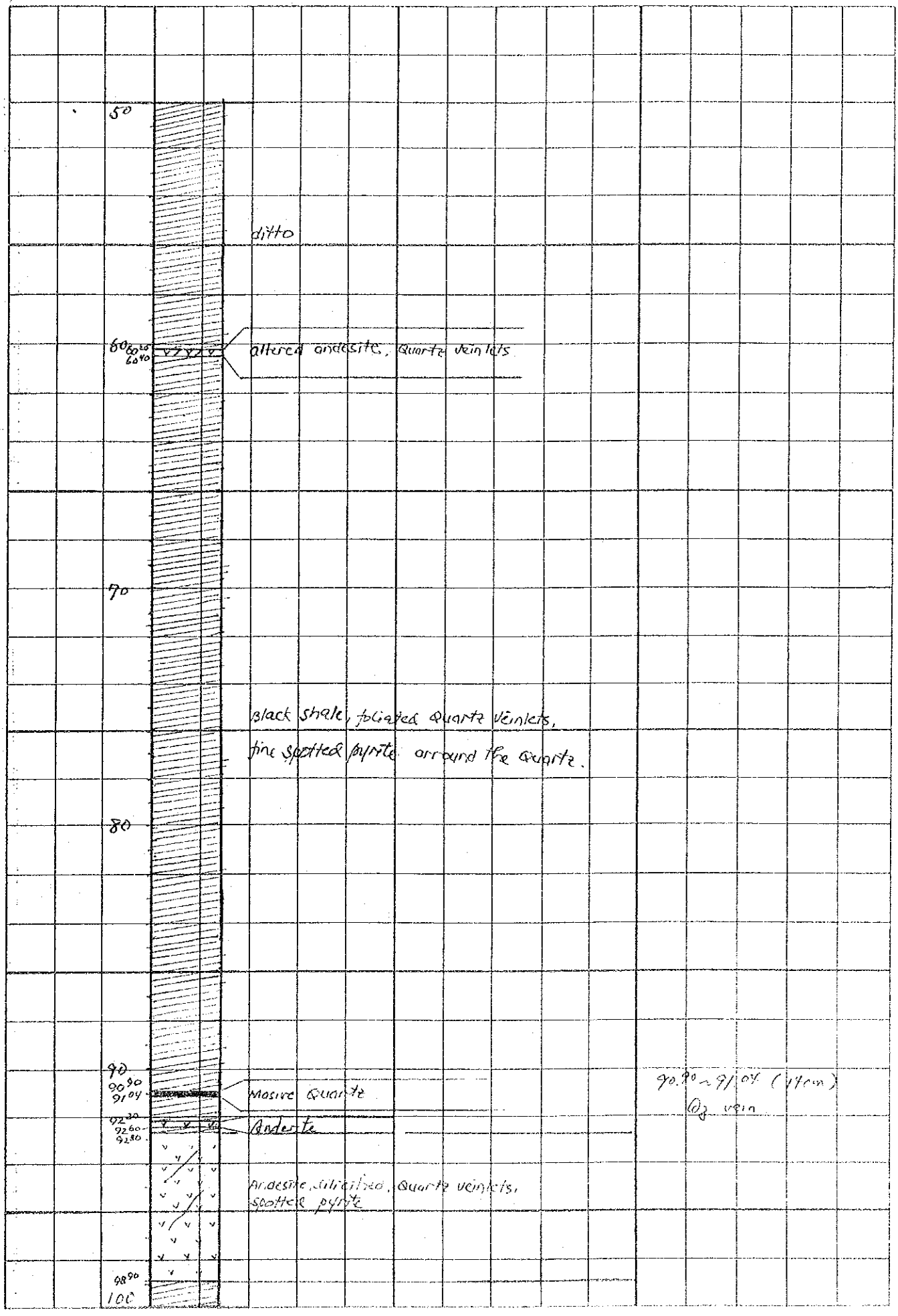
191.45 ~ 192.65
Qz stockwk zone
brownish, earthy
Py. Limo imp

192.65 ~ 193.45
brown clayey

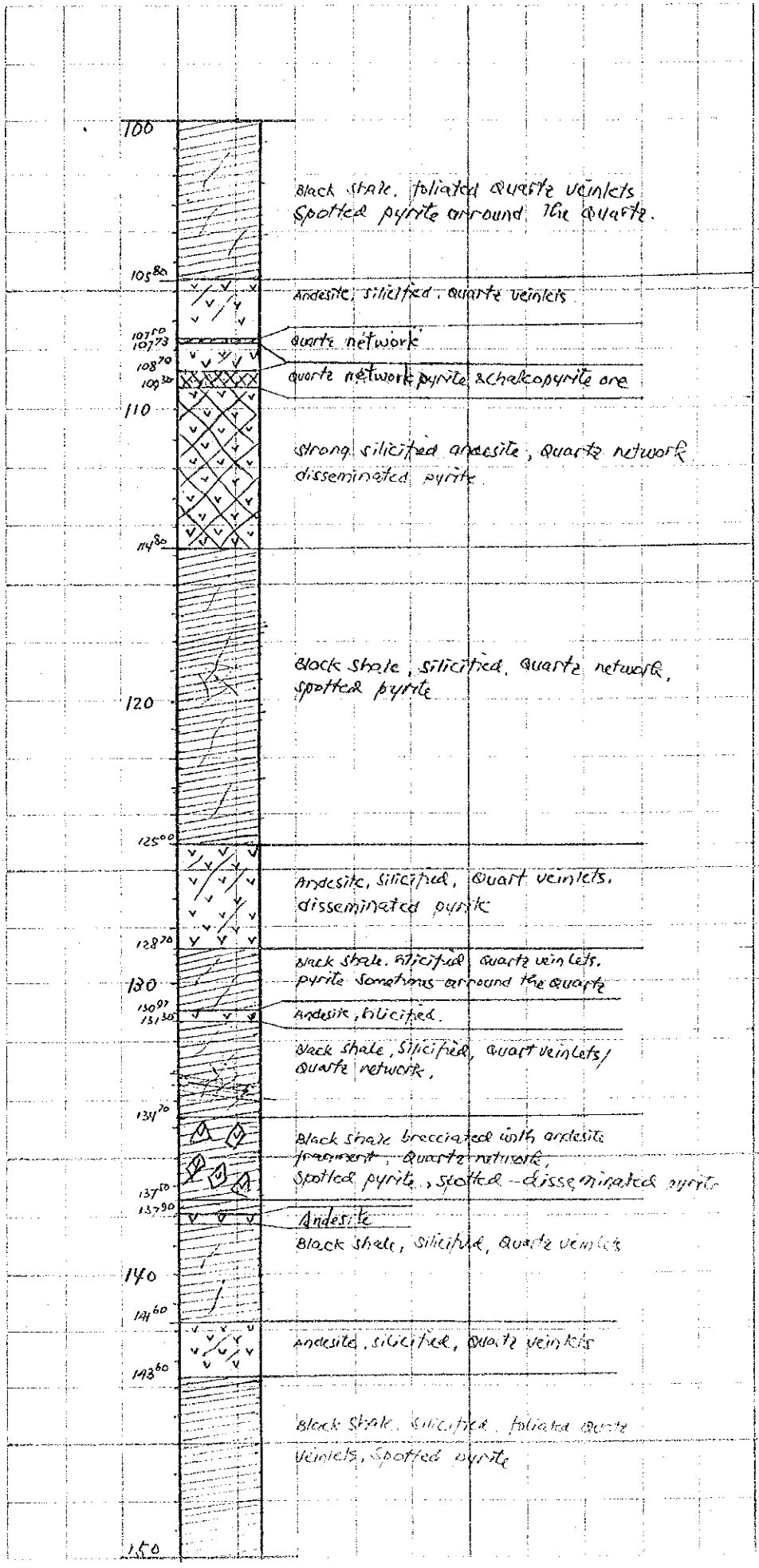
鉱脈名 MJT-8 (1) 地並 No. 1



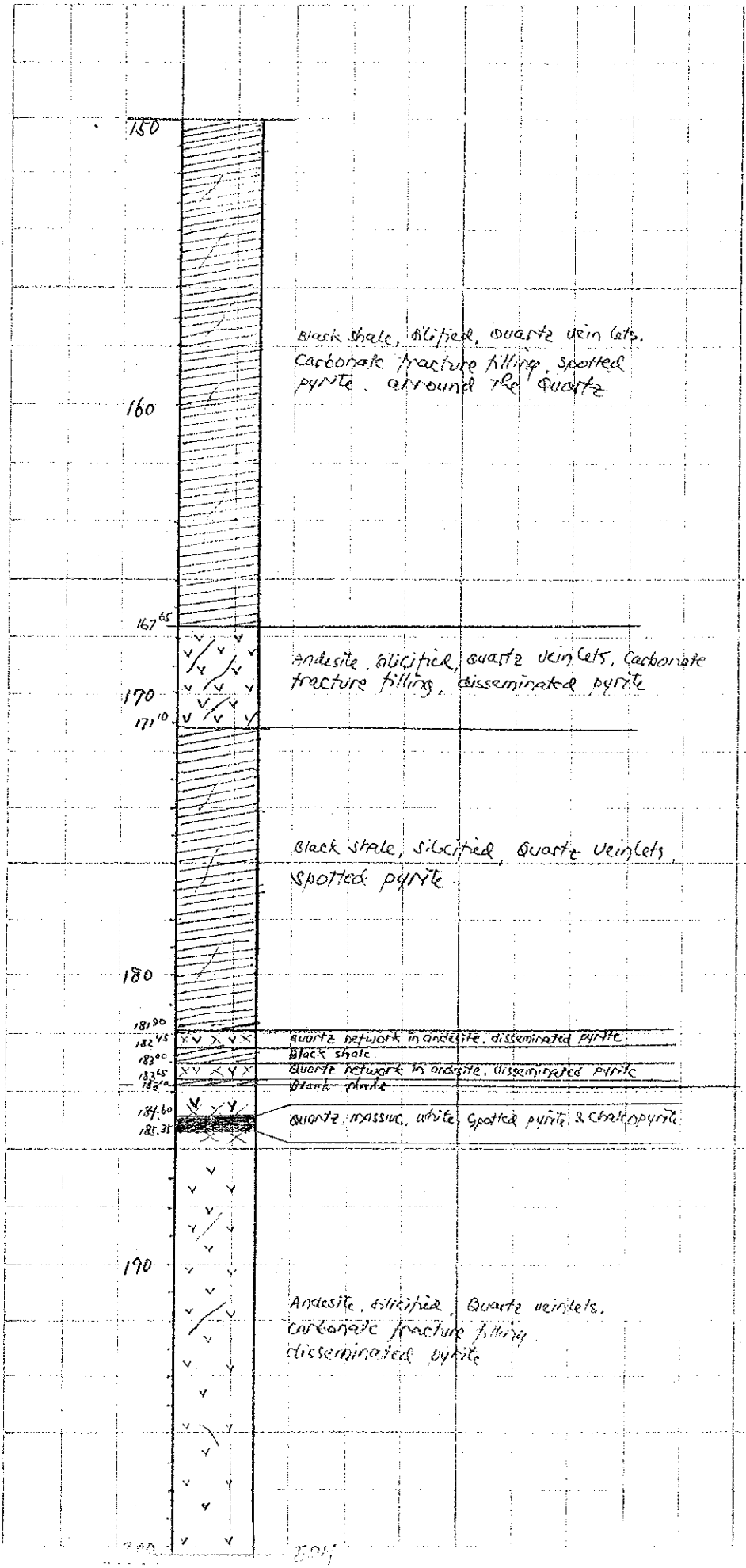
鉱脈名 MJT-8(2) 地並 No. 2



鉱脈名 MJT-8 (3) 地表 No. 5

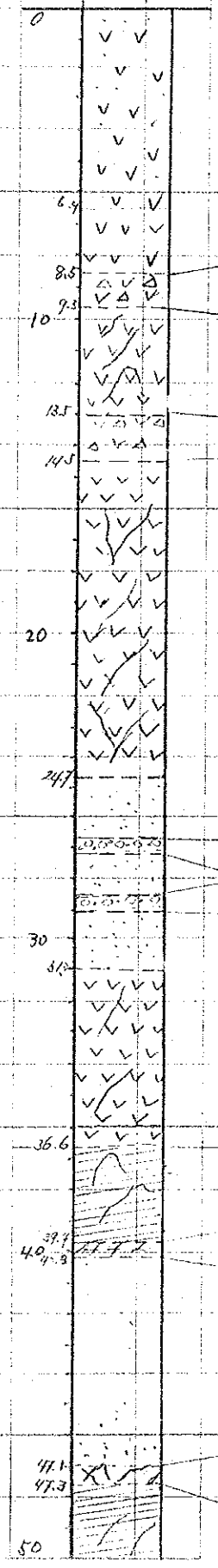


鉱脈名 MJT-8 (4) 地並 No. 9



182.05 ~ 182.45
Qz stockwk
183.02 ~ 183.55
Qz stockwk
184.60 ~ 181.35 (~175 cm)
Qz vein

鉱脈名 MJT-9 (1) 地業 No.



0 ~ 36.60
brownish grey ~ grey And massive weathered. highly fractured

Greenish grey alt And, highly fractured

Greenish grey, bx-And, propilitized (epi, dkl / Py spotted

Py

Greenish-grey alt And, highly fractured with veinlets of calcites ? & Qzt

And bx - loose, highly fractured

Greenish-grey alt And, highly fractured with veinlets of calcites ? & Qzt

Cutting (loose core), alternated And. fragments

Dark grey alt. And, fractured

36.60 ~ EOH
Black shales with some grits & calcite veinlets

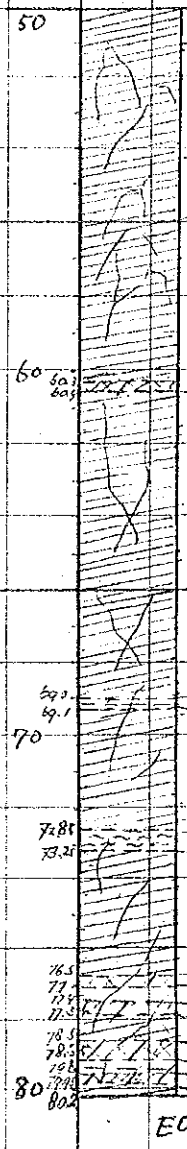
Foliated calcite & Qzt veinlet

Cutting / soft core of black shale

@3 veinlets (network) in black shale with cubic pyrite.

鉱脈名 MST-9 (2)　　地並

No.



Black shale, fractured with some foliated calcite veinlets

Calcite veinlets, width 20cm weathered

Black shale with calcite & qtz veinlets foliated.

Qzt & calcite veinlets (±5cm)

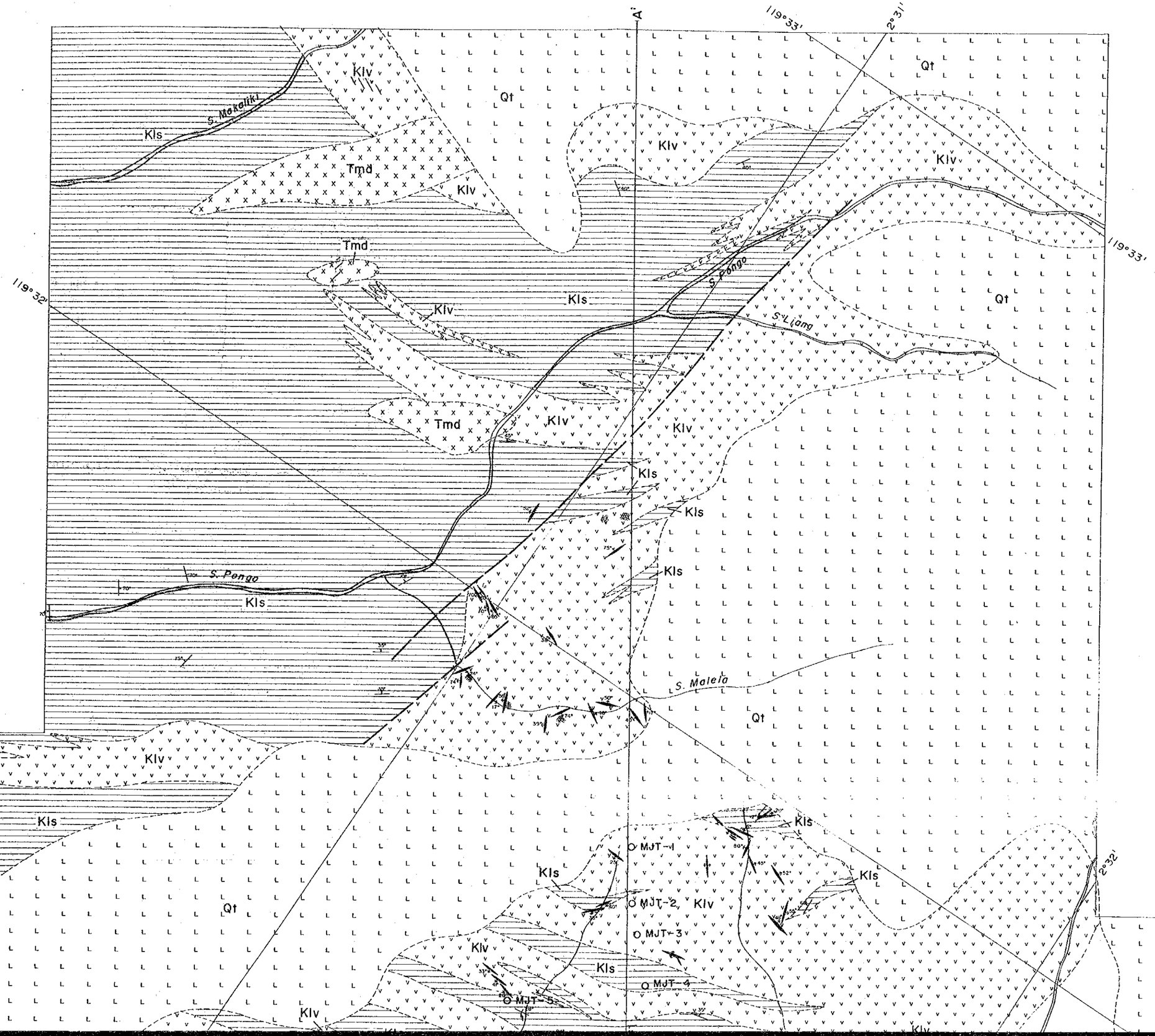
Hornfelsic rock, silicified, py dss.

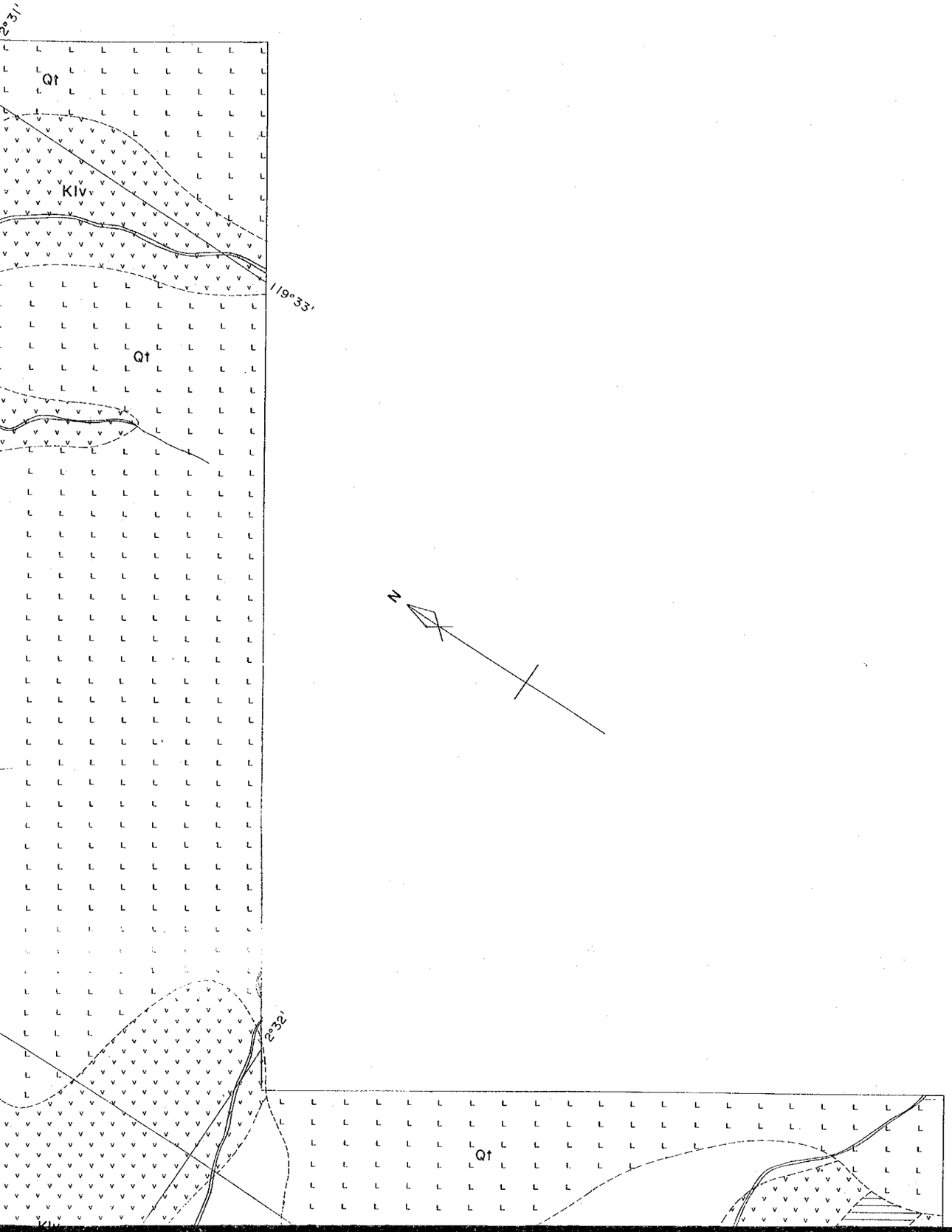
Qzt & calcite veinlets (width ± 15 cm)

Qzt & calcite veinlets (±10 cm)

Qzt & calcite veinlets (±5 cm)

Qzt & Calcite veinlets (±20 cm)


A'
119°33'
2°31'
Qt
Klv
Kls
Tmd
S. Makaliki
S. Congo
S. Liang
S. Pongo
S. Malela
119°33'
119°32'
MJT-1
MJT-2
MJT-3
MJT-4
MJT-5
2°32'
119°31'
N

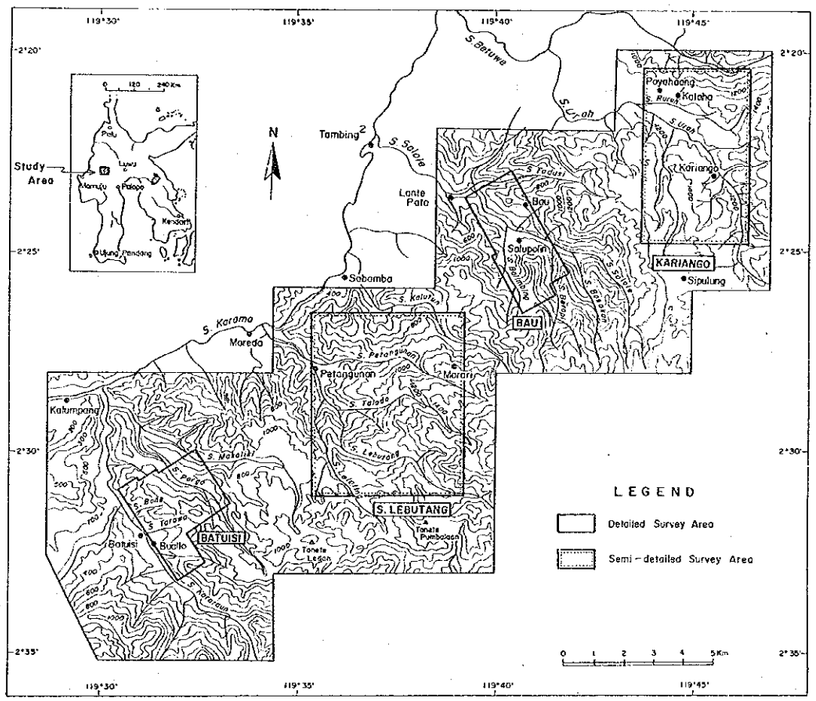


PL. 1

REPORT ON THE COOPERATIVE MINERAL EXPLORATION IN THE TORAJA AREA, THE REPUBLIC OF INDONESIA

PHASE Ⅲ

GEOLOGIC MAP AND GEOLOGIC PROFILE OF THE BATUISI PROSPECT

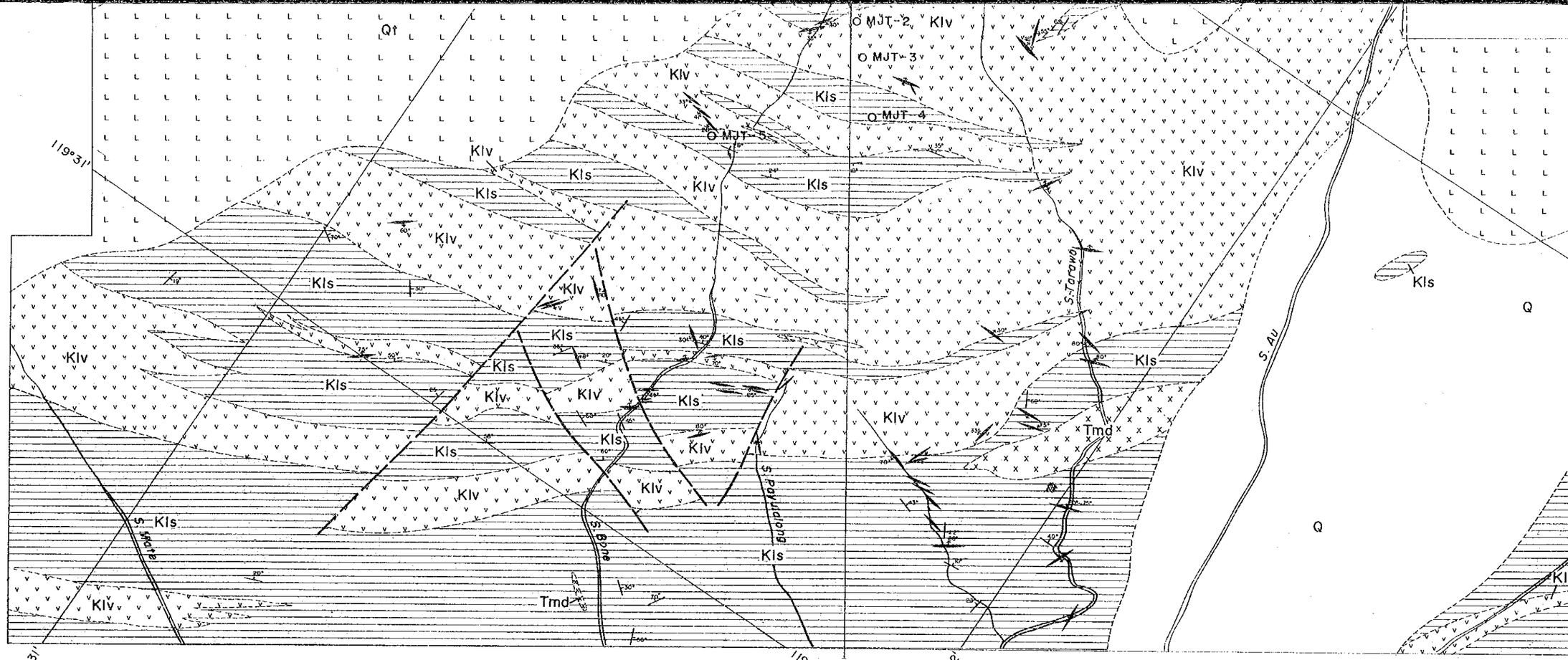


FEBRUARY • 1994

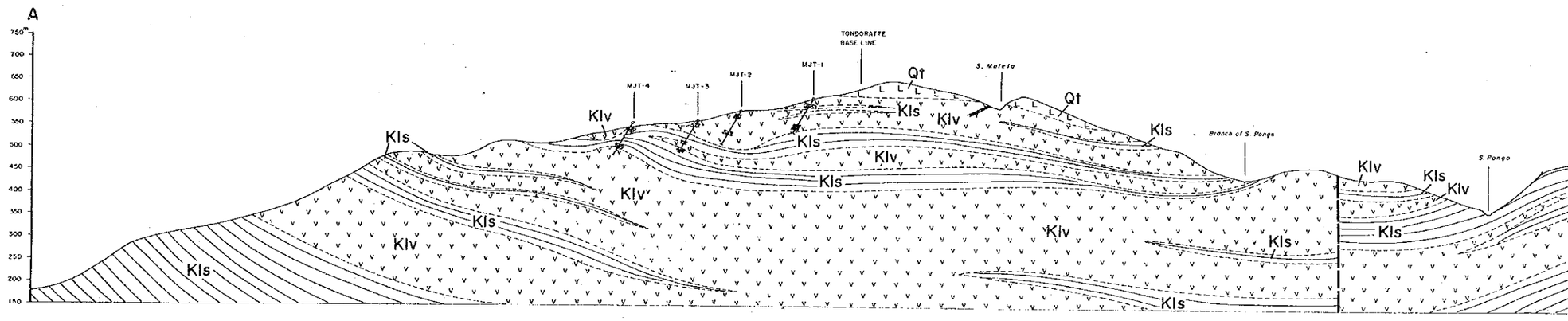
JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN

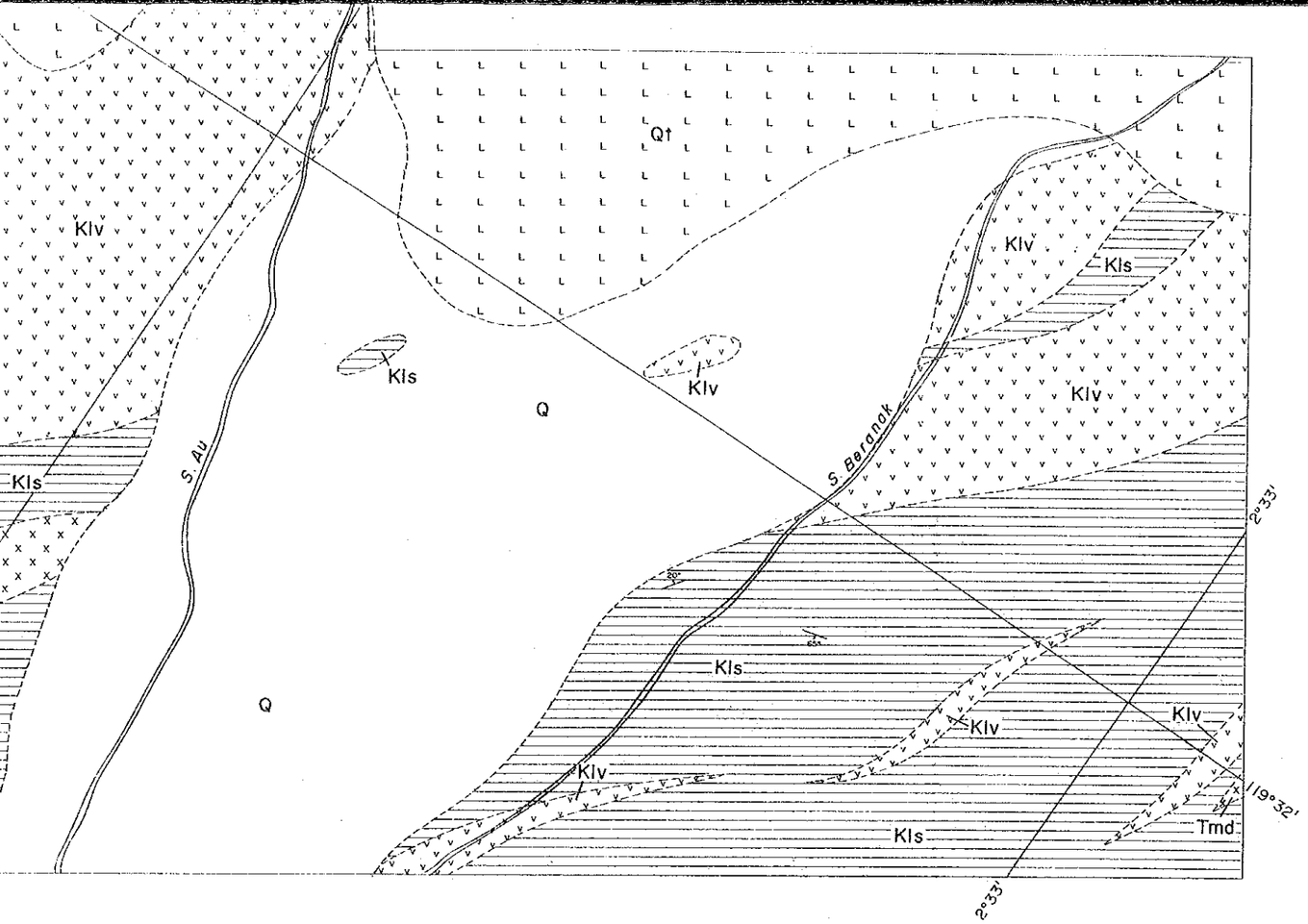
0 200 400 600 800 1000m

Scale 1 : 10,000

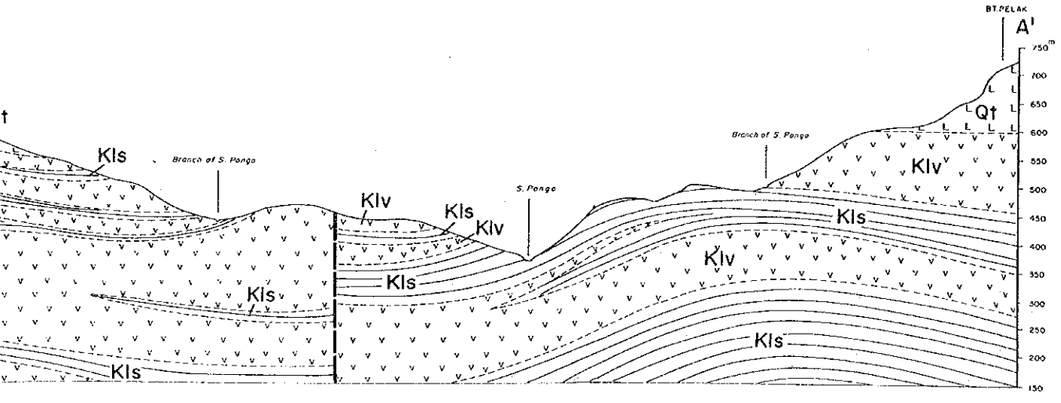


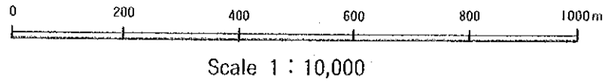
Geologic Profile along Line A – A'





Geologic Profile along Line A – A'





Scale 1 : 10,000

LEGEND

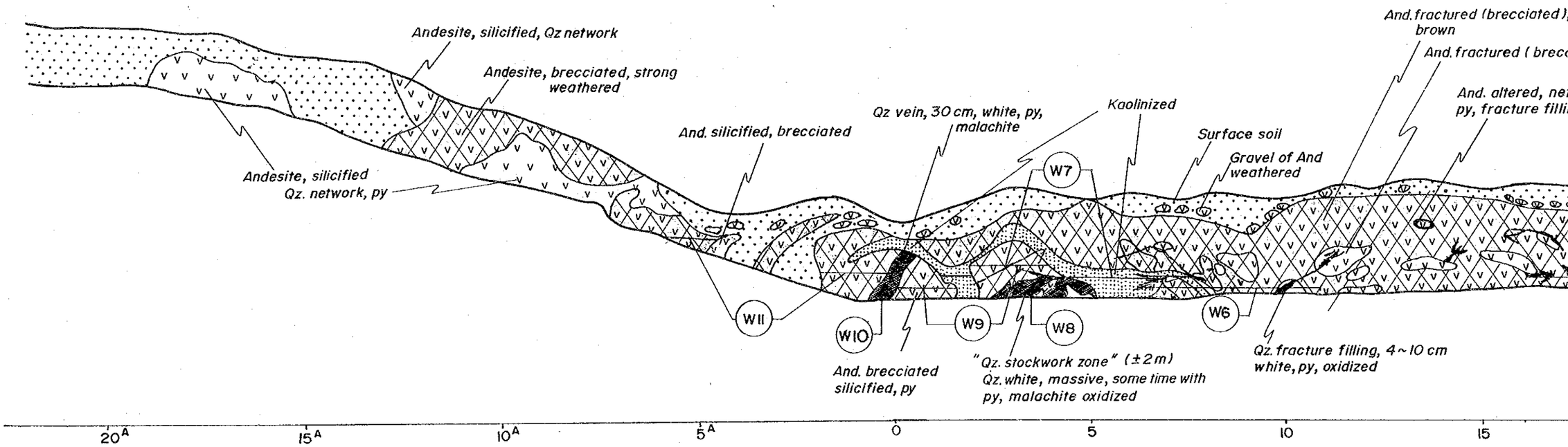
- Quaternary
  - Q — aluvial, talus deposit
  - Barupu Tuffs
    - Qt 2 — biotite dacite
    - Qt 1 — dacitic tuff
  - Qtc — conglomerate
- Tertiary
  - Pliocene
    - Beropa Tuffs
      - Tmb 3 — tuffaceous sandstone
      - Tmb 2 — mudstone and siltstone
      - Tmb 1 — andesitic tuff
  - Miocene
    - Beropa Tuffs
      - Tmv — andesite lava
  - Eocene
    - Toraja Formation
      - Tet — alternating beds of sandstone and siltstone
- Cretaceous
  - Latimojong Formation
    - Klvs — klvs : shale
    - Klv2 — klv2 : andesitic tuff
    - Klv1 — klv1 : andesite lava
    - Klv — klv : alternating beds of shale and andesitic rocks
    - Kls — kls : black shale
    - Klsv — klsv : andesitic rocks
    - Klsm — klsm : biotite schist after black shale
- Intrusive Rocks
  - Tv — andesite
  - Tmg — granite, granodiorite
  - Tmd — diorite
  - Kv — andesite dyke, andesitic volcanic neck

Fault

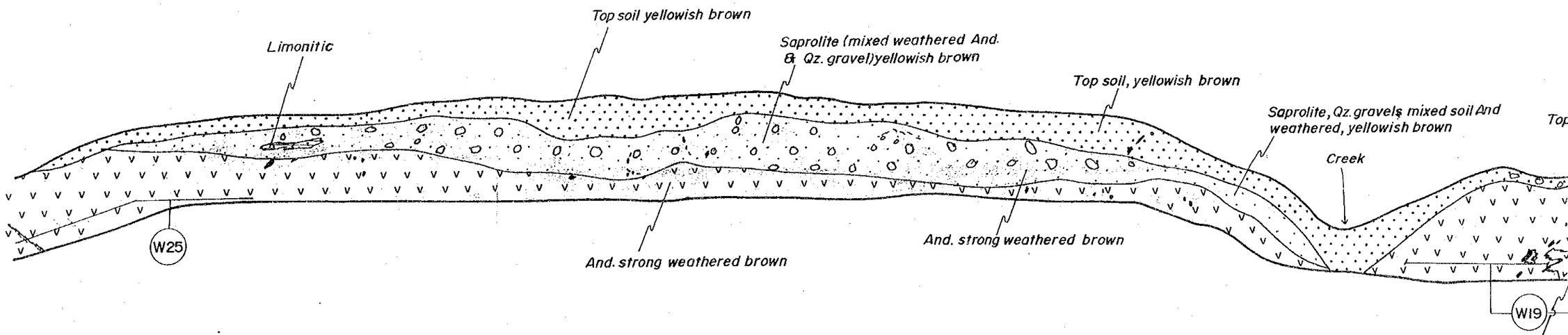
Quartz Vein

20 — Strike and dip of beds

MALELA TRENCH 1 (MT-1)
LEFT WALL SIDE

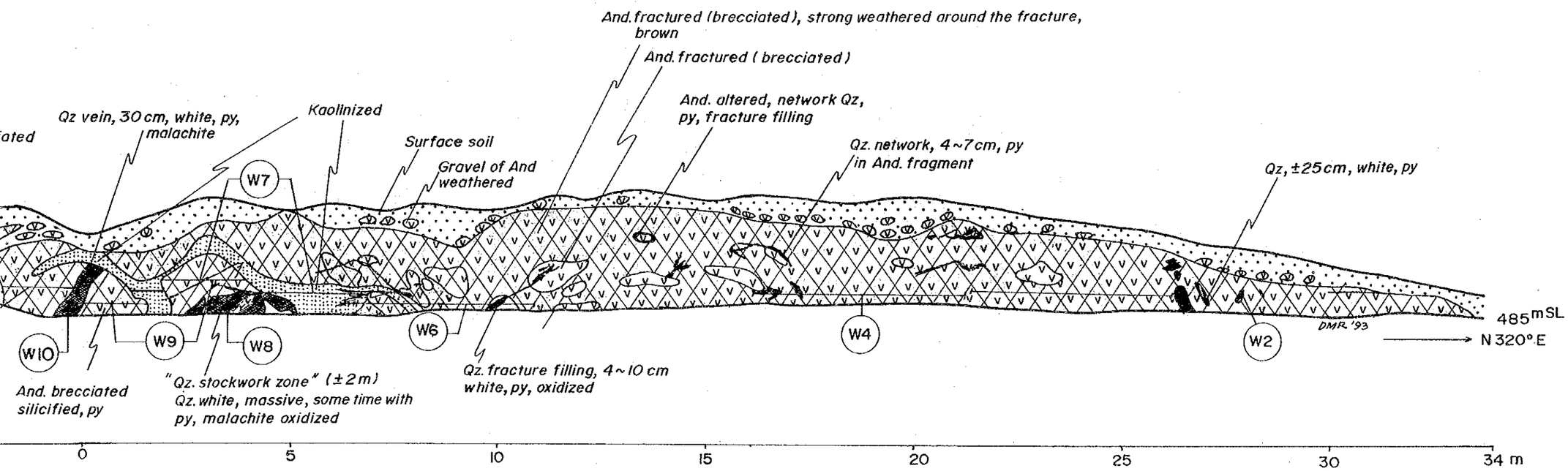


MALELA TRENCH 2 (MT-2)
LEFT WALL SIDE

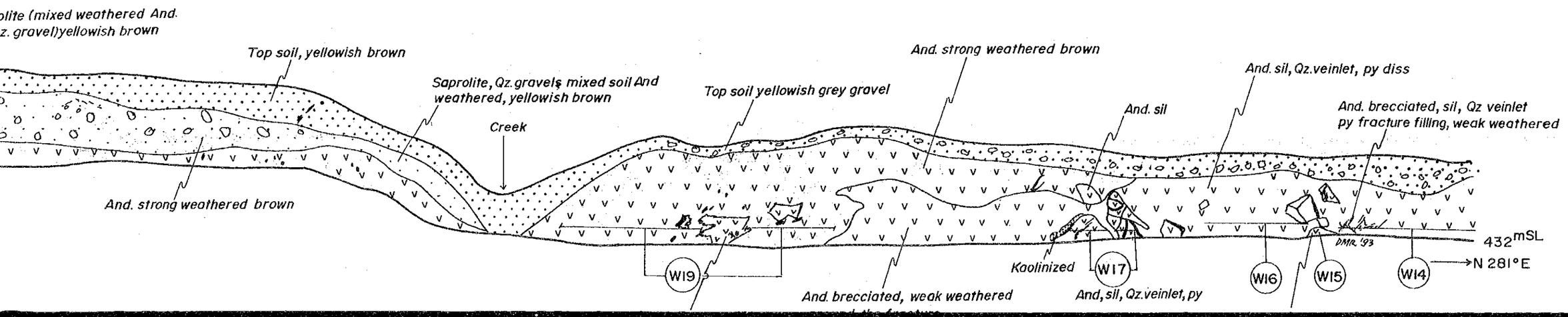


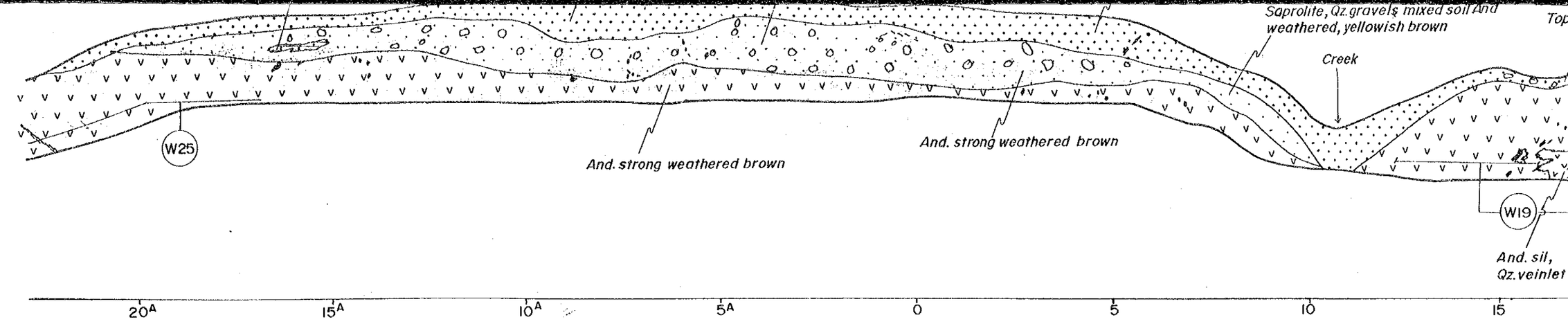
PL.2 SKETCH OF TRENCHES

MALELA TRENCH 1 (MT-1)
LEFT WALL SIDE

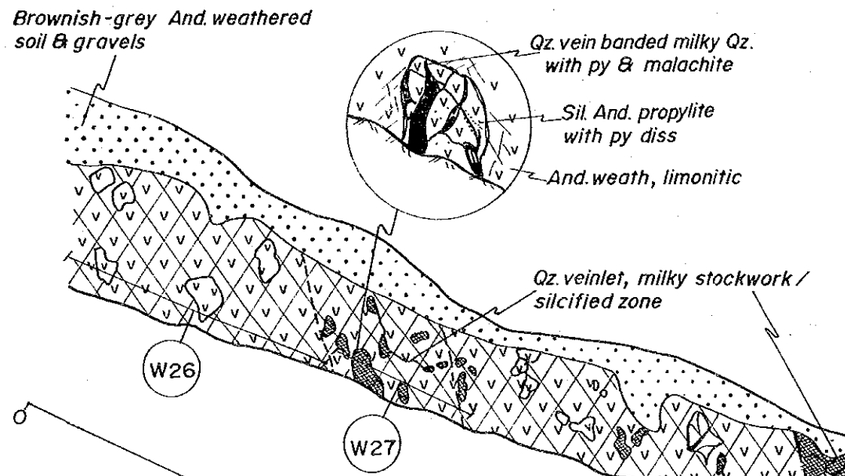


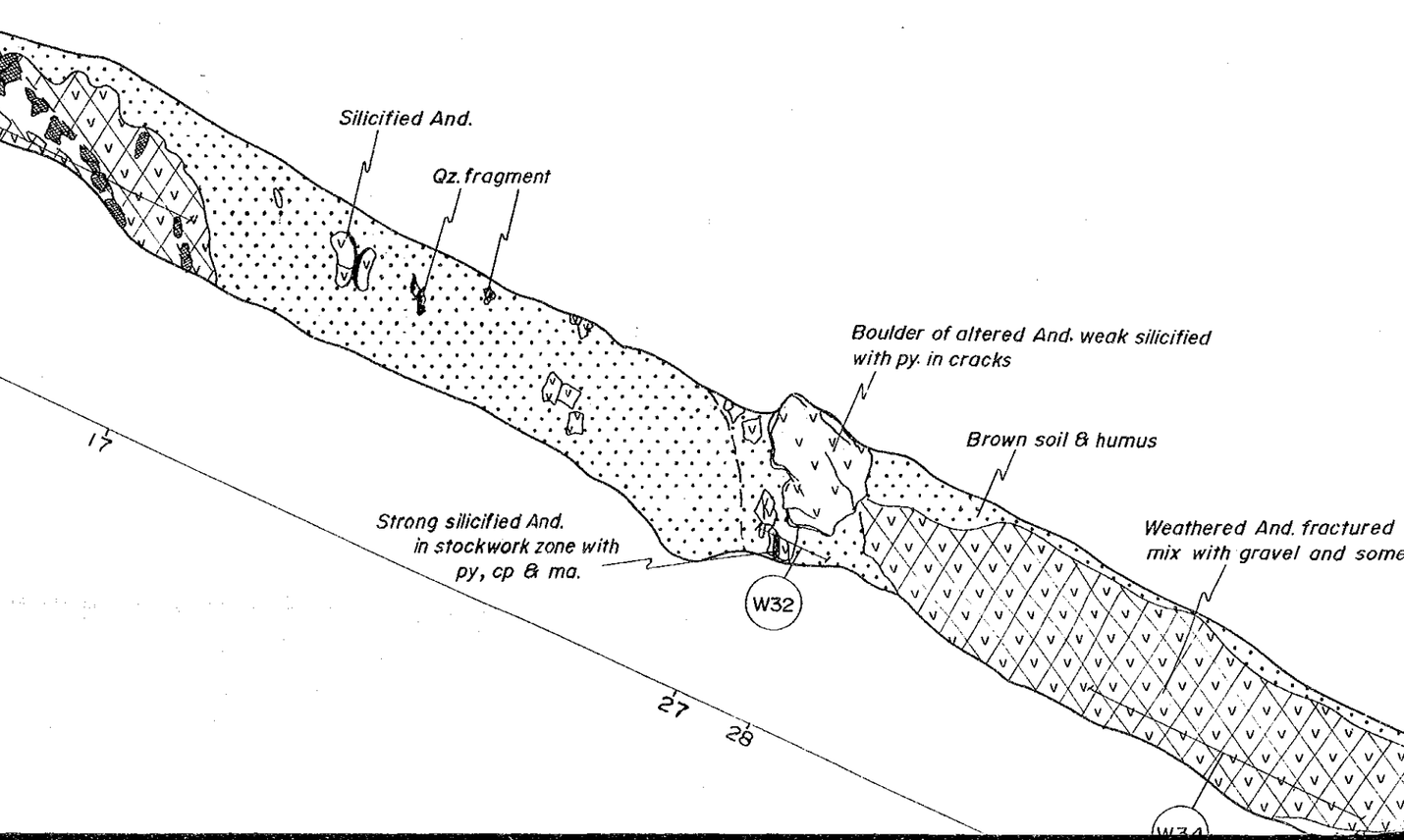
MALELA TRENCH 2 (MT-2)
LEFT WALL SIDE

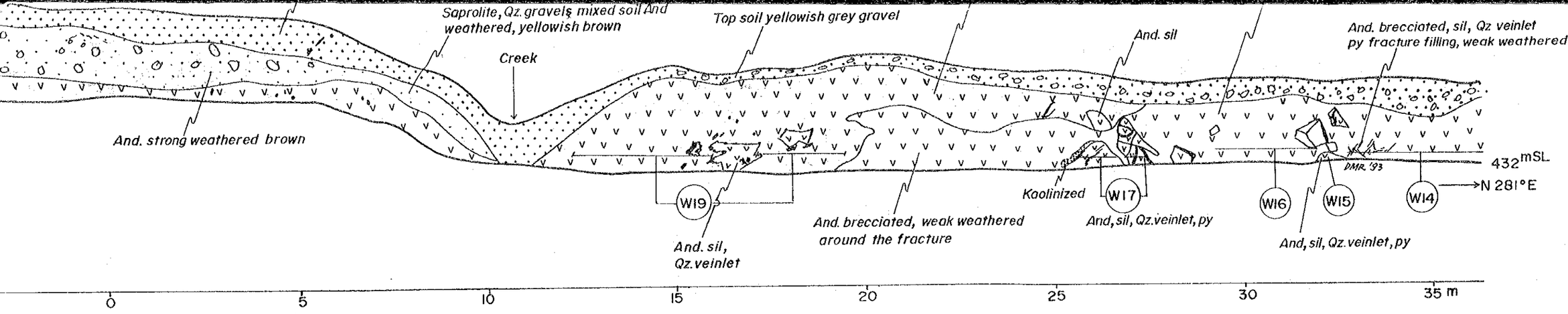




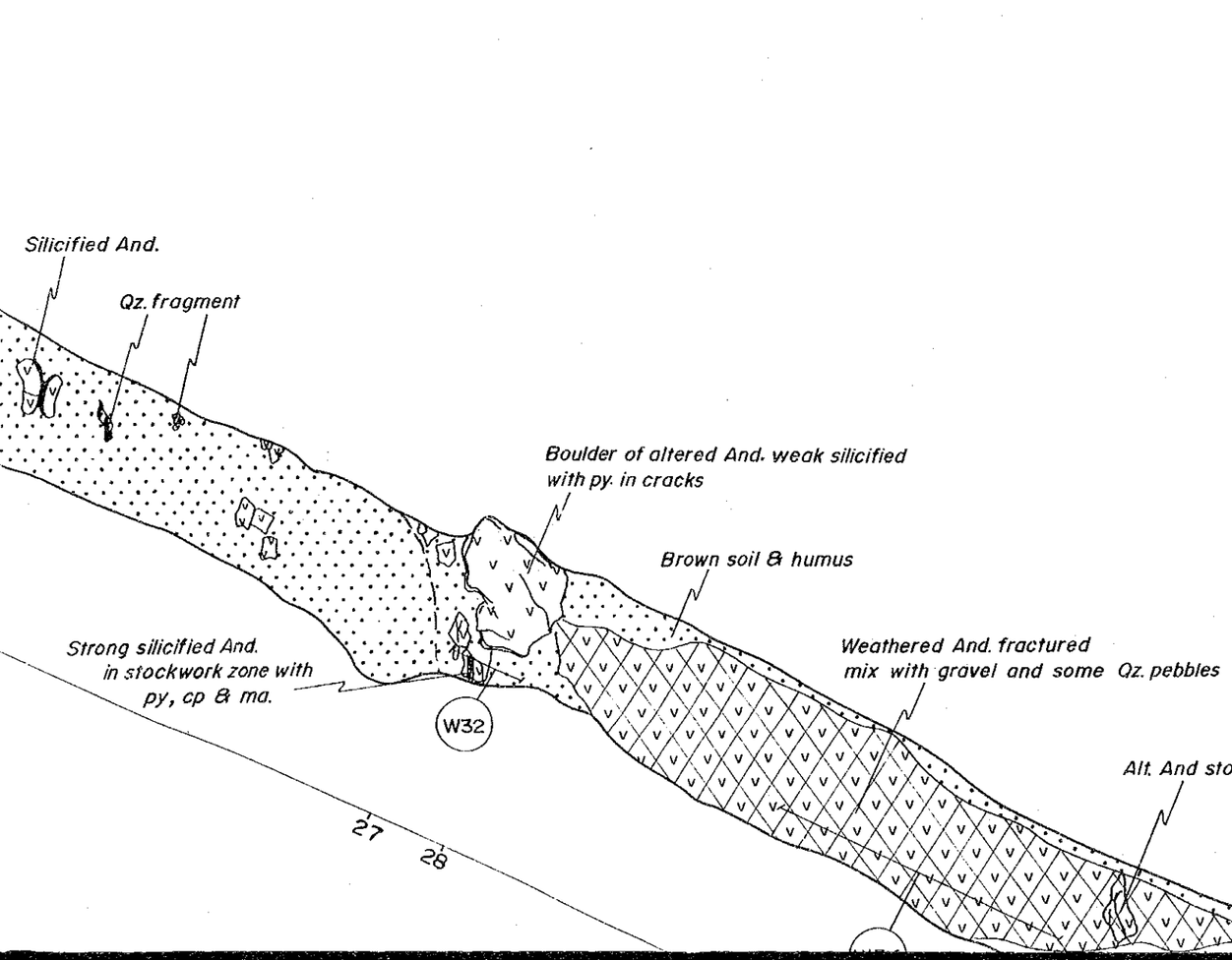
MALELA TRENCH 3 (MT-3)







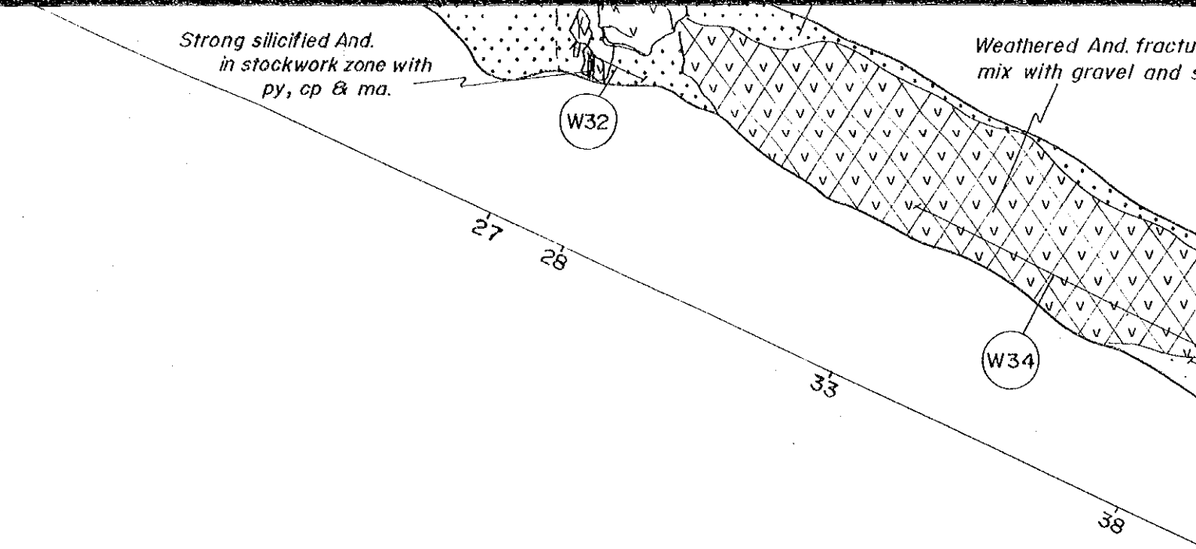
MALELA TRENCH 3 (MT-3)



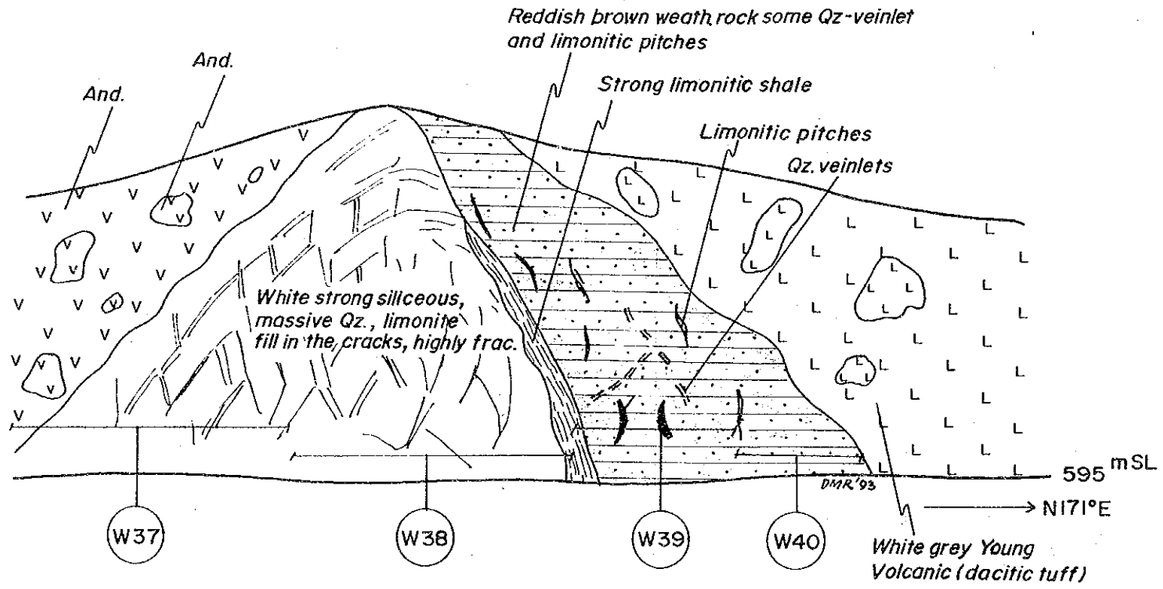
LEGEND

- Soil
- Saprolite
- Dacitic tuff (Young Volcanics)
- Andesite silicified
- Strong limonitic shale
- Limonitic
- Kaolinized
- Qz. vein / stockwork
- Fractured
- Weathered
- Sample location
- W15 Sample number

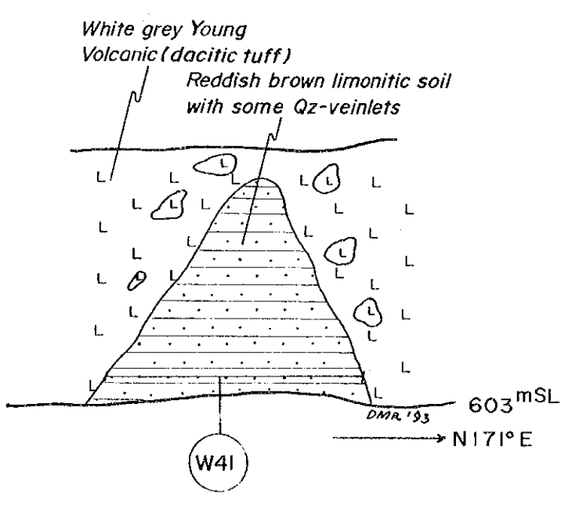
And = Andesite *py = pyrite* *cp = chalcopyrite*
ma = malachite *diss = disseminated*

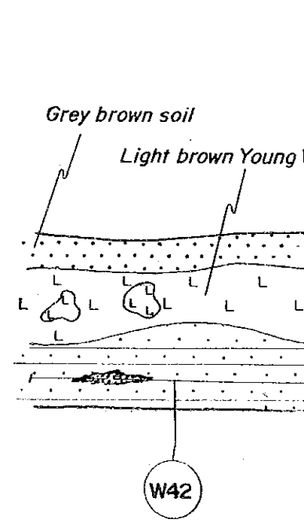


MALELA TRENCH 4 (MT-4)
ALONG THE EASTERN SIDE OF NEW ROAD

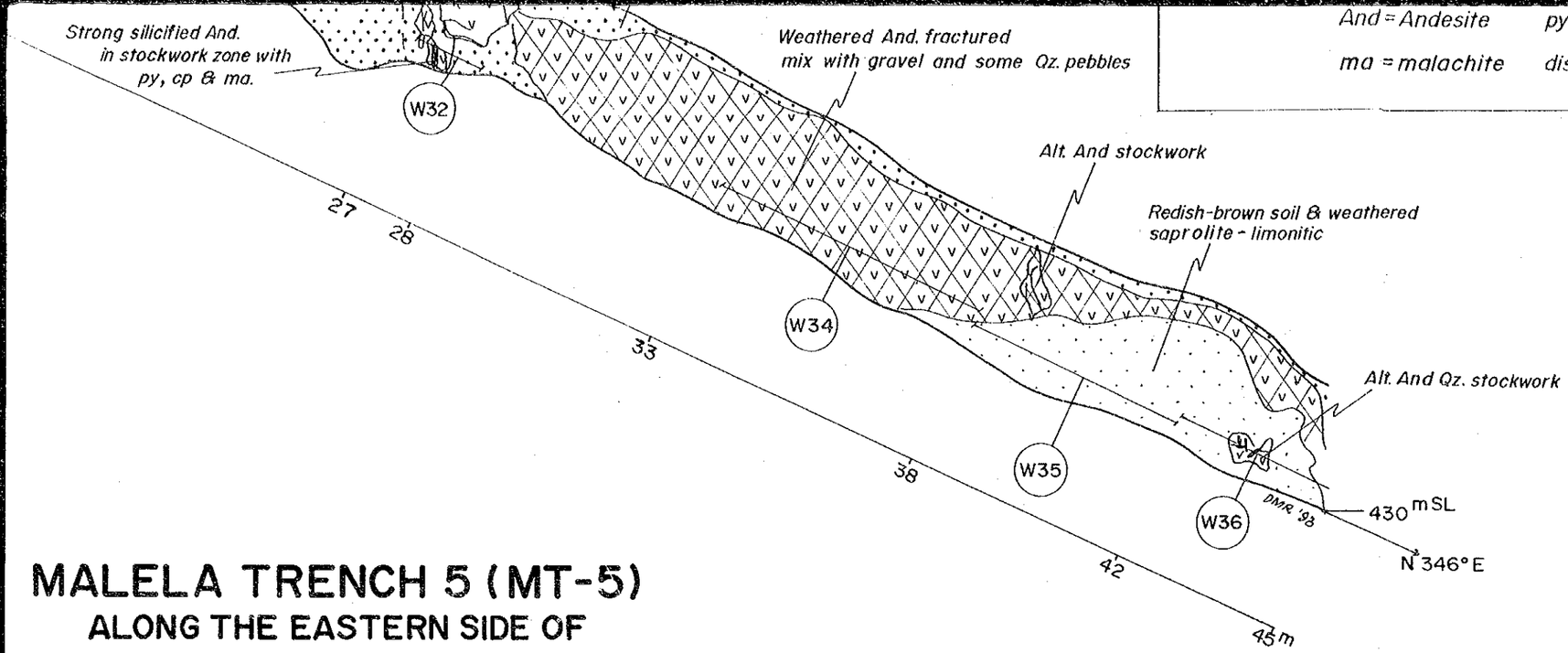


MALELA TRENCH 5 (MT-5)
ALONG THE EASTERN SIDE OF NEW ROAD

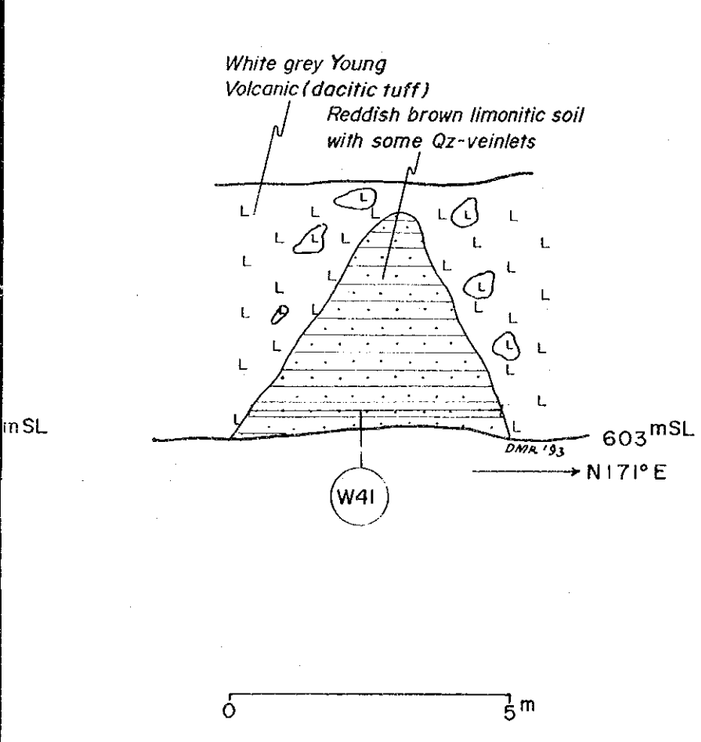




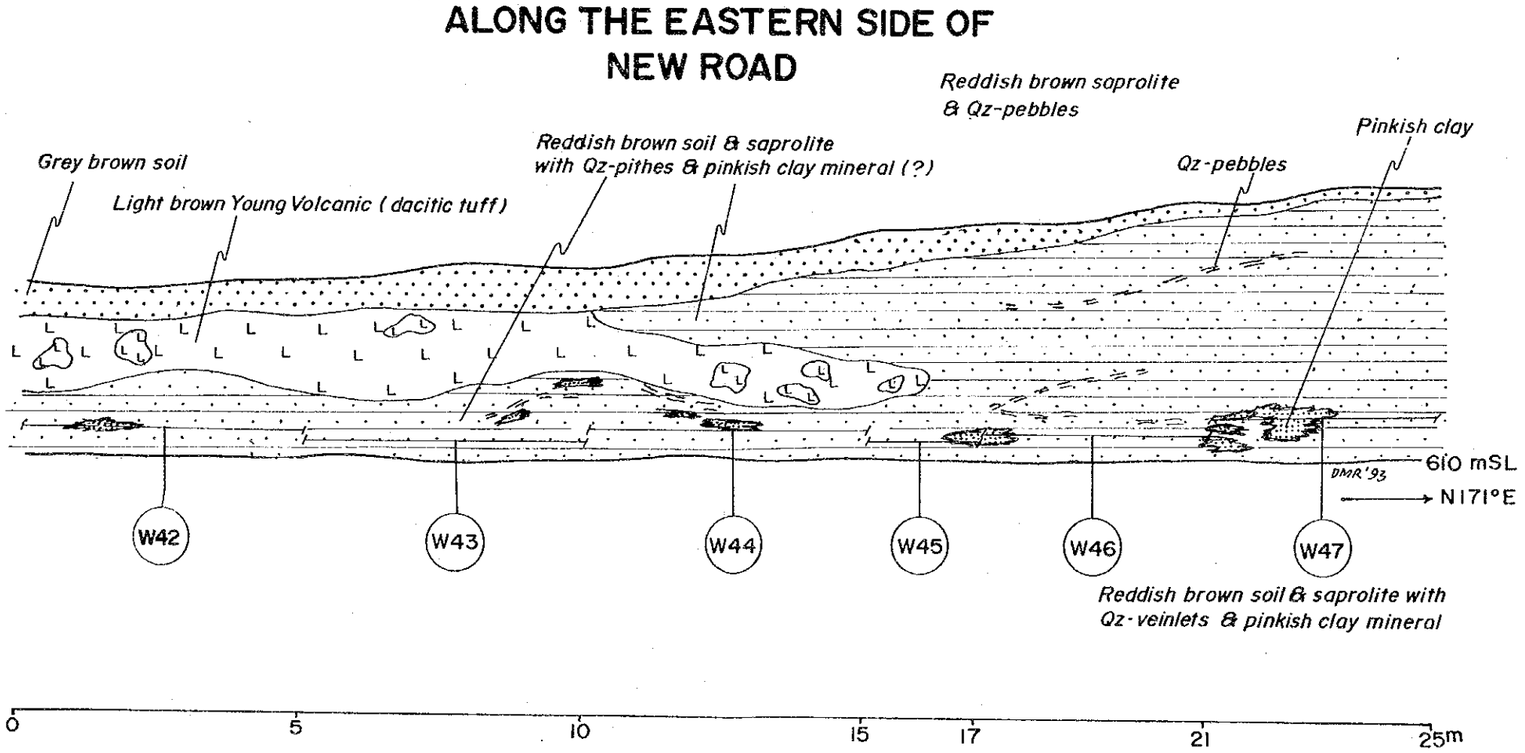
And = Andesite py = pyrite cp = chalcopyrite
ma = malachite diss = disseminated

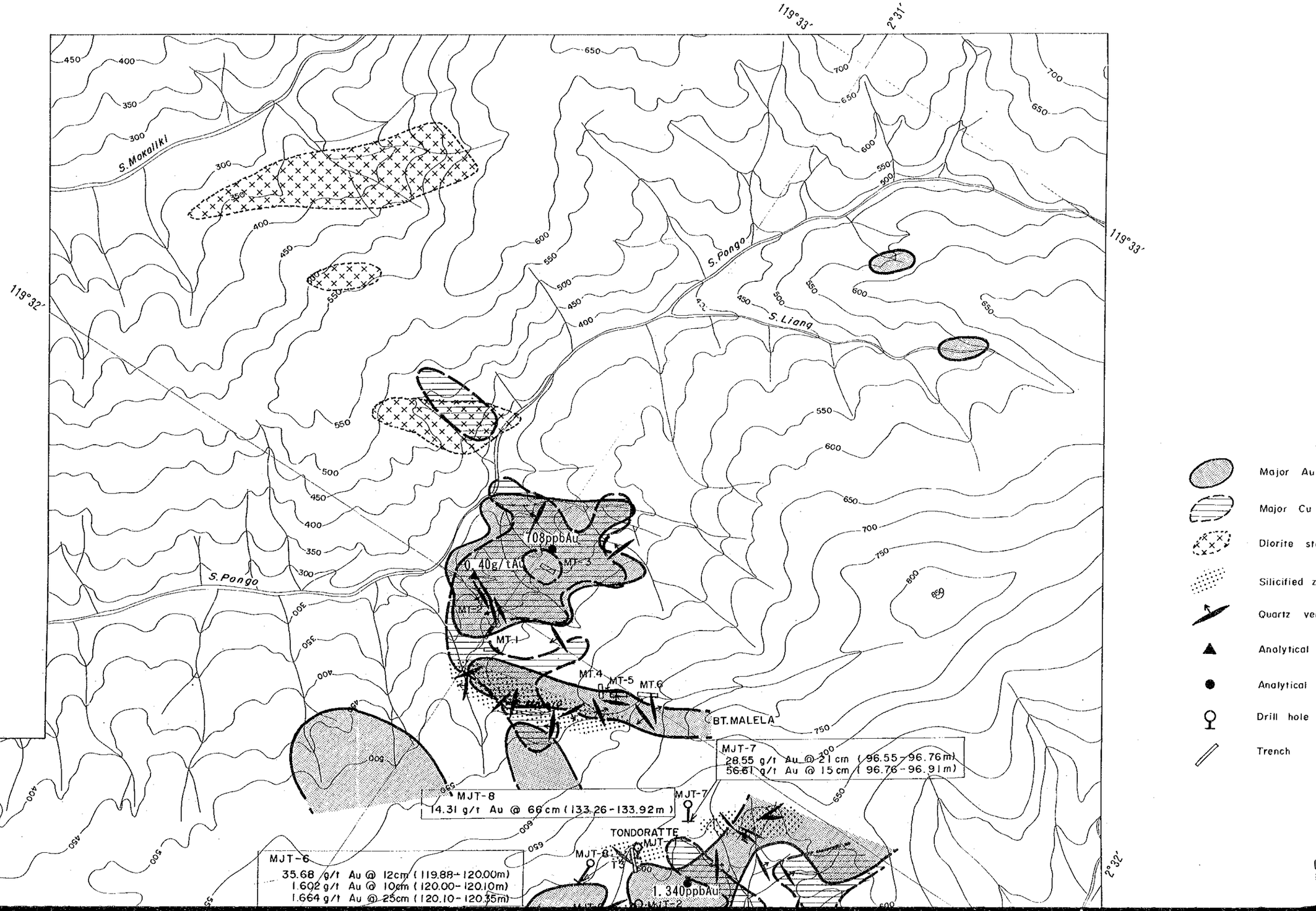


MALELA TRENCH 5 (MT-5)
ALONG THE EASTERN SIDE OF NEW ROAD

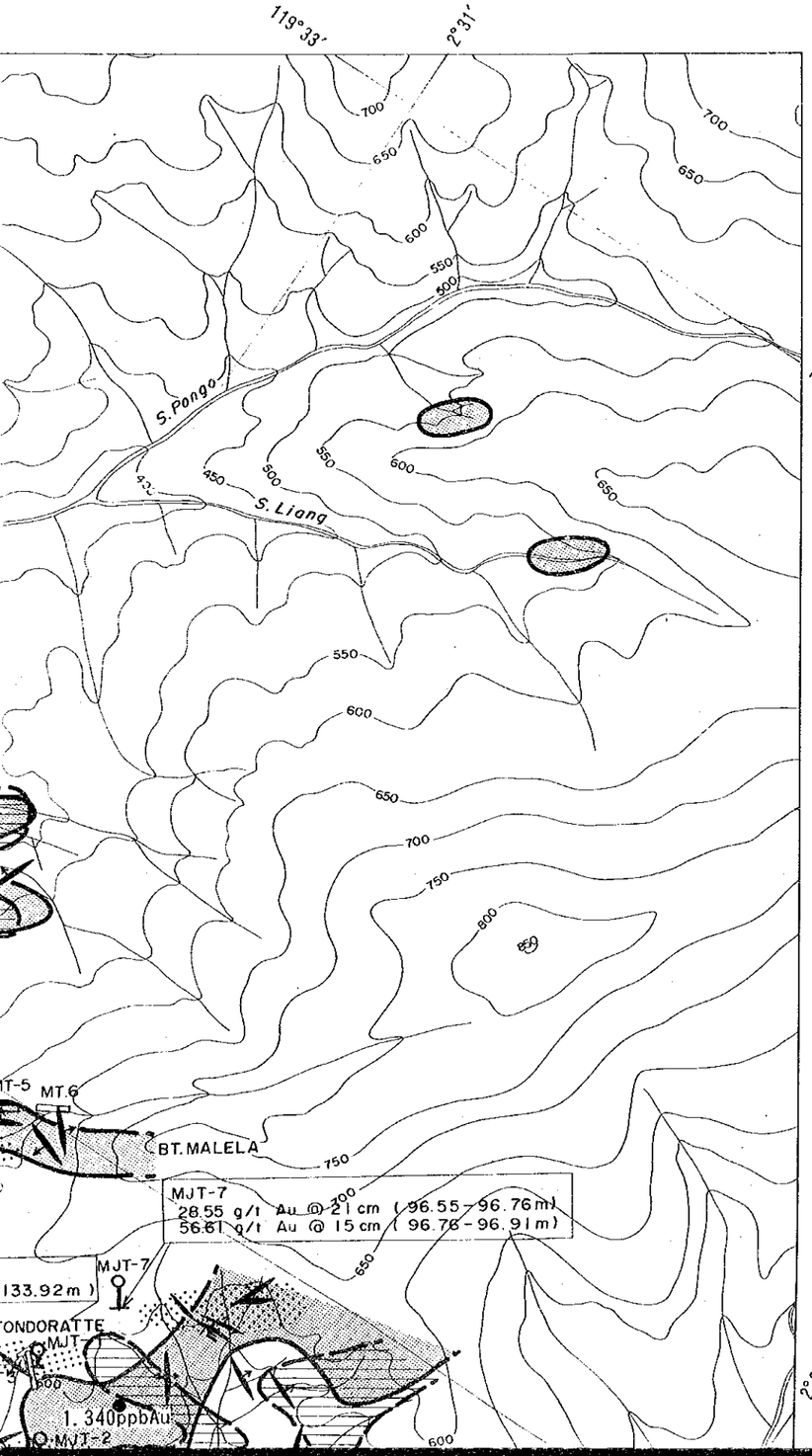


MALELA TRENCH 6 (MT-6)
ALONG THE EASTERN SIDE OF NEW ROAD




119°33'
2°31'
119°32'
119°33'
2°32'
S.Makalliki
S.Pongo
S.Pongo
S.Liang
708ppbAu
0.40g/tAu
MT-1
MT-2
MT-3
MT.4
MT-5
MT.6
BT.MALELA
MJT-7
28.55 g/t Au @ 21 cm (96.55 - 96.76m)
56.61 g/t Au @ 15 cm (96.76 - 96.91m)
MJT-8
14.31 g/t Au @ 60 cm (133.26 - 133.92m)
MJT-6
35.68 g/t Au @ 12cm (119.88 - 120.00m)
1.602 g/t Au @ 10cm (120.00 - 120.10m)
1.664 g/t Au @ 25cm (120.10 - 120.35m)
TONDORATTE
1.340ppbAu
Major Au
Major Cu
Diorite sto
Silicified zo
Quartz vein
Analytical
Analytical
Drill hole
Trench

PL. 3 INTEGRATED INTERPRETATION OF THE SURVEY RESULTS IN THE BATUISI PROSPECT



Major Au anomaly (Au ≧ 8.8ppb)

Major Cu anomaly (Cu ≧ 74.1ppm)

Diorite stock

Silicified zone

Quartz vein

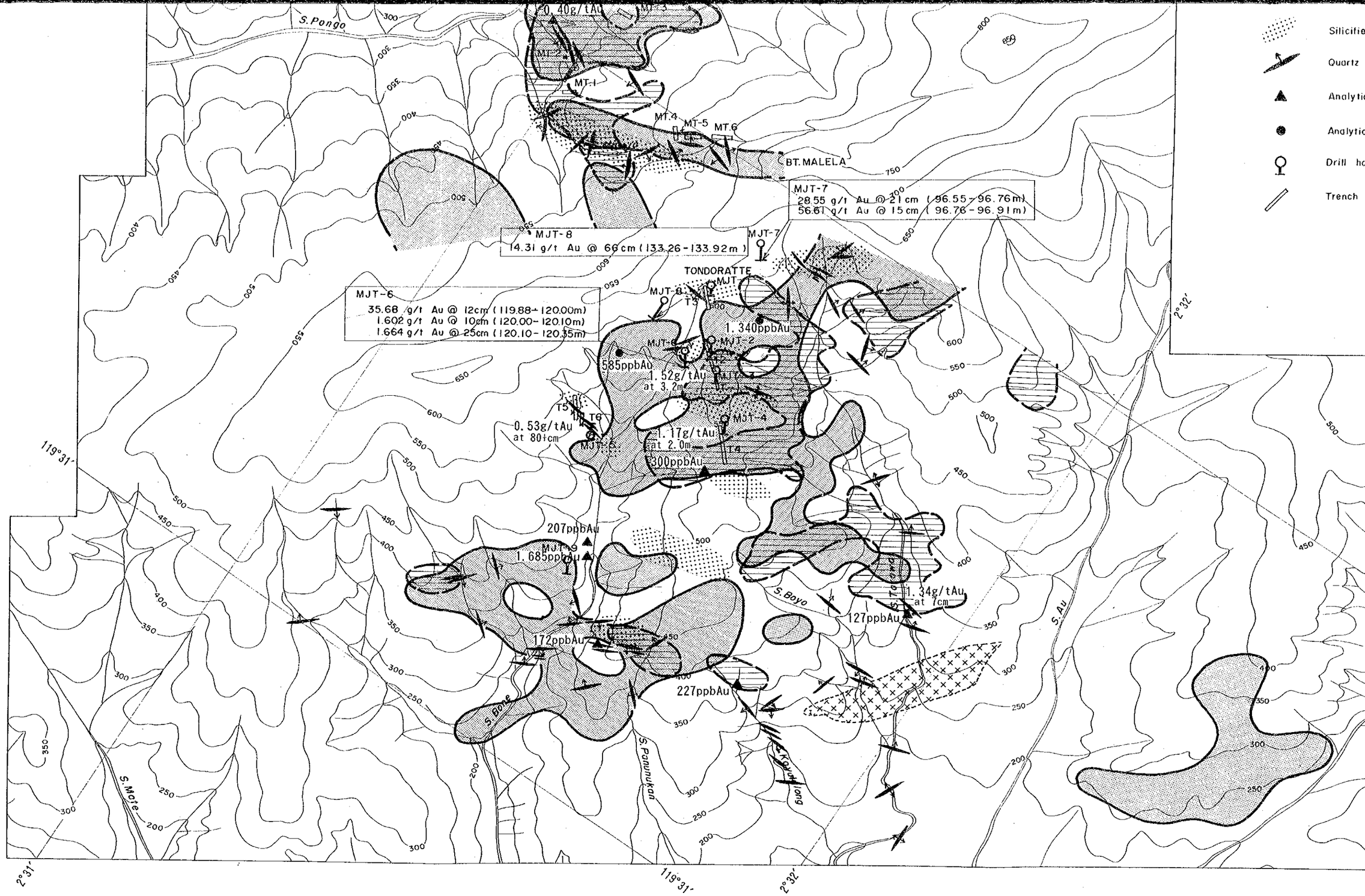
Analytical result (rock - chip)

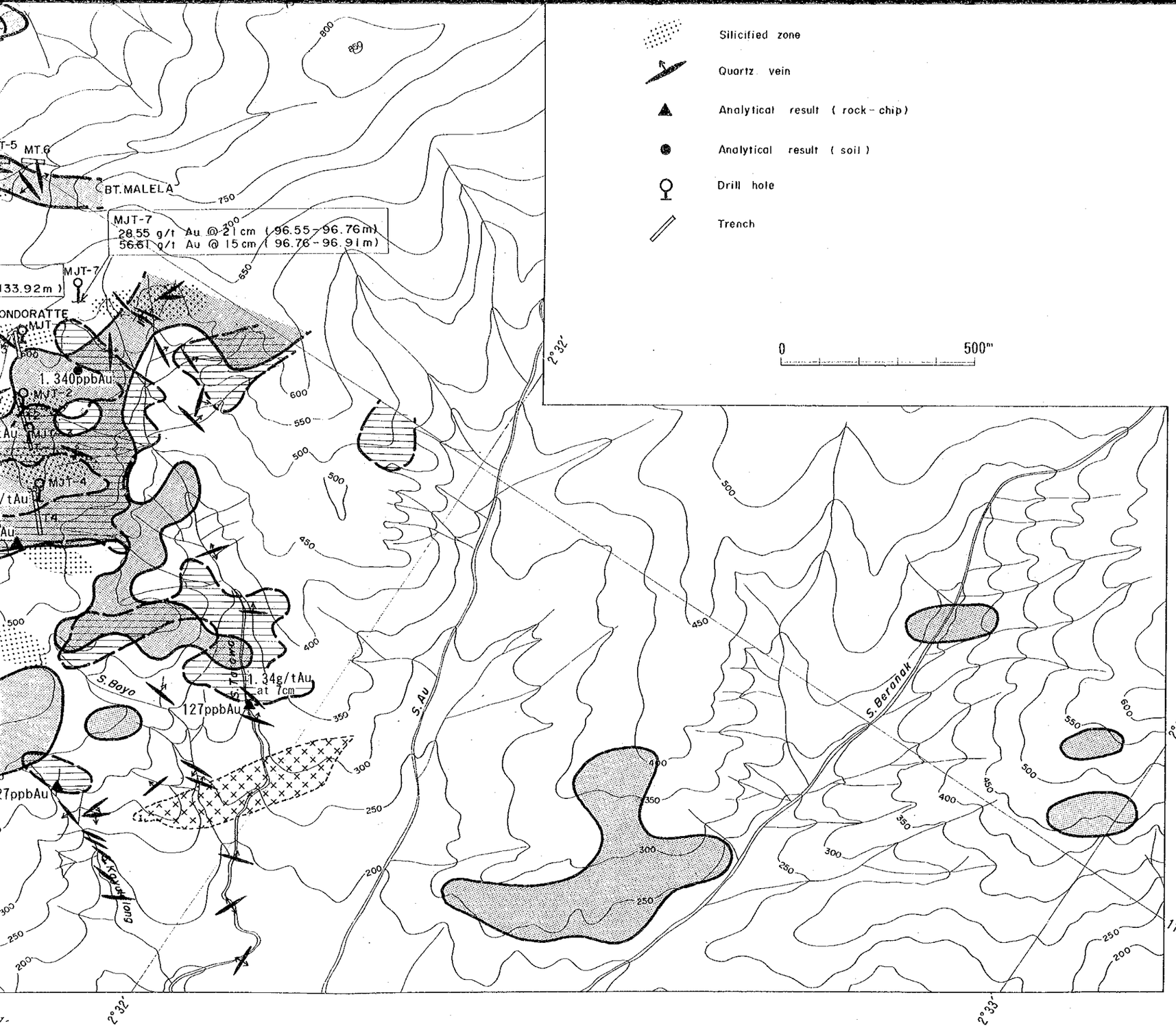
Analytical result (soil)

Drill hole

Trench

0 500m


MJT-8
14.31 g/t Au @ 66cm (133.26-133.92m)
MJT-7
28.55 g/t Au @ 21cm (96.55-96.76m)
56.61 g/t Au @ 15cm (96.76-96.91m)
MJT-6
35.68 g/t Au @ 12cm (119.88-120.00m)
1.602 g/t Au @ 10cm (120.00-120.10m)
1.664 g/t Au @ 25cm (120.10-120.35m)
0.40g/tAu
1.340ppbAu
585ppbAu
1.52g/tAu at 3.2m
0.53g/tAu at 80±cm
1.17g/tAu at 2.0m
300ppbAu
207ppbAu
1.685ppbAu
172ppbAu
227ppbAu
1.34g/tAu at 7cm
127ppbAu
TONDORATTE
BT. MALELA
S. Pongo
S. Bone
S. Panunukan
S. Kawilong
S. Boyo
S. Au
S. Mole
119°31'
2°32'
2°31'


Silicified zone
Quartz vein
Analytical result (rock - chip)
Analytical result (soil)
Drill hole
Trench
0
500m
MT-6
BT. MALELA
MJT-7
28.55 g/t Au @ 21 cm (96.55 - 96.76m)
56.61 g/t Au @ 15 cm (96.76 - 96.91m)
MJT-7
133.92m)
ONDORATTE
MJT-
1. 340ppbAu
MJT-2
MJT-4
T4
S. Boyo
S. Tolang
1. 34g/tAu
at 7cm
127ppbAu
S. Kayuyong
S. Au
S. Beronak
2°32'
2°33'
119°32'
800
750
700
650
600
550
500
450
400
350
300
250
200