part. As for the high magnetic anomaly to the west of the M-2 control survey line, it roughly matches the scope of distribution of the ultrabasic rocks in a weathered belt relating to laterite-nickel deposits.

(3) Magnetic Susceptibility

In the Katjel area, as in the Central Shebenik area, the magnetic susceptibility of different types of rocks was measured on surface outcrops. Fig. 2-2-22 gives the measurement locations, Table 2-2-5 the results of the measurements, and Table 2-2-6 and Fig. 2-2-23 the statistics concerning them. The breakdown by rock type was: harzburgite, 11 outcrops; dunite, 8 outcrops; chromitite, 2 outcrops; serpentine, 4 outcrops; and limestone, 1 outcrop.

The average value for dunite was higher than for harzburgite and chromite. In view of the fact, however, that dunite had considerable variation compared to harzburgite, one cannot say that there is a statistically significant difference. As for chromitite, for which the number of measured outcrops was small, it showed low magnetic susceptibility, whereas serpentine had high values, which are considered to be due to the fact that it occurs mainly at faults, where there is greater susceptibility to oxidation. The general tendency regarding the magnetic susceptibilities of those rock types is similar to that in the Central Shebenik area.

(4) 2D Simulation on Profile

As in the Central Shebenik area, a simulation analysis with two profiles, profile A (survey line 26) and profile B (survey line 16), was carried out with rock body size and magnetic susceptibility as the variable parameters.

Fig. 2-2-24 gives the results of the analysis along with the distribution of the confirmed deposits of the Katjel mine. In this area, too, as indicated in Fig. 2-2-24, it was necessary to give negative magnetic susceptibility to many blocks (blocks with reverse magnetization). In particular, all of the blocks east of the M-2 control survey line have to be given negative magnetic susceptibility.

The thickness of the chromitite body of the Katjel deposit and its dunite envelope, is only a few meters. Moreover, besides the fact that the size of the deposit itself is not all that large, the ore body is distributed at a considerable depth, with inclination to the east. Although the influence of the Katjel deposit's chromitite and accompanying dunite on the measurement values is therefore considered not to be all that great, it is noteworthy that the Katjel ore body is distributed very near the simulation block assumed to have relatively large negative magnetic susceptibility.

(5) Verification Directly Above Chrome Ore Body

In order to verify the effectiveness of magnetic prospecting of chrome deposits directly above a chrome body measurements were made at survey points with an interval of 5 m on 3 survey lines crossing a selected chromitite outcrop at the southern end of the Katjel area.

The chromitite outcrop consists of high-grade disseminated chromitite accompanied by a dunite envelope in harzburgite, the thickness including the dunite envelope, being approximately 2 m.

As indicated in Table 2-2-5, the magnetic susceptibility of the rocks of that outcrop and the immediate vicinity thereof was 1.33×10^{-3} SI for chromitite and 1.25-2.47 $\times 10^{-3}$ (1.68×10^{-3} SI as the 3-point average) for dunite but higher for harzburgite: 2.19-4.20 $\times 10^{-3}$ SI (3.13×10^{-3} SI as the 3-point average).

Fig. 2-2-27 indicates the location of the outcrop, Fig. 2-2-25 shows a photograph of the outcrop and its magnetic profile, and Fig. 2-2-26 gives the results of the profile analysis.

As indicated in Fig. 2-2-25, for all 3 survey lines there is a low magnetic anomaly in comparison

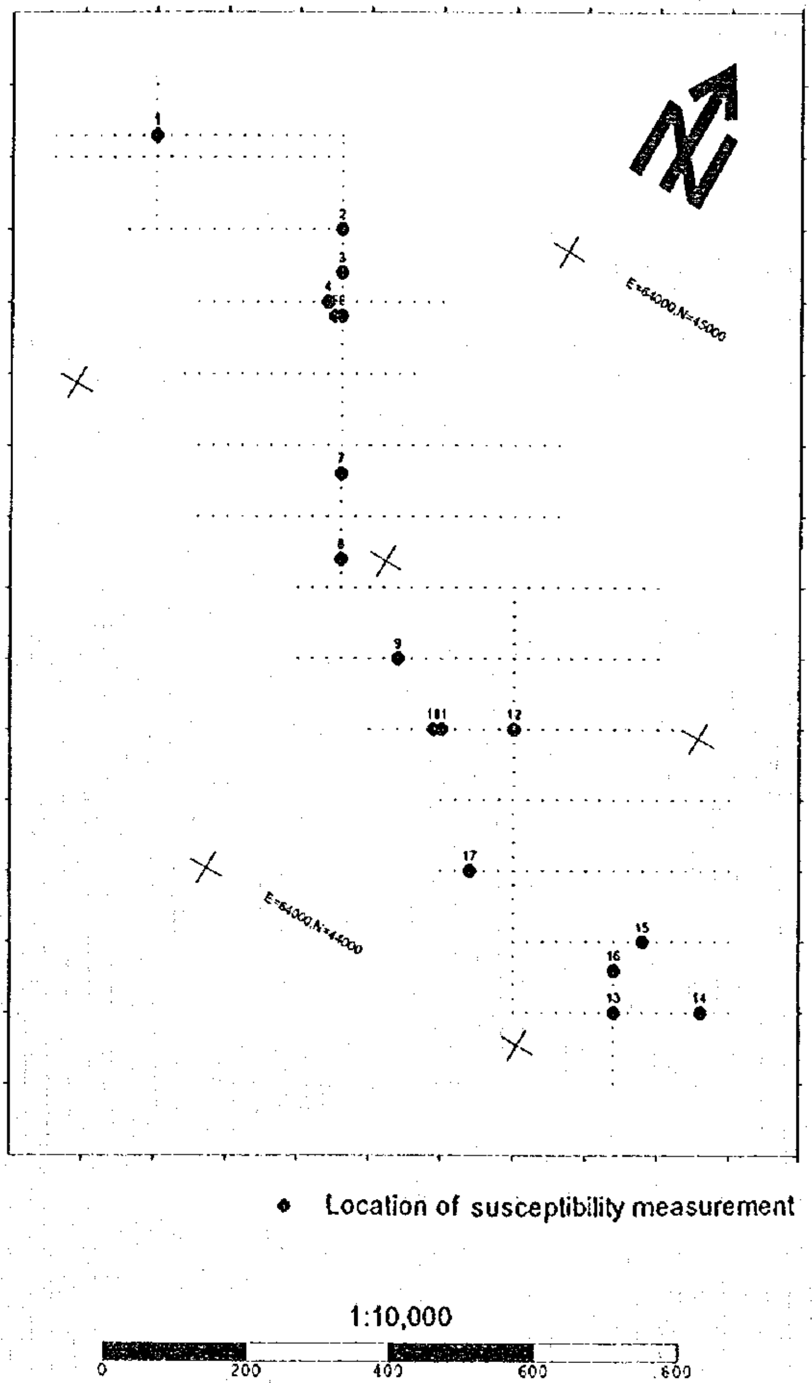


Fig. 2-2-22 Location map of rock susceptibility measurements, Katjel Area

Table 2-2-5 Magnetic susceptibility, Katjel Area

No.	Location		Data1	Data2	Data3	Data4	Data5	Data6	Correction factor	Susceptibility ×10⁻³ SI	Description	Oriented sampling
	Profile	Station										
1	35	50	0.00	0.00	0.00				1.15	0.00	Lm	
2	32	76	12.60	16.10	15.80	13.30			1.15	16.62	Hz	
3	30.4	76	14.30	15.00	14.20	13.30			1.15	16.33	Du	
4	30	74	22.50	21.30	21.90				1.15	25.19	Du	
5	28.8	76	5.95	6.98	6.60	6.86			1.15	7.59	Du	
6	28.8	76	13.40	14.00	13.30	9.46	10.00		1.15	13.84	Du	
7	24.6	76	9.17	10.80	10.80	12.20	15.20	15.00	1.15	14.02	Du	
			21.20	22.20	23.00				1.15	25.45	Serpentinization	
8	22.4	76	7.11	7.51	7.90	9.82	10.20	10.30	1.15	10.13	Hz	
9	20	84	5.76	8.37	8.23	8.43	6.15	6.06	1.15	8.24	Hz	
10	18	90	1.40	1.40					1.15	1.61	Hz	
			20.80	21.10	17.00				1.15	22.58	Serpentinization	
			1.55	1.59					1.15	1.81	Hz	
11	18	90	1.57	1.49					1.15	1.76	Hz	
			4.38	3.98					1.15	4.81	Serpentinization	
12			6.50	5.69	5.19	5.23	6.67		1.15	6.73	Cr	
13	10	114	2.66	1.75	1.29				1.15	2.19	Hz	
			12.60	14.90	5.19	9.88			1.15	12.21	Serpentinization	
14	10	126	2.80	2.94	2.11				1.15	3.01	Hz	
15	12	118	2.95	4.86	4.30	4.02	2.14		1.15	4.20	Hz	
16			1.27	0.99	1.01				1.15	1.25	Du	
			1.40	1.04	1.04				1.15	1.33	Cr	
			0.74	1.46	1.27				1.15	1.33	Du	
			2.07	2.22					1.15	2.47	Du	
17	14	94	4.06	5.46	5.18				1.15	5.64	Hz	
			8.62	5.21	9.08	5.55	4.99	7.01	1.15	7.75	Hz	

Table 2-2-6 Statistics of magnetic susceptibility, Katjel area

Description	Number of samples	Susceptibility (×10⁻³ SI)				
		Minimum	Maximum	Median	Average	Std. Dev.
Harzburgite	11	1.61	16.6	4.20	5.72	4.46
Dunite	8	1.25	25.2	10.7	10.3	8.03
Chromite	2	1.33	6.73	—	4.03	—
Serpentinite	4	4.81	25.5	17.4	16.3	8.25
Limestone	1	—	—	0.00	—	—

Std. Dev : Standard Deviation

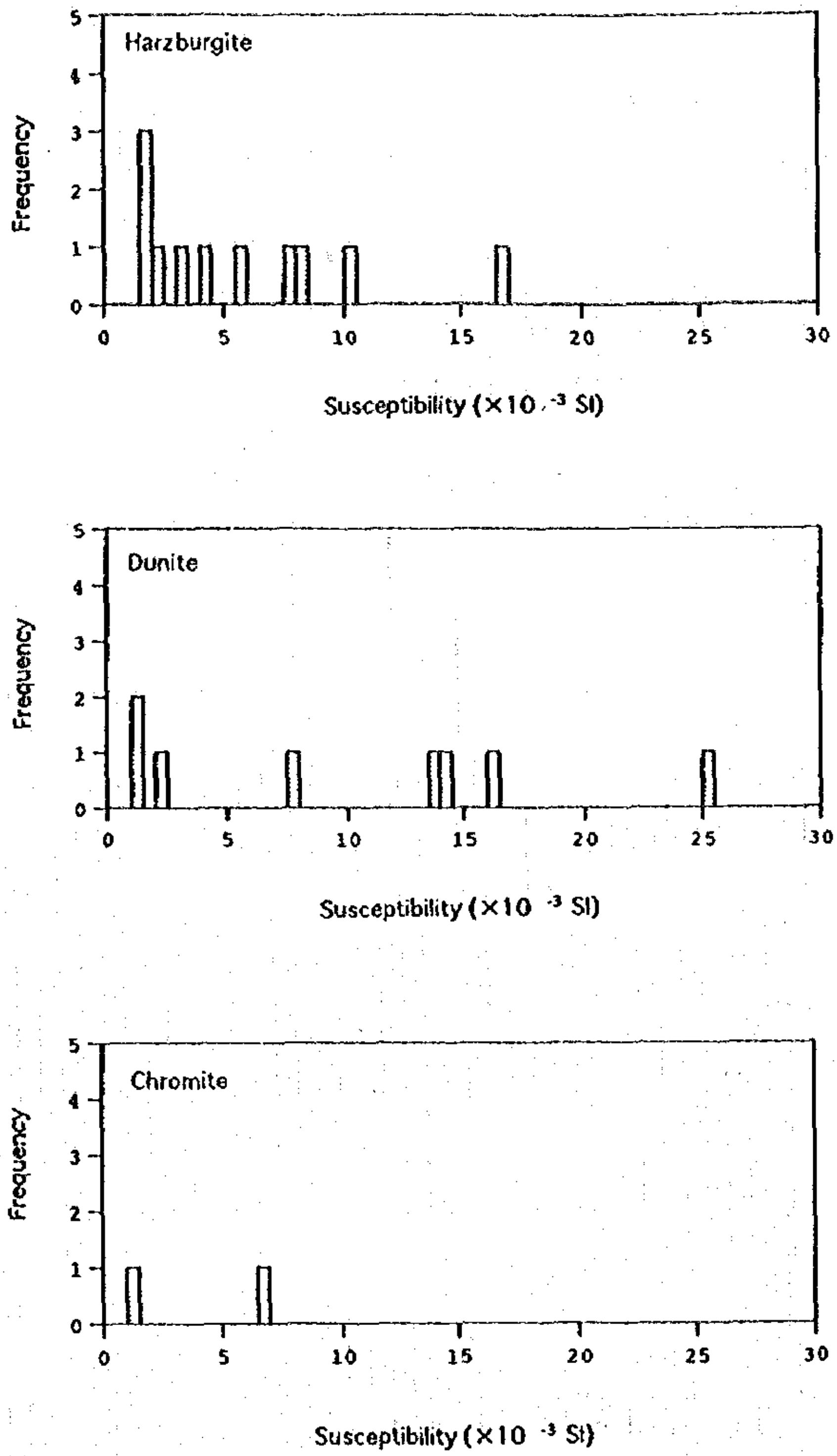
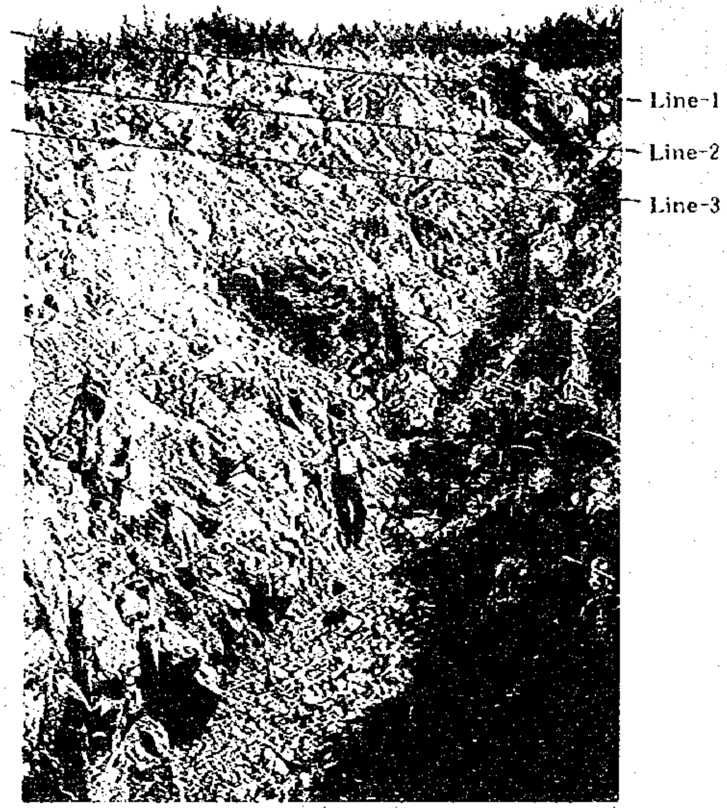


Fig. 2-2-23 Histogram of susceptibility, Katjel Area



Chromite outcrop view

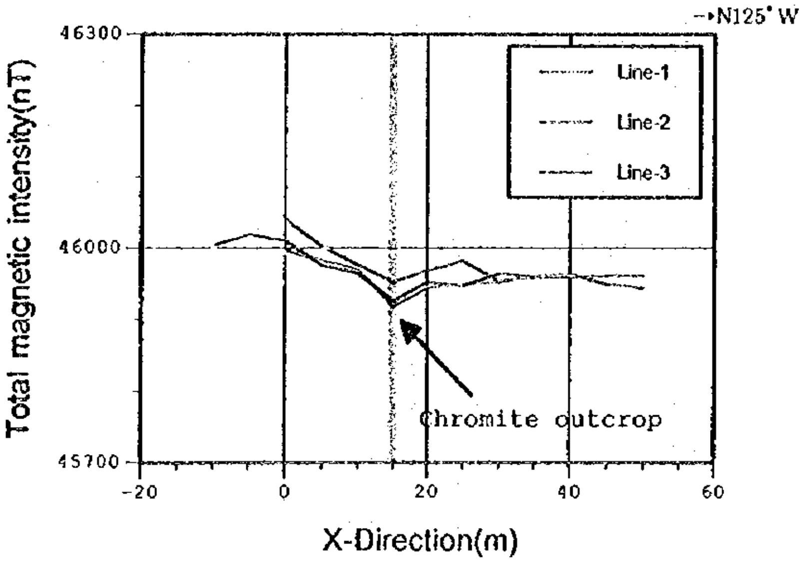


Fig. 2-2-25 Magnetic profiles above chromite outcrop

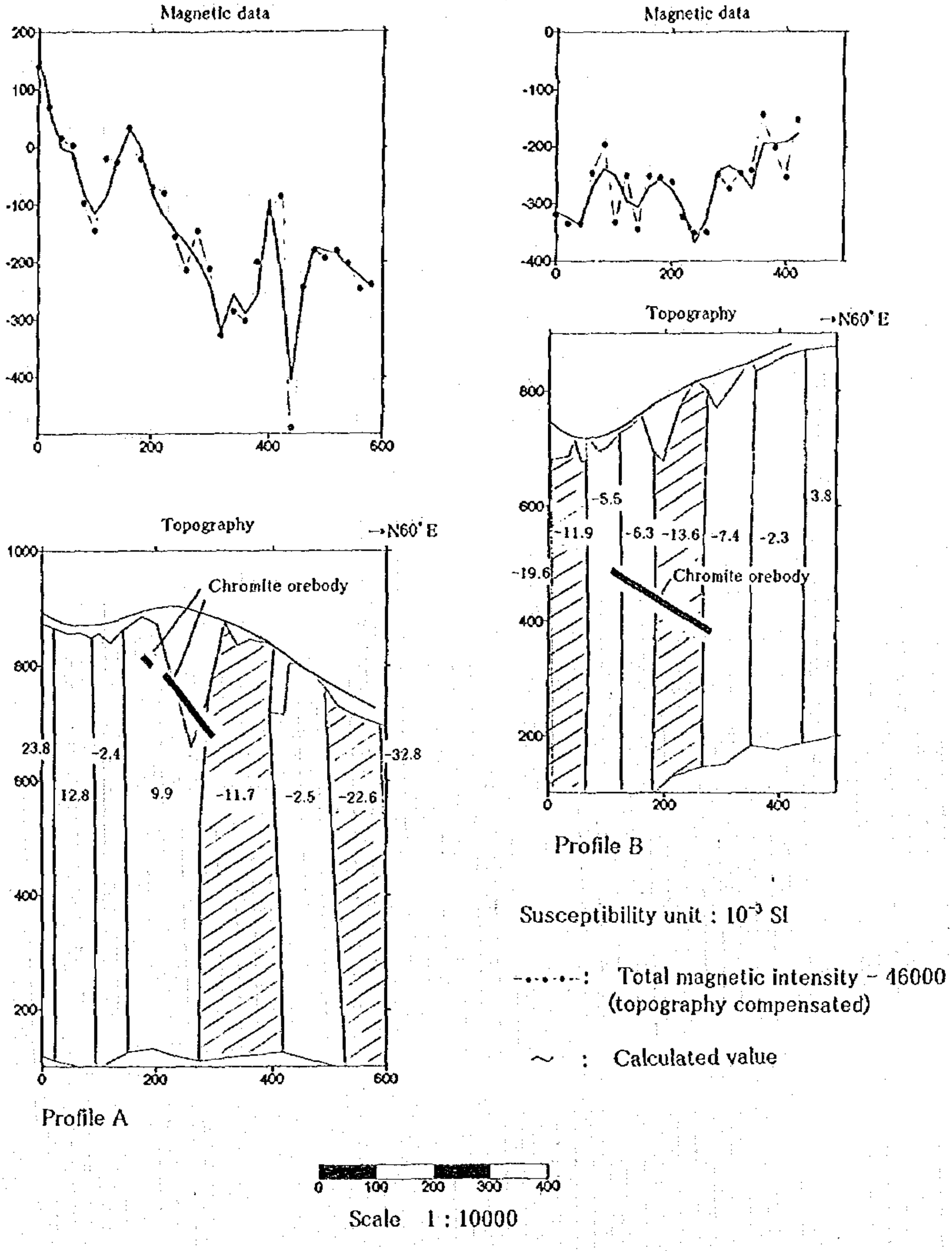


Fig. 2-2-24 Analyzed profiles, Katjel Area

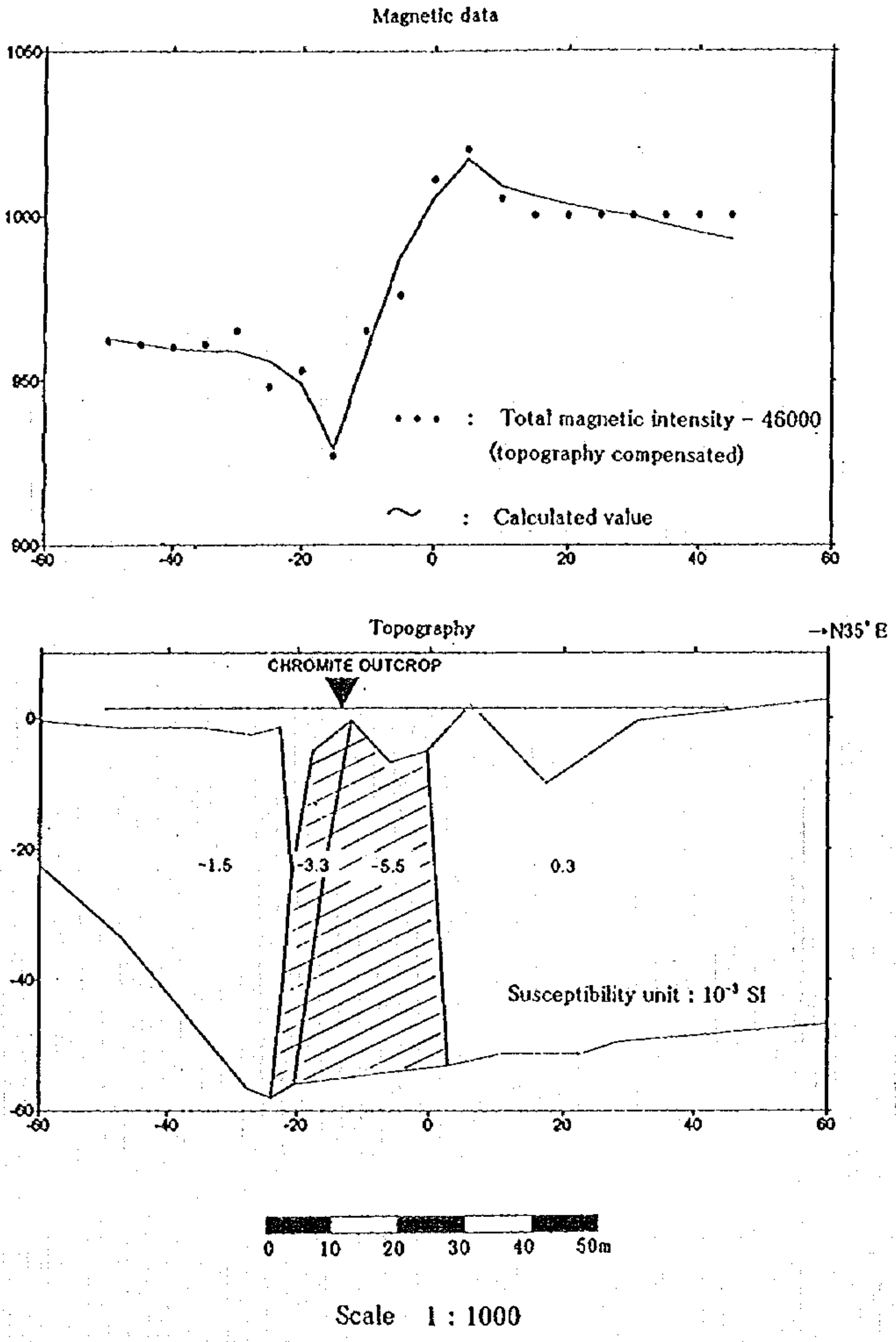


Fig. 2-2-26 Interpretation of magnetic profiles above chromite outcrop

with the surroundings directly above the chromitite. Although these anomalies are weak there are in harmony with the trend regarding magnetic susceptibility of the rocks.

In the simulation profile analysis with rock body size and magnetic susceptibility as variable parameters the model giving the chromitite and its vicinity negative magnetic susceptibility gave the optimum solution as indicated in Fig. 2-2-26. In other words, the model with reverse magnetization of the chromitite and its surroundings best matches the measured values.

2-2-5 Discussion

Fig. 2-2-27 gives the comprehensive analysis map for the Katjel area. It indicates the magnetic lineaments (the directions of extension of the magnetic anomalies) for the shallow, medium and deep components from the filter analysis along with the Katjel and other known deposits.

In the western half of the Katjel area the magnetic lineaments predominantly run in the direction N30°W in harmony with the regional geological structure of the ultrabasic rocks, with many in the direction N40°W in the deep component. On the other hand, on the east side of the valley the direction is N60°E, which indicates the possibility of the existence of a structural discontinuity between the two.

The Katjel ore body occurs in the low magnetic anomaly east of the M-2 control line. The western edge of the ore body, which is vertical to steeply inclined, is situated roughly at the boundary between the high magnetic anomaly on the west side and the low magnetic anomaly to the east, and the deep ore body with gentle inclination is situated roughly in the middle of a large low magnetic anomaly. Furthermore, in the magnetic survey on the chromitite outcrop situated to the southeast of the Katjel ore body chromitite and its dunite envelope were detected as a feeble but distinct low magnetic anomaly.

From those results it is considered that chromitite deposits and the accompanying dunite in some way correlated with a kind of correlation with the low magnetic anomaly and that it is highly probable that the low magnetic anomaly is attributable to reverse magnetization.

Fig. 2.2.28 gives the comprehensive analysis map for the Central Shebenik area along with the magnetic lineaments, the circular lineament, the medium-depth magnetic anomaly, the large deep low magnetic anomaly, the chrome indications, etc.

Except for the N30°W direction in harmony with the regional geological structures of the ultrabasic rocks in the part where the DHSRL (dunite-harzburgite suite with remarkable layering) is distributed in the northeast corner of the area, the magnetic lineaments of the Central Shebenik area have a N15°E direction throughout almost the entire area.

Although no significant difference due to rock type is to be seen in the magnetic susceptibility distribution in this area, there is considerable variation for each type of rock. As for the orientation of natural remanent magnetization, samples show that dunite has a high probability of reverse magnetization and that harzburgite has either reverse magnetization or a direction different from the present geomagnetic field. That trend in the orientation of natural remanent magnetization is considered to be an indication of the direction of the earth's magnetic field at the time of acquisition of magnetization or transition due to faults or some other factor, and the magnetic anomalies obtained in this area are considered to be a reflection of such differences in magnetic susceptibility, differences in natural remanent magnetization orientation, etc. between the different rock bodies.

The main medium-depth magnetic anomalies extracted were 14 high magnetic anomalies and 10 low magnetic anomalies. However, considering, the fact that there appears to be a correlation between the Katjel chrome body and a low magnetic anomaly, four zones at which a high and a low

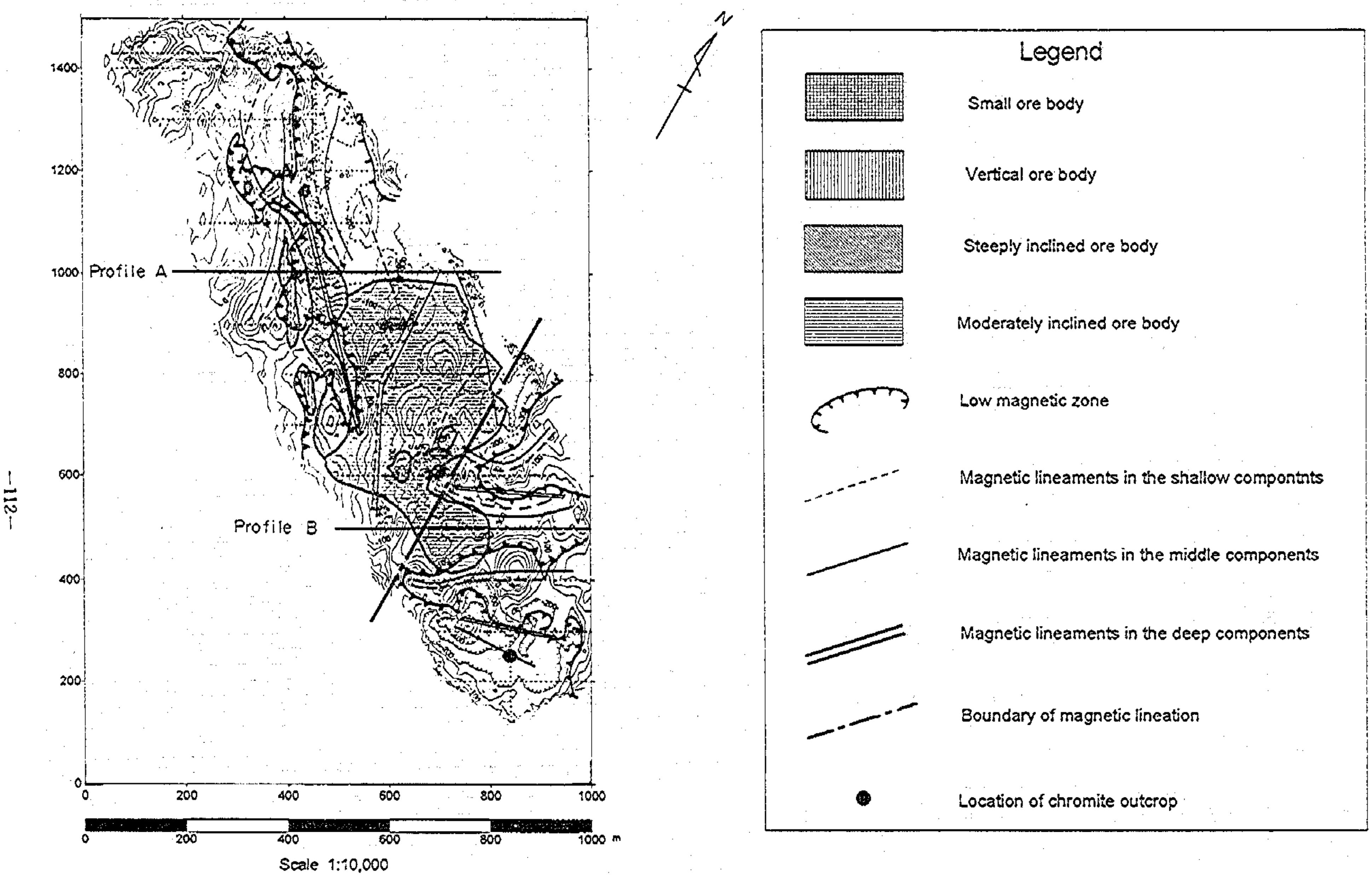


Fig. 2-2-27 Interpretation map, Katjel Area

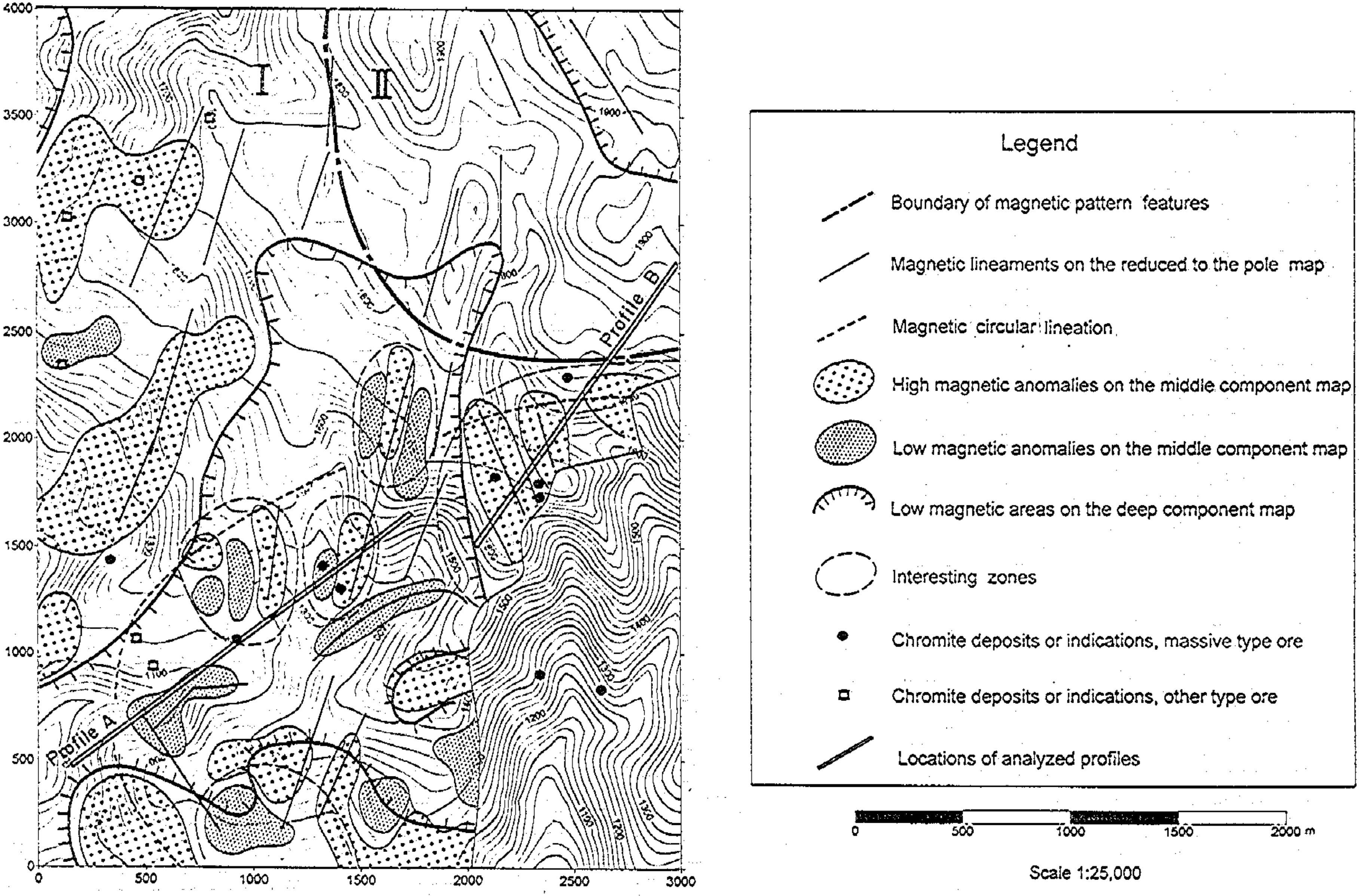


Fig. 2-2-28 Interpretation map, Central Shebenik

magnetic anomaly occur as a pair have been extracted as zones at proper depth that should be included in future prospecting.

As for the deep low magnetic anomaly widely distributed in the northeast direction from the southern part of the area to the middle of the northern half of the area, it is considered to be a reflection of the influence of rock bodies with different remanent magnetization orientations, but one can also not rule out the possibility that the values of total magnetic intensity at the survey points along the valley were not sufficiently corrected for terrain.

2-3 Drilling Survey

2-3-1 Summary of the Survey

A total of 19 drill holes (MJAS-1 to MJAS-22) was drilled in the 8 target areas indicated in Fig. 2-3-1. Of which the five target areas, Bregu i Pishes, Gjorduke, Fusha e Madhe, Shesh Bush No. 1 and Murriq located in the northern part of the Pogradec ultrabasic massif, one target area, Qarri i Zi, in the central part of the Shebenik ultrabasic massif and the two target areas, Mbi Skroske, and Pishkash South in the southern part of the Shebenik ultrabasic massif.

In implementation of the drilling the main purpose was underground exploration of known chrome deposits and indications in the case of the 5 areas, Bregu i Pishes, Gjorduke, Shesh Bush No. 1, Murriq and Qarri i Zi and underground investigation of magnetic anomalies in the case of the 3 areas, Fusha e Madhe, Pishkash South and Mbi Skroske. It should be noted that in the first year of the survey favorable EPMA indices were obtained for 2 of the 5 areas for the purpose of underground exploration of chromite deposits and indications: Bregu i Pishes and Qarri i Zi areas.

Table 2-3-1 gives the coordinates of all of the drilling points and the data of the drill holes.

Table 2-3-1 Summary of drill holes in 1996

	Drill Hole Number	Area	Coordinates Y	Coordinates X	Elevation m	Direction degree	Inclination degree	Depth m	Core Recovery %
1	MJAS-1	Bregu i Pishes	67,132.14	43,300.49	1,141.32	S60W	-43	80.00	82.59
2	MJAS-2	Bregu i Pishes	67,122.11	43,334.64	1,141.46	S60W	-45	80.00	88.78
3	MJAS-3	Bregu i Pishes	67,121.57	43,370.25	1,135.48	S60W	-40	130.86	90.56
4	MJAS-4	Fusha e Madhe	66,160.17	44,045.42	1,119.44	N50W	-45	191.50	85.97
5	MJAS-6	Gjorduke	66,544.17	43,874.42	1,304.85	S70W	-60	170.10	99.21
6	MJAS-7	Gjorduke	66,549.14	43,908.08	1,303.65	S70W	-49	167.30	95.48
7	MJAS-8	Qarri i Zi	55,361.02	53,816.78	644.87	N60E	-40	87.50	80.56
8	MJAS-9	Qarri i Zi	55,363.50	53,829.16	644.68	N60E	-51	101.55	85.61
9	MJAS-10	Qarri i Zi	55,376.77	53,792.23	627.18	N60E	-46	101.13	93.16
10	MJAS-12	Shesh Bush No.1	65,753.80	43,084.68	1,202.04	S60W	-40	100.60	100.00
11	MJAS-13	Shesh Bush No.1	65,763.09	43,043.35	1,199.60	S60W	-43	100.00	100.00
12	MJAS-14	Shesh Bush No.1	65,771.81	43,001.98	1,199.76	S60W	-40	100.80	100.00
13	MJAS-15	Pishkash South	60,139.78	51,301.59	959.19	E	-45	209.50	99.93
14	MJAS-16	Pishkash South	60,198.17	51,182.74	885.63	E	-60	211.80	100.00
15	MJAS-18	Murriq	64,515.89	45,310.19	714.35	N	-30	100.00	90.12
16	MJAS-19	Murriq	64,564.52	45,310.46	719.74	N	-30	100.00	94.52
17	MJAS-20	Mbi Skroske	59,286.67	52,620.93	1,041.81	N54E	-55	100.17	96.59
18	MJAS-21	Mbi Skroske	59,266.00	52,624.19	1,039.03	N30E	-55	100.60	91.41
19	MJAS-22	Mbi Skroske	59,163.75	52,718.30	1,080.12	S10W	-63	100.00	100.00
	Total							2,333.41	94.12

According to the original plans for the drilling survey, a total of 22 holes (MJAS-1 to MJAS-22) with a total length of 2,690 m were to be drilled in the above-mentioned 8 target areas, but drilling of 3 of them (MJAS-5, MJAS-11 and MJAS-17) had to be discontinued because of the fact that the drilling program as a whole fell way behind schedule as a result of damage to a transport truck and lift pump when a truck plunged off a road shortly after arrival of the drilling equipment, delay in moving sites due to bad weather in late September, drilling rod breakage due to marked fractured zone, an accident in which a hydraulic pump burst and other reasons. As a result, the final figures were 19 drill holes completed for a total length of 2,333.41 m.

2-3-2 Methods of the Survey

(1) Drilling Work Schedule

Fig. 2-3-2 gives the overall drilling work schedule, and Fig. 2-3-3(1)-(8) gives the drilling schedule for the drill holes in each target area. The drilling team's schedule was as follows:

- Mobilization (Tokyo - Tirana): June 17 - June 19, 1996
- Negotiations and conclusion of contract with Italian company: June 24 - June 26, 1996
- Road and site preparation and maintenance: June 27 - December 5, 1996
- Bringing in of drilling equipment from Italy: August 26 - August 31, 1996
- Drilling works at the sites: September 1 - December 14, 1996
- Taking away of drilling equipment to Italy: December 15 - December 18, 1996
- Leaving (site - Tokyo): December 16 - December 21, 1996
- Laboratory tests and preparation of report: December 25, 1996 - February 23, 1997

As indicated in Fig. 2-3-2, during the initial month of the drilling work only 2 sets of drilling equipment were used, but when it became clear that the work was falling way behind schedule, a third set was brought in October and put into use with the other two in the drilling work.

(2) Drilling Work and Personnel

The drilling work was done by the drilling company So.Ri.Ge. Perforazzione, established in Parma, northern Italy.

Three drilling rigs, L-38, Cordiam and Mustang, were used in the drilling survey, each in principle being used in 2 shifts around the clock.

In principle the personnel makeup for each shift was one drilling engineer and two drilling assistants, i.e. a total of three men, each for the L-38 and Cordiam rigs based on the wire line method, and one drilling engineer and three drilling assistants, i.e. a total of four men, for the Mustang rig based on the ordinary drilling method. Besides those people directly involved in the drilling, one man worked constantly at each of the 2 or 3 water-sites where lift pumps were in operation, and two guards were stationed at the materials and equipment storage facility.

(3) Road and Site Preparation, Repair and Maintenance

Before commencement of the drilling in each target area preparation of the drilling sites and preparation and repair of access roads was accomplished by Pogradec Geological Enterprise under the supervision of Gjeoalba.

In accordance with the initial plans 22 drilling sites were prepared, 19 of which (indicated in Table 2-3-1) were used in the drilling work. Drilling sites along the stream, such as those in the Murriq area, however, were washed away every time it rained and had to be prepared over again.

The main roads connecting the drilling target areas were the national highway (asphalt-paved) from Librazhd to Pogradec via Prrenjas and Qaf Thane and the unpaved road from Qaf Thane to Pogradec via Cervenake. Maximum possible use was made of existing mountain roads and abandoned exploratory roads for access to the drilling target areas and pump sites on the basis of repair and maintenance work, but new access roads had to be prepared where such existing roads were lacking. The total length of access road construction, repair and maintenance was 8,961 m, and repair and maintenance work had to be continued throughout the period of the drilling. Even at that, there was very great difficulty in keeping the access roads negotiable during the rainy period in late September and the period of rain and snowfall in late November and early December.

The main equipment used in preparation of the drilling sites and construction, repair and maintenance of the access roads was two bulldozers owned by Pogradec Geological Enterprise, but blasting work also had to be undertaken in areas such as Mbi Skroske and Gjorduke where the

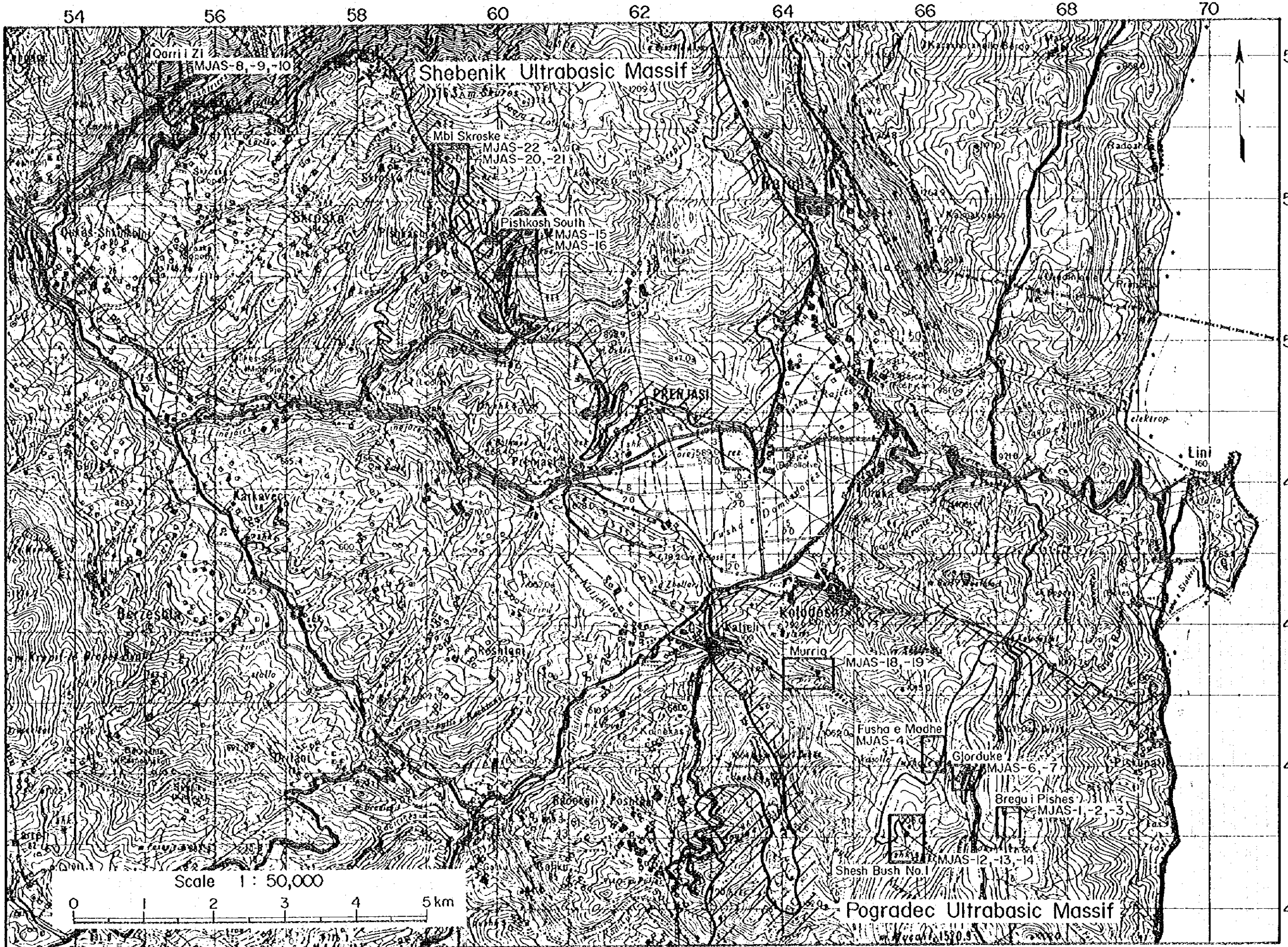


Fig. 2-3-1 Location map of the drilling survey areas

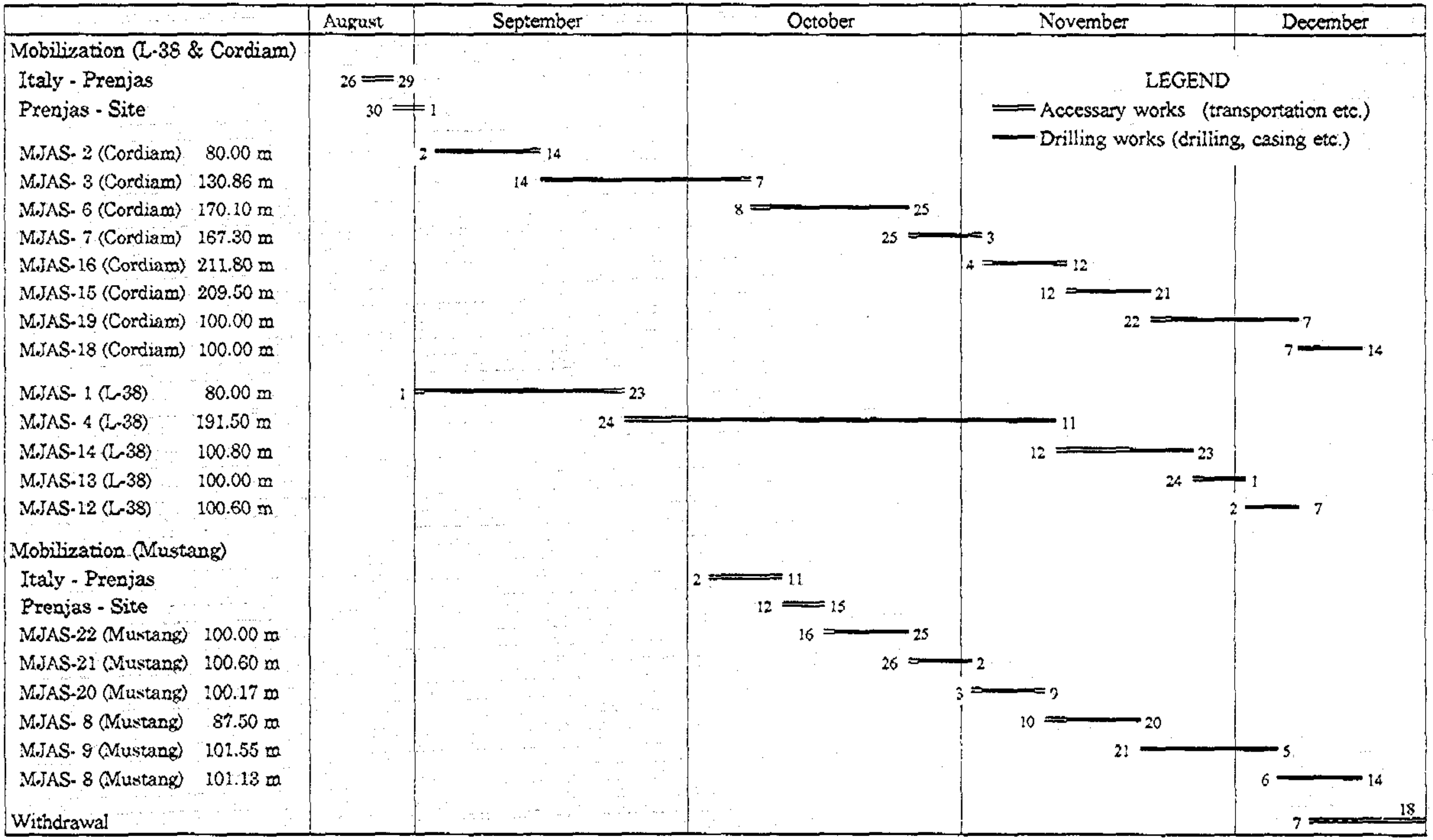
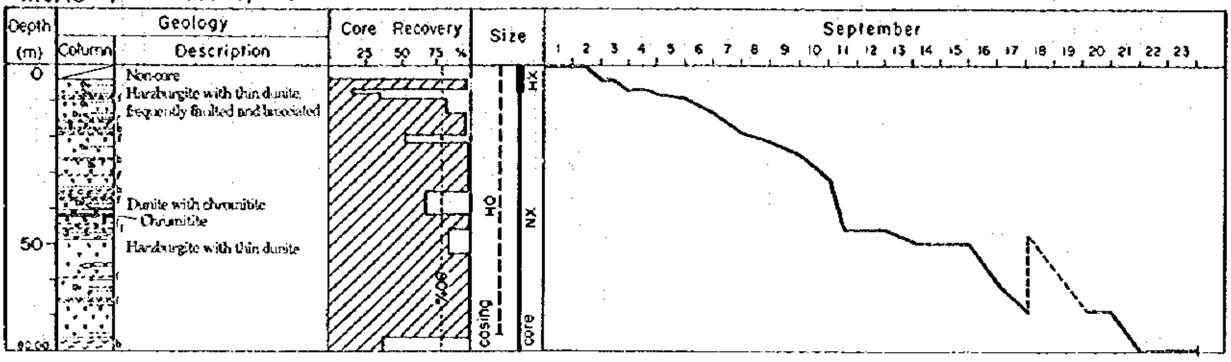
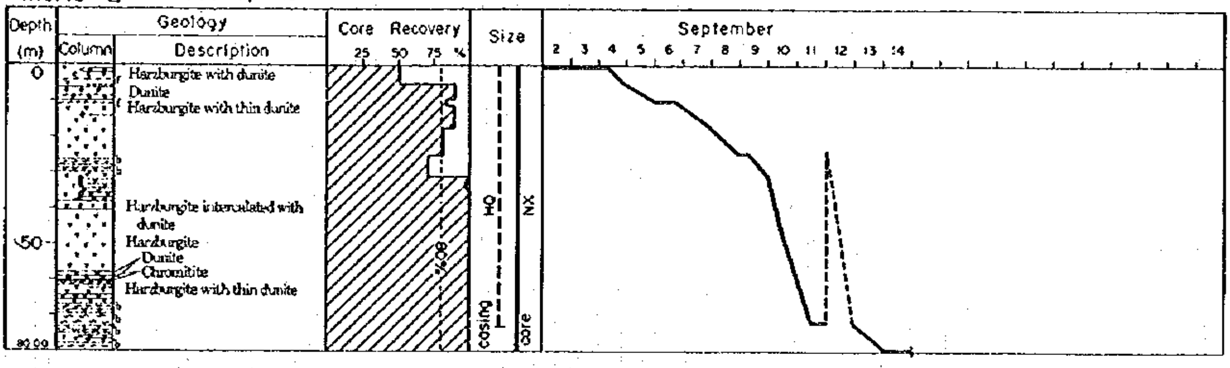


Fig. 2-3-2 Advance of All Drilling Works in 1996

MJAS-1 S60°W, -43°



MJAS-2 S60°W, -45°



MJAS-3 S60°W, -40°

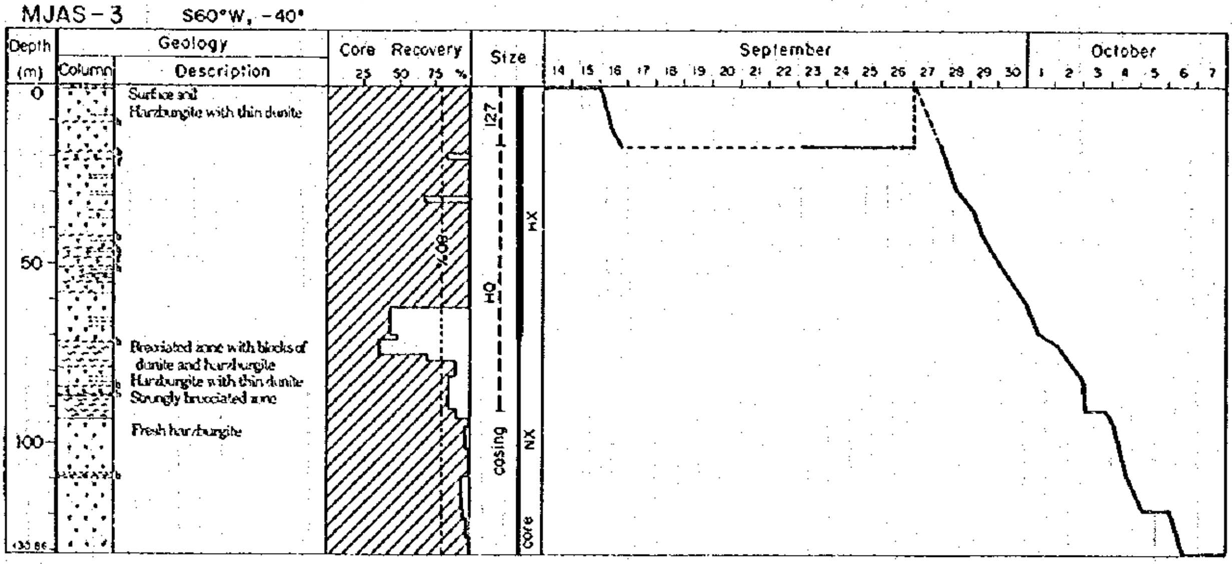


Fig. 2-3-3 (1) Advance of drilling works, MJAS-1,2,3, Bregu i Pishes area

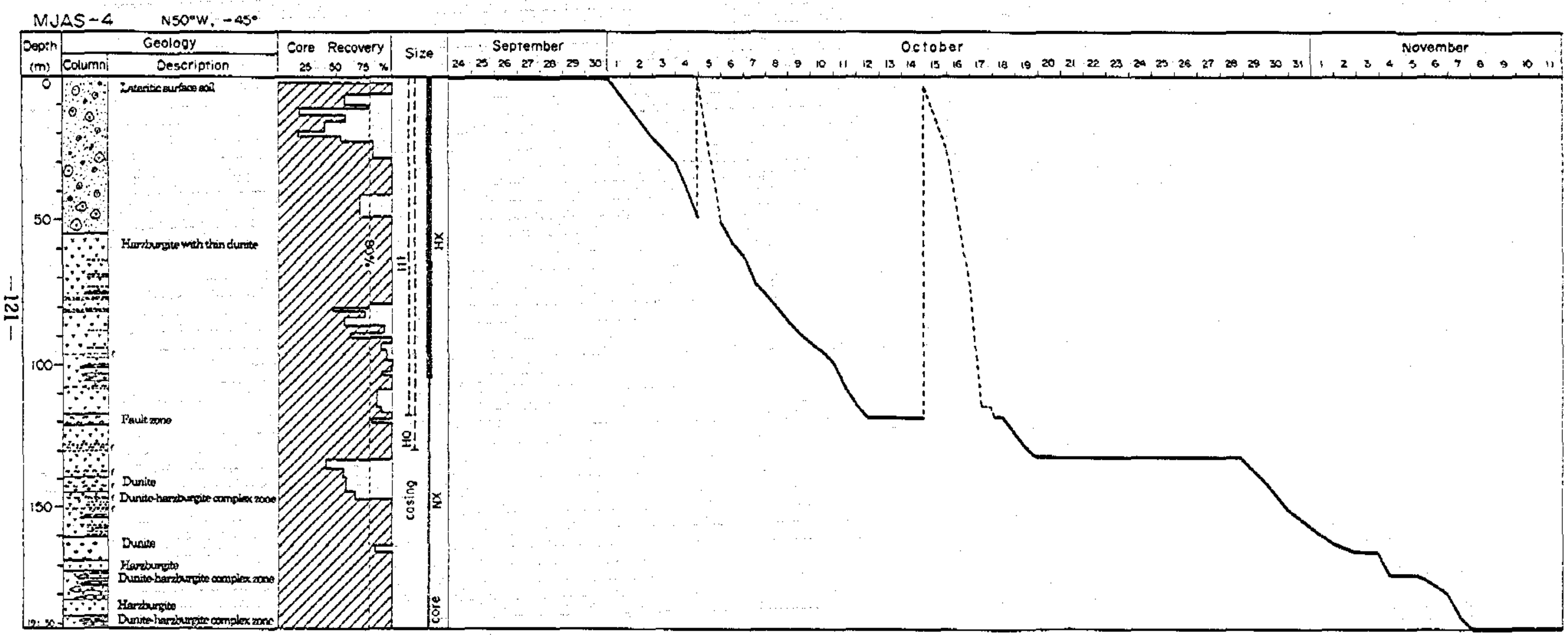
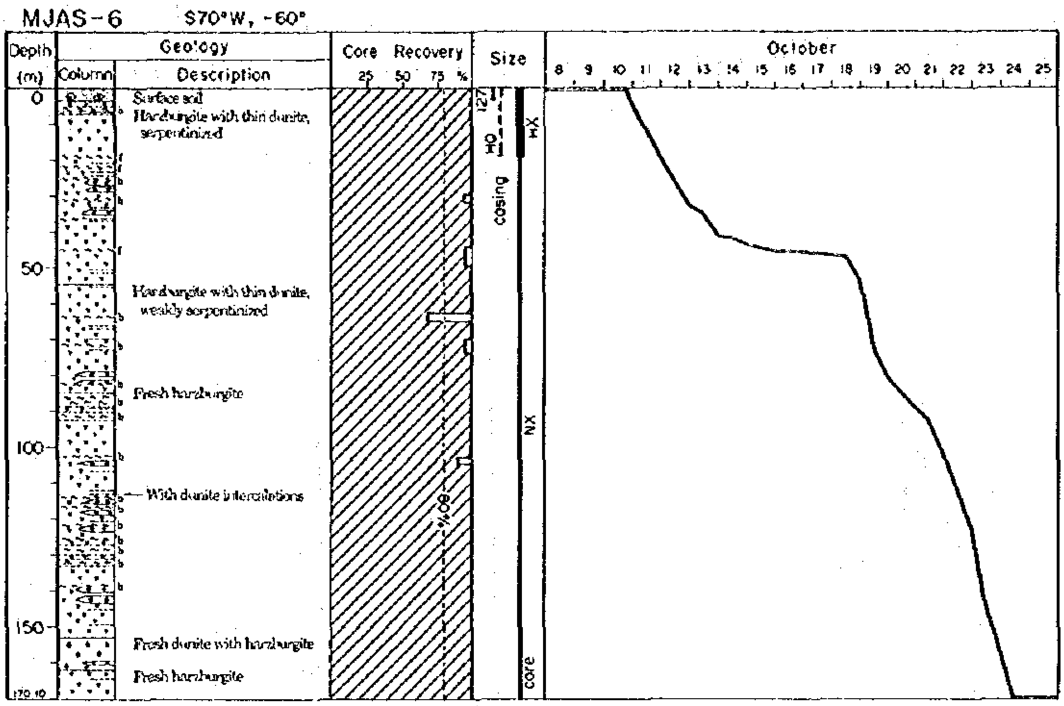


Fig. 2-3-3 (2) Advance of drilling works, MJAS-4, Fusha e Madhe area



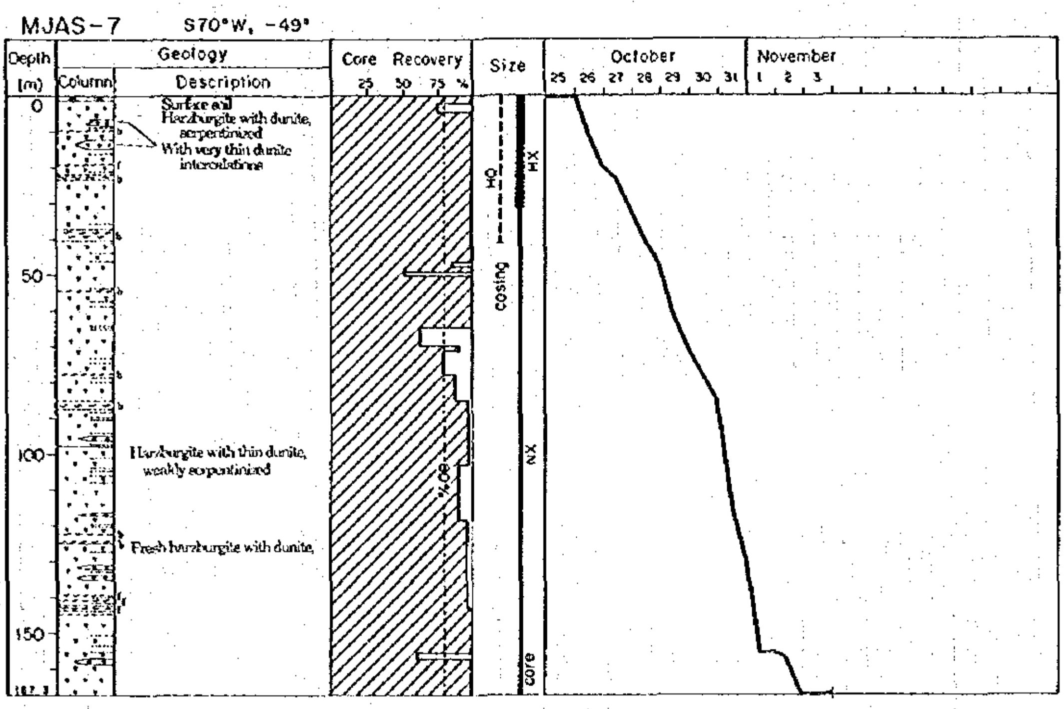
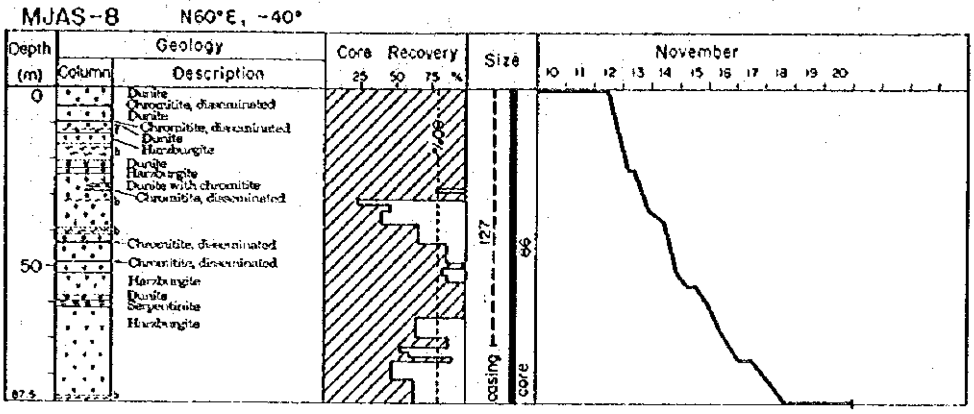
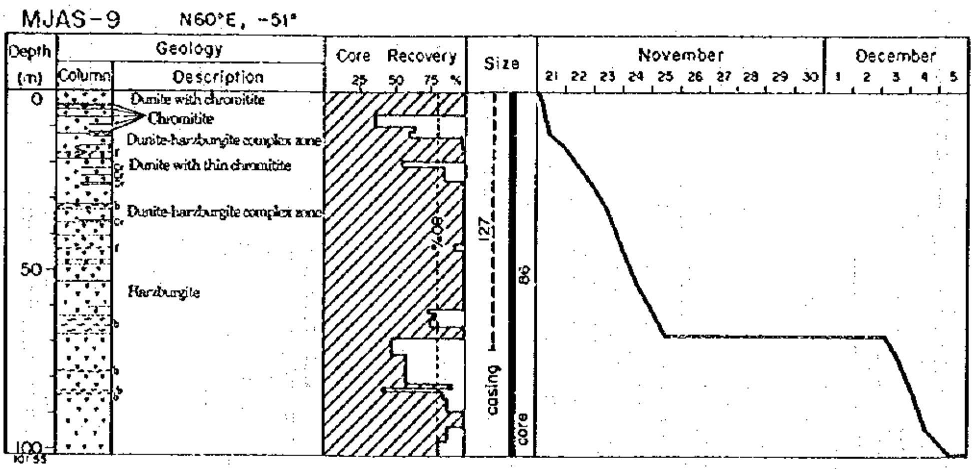


Fig. 2-3-3 (3) Advance of drilling works, MJAS-6,7, Gjorduke area





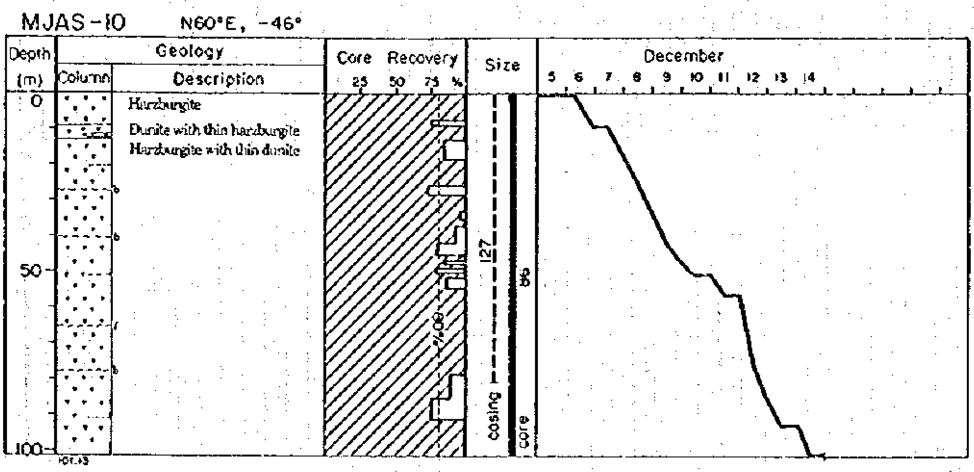
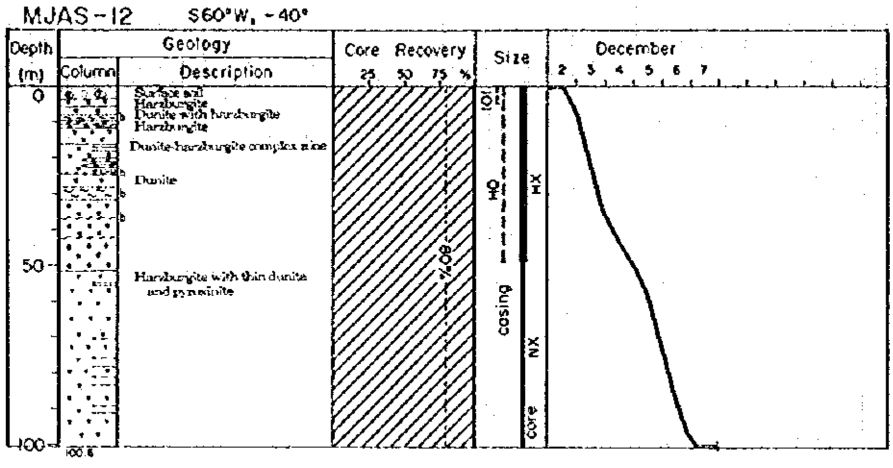
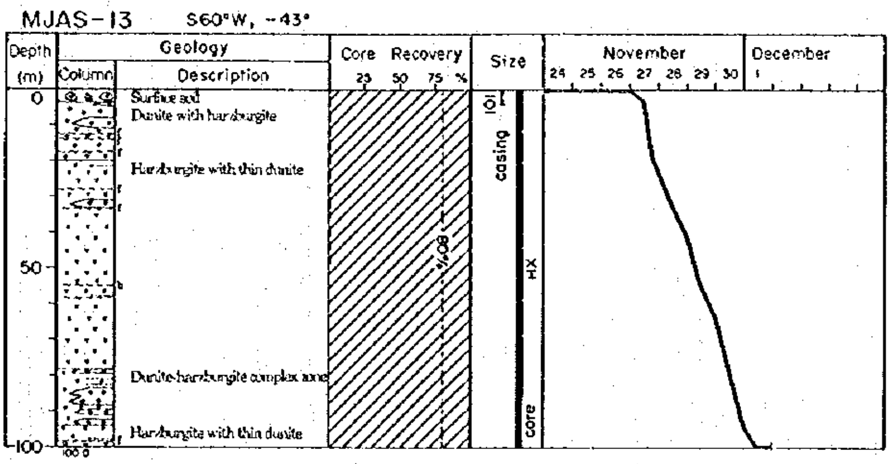


Fig. 2-3-3 (4) Advance of drilling works, MJAS-8,9,10, Qarri i Zi area





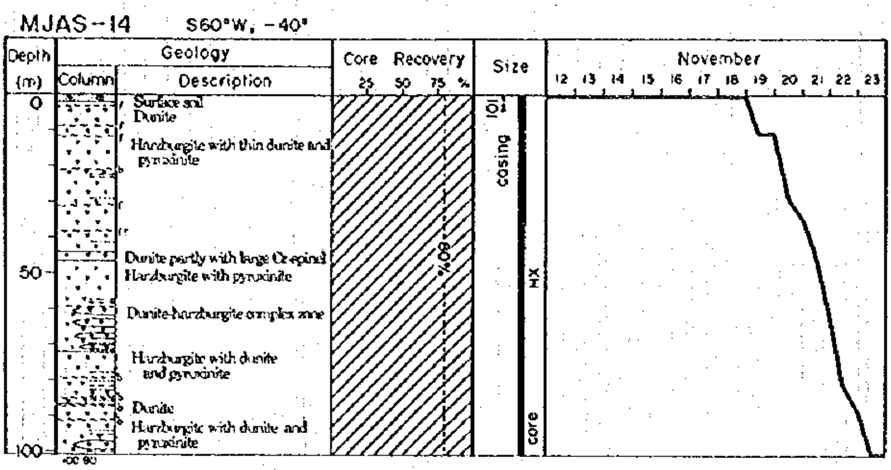
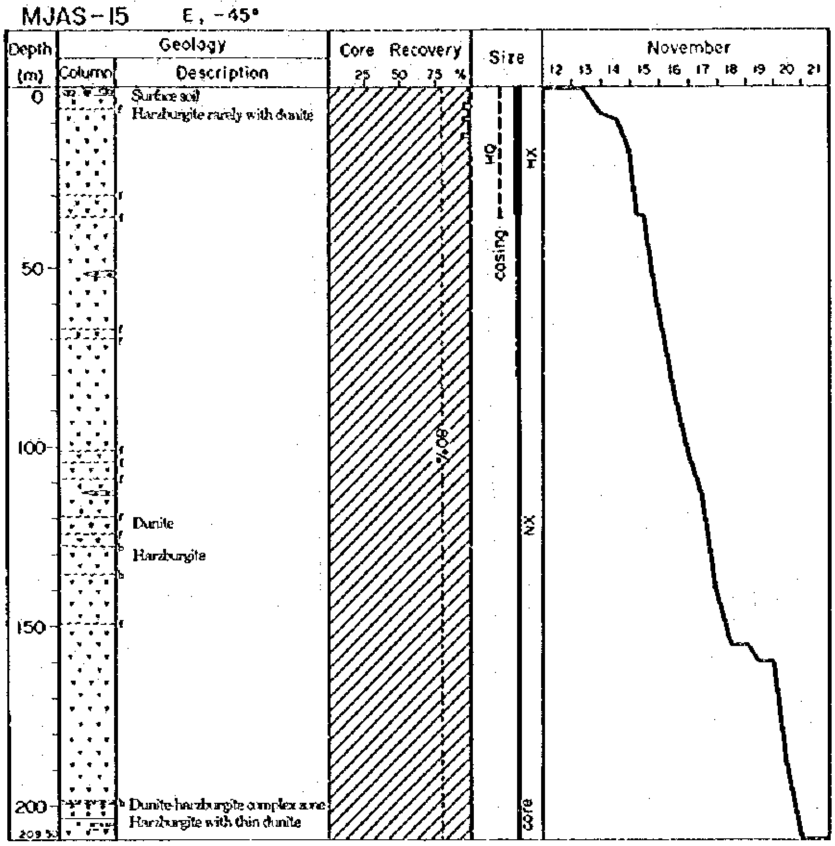


Fig. 2-3-3 (5) Advance of drilling works, MJAS-12,13,14, Shesh Bush No.1 area

MJAS-15 E, -45°



MJAS-16 E, -60°

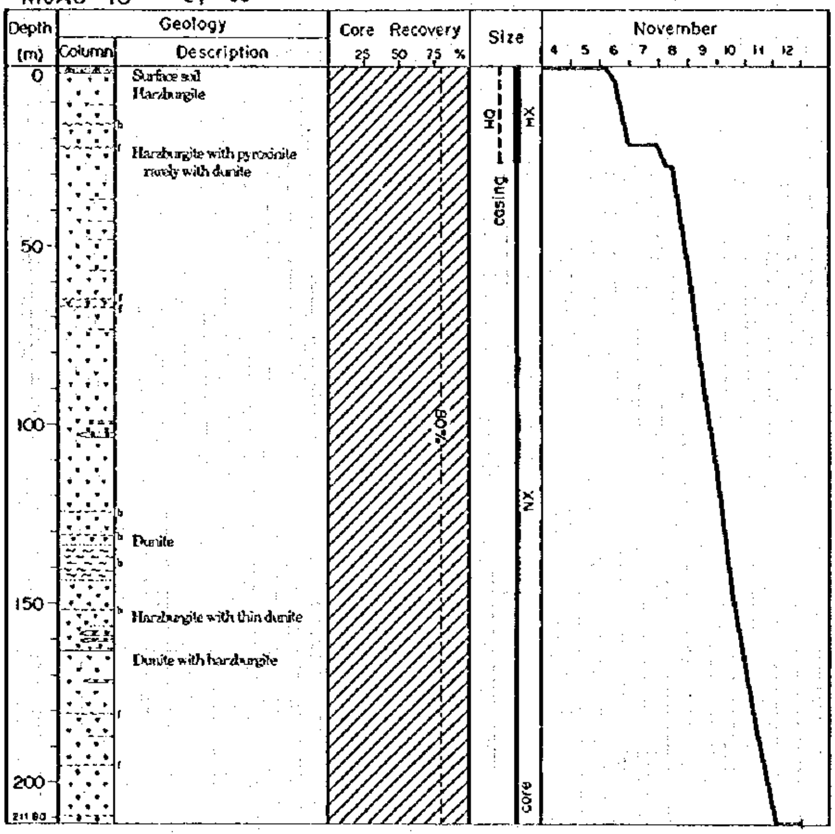
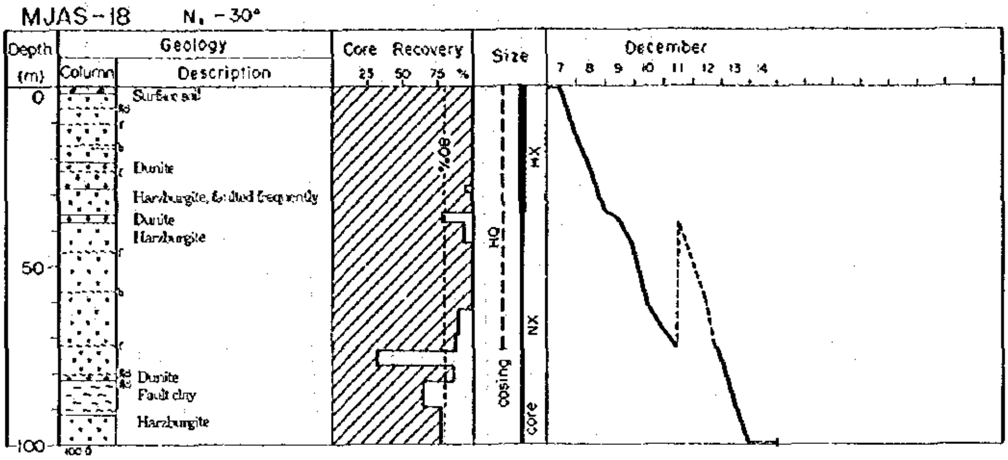


Fig. 2-3-3 (6) Advance of drilling works, MJAS-15,16, Pishkash South area



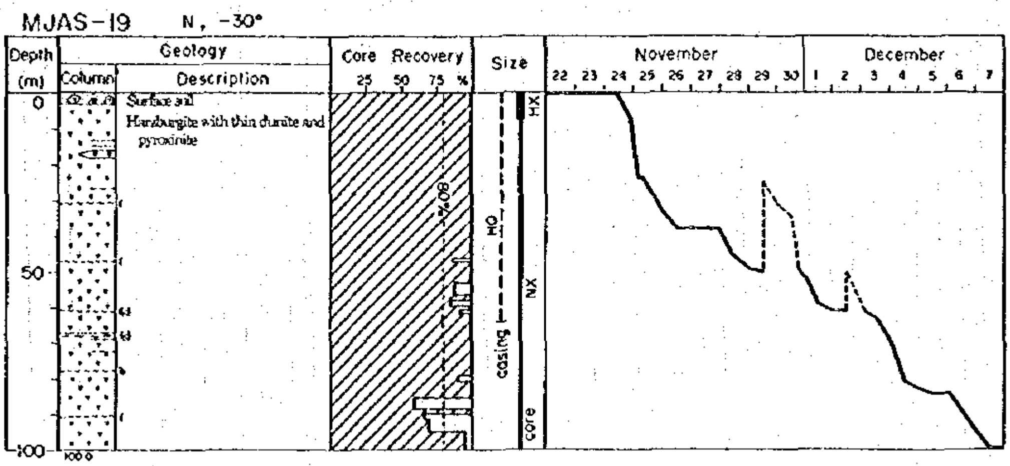
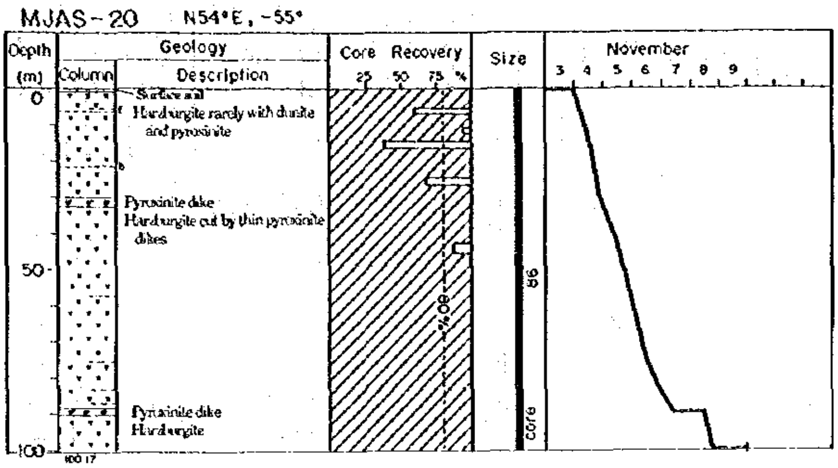
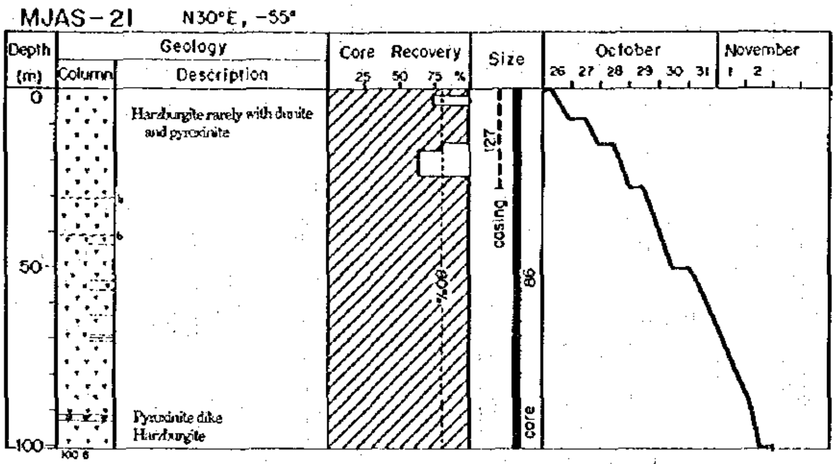


Fig. 2-3-3 (7) Advance of drilling works, MJAS-18,19, Murriq area





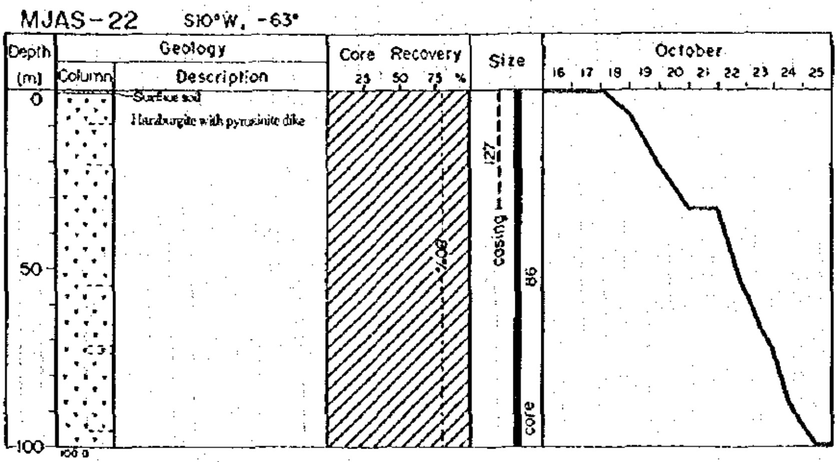


Fig. 2-3-3 (8) Advance of drilling works, MJAS-20,21,22, Mbi Skroske area

surface of the ground consists of bedrock. Assistance was received in the Murriq area in the form of a tractor shovel owned by the Katjel mine and in the Qarri i Zi area in the form of a bulldozer also owned by it.

(4) Equipment and Materials and Supply of Drilling Water

Table 2-3-2 indicated the consumable materials and diamond bits used, and Table 2-3-3 the equipment used.

The drilling rigs used during the first month were a Longyear model L-38 rig (stationary, engine-driven type) and an Italian Cordiam model 76 A-M rig (caterpillar self-propelled hydraulic-drive type), but as a result of major delay in the drilling work in September in comparison with the initial schedule a Netherlands Mustang rig (caterpillar self-propelled hydraulic-drive type with built-in drilling pump) was added in October.

For moving from site to site within a drilling survey area two 4-WD 6t trucks with crane were used for the L-38 rig, and the Cordiam and Mustang rigs moved on their own caterpillar tracks. For movement between survey areas the L-38 rig was transported in the same way as for movement between sites in the same area, but for the other two rigs it was necessary to use 2 trucks with cranes and one large special-purpose transport truck.

For liaison between the survey areas and everyday transportation of personnel and small equipment use was made by mean of three four-wheel-drive vehicles: a Landrover, a Cherokee jeep and a Mitsubishi Pajero, and two Toyota Land Cruisers provided Gjeoalba by JICA were also used for liaison between the drilling sites and the Pogradec office and transportation of cores.

The minor drilling equipment and materials were kept at a storage facility lent by the Prrenjas Fe-Ni mine at the site of a former vehicle repair facility, and a container equipped with various repair tools were placed there to serve as a small temporary repair shop.

For the four drilling areas, Bregu i Pishes, Fusha e Madhe, Gjorduke and Shesh Bush No.1, the water needed for the drilling was lifted from the Ceckes spring, located about 800 m north of the Bregu i Pishes area, by a series of three pumps equipped with a pressure buffer tanks. The maximum distance from the water site to the drill site was about 2.5 km (in the case of the Shesh Bush No.1 area), and the difference in level between the water site and the target area with the highest elevation in the case of Gjorduke area was 250 m. In the case of the Fusha e Madhe area supplementary use was made of spring water available in the southeastern part of the area.

A sufficient supply of water for drilling was supplied to the Murriq and Pishkash South areas from the streams located nearby and to the Qarri i Zi area by an agricultural irrigation channel in the northern part of the area after it was repaired. As for the Mbi Skroske area, it received water for drilling purposes from a spring at the Pishkash-4 well head at a level just a little higher than the drilling point by pumping over a distance of about 750 m.

(5) Drilling Method

The drilling by the L-38 and Cordiam rigs was done by the wire line method, and that by the Mustang by the ordinary drilling method.

Table 2-3-4 gives the drilling depths, the core lengths, the core recoveries, the core diameters, the drilling periods, the average daily drilling distances, etc. for the drill holes, and Table 2-3-5 gives the work time breakdown according to the types of work, the actual average drilling distances per unit of drilling time, the personnel makeup, etc. for them.

Table 2-3-2 Consumable materials used for the drilling survey in 1996

Specification	Unit	MJAS-1	MJAS-2	MJAS-3	MJAS-4	MJAS-6	MJAS-7	MJAS-8	MJAS-9	MJAS-10	MJAS-12
Diamond bit (HQ)	pcs.	1	0	3	2	4	3	-	-	-	1
Diamond reamer (HQ)	pcs.	1	0	3	1	1	2	-	-	-	1
Diamond bit (NQ)	pcs.	3	2	3	7	3	3	-	-	-	1
Diamond reamer (NQ)	pcs.	3	2	3	4	2	2	-	-	-	1
Diamond bit(86)	pcs.	-	-	-	-	-	-	2	2	2	0
Core lifter (HQ)	pcs.	0	0	1	2	1	1	-	-	-	1
Core lifter (NQ)	pcs.	3	2	2	4	2	2	-	-	-	1
Core lifter (86)	pcs.	-	-	-	-	-	-	1	1	2	0
Core box	pcs.	17	18	34	49	45	43	24	29	31	29
Dieseloil	l	775	570	1,130	2,810	1,480	1,530	2,080	2,605	3,040	850
Lubricant oil	l	2	5	45	50	15	10	20	10	10	6
Grease	kg	4	3	3	25	5	3	5	5	5	4
Cement	kg	0	0	0	300	500	0	200	80	0	0
Bentonite	kg	91	70	622	1,381	725	0	0	0	0	0
Polimer	kg	0	0	14	88	63	36	0	0	20	18

Specification	Unit	MJAS-13	MJAS-14	MJAS-15	MJAS-16	MJAS-18	MJAS-19	MJAS-20	MJAS-21	MJAS-22	Total
Diamond bit (HQ)	pcs.	1	1	2	2	2	2	-	-	-	24
Diamond reamer (HQ)	pcs.	1	1	2	2	2	2	-	-	-	19
Diamond bit (NQ)	pcs.	0	0	3	1	2	5	-	-	-	33
Diamond reamer (NQ)	pcs.	0	0	2	2	1	2	-	-	-	24
Diamond bit(86)	pcs.	-	-	-	-	-	-	2	2	2	12
Core lifter (HQ)	pcs.	2	2	2	1	2	1	-	-	-	16
Core lifter (NQ)	pcs.	0	0	2	2	1	3	-	-	-	24
Core lifter (86)	pcs.		-	-	-	-	-	2	1	1	8
Core box	pcs.	30	33	55	55	26	25	33	33	34	643
Dieseloil	l	1,280	1,475	1,475	1,245	1,590	3,030	1,650	2,410	1,640	32,665
Lubricant oil	l	28	5	10	85	10	65	2	5	10	393
Grease	kg	6	4	7	7	4	6	6	5	5	112
Cement	kg	0	0	0	0	0	0	0	0	0	1,080
Bentonite	kg	160	350	52	0	0	0	0	0	0	3,451
Polimer	kg	23	39	10	5	14	10	0	0	0	340

Table 2-3-3 Equipment used for the drilling survey in 1996

Drilling Machines:
- Cordiam (1 set): model 76 A-M, made in Italy, track mounted self propelled and hydraulically operated type, with diesel engine (120 HP),
- Longyear (1 set): model L-38 with tower, made in Canada, diesel engine (80HP) drive type,
- Mustang (1 set): made in Holland, track mounted self propelled and hydraulically operated type, built-in drilling pomp, with diesel engine (180 HP),

Drilling Pope:
- Lombardini (2 set): model 4LD 820, with diesel engine,
- Deutz (2 set): with diesel engine,

Water supply pomp;
- Trashlib 2 (2 set) with diesel engine
- Trido 130/40 (2 set) with diesel engine

Mud Mixer: 3 set, 1 m^3

Water Tank
- 1 set (10 m^3); plastic
- 2 set (4 m^3); plastic

Trucks;
- Fiat Campangola H.T.(1 set): 4 wheel drive type, with derrick crane,
- Tigrotto OM (1 set): 4 wheel drive type, with derrick crane,
- Carrier truck

For thirteen of the drill holes, i.e. the five drilled by the L-38 rig (MJAS-1 in the Bregu i Pishes area, MJAS-4 in the Fusha e Madhe area and MJAS-12, 13 and 14 in the Shesh Bush No.1 area) and the eight drilled by the Cordiam rig (MJAS-2 and 3 in the Bregu i Pishes area, MJAS-6 and 7 in the Gjorduke area, MJAS-15 and 16 in the Pishkash South area and MJAS 18 and 19 in the Murriq area), the drilling was started with HQ-WL, followed by switching to NQ-WL and completion to the bottom of the drill holes with it.

On the other hand, the 6 holes drilled by the Mustang rig (MJAS-8, 9, and 10 in the Qarri i Zi area and MJAS-20, 21 and 22 in the Mbi Skroske area) were drilled from the top to the bottom using a dual-tube core barrel and 86 mm bits.

As indicated in Table 2-3-4, the core recoveries for the different drill holes were in the range 80.56% to 100.0%, the average for all of the drill holes being 94.12%. Moreover, as can be seen from that table, there was not different in core recovery according to drilling method and rig type, the factors substantially influencing it being the states of fractured zones and the weathered zone.

(6) Geological Log, Sampling and Storage of Cores

The cores extracted from the core tubes for each drilling section were washed in fresh water and put in wooden core boxes, and their drilling times and core lengths were measured and recorded. Every day or two all of the cores thus made ready were sent to the Pogradec office, where they were photographed, geologically logged and taken as samples.

Furthermore, data on the work done each day, the number of hours of work relating to the drilling took, the core lengths and drilling times, drilling gauges and casing depths of the different drilling sections and quantities of consumable materials used, etc. was recorded in the daily reports and sent to the Pogradec office along with the cores to be used for overall working process control of the drilling survey.

After being photographed, logged geologically and used for sampling, the cores were

Table 2-3-4 Working days, core recovery and drilling rate of the drilling survey in 1996

Specification	Unit	Mobilization	MJAS-1	MJAS-2	MJAS-3	MJAS-4	MJAS-6	MJAS-7	MJAS-8	MJAS-9	MJAS-10	MJAS-12
Depth	m		80.00	80.00	130.86	191.50	170.10	167.30	87.50	101.55	101.13	100.60
Total core length	m		66.07	71.02	118.51	164.63	168.75	159.74	70.49	86.94	94.21	100.60
Core recovery	%		82.59	88.78	90.56	85.97	99.21	95.48	80.56	85.61	93.16	100.00
Length drilled by HQ-WL	m		7.20	0.00	71.20	104.60	18.70	30.55	-	-	-	49.70
Length drilled by NQ-WL	m		72.80	80.00	59.66	86.90	151.40	136.75	-	-	-	50.90
Length drilled by 86	m		-	-	-	-	-	-	87.50	101.55	101.13	-
Date of start		26 Aug	1 Sep	2 Sep	14 Sep	24 Sep	8 Oct	25 Oct	10 Nov	21 Nov	5 Dec	2 Dec
Date of finish		31 Aug	23 Sep	14 Sep	7 Oct	11 Nov	25 Oct	3 Nov	20 Nov	5 Dec	14 Dec	7 Dec
Working days	day	6.0	21.0	12.5	15.0	46.0	16.5	9.5	11.0	10.0	9.5	6.0
Non-working days	day	0.0	2.0	0.0	8.5	3.0	0.0	0.0	0.0	5.0	0.0	0.0
Total days	day	6.0	23.0	12.5	23.5	49.0	16.5	9.5	11.0	15.0	9.5	6.0
Instalation	day		1.0	2.0	1.0	3.0	1.5	0.5	1.0	0.2	1.0	0.5
Drilling	day		15.0	8.0	9.0	20.0	12.5	7.5	5.5	6.2	7.0	5.0
Dismounting	day		1.0	0.5	1.0	1.0	0.5	1.0	0.5	0.8	0.5	0.5
Others	day		4.0	2.0	4.0	22.0	2.0	0.5	4.0	2.8	1.0	0.0
Total	day		21.0	12.5	15.0	46.0	16.5	9.5	11.0	10.0	9.5	6.0
Drilling rate for total days	m/day		3.8	6.4	8.7	4.2	10.3	17.6	8.0	10.2	10.6	16.8
Drilling rate for drilling days	m/day		5.3	10.0	14.5	9.6	13.6	22.3	15.9	16.4	14.4	20.1

Specification	Unit	MJAS-13	MJAS-14	MJAS-15	MJAS-16	MJAS-18	MJAS-19	MJAS-20	MJAS-21	MJAS-22	Withdrawal	Total
Depth	m	100.00	100.80	209.50	211.80	100.00	100.00	100.17	100.60	100.00		2,333.41
Total core length	m	100.00	100.80	209.35	211.80	90.12	94.52	96.75	91.96	100.00		2,196.26
Core recovery	%	100.00	100.00	99.93	100.00	90.12	94.52	96.59	91.41	100.00		94.12
Length drilled by HQ-WL	m	100.00	100.80	35.60	26.40	35.60	6.80	-	-	-		587.15
Length drilled by NQ-WL	m	0.00	0.00	173.90	185.40	64.40	93.20	-	-	-		1,155.31
Length drilled by 86	m	-	-	-	-	-	-	100.17	100.60	100.00		590.95
Date of start		24 Nov	12 Nov	12 Nov	4 Nov	7 Dec	22 Nov	3 Nov	26 Oct	16 Oct	8 Dec	26 Aug
Date of finish		1 Dec	23 Nov	21 Nov	12 Nov	14 Dec	7 Dec	9 Nov	2 Nov	25 Oct	18 Dec	18 Dec
Working days	day	7.0	6.5	9.5	8.5	7.5	15.5	7.0	8.0	9.0	11.0	252.5
Non-working days	day	1.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	26.5
Total days	day	8.0	12.5	9.5	8.5	7.5	15.5	7.0	8.0	10.0	11.0	279.0
Instalation	day	2.0	1.0	0.5	2.0	0.5	1.5	1.0	0.5	1.0		21.70
Drilling	day	4.5	5.0	7.0	5.0	5.5	10.0	4.0	6.0	6.5		149.20
Dismounting	day	0.5	0.5	1.0	0.5	1.0	0.5	1.0	0.5	0.5		13.30
Others	day	0.0	0.0	1.0	1.0	0.5	3.5	1.0	1.0	1.0		51.30
Total	day	7.0	6.5	9.5	8.5	7.5	15.5	7.0	8.0	9.0		235.5
Drilling rate for total days	m/day	14.3	15.5	22.1	24.9	13.3	6.5	14.3	12.6	11.1		9.9
Drilling rate for drilling days	m/day	22.2	20.2	29.9	42.4	18.2	10.0	25.0	16.8	15.4		15.6

Table 2-3-5 Working hours of the drilling survey in 1996

Specification	Unit	Mobilization	MJAS-1	MJAS-2	MJAS-3	MJAS-4	MJAS-6	MJAS-7	MJAS-8	MJAS-9	MJAS-10	MJAS-12
Nomber of shift	shift	6	23	16	23	64	27	19	20	18	19	11
Drilling	hour		84.58	72.83	114.50	222.50	132.67	113.42	94.67	110.75	114.50	82.33
Accessary works of drilling	hour		86.50	32.92	33.17	109.00	33.00	3.50	23.00	33.58	40.75	8.00
Repairing	hour		32.08	24.00	62.25	299.83	22.00	33.25	86.00	28.00	27.50	4.00
Others	hour		0.00	0.00	0.00	4.00	57.50	12.00	0.00	7.00	5.00	4.00
Sub-total	hour		203.16	129.75	209.92	631.33	187.67	150.17	203.67	172.33	182.75	94.33
Installation	hour		22.00	26.00	4.00	12.00	47.00	24.00	18.00	1.00	21.00	17.00
Dismounting	hour		12.00	10.00	22.00	6.00	12.00	6.00	3.00	7.00	12.00	12.00
Total	hour		237.16	165.75	235.92	649.33	246.67	180.17	224.67	180.33	215.75	123.33
Drilling rate for drilling hours	m/hour		0.95	1.10	1.14	0.86	1.28	1.48	0.92	0.92	0.88	1.22
Pomping of water	hour		126.50	110.00	91.00	229.83	195.00	125.00	108.00	71.00	98.00	54.00
Drilling engineer	man*day	24	29	18	23	65	28	19	20	20	19	11
Assistant workers	man*day	32	67	38	46	120	57	38	64	49	50	22
Total	man*day	56	96	56	69	185	85	57	84	69	69	33

Specification	Unit	MJAS-13	MJAS-14	MJAS-15	MJAS-16	MJAS-18	MJAS-19	MJAS-20	MJAS-21	MJAS-22	Withdrawal	Total
Nomber of shift	shift	13	14	19	16	15	31	12	15	12	21	387
Drilling	hour	86.00	84.00	97.08	102.42	99.42	111.25	84.42	97.75	16.00		1,921.09
Accessary works of drilling	hour	0.00	4.00	8.00	3.33	36.25	82.25	12.00	32.75	63.58		645.58
Repairing	hour	3.00	21.50	56.33	29.30	15.00	77.92	25.00	12.67	20.92		880.55
Others	hour	6.00	1.58	0.00	0.00	0.00	40.00	0.00	0.00	0.00		137.08
Sub-total	hour	89.00	109.50	161.41	135.05	150.67	271.42	121.42	143.17	100.50		3,447.22
Installation	hour	45.00	18.00	18.00	24.00	2.00	33.00	12.00	8.00	20.00		372.00
Dismounting	hour	14.00	12.00	26.00	6.00	24.00	5.00	12.00	6.00	6.00		213.00
Total	hour	148.00	139.50	205.41	165.05	176.67	309.42	145.42	157.17	126.50		4,032.22
Drilling rate for drilling hours	m/hour	1.16	1.20	2.16	2.07	1.01	0.90	1.19	1.03	6.25		1.21
Pomping of water	hour	108.00	108.00	82.00	42.00	0.00	0.00	32.00	102.00	95.00		1,777
Drilling engineer	man*day	13	14	19	17	15	30	14	16	16	50	406
Assistant workers	man*day	26	28	38	36	31	54	28	30	31	55	853
Total	man*day	39	42	57	53	46	84	42	46	47	105	1,259

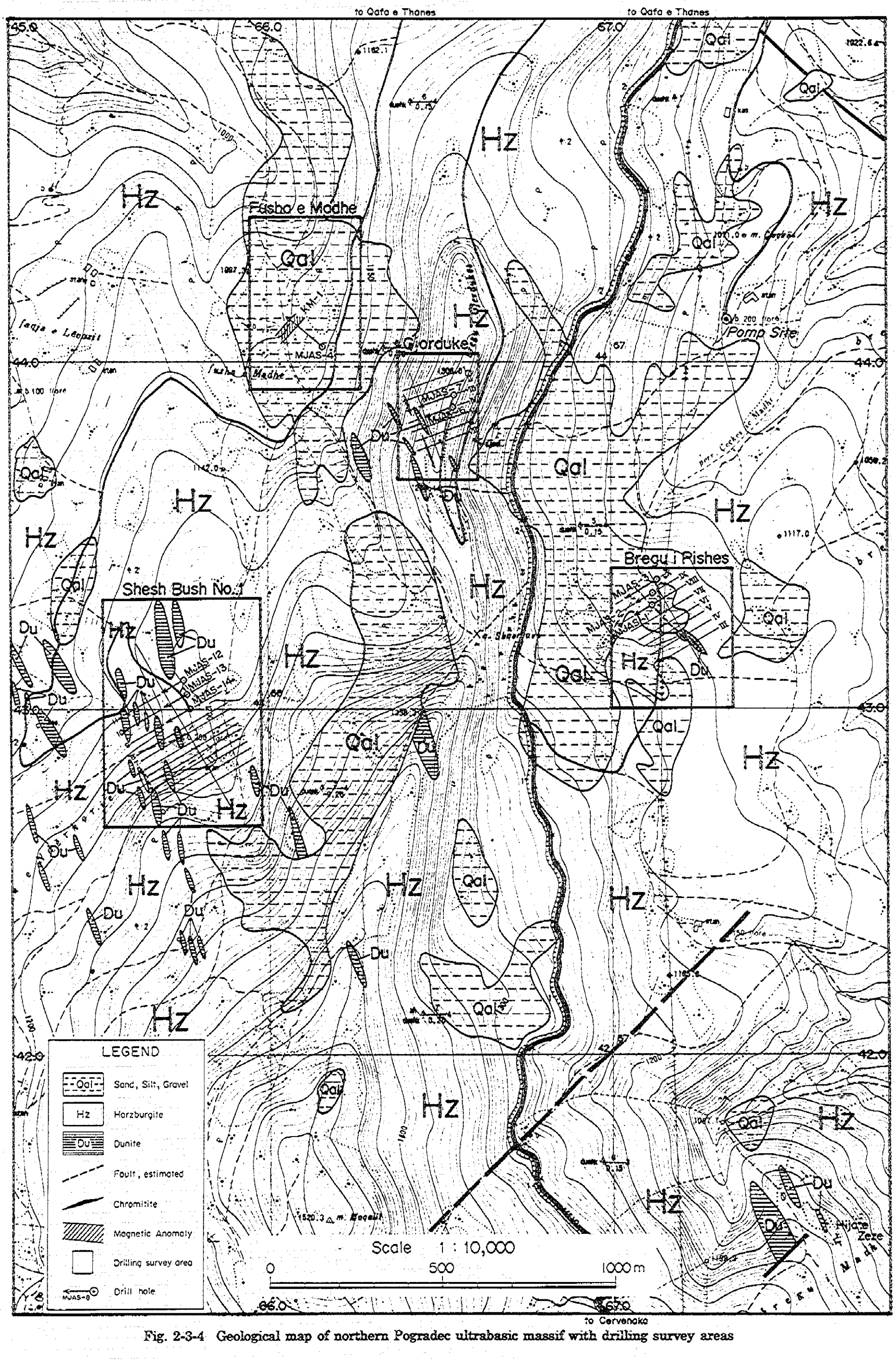


Fig. 2-3-4 Geological map of northern Pogradec ultrabasic massif with drilling survey areas

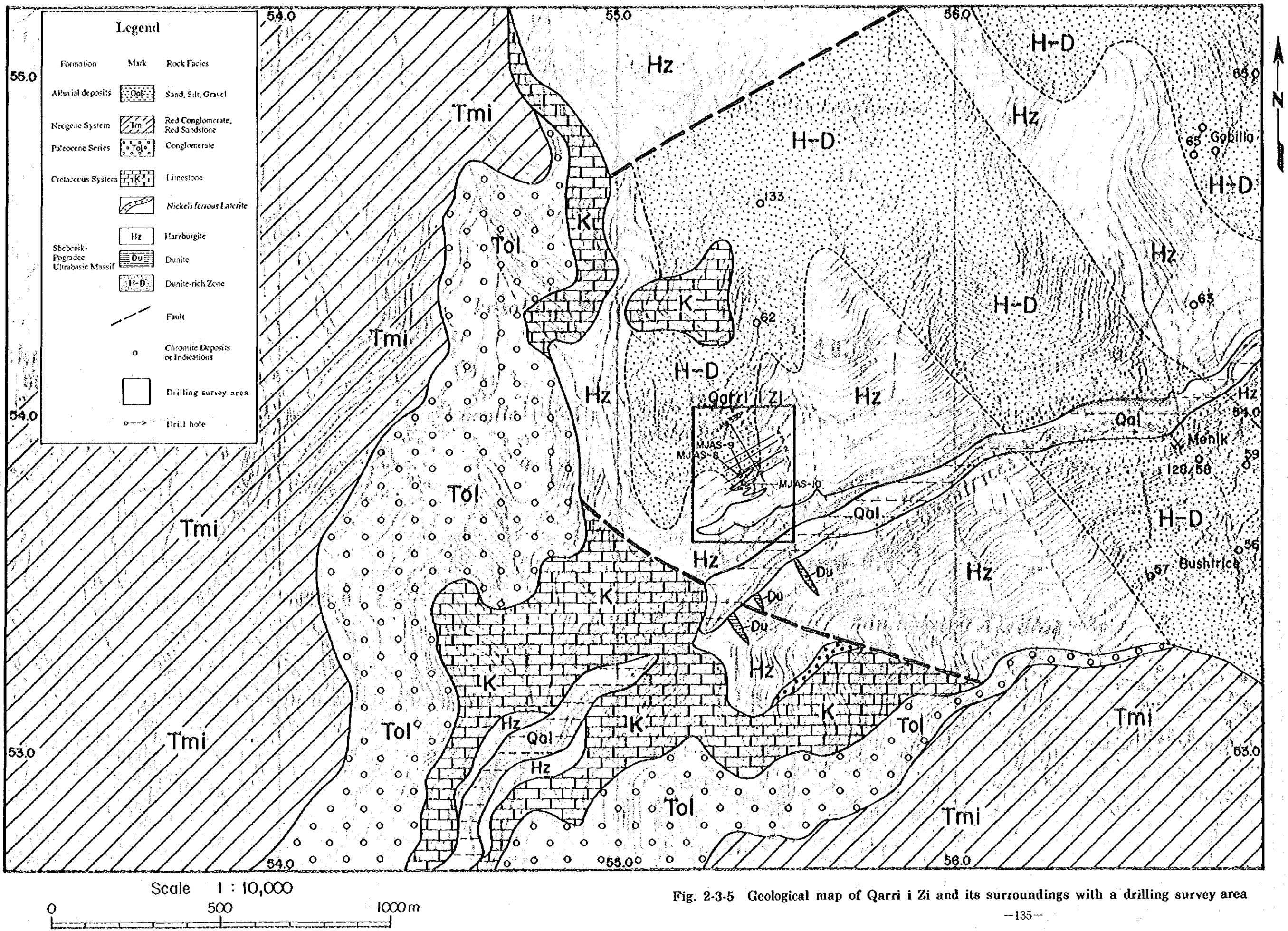


Fig. 2-3-5 Geological map of Qarri i Zi and its surroundings with a drilling survey area

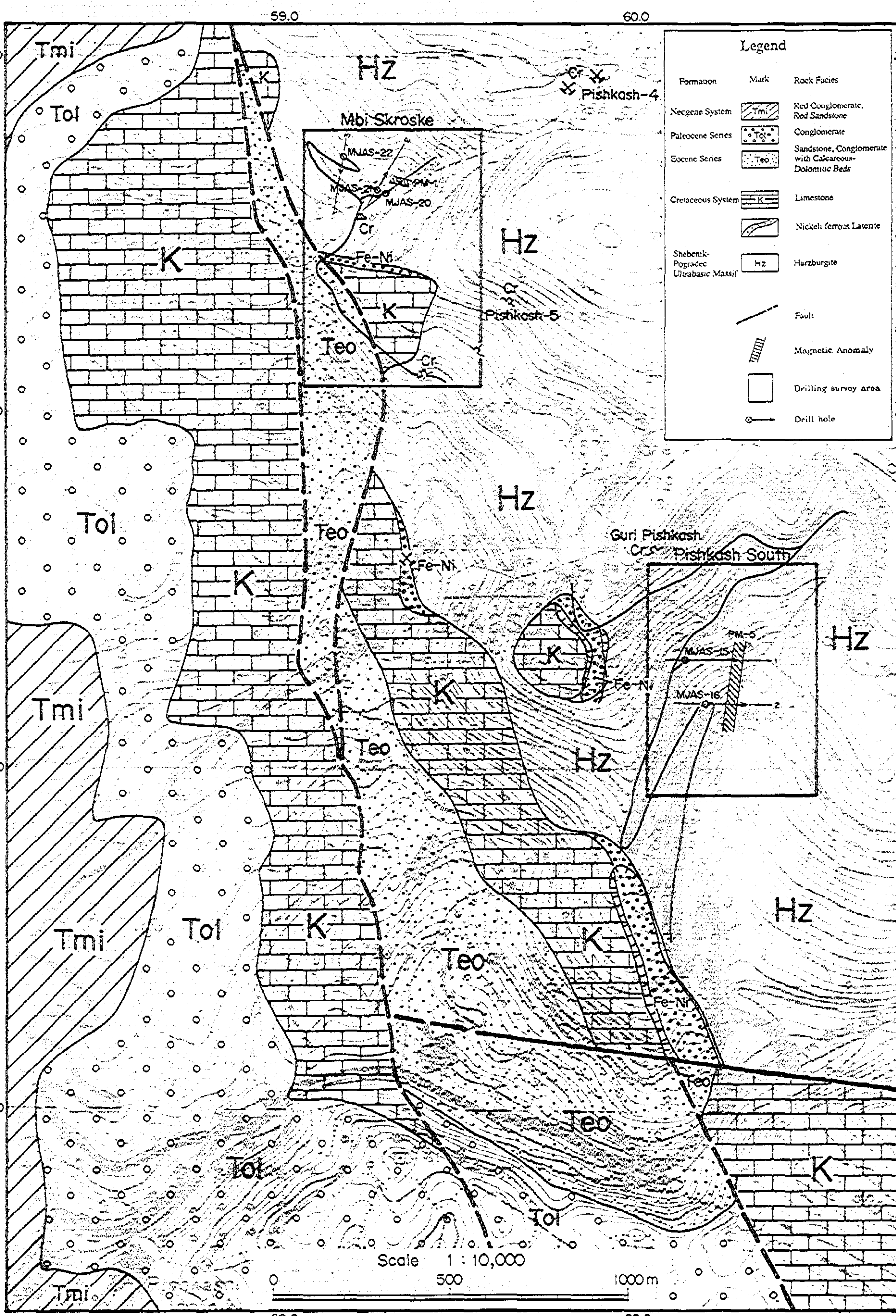


Fig. 2-3-6 Geological map of South Shebenik ultrabasic massif with drilling survey areas

transported to the storage facility in Tirana managed by Gjeoalba in quantities corresponding to 3 or 4 drill holes for safe keeping. The geological samples were shipped to Japan in two consignments to be used in laboratory testing, including EPMA and chemical analyses.

2-3-3 Results of the Drilling Survey

As already mentioned, of the 8 drilling survey areas, 5 are located in the northern part of the Pogradec ultrabasic massif, 1 in the central part of the Shebenik ultrabasic massif and 2 in the southern part of the Shebenik ultrabasic massif. Figs. 2-3-4, 2-3-5 and 2-3-6 give, respectively, a geological map of those three areas along with the drilling target areas in them.

The northern part of the Pogradec ultrabasic massif, as indicated in Fig. 2-3-4, consists mainly of harzburgite, which is accompanied by dunite with a direction of NNW-SSE. To the west of Fig. 2-3-4 and contiguous to it is located the largest deposit in the Shebenik-Pogradec ultrabasic massif, the Katjel deposit (C1 + C2 ore reserves: 820,000 t, average grade: Cr_2O_3 42.1%), which is in operation. To the southeast is the Pojske deposit (C1 + C2 ore reserves: 443,000 t, average grade: Cr_2O_3 35.7%), and also included in the scope of that figure are other chrome deposits, including Bregu i Pishes, Gjorduke, Shesh Bush No. 1, Fusha e Madhe and Hija e Zeze. The Murriq area is located at the northern edge of the Pogradec ultrabasic massif. It consists mainly of harzburgite, with dunite as well, accompanied by a chrome indication in the E-W direction. Since, it was not possible to obtain a topographical map on a scale of 1:10,000 that includes that area, it is not indicated in Fig. 2-3-4.

As indicated in Fig. 2-3-5, the central part of the Shebenik ultrabasic massif consists of ultrabasic rock, mainly harzburgite, accompanied by dunite, and, unconformably covering them in the western part, Cretaceous System consisting mainly of limestone and Tertiary System (Oligocene and Miocene) consisting mainly of conglomerate. Directly beneath the Cretaceous System laterite nickel deposits occur in strongly weathered ultrabasic rocks, and also many chrome deposits, including Qarri i Zi, Menik and Bushtrice, have been discovered in the ultrabasic massif.

As indicated in Fig. 2-3-6, the southern part of the Shebenik massif consists of ultrabasic rocks, mainly harzburgite, accompanied by dunite and pyroxenite, and, unconformably covering them in the western part, Cretaceous System consisting mainly of limestone and Tertiary System (Eocene, Oligocene and Miocene) consisting of conglomerate and sandstone. Directly below the Cretaceous there occur many laterite-nickel deposits resulted from weathering of ultrabasic rocks, and many chrome deposits, including Pishkash-4, Pishkash-5 and Guri Pishkash in the ultrabasic massif.

The following is an account of the results of the drilling survey, starting with the 5 areas, Bregu i Pishes, Gjorduke, Shesh Bush No. 1, Murriq and Qarri i Zi, with respect to which the purpose of the drilling survey was underground exploration of known chrome deposits and indications, followed by the 3 areas, Fusha e Madhe, Pishkash South and Mbi Skroske, the purpose of which was underground investigation for zones of magnetic anomalies.

(1) Bregu i Pishes Area

In this area the 3 holes, MJAS-1, MJAS-2 and MJAS-3, were drilled respectively on profiles of VIII-VIII, IX-IX and X-X indicated in Fig. 2-3-7, for the purpose of exploring the northern extension of the Bregu i Pishes chromite indication. The coordinates, azimuth, inclination, depth and core recovery of each hole have already been given in Table 2-3-1.

The results of geological core log of each drill hole are given in Apx. 2-3-1 (1)-(3), the drilling profiles in Fig. 2-3-8, and the projection profile in the N30°W direction in Fig. 2-3-9.

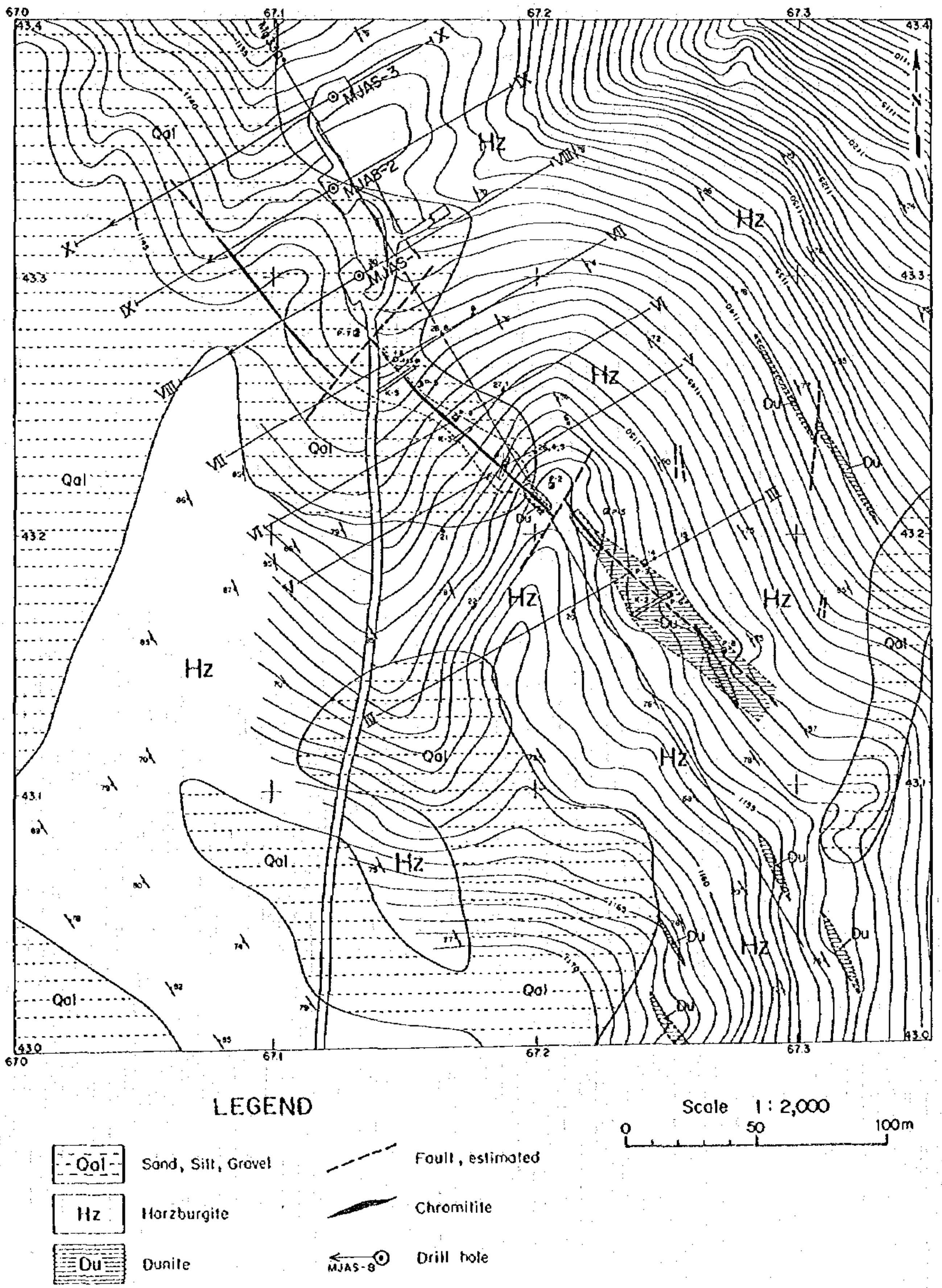


Fig. 2-3-7 Geological map with drilling sites, Bregu i Pishes area

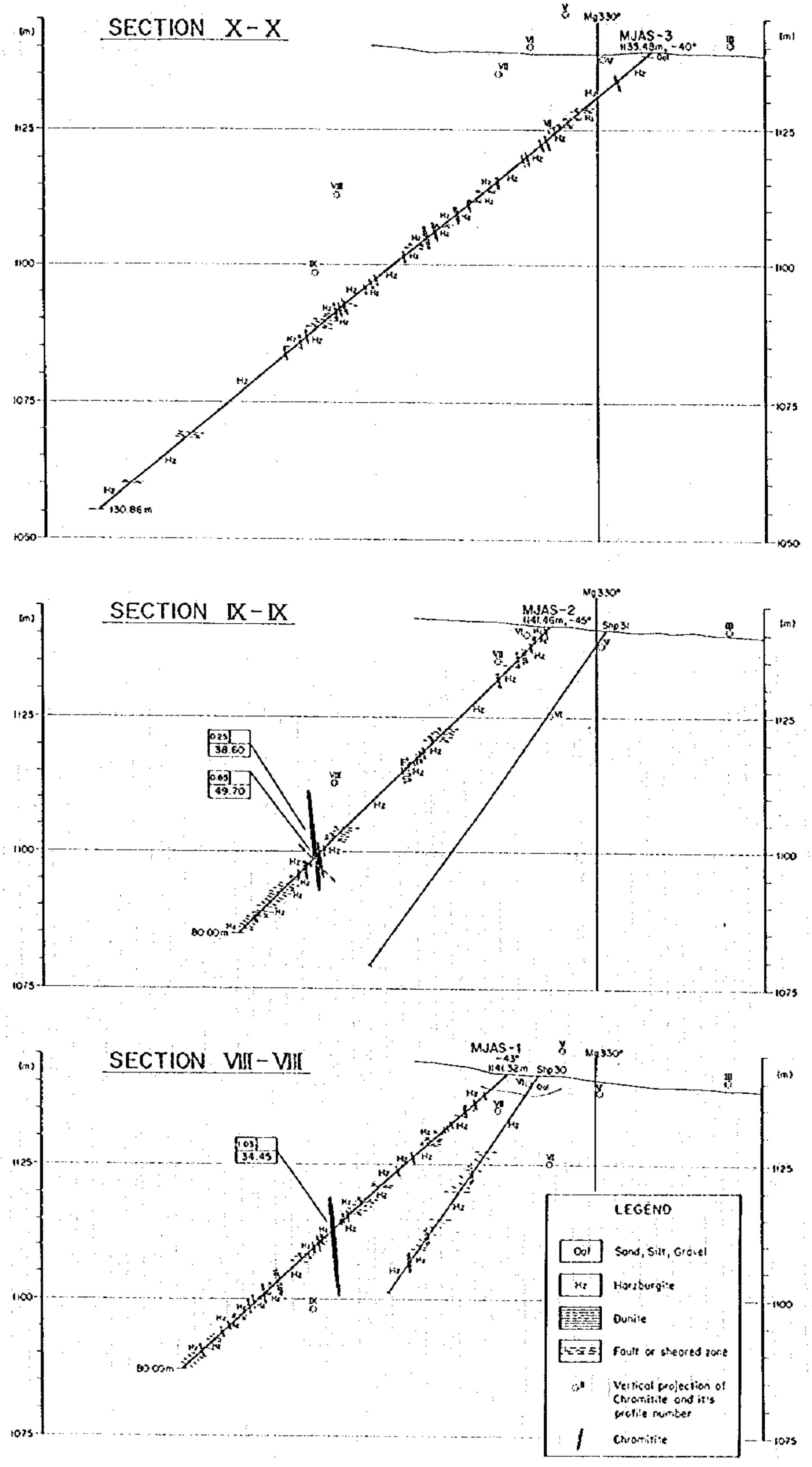


Fig. 2-3-8 Cross section of VIII-VIII, IX-IX and X-X, Bregu i Pishes area

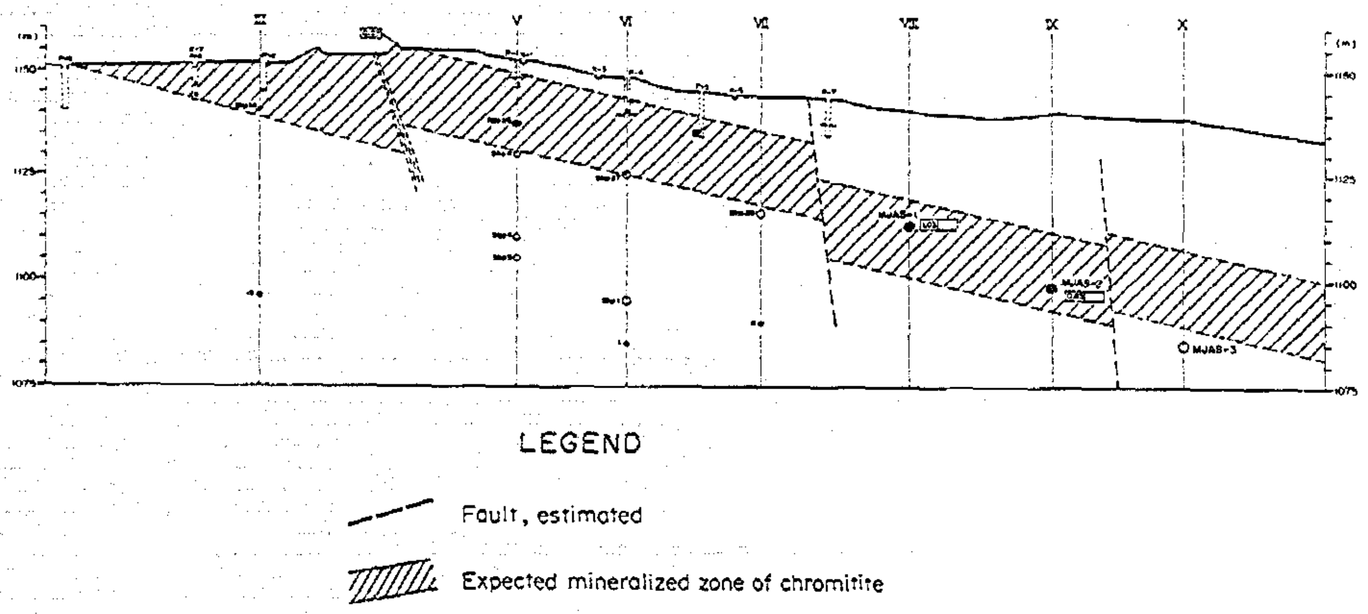


Fig. 2-3-9 Longitudinal section of Mg-330', Bregu i Pishes area

As indicated in Apx. 2-3-1 (1)-(3) and Fig. 2-3-8, the geology of MJAS-1, MJAS-2 and MJAS-3 consists mainly of harzburgite, frequently accompanied by dunite, with many faults and brecciated zones. Furthermore, chromitite with a dunite envelope was encountered in MJAS-1 and MJAS-2.

In general, harzburgite is serpentinized to show dark greenish gray color. But comparatively fresh harzburgite occurs in the deeper part below the depth of 93.10m of MJAS-3 truncated by a fault zone. The quantity of orthopyroxene in the harzburgite varies in the range 20-40%. Foliated structure in harzburgite is frequently recognized.

Dunite is generally brown to dark brown as a result of oxidation. Most of it has a thickness of less than 10 cm, but some with a thickness of more than 40 cm. Disseminated to massive chromitite occurs in dunite in the depth range 41.65-43.70 m of MJAS-1 and the depth range 58.80-60.90 m of MJAS-2. Immediately above the dunite accompanied by chromitite, harzburgite intercalated with layered dunite with a thickness of 1 to 2 cm was found.

Table 2-3-6 indicates the sections in which chromitite was encountered in MJAS-1 and MJAS-2 along with its mode of occurrence and the results of chemical analysis. It is surmised that the dunite accompanied by chromitite in MJAS-1 and MJAS-2 joins up with MJAS-3 in the X-X profile to the north in the depth range 72.5-75.4 m, and it is highly probable that it was not encountered in MJAS-3 because the hole cuts below the chromitite mineralized zone encountered by MJAS-1 and MJAS-2 as indicated in Fig. 2-3-9.

Table 2-3-6 Chromitite discovered by MJAS-1 and MJAS-2, Bregu i Pishes area

No.of Hole	Depth(m)	Thickness	Dunite Envelope	Type of Ore	Cr_2O_3(%)
MJAS-1			41.65-41.70m		
	41.70-42.10	0.40m		Disseminated	36.70
	42.10-42.30	0.20m		Disseminated	34.40
	42.30-42.73	0.43m		Disseminated	32.40
			42.73-43.70m		
MJAS-2			58.80-59.00m		
	59.00-59.25	0.25m		Disseminated	38.60
			59.25-60.05m		
	60.05-60.90	0.85m		Massive	49.70
			Cut by fault		

Judging from the results of previous trench, shaft and drilling surveys and the positions in which it has been encountered in MJAS-1 and MJAS-2 as well as other factors, it is estimated that Bregu i Pishes' dunite accompanied by chromitite strikes N36°W and dips 70°-80°E and that the chromitite ore body plunges 14°N.

(2) Gjorduke Area

In this area the two holes, MJAS-6 and MJAS-7, were drilled respectively on profiles of III-III and IV-IV as indicated in Fig. 2-3-10 for the purpose of underground exploration of the northward extension of the Gjorduke ore body.

The coordinates, azimuth, inclination, depth and core recovery of both holes have already been given in Table 2-3-1.

The results of geological core log of each drill hole are given in Apx. 2-3-1(5)-(6), the drilling profiles in Fig. 2-3-11, and the projection profile in the N20°W direction in Fig. 2-3-12.

As indicated in Fig. 2-3-10, there are two chromitite ore bodies in the Gjorduke area: the Fusha e Madhe ore body cropping out on the western slope of the north-south ridge-line and the Gjorduke ore body, discovered underground on the eastern slope of the ridge-line. Up to now the exploration of those two ore bodies has involved drilling of more than 40 drill holes and galleries of 7 levels. The relationship between the two ore bodies has been studied on the basis of the results of those surveys, there presently being two different ideas about it since of the exploratory drill holes carried out for the Gjorduke ore body north of the IV-IV profile have been few and only two of them have encountered ore. One is that they are two independent ore bodies. The other is that it is a single ore body repeated by a homoclinal fold. Thus, having assumed that the latter idea is more probable, in the present survey the above-mentioned two drill holes were carried out to explore the northward underground extension of the Gjorduke ore body.

As shown in Apx. 2-3-1 (5)-(6), the geology of MJAS-6 and MJAS-7 consists of harzburgite accompanied by dunite, frequently cut by faults and brecciated zones. Dunite and harzburgite in both drill holes have a transition zone with only slight serpentinization on top of which there is generalized serpentinization and below which dunite and harzburgite are mostly fresh. The depth of the transition zone is 54-70-82.70 m in MJAS-6 and 97.70-125.30 m in MJAS-7, and in both holes a fault and brecciated zone forms the boundary between the transition zone and the fresh part.

Harzburgite is greenish dark gray to gray in the serpentinized part and transition zone and yellowish gray to gray in the fresh part, the quantity of orthopyroxene varying in the range 30-35%. Dunite is dark brown in the serpentinized part and the transition zone and brown to yellowish gray in the fresh part.

The depths at which comparatively large dunite with a thickness of more than 50 cm occurs, are for MJAS-6, 6.10-6.65 m, 24.05-24.70 m, 25.05-26.85 m, 69.70-70.50 m, 72.50-73.10 m, 79.20-80.20 m, 81.45-82.60 m, 104.10-105.55 m, 115.20-116.10 m, 118.35-119.30 m, 123.10-124.00 m, 142.00-144.00 m, 155.60-156.10 m, etc. and, for MJAS-7, 6.75-8.00 m, 73.00-73.50 m, 74.25-75.30 m, 87.80-88.50 m, 89.50-90.20 m, 97.15-97.70 m, 116.8-117.60 m, 131.50-132.50 m, 134.40-135.50 m, 141.70-142.30 m, 150.70-151.40 m, 154.40-155.00 m, 162.70-164.30 m, etc. Those dunite is sparsely accompanied by chromian spinel as a rock forming mineral. The only concentration that was found was that of coarse-grained chromian spinel with a diameter of about 7 mm in schlieren form with a width of 2 cm at the depth 155.60-156.10 m in MJAS-6. However, no substantial concentrations of chromitite have been encountered in the both drill holes.

As indicated in Fig. 2-3-12, the Gjorduke body confirmed by galleries has a plunge of about 20 degrees to the north, and in view of that distribution, there ought to be considerable possibility of encountering large dense concentrations chromitite in both MJAS-6 and MJAS-7 assuming that the Fusha e Madhe and the Gjorduke bodies are one parts of a single ore body repeated by homoclinal fold. In reality, however, they were not encountered, and therefore one can only conclude that there is very little possibility that the Gjorduke body continues along its plunge northward of the IV-IV profile.

Considering the survey results of those two drill holes and earlier findings such as the similarity of the ore type of the two bodies, frequent migrations of ore body by faulting, the fact that the lower boundary of the Fusha e Madhe body is truncated by faulting, etc., as indicated in Fig. 2.3.11 and Fig. 2.3.12, it is considered to that the Gjorduke body is the bottom part of the Fusha e Madhe body displaced to the east by faulting with a NW-SE strike and a dip of about 15°NE.

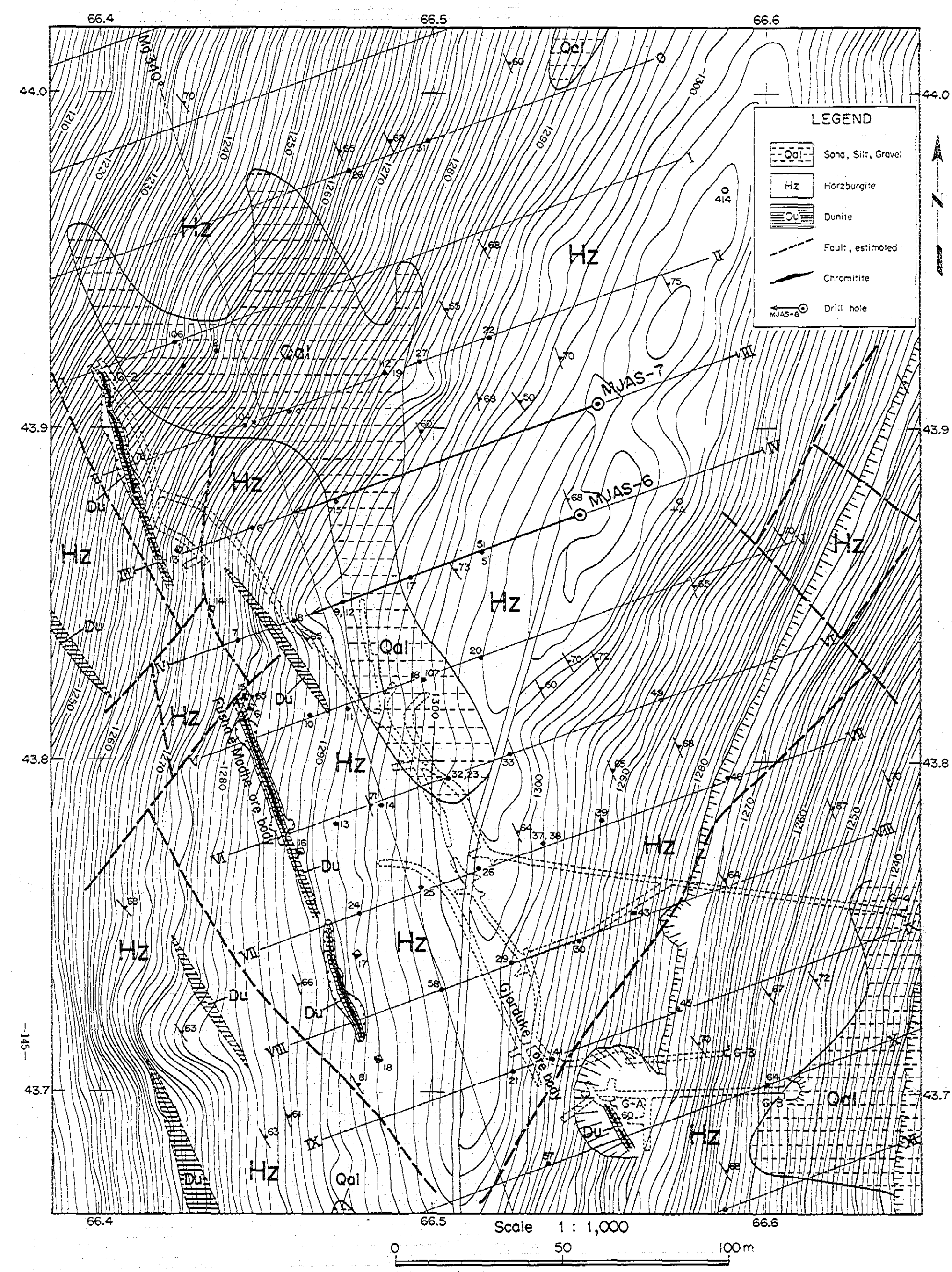


Fig. 2-3-10 Geological map with drilling sites, Gjorduke area

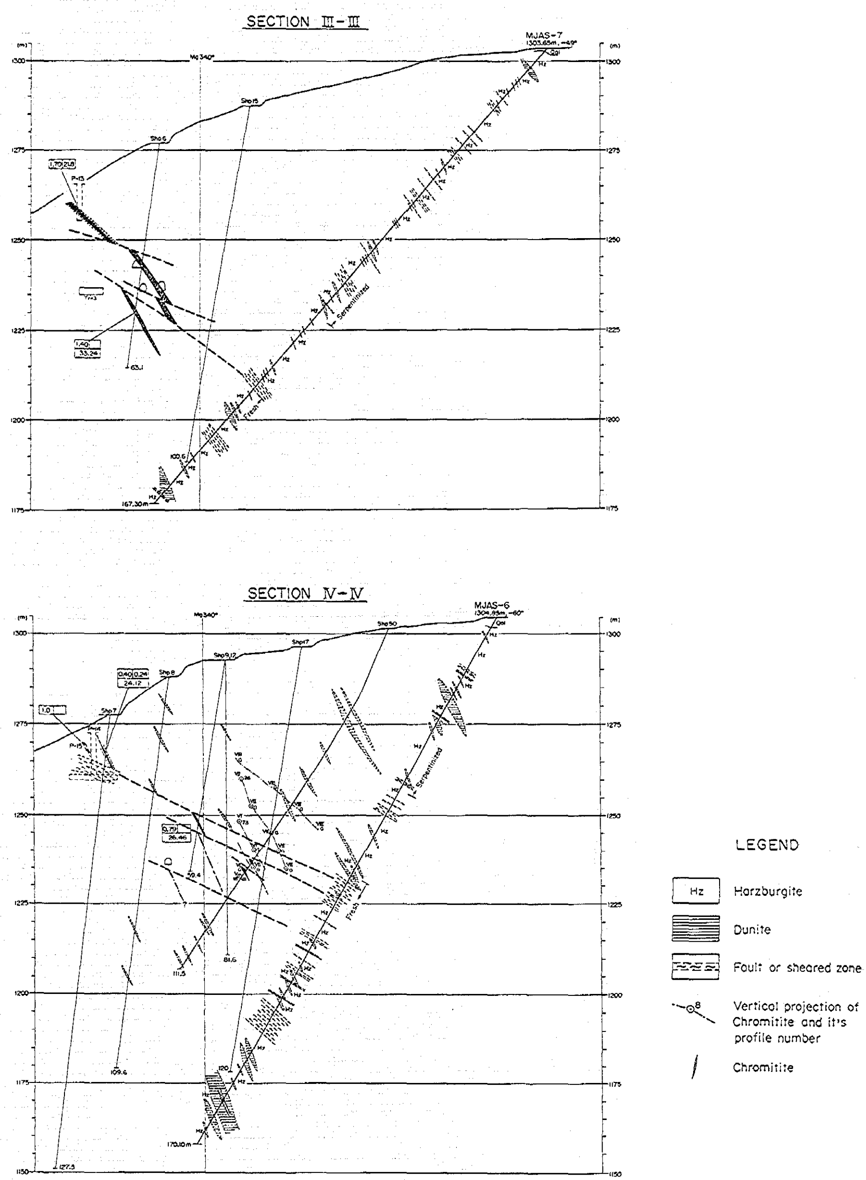


Fig. 2-3-11 Cross section of Ⅲ-Ⅲ and Ⅳ-Ⅳ, Gjorduke area

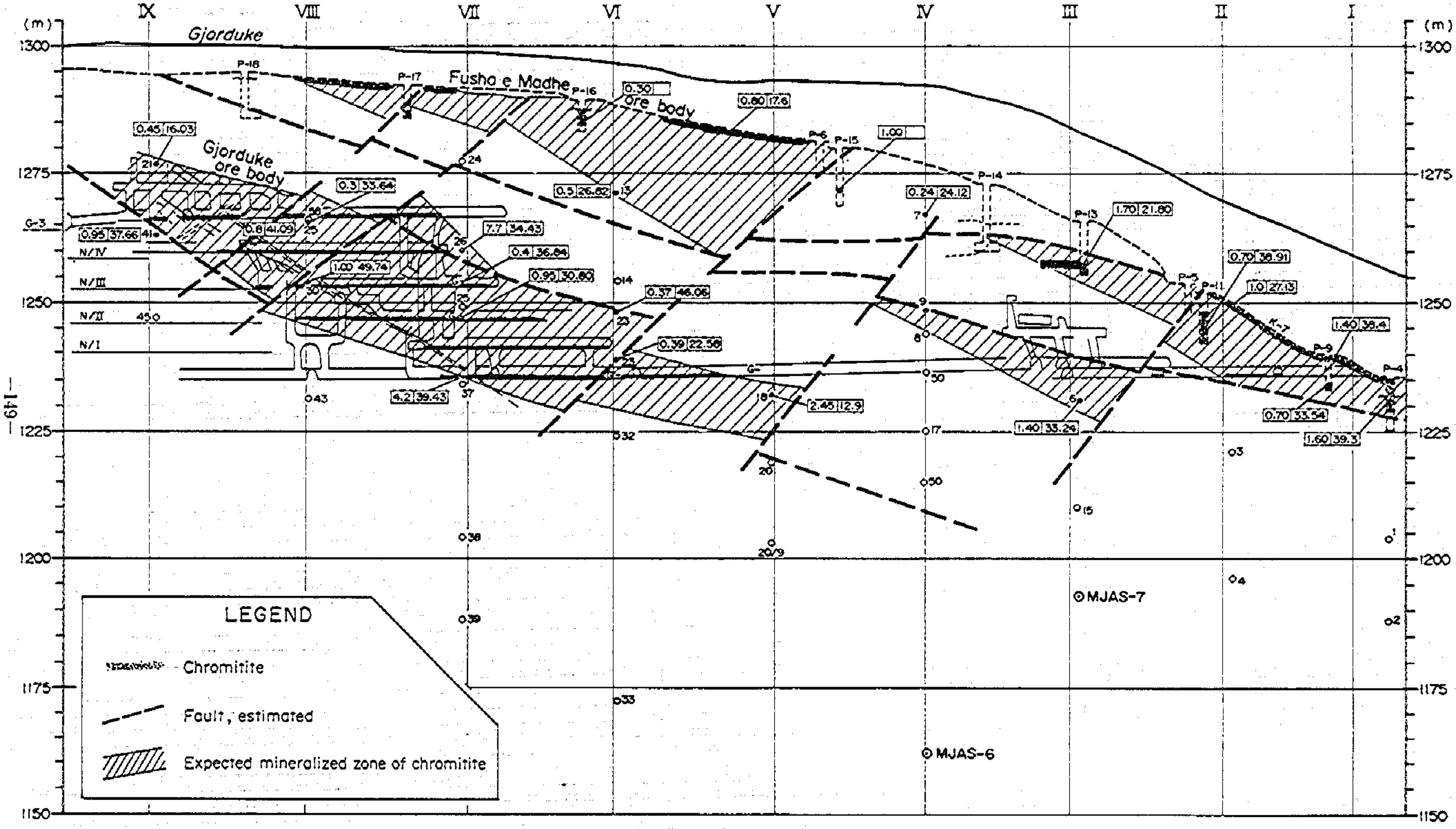


Fig. 2-3-12 Longitudinal section of Mg-340', Gjorduke area

Furthermore, it is surmised that the north side of the Gjorduke body is upheaved by a normal fault with a strike of WNW-ESE dipping to the south that intersects with that fault.

Therefore it is considered to be desirable to undertake a drilling survey for more shallow zone assuming an overall plunge of about 10 degrees in the north of the IV-IV profile of the Gjorduke body.

(3) Shesh Bush No. 1 Area

In this area three drill holes, MJAS-14, MJAS-13 and MJAS-12, were drilled respectively on the three profiles 9-9, 10-10 and 11-11 indicated in Fig. 2-3-13 for the purpose of underground exploration of the northern extension of the Shesh Bush No.1 ore body. The coordinates, azimuth, inclination, depth and core recovery of each drill hole have already been given in Table 2-3-1.

The results of geological core log of each drill hole are given in Apx. 2-3-1 (10)-(12), the drilling profiles in Fig. 2-3-14, and the projection profile in the N30°W direction in Fig. 2-3-15.

As indicated in Fig. 2-3-15, in this area high-grade massive chromitite with a thickness of 1.8-2.8 m (Cr_2O_3: 47.38-52.96%) has been discovered up to now at comparatively shallow depths between profile 00 and profile 4-4 by shafts and galleries, and as indicated in Fig. 2.3.13, more than 25 drill holes were drilled between profiles 0-0 and 8-8 and a gallery of 1,201 meters level were opened to explore downward extension of the ore body. From the results of those explorations and the fact that chromitite was encountered by drill hole No. 222 on profile 8-8 it was surmised that the Shesh Bush No.1 ore body plunges 12 degrees to the north. Exploration of the northern underground extension of profile 8-8, however, had not yet been carried out, thus the above-mentioned three drill holes on the profiles 9-9, 10-10 and 11-11 indicated in Fig. 2-3-14 was undertaken as a part of the present survey.

As indicated in Apx. 2-3-1 (10)-(12), the geology of the three drill holes, MJAS-12, MJAS-13 and MJAS-14 consists of harzburgite frequently accompanied by dunite. Also there are rare intrusions of pyroxenite dikes with a thickness of several cm in the harzburgite, and occurrence of many faulted and brecciated zones. But no substantial concentrations of chromian spinel were recognized to fail to encounter chromitite ores.

Harzburgite of those three holes is usually serpentinized to show greenish dark gray color, orthopyroxene in it varies in the range 20-30% in quantity.

Dunite is dark brown to dark gray in color with a greenish tint as a result of serpentinization. Large amounts of dunite are recognized in depth sections 5.30-11.50 m and 24.60-51.70 m in MJAS-12, 3.60-19.80 m in MJAS-13 and 1.30-11.30 m, 44.40-46.50 m and 86.80-91.40 m in MJAS-14. Also a complex zone of dunite and harzburgite occurs in depth sections 16,00-14.60 in MJAS-12, 78.80-94.20 m in MJAS-13 and 59.70-72.70 m in MJAS-14. Between depths of 44.60 and 46.50 m in MJAS-4 dunite is sporadically spotted by coarse-grained chromian spinel, and this dunite is considered to be a part of the dunite in which the Shesh Bush No.1 chromitite ore body occurs.

It is considered that the reason why most of the drill holes deeper than the 1,201 meters level including present three drill holes has not encountered chromitite ore in spite of the fact that high-grade massive ore has been encountered near the surface might be the fact that the lower extension of the dunite accompanied by chromitite has been migrated by the fault with a low dip angle that passes in the vicinity of elevation 1,200 m as indicated in Fig. 2.3.15. Although the mode of dislocation by faulting is not clear, in the exploration to date the lower extension of the dunite accompanied by chromitite has not yet been found in the range 100 m east and west sides of the known ore body.

(4) Murriq Area

In this area three drill holes, i.e. MJAS-17, MJAS-18 and MJAS-19, were planned, and two

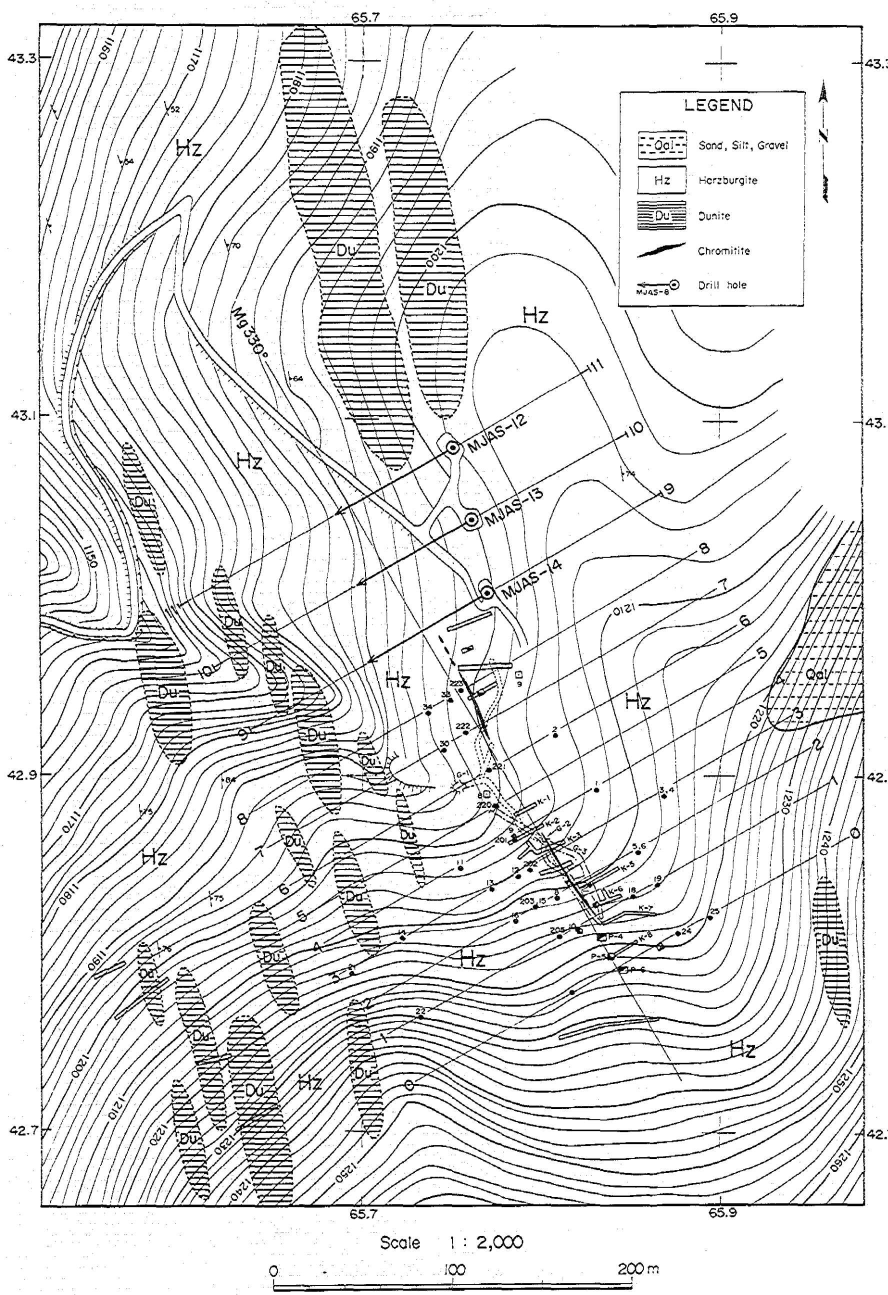


Fig. 2-3-13 Geological map with drilling sites, Shesh Bush No.1 area

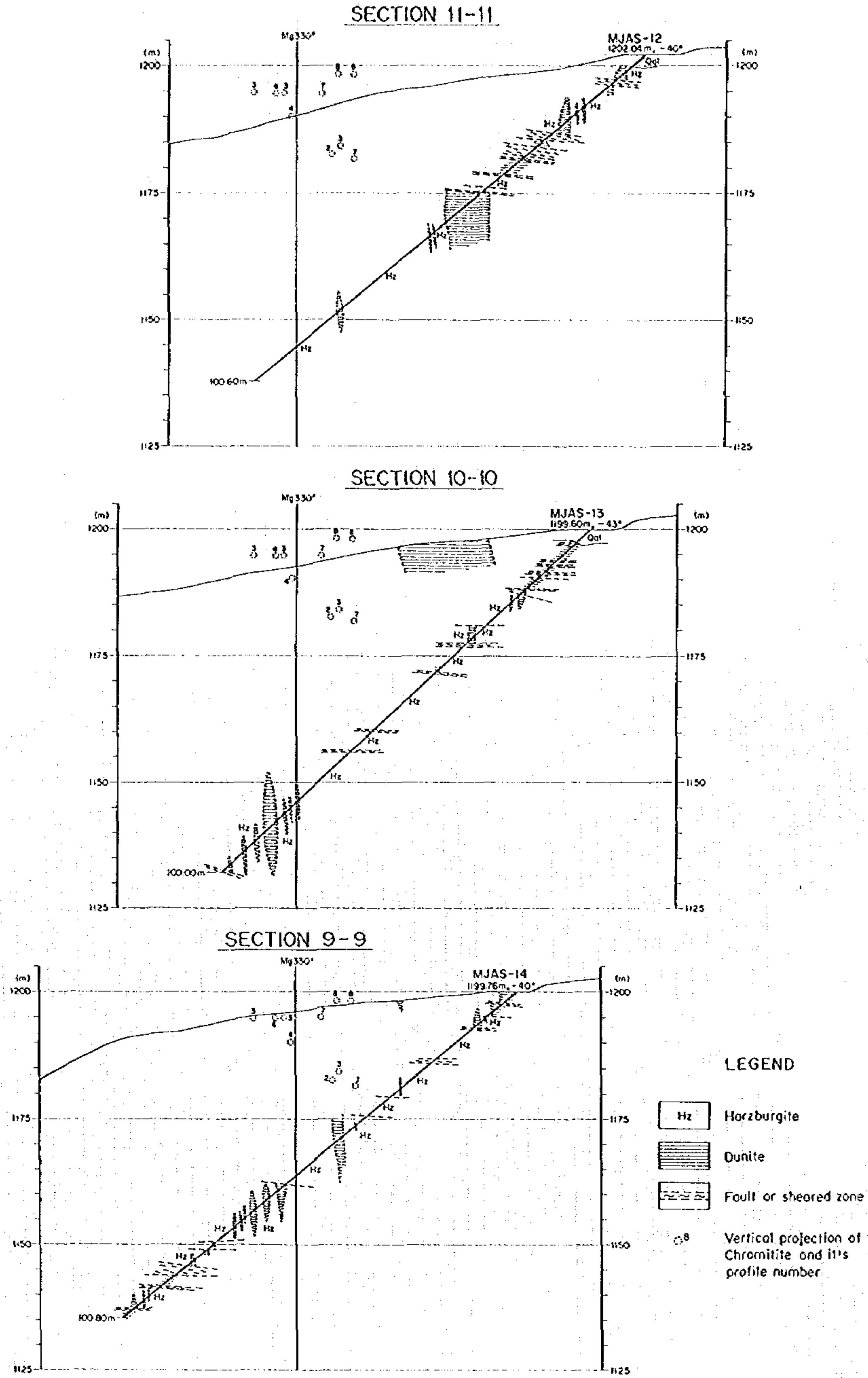
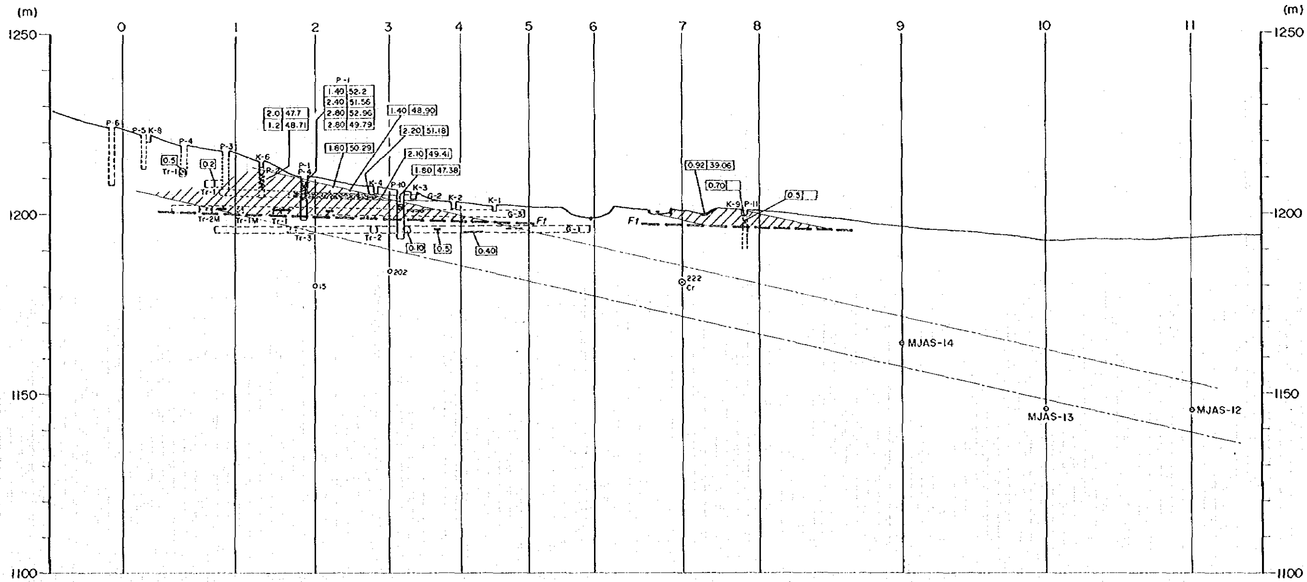


Fig. 2-3-14 Cross section of 9-9, 10-10 and 11-11, Shesh Bush No.1 area



LEGEND

Chromitite

Fault, estimated

Expected mineralized zone of chromitite

Fig. 2-3-15 Longitudinal section of Mg-330', Shesh Bush No.1 area

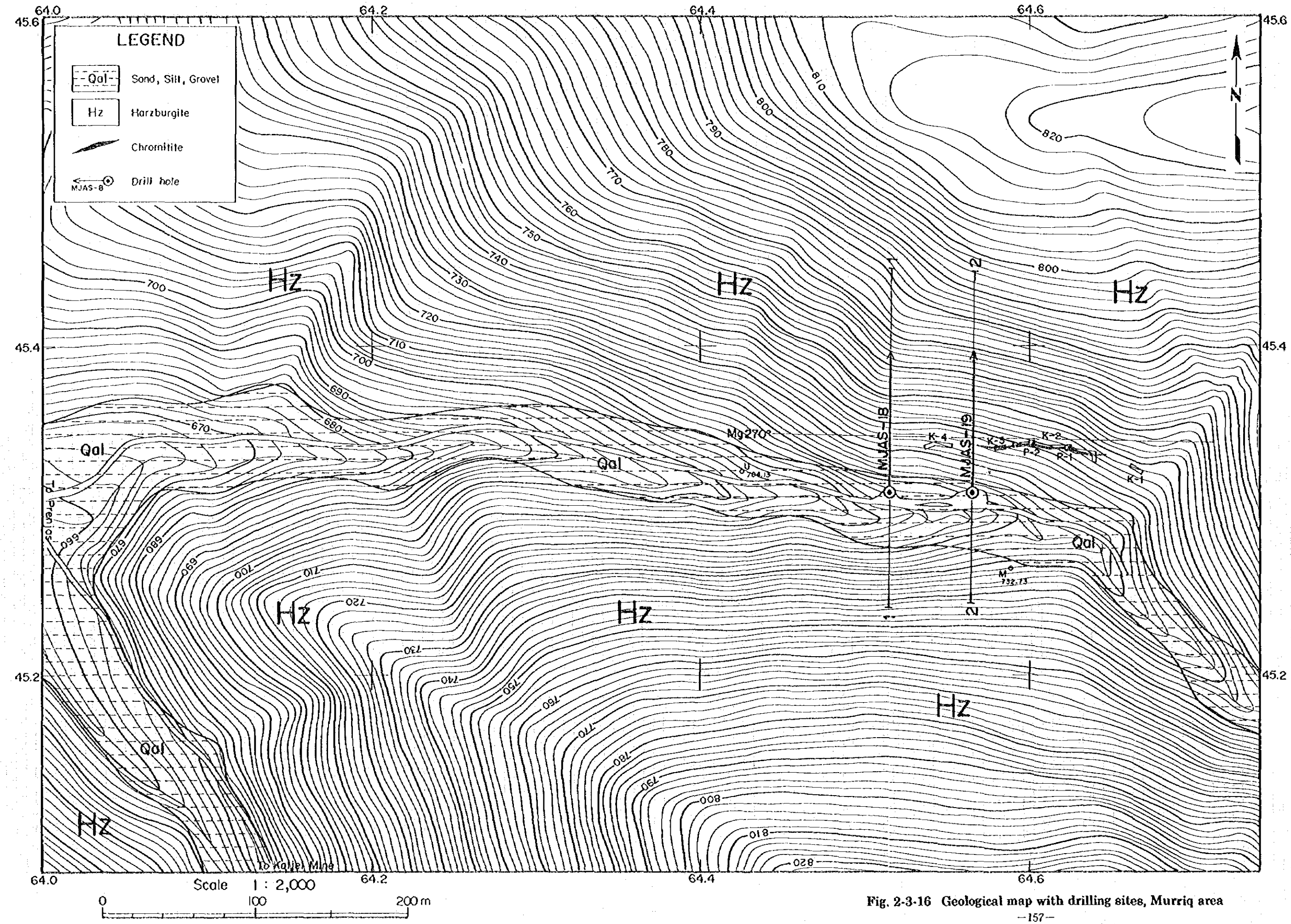


Fig. 2-3-16 Geological map with drilling sites, Murriq area

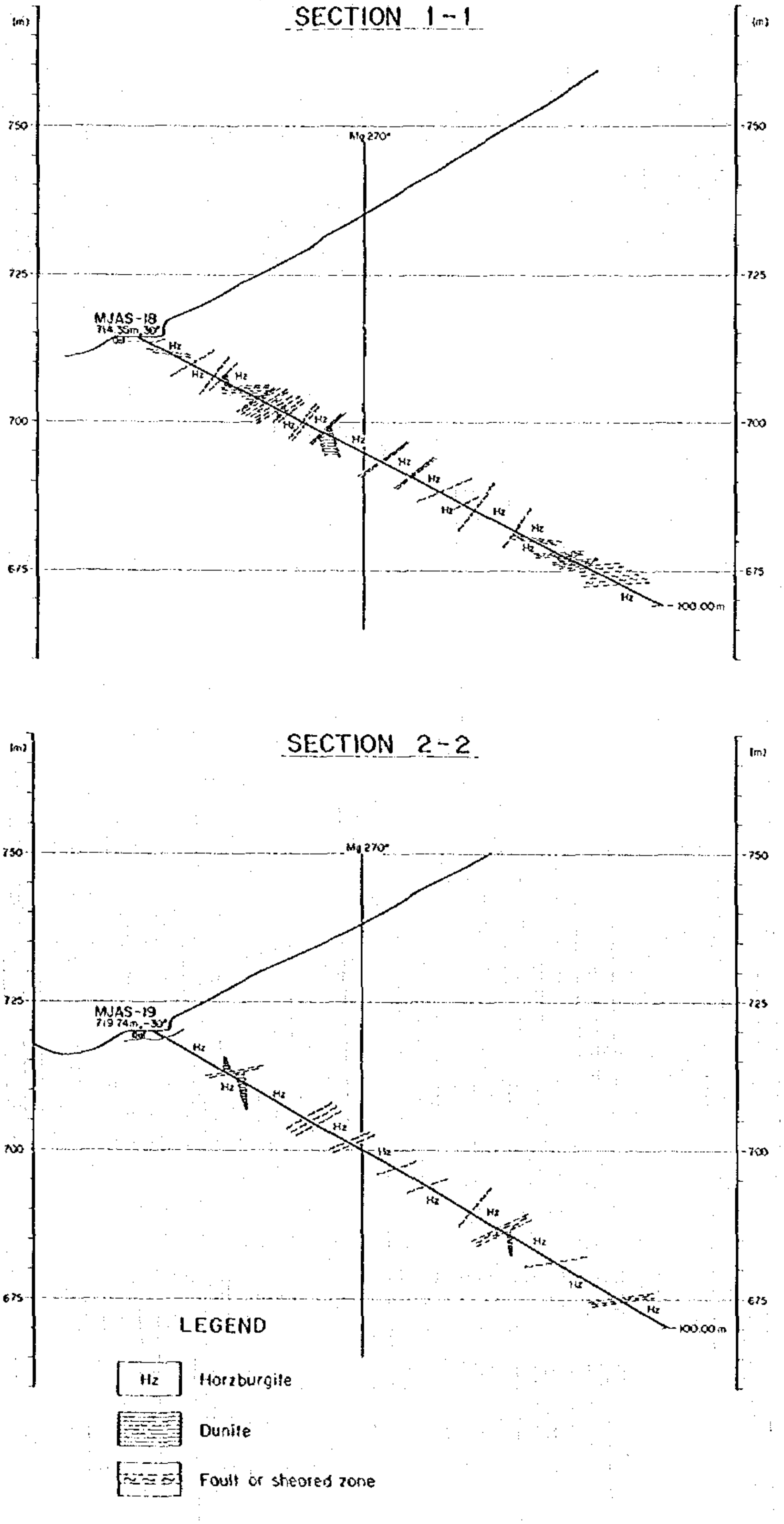


Fig. 2-3-17 Cross section of 1-1 and 2-2, Murriq area