Appendix 3. Miscellaneous Data for the Drilling Survey

Appendix 3-1(1) List of the Used Equipments for Drilling

(MJSN-11,14)

Item	Model	Quantity	Capacity, type and specification
Drilling machine	SKB-41	1	Capacity ϕ 76mm:300m ϕ 59mm:500m Inner diameter of spindle:60mm
Motor for drill	4AM-180	1	22kw, rpm/1,500 ps
Pump	NB-4	1	Piston ϕ 50mm, Capacity 40/160 liter/min Pressure 4 kg/min
Motor for pump	4AM-132	1	7.5kw, rpm/1,500 ps
Wire line hoist	LB-5	1	
Motor for hoist		1	4 kw
Generator	—	—	Power line
Engine for generator	—	—	
Mud mixer	GKL-2M	1	
Derrick	UKB-500	1	Maximum load 15T
Rod holder	TD	1	
Drill rods	SSK-59 ϕ 50mm ϕ 42mm	70 5 5	4.50 m/pc 4.00 m/pc 4.00 m/pc
Casing pipes	ϕ 108mm ϕ 89mm ϕ 73mm	4 5 12	3.00 m/pc 3.00 m/pc 4.00 m/pc
Core tube assembly	SSK-59 SSK-59 ϕ 108mm ϕ 93mm ϕ 76mm OKS-73	6 6 1 1 1 1	3.00 m/pc 2.50 m/pc 1.00 m/pc 1.00 m/pc 1.00 m/pc 1.00 m/pc

Appendix 3-1(2) List of the Used Equipments for Drilling

(MJSN-12,13)

Item	Model	Quantity	Capacity, type and specification
Drilling machine	SKB-41	1	Capacity ϕ 76mm:300m ϕ 59mm:500m Inner diameter of spindle:60mm
Motor for drill	4AM-180	1	22kw, rpm/1,500 ps
Pump	NB-4	1	Piston ϕ 50mm, Capacity 40/120 liter/min Pressure 4 kg/min
Motor for pump	4AM-132	1	7.5kw, rpm/1,500 ps
Wire line hoist	LB-5	1	
Motor for hoist		1	4kw
Generator	—	—	Power line
Engine for generator	—	—	
Mud mixer	GKL-2M	1	
Derrick	UKB-200	1	Maximum load 15T
Rod holder	TD	1	
Drill rods	SSK-59	60	4.50 m/pc
	ϕ 50mm	5	4.00 m/pc
	ϕ 42mm	5	4.00 m/pc
Casing pipes	ϕ 108mm	4	3.00 m/pc
	ϕ 89mm	5	3.00 m/pc
	ϕ 73mm	13	4.00 m/pc
Core tube assembly	SSK-59	6	3.00 m/pc
	SSK-59	8	2.50 m/pc
	ϕ 108mm	1	1.00 m/pc
	ϕ 93mm	1	1.00 m/pc
	ϕ 76mm	1	1.00 m/pc
	OKS-73	1	1.00 m/pc (Ejector)

Appendix 3-1(3) List of the Used Equipments for Drilling

(MJML-1)

Item	Model	Quantity	Capacity, type and specification
Drilling machine	SKB-41	1	Capacity ϕ 76mm:300m ϕ 59mm:500m Inner diameter of spindle:63mm
Motor for drill	4AM-180	1	22kw, rpm/1,500 ps
Pump	NB-4	1	Piston ϕ 60mm, Capacity 40/160 liter/min Pressure 4 kg/min
Motor for pump	4AM-132	1	7 kw, rpm/1,500 ps
Wire line hoist	—	—	
Motor for hoist	—	—	
Generator	DES-60P	1	60kvA
Engine for generator	AM-01E	1	Diesel engine : 60kwh, rpm/1,500 ps
Mud mixer	TD	1	
Derrick	MPGY-3	1	Maximum load 20T
Rod holder	PT-1200	1	
Drill rods	SSK-59	—	4.50 m/pc
	ϕ 50mm	60	4.00 m/pc
	ϕ 42mm	25	4.00 m/pc
Casing pipes	ϕ 108mm	5	3.00 m/pc
	ϕ 89mm	15	3.00 m/pc
	ϕ 73mm	3	4.00 m/pc
Core tube assembly	SSK-59	—	3.00 m/pc
	SSK-59	—	2.50 m/pc
	ϕ 108mm	—	3.00 m/pc
	ϕ 93mm	1	3.00 m/pc
	ϕ 76mm	4	3.00 m/pc
	OKS-73	2	1.00 m/pc (Ejector)

Appendix 3-1(4) List of the Used Equipments for Drilling

(MJML-2)

Item	Model	Quantity	Capacity, type and specification
Drilling machine	SKB-41	1	Capacity ϕ 76mm:300m ϕ 59mm:500m Inner diameter of spindle:63mm
Motor for drill	4AM-180	1	22kw, rpm/1,500 ps
Pump	NB-4	1	Piston ϕ 60mm, Capacity 40/160 liter/min Pressure 4 kg/min
Motor for pump	4AM-132	1	7 kw, rpm/1,500 ps
Wire line hoist	—	—	
Motor for hoist	—	—	
Generator	DES-60P	1	60kvA
Engine for generator	AM-01E	1	Diesel engine : 60kwh, rpm/1,500 ps
Mud mixer	TD	1	
Derrick	MPGY-3	1	Maximum load 20T
Rod holder	PT-1200	1	
Drill rods	SSK-59	—	4.50 m/pc
	ϕ 50mm	55	4.00 m/pc
	ϕ 42mm	20	4.00 m/pc
Casing pipes	ϕ 108mm	5	3.00 m/pc
	ϕ 89mm	10	3.00 m/pc
	ϕ 73mm	3	4.00 m/pc
Core tube assembly	SSK-59	—	3.00 m/pc
	SSK-59	—	2.50 m/pc
	ϕ 108mm	—	3.00 m/pc
	ϕ 93mm	1	3.00 m/pc
	ϕ 76mm	4	3.00 m/pc
	OKS-73	2	1.00 m/pc (Ejector)

Appendix 3-2(1) Results of Drilling Works on Individual Drillhole

(MJSN-11)

	Survey period		Breakdown of period		Total workers
	Period	Total days	Working days	No working days	
Preparation	Aug. 9, '98 ~ Aug.24, '98	15.5	6.5	9.0	24
Drilling	Aug.24, '98 ~ Oct.10, '98	46.7	45.7	1.0	228
Dismount	Oct.10, '98 ~ Oct.10, '98	0.8	0.8	0.0	5
Total	Aug. 9, '98 ~ Oct.10, '98	63.0	53.0	10.0	257

Drilling length			
Programmed length	280.00 m	Overburden	11.80 m
Prolongation	0.10 m	Core length	229.00 m
Effective length	280.10 m	Core recovery	81.8 %

Working hours			Core recovery each 100m		
			Length (m)	Each (%)	Cumula.(%)
Drilling	384.0H	30.3 %	0-103.9	80.8	80.8
Out drilling	518.0H	40.8 %	103.9-206.9	82.1	81.4
Regain of accident	190.0H	15.0 %	206.9-280.1	82.7	81.8
Preparation	25.0H	2.0 %			
Dismount/Mobilization	44.0H	3.4 %			
Others	108.0H	8.5 %	Efficiency		
			Effective length/Total days		
			4.45 m/d		
Total	1,269.0H	100 %	Effective length/Working days		
			5.29 m/d		

Drilling length by diameter							
Bit diameter	76 m/m	59 m/m	m/m	m/m	m/m	m/m	Total
Drilling length	15.0 m	265.1 m					280.1 m
Core length	9.3 m	219.7 m					229.0 m

Inserted casing pipes			
Inserted length by diameter		Inserted length/Drilling length x 100	Casing Recovery
73 m/m	15.00 m	5.4 %	100 %
m/m	m	%	%

Appendix 3-2(2) Results of Drilling Works on Individual Drillhole

(MJSN-12)

	Survey period		Breakdown of period		Total workers
	Period	Total days	Working days	No working days	
Preparation	July 27, '98 ~ Aug. 5, '98	9.5	3.4	6.1	31
Drilling	Aug. 9, '98 ~Sept.25, '98	51.0	50.0	1.0	244
Dismount	Sept.25, '98 ~Sept.25, '98	0.5	0.5	0.0	5
Total	July 27, '98 ~Sept.25, '98	61.0	53.9	7.1	280

Drilling length			
Programmed length	220.00 m	Overburden	1.50 m
Prolongation	0.00 m	Core length	178.50 m
Effective length	220.00 m	Core recovery	81.1 %

Working hours			Core recovery each 100m		
			Length (m)	Each (%)	Cumula.(%)
Drilling	319.0H	24.4 %	0-109.1	80.8	80.8
Out drilling	546.0H	41.8 %	109.1-204.4	81.6	81.2
Regain of accident	347.0H	26.6 %	204.4-220.0	80.8	81.1
Preparation	27.0H	2.1 %			
Dismount/Mobilization	30.0H	2.3 %			
Others	36.0H	2.8 %	Efficiency		
			Effective length/Total days		
			3.61 m/d		
Total	1,305.0H	100 %	Effective length/Working days		
			4.05 m/d		

Drilling length by diameter							
Bit diameter	76 m/m	59 m/m	m/m	m/m	m/m	m/m	Total
Drilling length	5.0 m	215.0 m					220.0 m
Core length	3.3 m	175.2 m					178.5 m

Inserted casing pipes			
Inserted length by diameter		Inserted length/Drilling length x 100	Casing Recovery
73 m/m	5.00 m	2.3 %	100 %
m/m	m	%	%

Appendix 3-2(3) Results of Drilling Works on Individual Drillhole

(MJSN-13)

	Survey period		Breakdown of period		Total workers
	Period	Total days	Working days	No working days	
Preparation	Sept.20, '98 ~ Sept.27, '98	7.5	3.9	3.6	19
Drilling	Sept.27, '98 ~ Oct.11, '98	13.7	13.7	0.0	66
Dismount	Oct.11, '98 ~ Oct.11, '98	0.8	0.8	0.0	5
Total	Sept.20, '98 ~ Oct.11, '98	22.0	18.4	3.6	90

Drilling length			
Programmed length	120.00 m	Overburden	5.80 m
Prolongation	8.00 m	Core length	105.10 m
Effective length	128.00 m	Core recovery	82.1 %

Working hours			Core recovery each 100m		
			Length (m)	Each (%)	Cumula.(%)
Drilling	147.0H	33.6 %	0-104.6	80.8	80.8
Out drilling	79.0H	18.0 %	104.6-128.0	88.0	82.1
Regain of accident	101.0H	23.0 %			
Preparation	24.0H	5.5 %			
Dismount/Mobilization	42.0H	9.6 %			
Others	45.0H	10.3 %	Efficiency		
			Effective length/Total days		
			5.82 m/d		
Total	438.0H	100 %	Effective length/Working days		
			7.03 m/d		

Drilling length by diameter							
Bit diameter	76 m/m	59 m/m	m/m	m/m	m/m	m/m	Total
Drilling length	10.0 m	118.0 m					128.0 m
Core length	4.0 m	101.1 m					105.1 m

Inserted casing pipes			
Inserted length by diameter		Inserted length/Drilling length x 100	Casing Recovery
73 m/m	10.00 m	7.8 %	100 %
m/m	m	%	%

Appendix 3-2(4) Results of Drilling Works on Individual Drillhole

(MJSN-14)

	Survey period		Breakdown of period		Total workers
	Period	Total days	Working days	No working days	
Preparation	July 20, '98 ~ July 28, '98	9.0	3.0	6.0	24
Drilling	July 29, '98 ~Aug.21, '98	23.5	23.5	0.0	117
Dismount	Aug.21, '98 ~ Aug.22, '98	1.5	0.9	0.6	7
Total	July 20, '98 ~Aug.22, '98	34.0	27.4	6.6	148

Drilling length			
Programmed length	160.00 m	Overburden	4.00 m
Prolongation	2.30 m	Core length	131.60 m
Effective length	162.30 m	Core recovery	81.1 %

Working hours			Core recovery each 100m		
			Length (m)	Each (%)	Cumula.(%)
Drilling	228.0H	34.7 %	0-105.6	78.9	78.9
Out drilling	199.0H	30.3 %	105.6-162.3	85.2	81.1
Regain of accident	137.0H	20.9 %			
Preparation	27.0H	4.1 %			
Dismount/Mobilization	39.0H	5.9 %			
Others	27.0H	4.1 %	Efficiency		
			Effective length/Total days		
			4.77 m/d		
Total	657.0H	100 %	Effective length/Working days		
			5.92 m/d		

Drilling length by diameter							
Bit diameter	76 m/m	59 m/m	m/m	m/m	m/m	m/m	Total
Drilling length	6.0 m	156.3 m					162.3 m
Core length	3.5 m	128.1 m					131.6 m

Inserted casing pipes			
Inserted length by diameter		Inserted length/Drilling length x 100	Casing Recovery
73 m/m	6.00 m	3.7 %	100 %
m/m	m	%	%

Appendix 3-2(5) Results of Drilling Works on Individual Drillhole

(MJML-1)

	Survey period		Breakdown of period		Total workers
	Period	Total days	Working days	No working days	
Preparation	Aug.10, '98 ~ Aug.27, '98	18.0	6.4	11.6	59
Drilling	Aug.28, '98 ~Sept.25, '98	28.2	28.2	0.0	140
Dismount	Sept.25, '98 ~Sept.25, '98	0.8	0.8	0.0	5
Total	Aug.10, '98 ~Sept.25, '98	47.0	35.4	11.6	204

Drilling length			
Programmed length	200.00 m	Overburden	0.00 m
Prolongation	1.10 m	Core length	168.90 m
Effective length	201.10 m	Core recovery	84.0 %

Working hours			Core recovery each 100m		
			Length (m)	Each (%)	Cumula.(%)
Drilling	379.0H	33.4 %	0-103.5	83.8	83.8
Out drilling	427.0H	37.6 %	103.5-201.1	84.2	84.0
Regain of accident	262.0H	23.1 %			
Preparation	12.0H	1.1 %			
Dismount/Mobilization	9.0H	0.8 %			
Others	45.0H	4.0 %	Efficiency		
			Effective length/Total days		
			4.28 m/d		
Total	1,134.0H	100 %	Effective length/Working days		
			5.70 m/d		

Drilling length by diameter								
Bit diameter	76 m/m	m/m	m/m	m/m	m/m	m/m	m/m	Total
Drilling length	201.1 m	m						201.1 m
Core length	168.9 m	m						168.9 m

Inserted casing pipes			
Inserted length by diameter		Inserted length/Drilling length x 100	Casing Recovery
89 m/m	20.00 m	9.9 %	100 %
m/m	m	%	%

Appendix 3-2(6) Results of Drilling Works on Individual Drillhole

(MJML-2)

	Survey period		Breakdown of period		Total workers
	Period	Total days	Working days	No working days	
Preparation	July 21, '98 ~ Aug.12, '98	22.5	2.8	19.7	90
Drilling	Aug.12, '98 ~ Sept.21, '98	40.0	40.0	0.0	195
Dismount	Sept.21, '98 ~Sept.21, '98	0.5	0.5	0.0	5
Total	July 21, '98 ~ Sept.21, '98	63.0	43.3	19.7	290

Drilling length			
Programmed length	180.00 m	Overburden	2.90 m
Prolongation	3.00 m	Core length	155.30 m
Effective length	183.00 m	Core recovery	84.9 %

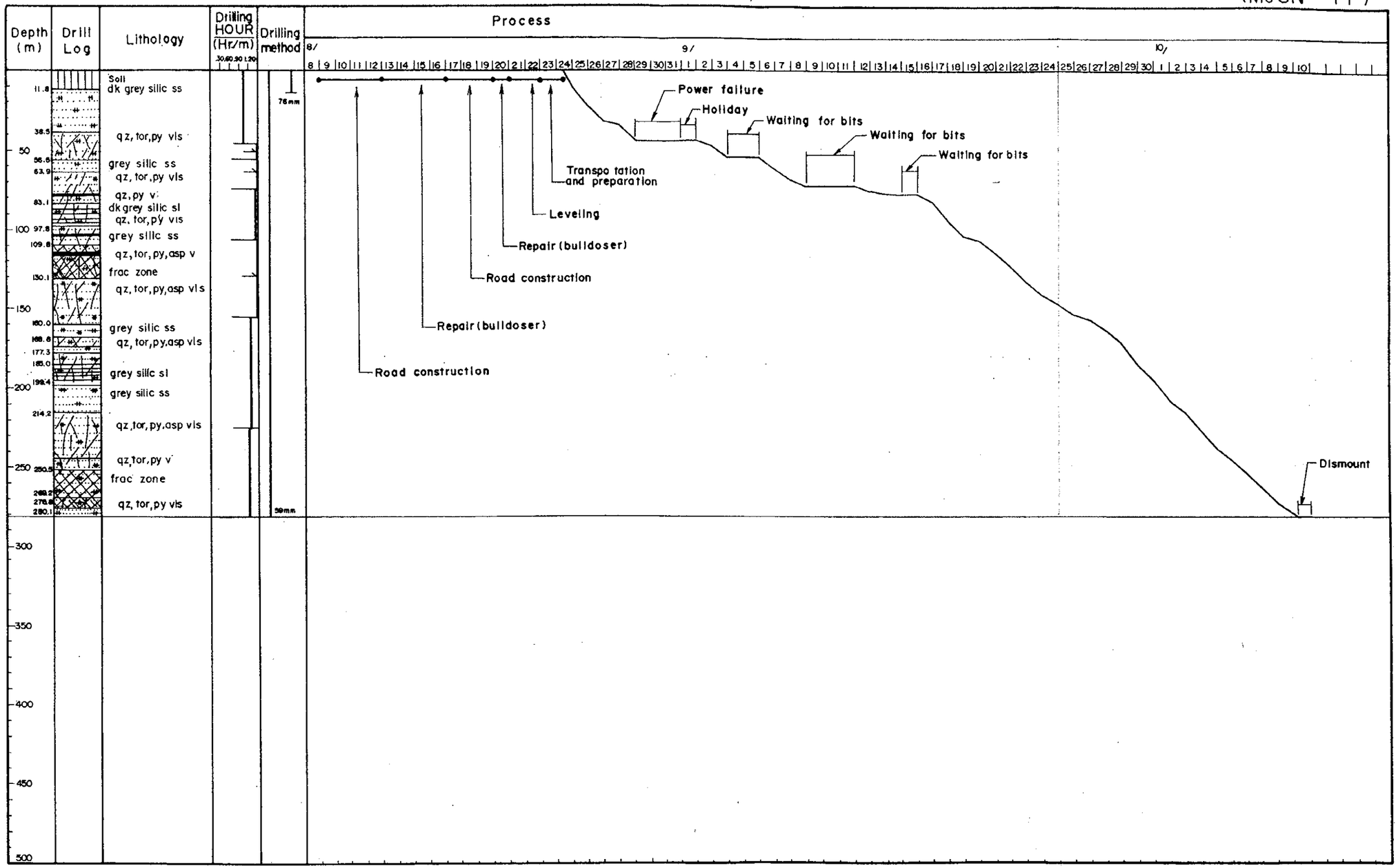
Working hours			Core recovery each 100m		
			Length (m)	Each (%)	Cumula.(%)
Drilling	384.0H	32.5 %	0-100.8	83.2	83.2
Out drilling	431.0H	36.6 %	100.8-183.0	86.9	84.9
Regain of accident	286.0H	24.3 %			
Preparation	12.0H	1.0 %			
Dismount/Mobilization	21.0H	1.8 %			
Others	45.0H	3.8 %	Efficiency		
			Effective length/Total days		
			2.90 m/d		
Total	1,179.0H	100 %	Effective length/Working days		
			3.72 m/d		

Drilling length by diameter							
Bit diameter	76 m/m	m/m	m/m	m/m	m/m	m/m	Total
Drilling length	183.0 m	m					183.0 m
Core length	155.3 m	m					155.3 m

Inserted casing pipes			
Inserted length by diameter		Inserted length/Drilling length x 100	Casing Recovery
89 m/m	15.00 m	8.2 %	100 %
m/m	m	%	%

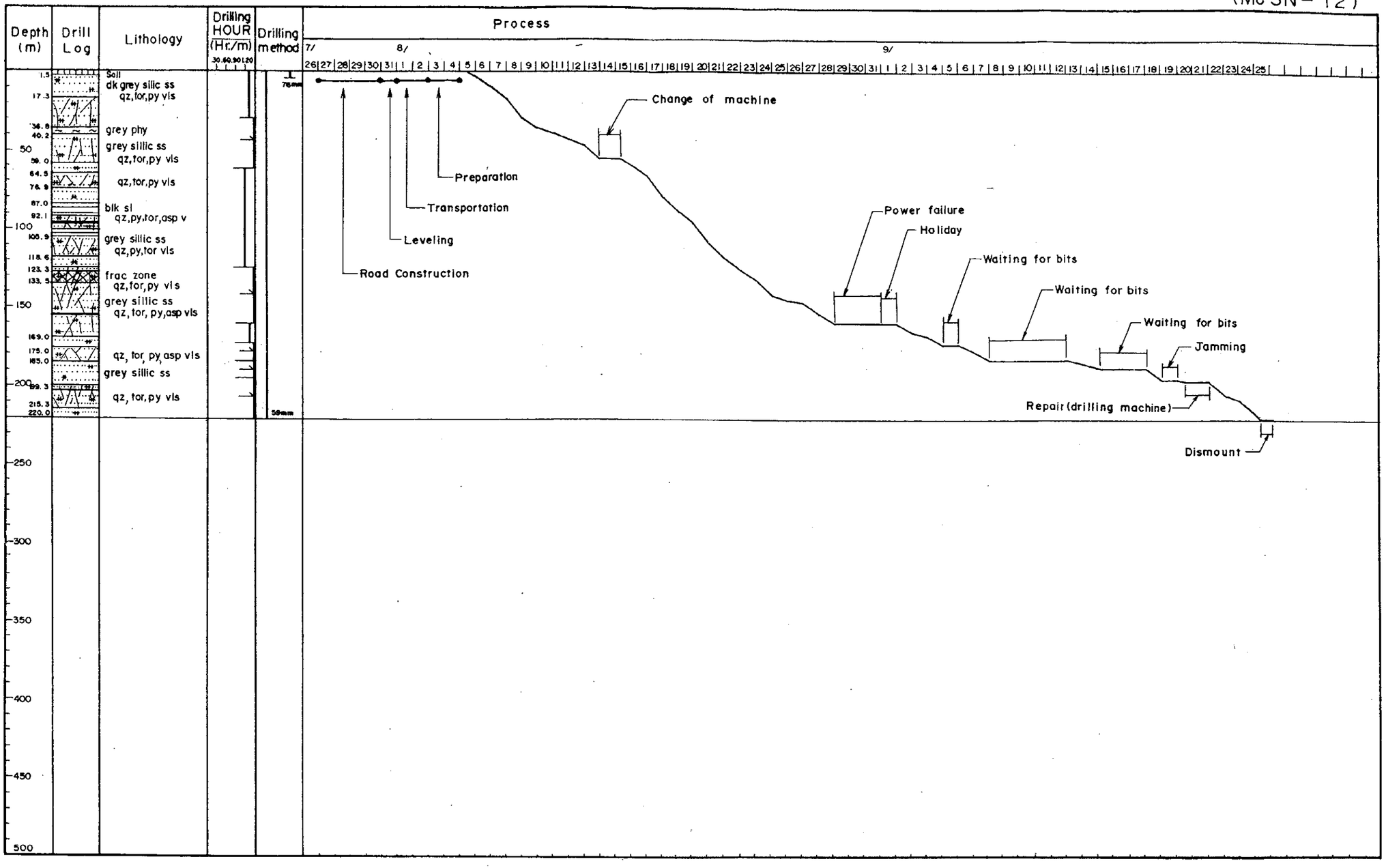
Appendix 3-3(1) PROGRESS RECORD OF DIAMOND DRILLING

(MJSN-11)



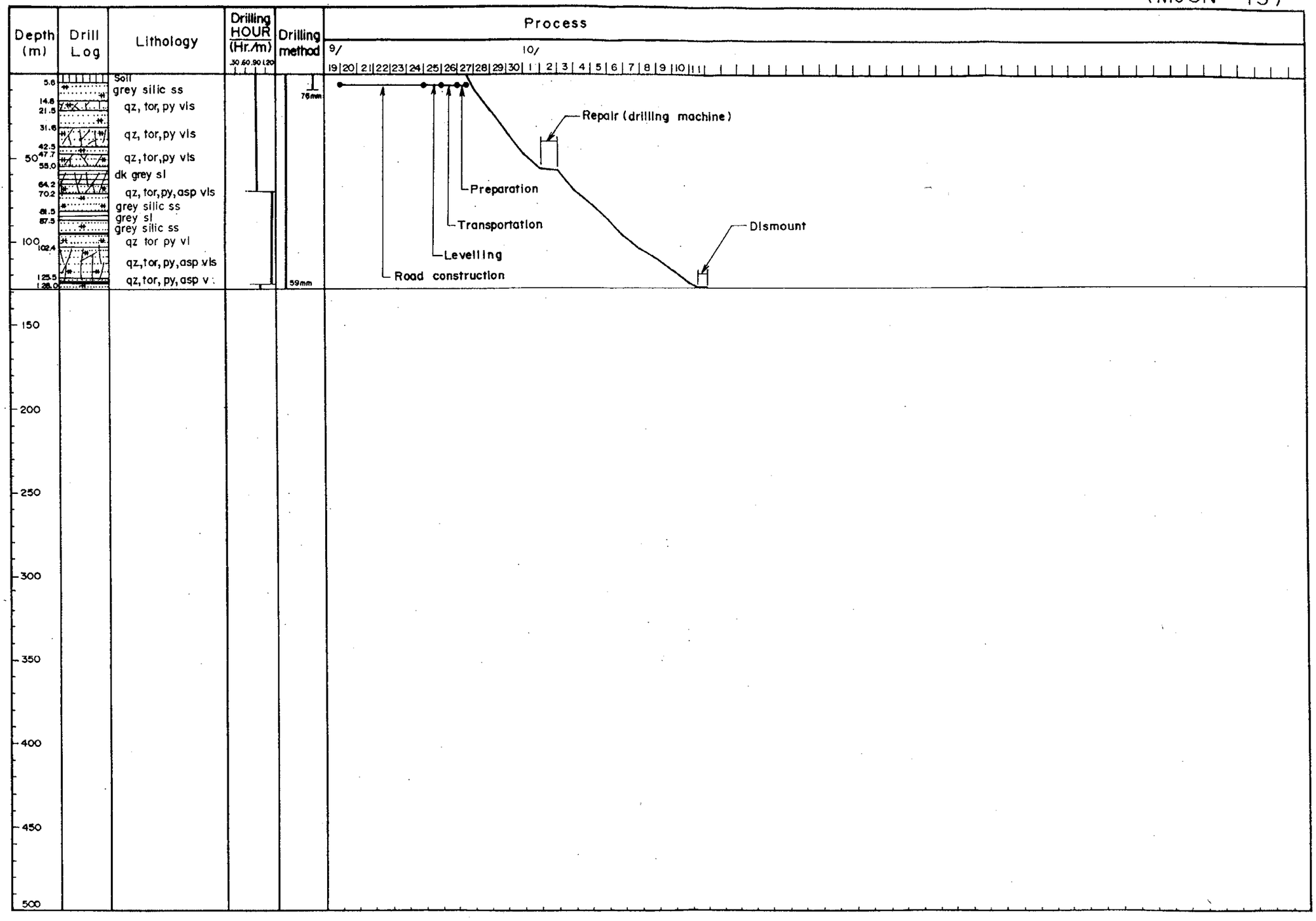
Appendix 3-3(2) PROGRESS RECORD OF DIAMOND DRILLING

(MJSN-12)

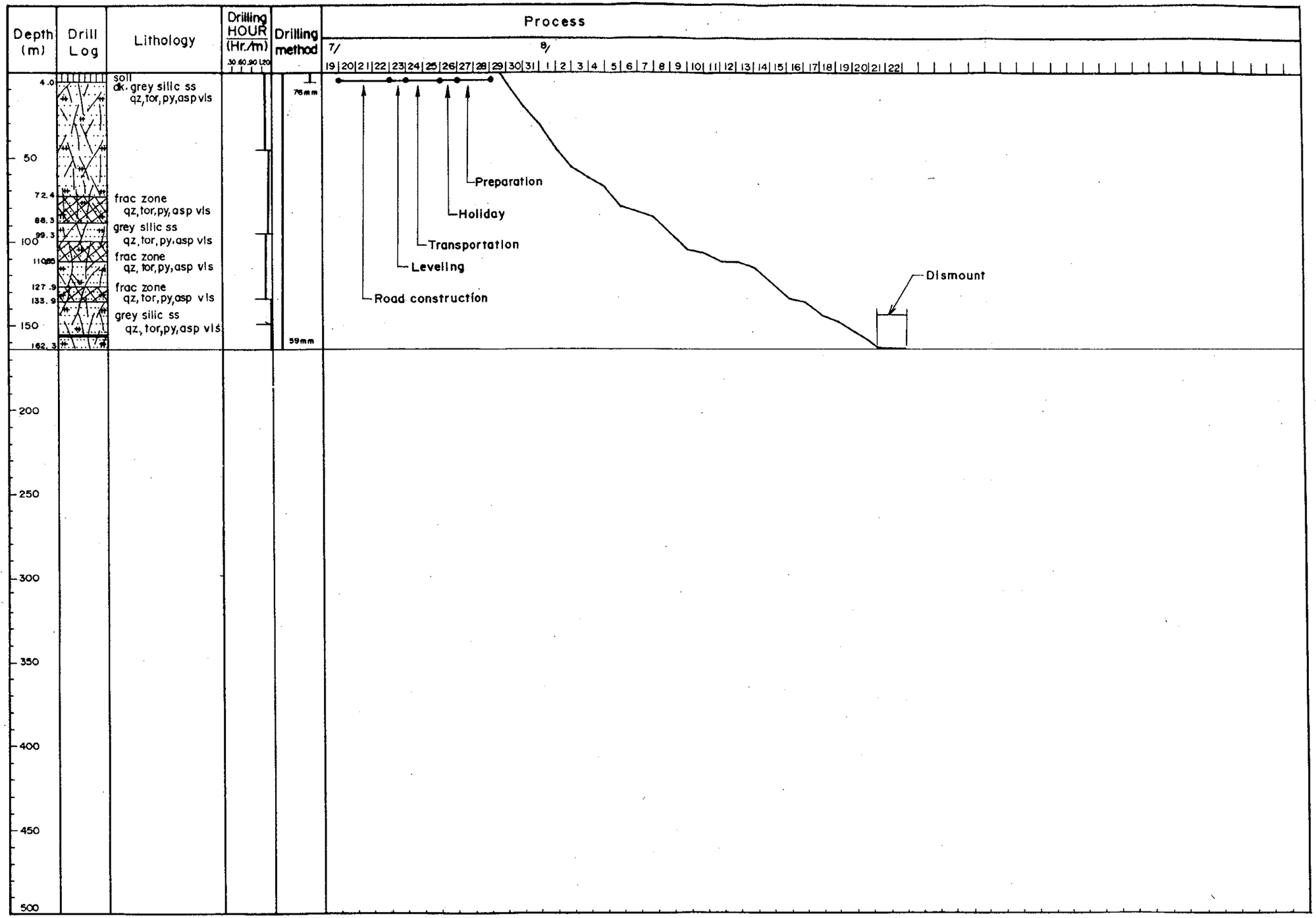


Appendix 3-3 (3) PROGRESS RECORD OF DIAMOND DRILLING

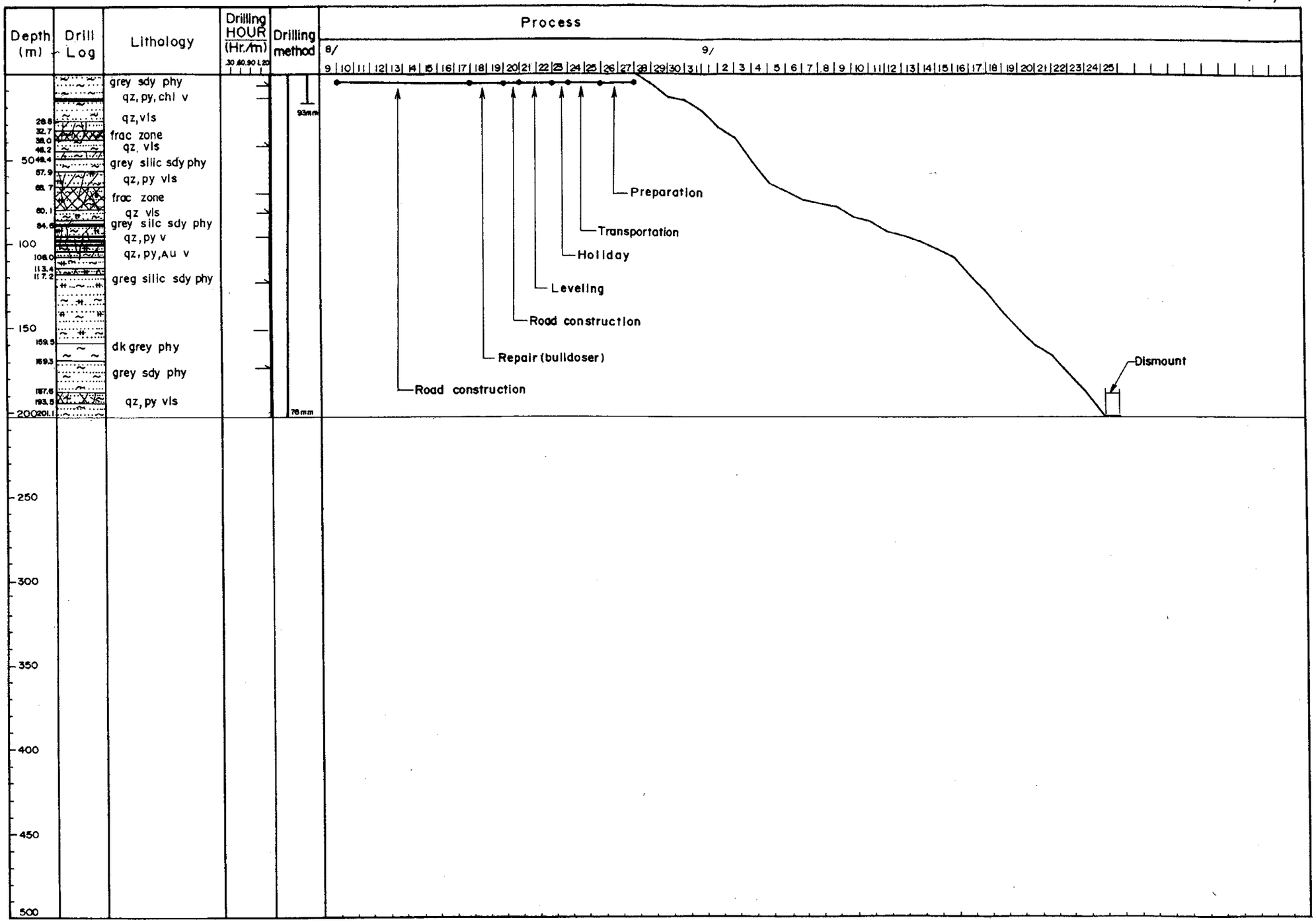
(MJSN- 13)



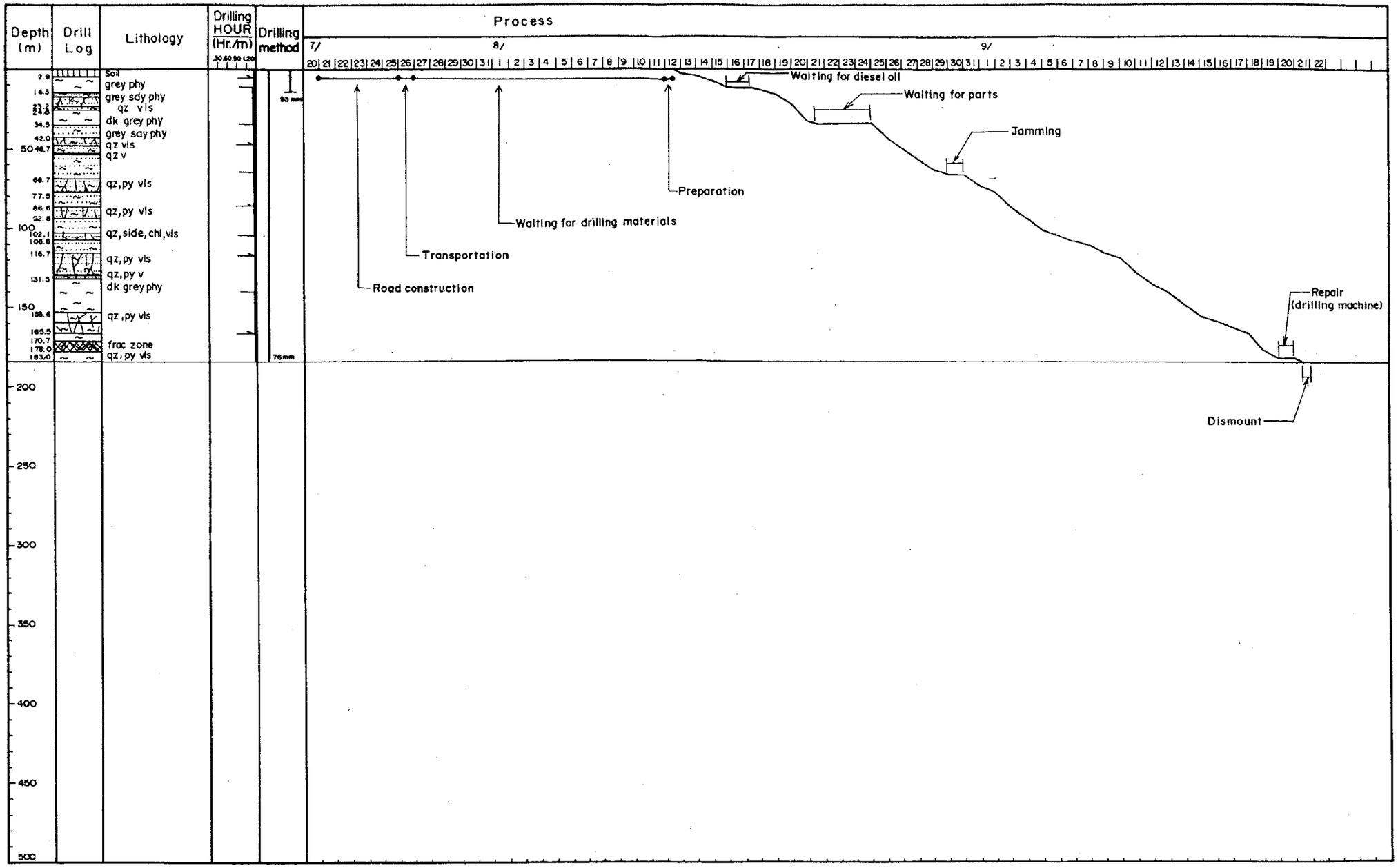
Appendix 3-3(4) PROGRESS RECORD OF DIAMOND DRILLING (MJSN-14)



Appendix 3-3(5) PROGRESS RECORD OF DIAMOND DRILLING (MJML-1)



Appendix 3-3(6) PROGRESS RECORD OF DIAMOND DRILLING (MJML-2)



Appendix 3-4 Results of Hole Devitation Measurement

MJSN-11		
Depth(m)	Direction	Dip
5	—	74° 45'
20	9°	74° 30'
40	9°	74° 30'
60	9°	73° 30'
80	10°	73° 00'
100	10°	73° 00'
120	10°	72° 00'
140	11°	71° 30'
160	11°	71° 00'
180	11°	70° 45'
200	12°	70° 30'
220	13°	70° 30'
240	13°	70° 30'
260	13°	70° 15'
270	14°	70° 15'

MJSN-12		
Depth(m)	Direction	Dip
5	—	74° 30'
20	193°	74° 00'
40	195°	73° 00'
60	197°	72° 30'
80	200°	72° 30'
100	200°	72° 00'
120	201°	71° 45'
140	201°	71° 30'
160	200°	71° 00'
180	203°	71° 00'
200	203°	70° 45'
216	203°	70° 30'

MJSN-13		
Depth(m)	Direction	Dip
5	—	75° 00'
20	103°	74° 00'
40	105°	74° 00'
60	105°	73° 00'
80	105°	72° 30'
100	105°	72° 00'
120	106°	72° 00'
125	106°	72° 45'

MJSN-14		
Depth(m)	Direction	Dip
5	192°	75° 30'
20	194°	75° 00'
30	197°	74° 45'
40	200°	72° 45'
50	205°	72° 00'
60	208°	71° 15'
80	209°	70° 30'
100	209°	68° 45'
110	208°	67° 30'
120	208°	67° 00'
140	206°	67° 15'
160	203°	67° 15'

MJMI-1		
Depth(m)	Direction	Dip
5	204°	74° 45'
20	204°	74° 15'
40	203°	74° 00'
60	203°	72° 15'
62	203°	71° 00'
80	202°	70° 30'
100	200°	69° 30'
120	200°	69° 00'
140	199°	68° 15'
160	193°	67° 00'
162	193°	66° 45'
180	192°	66° 00'
194	191°	65° 30'

MJML-2		
Depth(m)	Direction	Dip
5	220°	75° 30'
20	211°	75° 30'
40	207°	75° 15'
60	202°	75° 30'
62	202°	75° 30'
80	203°	75° 45'
100	197°	75° 30'
120	197°	75° 15'
140	192°	74° 45'
160	194°	74° 15'
162	194°	74° 00'
178	194°	73° 15'

L-20

L-51

O-S$_2$

O-S$_\delta$?

O-S$_a$?

MJSN-6

MJSN-7

MJSN-8

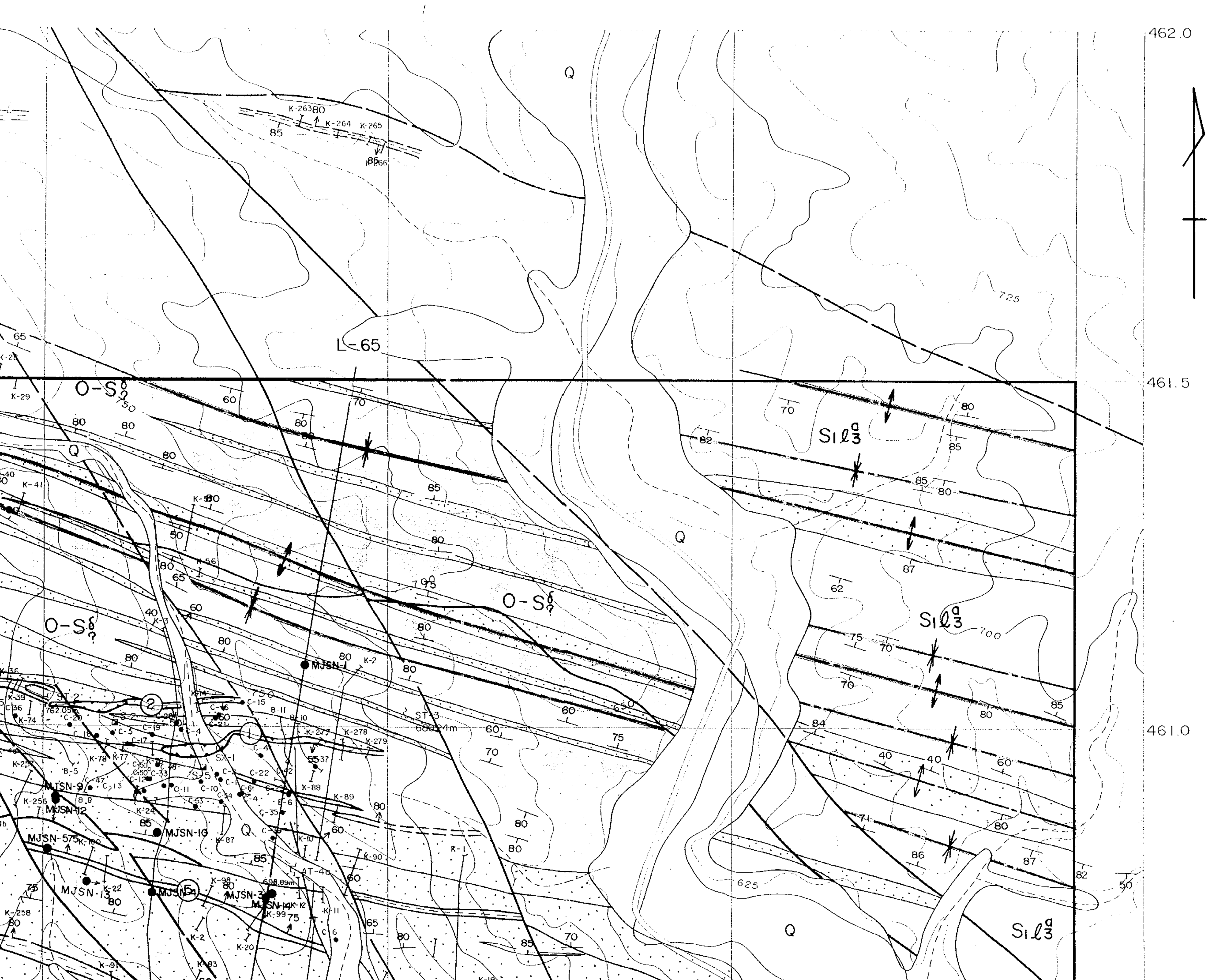
MJSN-9

MJSN-11

MJSN-12

MJSN-13

MJSN-575



PL. II-1-1-1

THE MINERAL EXPLORATION IN THE SOUTHERN NURATAU AREA THE REPUBLIC OF UZBEKISTAN (PHASE II)

GEOLOGIC MAP OF THE ALTYNSAI DEPOSIT

JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN
FEBRURARY 1999
PREPARED BY MINDECO

Scale 1 : 2,500 (0 – 100 – 200 – 300m)

Legend

Quaternary	Q	Talus, gravel, sand	
Lower Silurian		Slates, Siltstones	
		Quartz sandstones	
Silurian ~ Ordovician		Cherty slates	Middle Formation
	O-S	Sandstones	
	O-S	Cherty slates	Lower Formation
	O-S	Sandstones	
Dyke		Lamprophyres	
		Fractures : 1. Traced 2. Supposed	
		Zones of brecciation and silicification	
		Zones of quartz veins and veinlets	
		Ore zone and its number	
		Strike and dip : 1. Bedding 2. Fractures	
		1. Anticlinal axes 2. Synclinal axes	
		Trench and its number	
		Shaft and its number	
		Adit and its number	
		Old workings	

O-S$^{a}_{?}$

O-S$^{\delta}_{?}$

MJSN-6

MJSN-7

MJSN-8

MJSN-9

MJSN-11

MJSN-12

MJSN-13

MJSN-575

752.5

L-20

753.0

753.5

754.0

L-51

754.5

Legend

Quaternary — Q — Talus, gravel, sand

Lower Silurian — Slates, Siltstones

Quartz sandstones

Cherty slates

Silurian — Sandstones — Middle Formation

Ordovician — Cherty slates — Lower Formation

Sandstones

Dyke — Lamprophyres

Fractures : 1. Traced 2. Supposed

Zones of brecciation and silicification

Zones of quartz veins and veinlets

Ore zone and its number

Strike and dip : 1. Bedding 2. Fractures

1. Anticlinal axes 2. Synclinal axes

Trench and its number

Shaft and its number

Adit and its number

Old workings

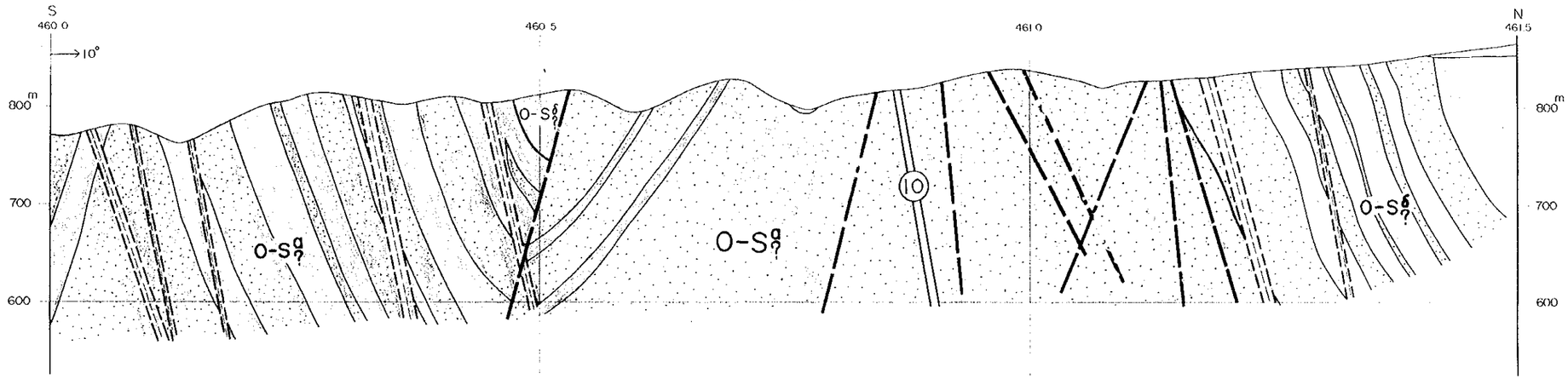
Drillholes : 1. Existed 2. MMAJ(199?) 3. MMAJ(1998)

Detailed survey area

754.5 L-65 755.0 755.5 756.0

460.5 460.0 461.0

L-20



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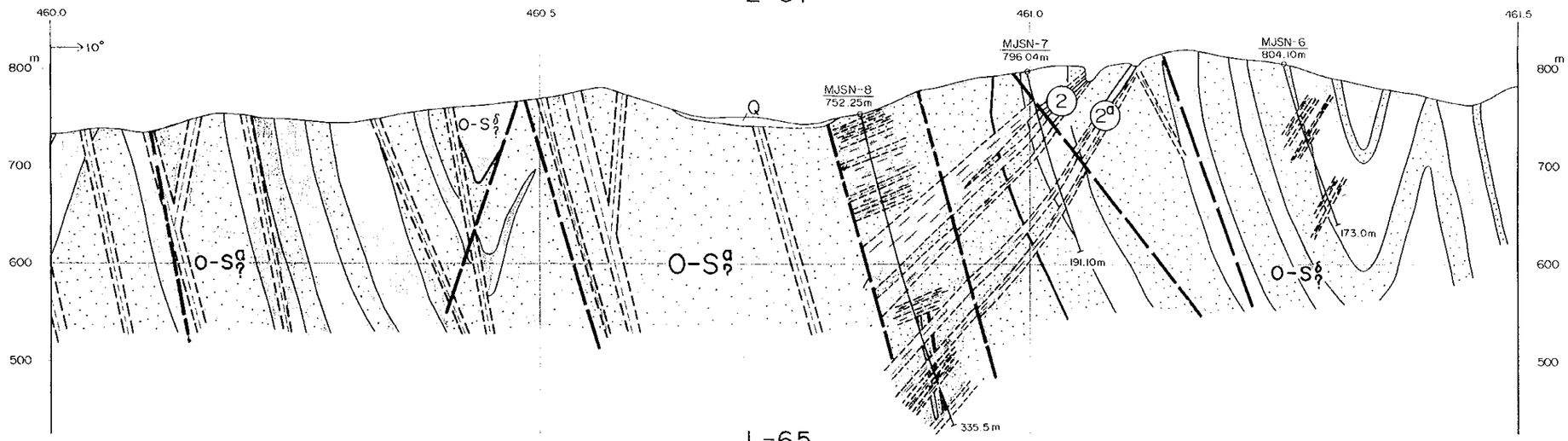

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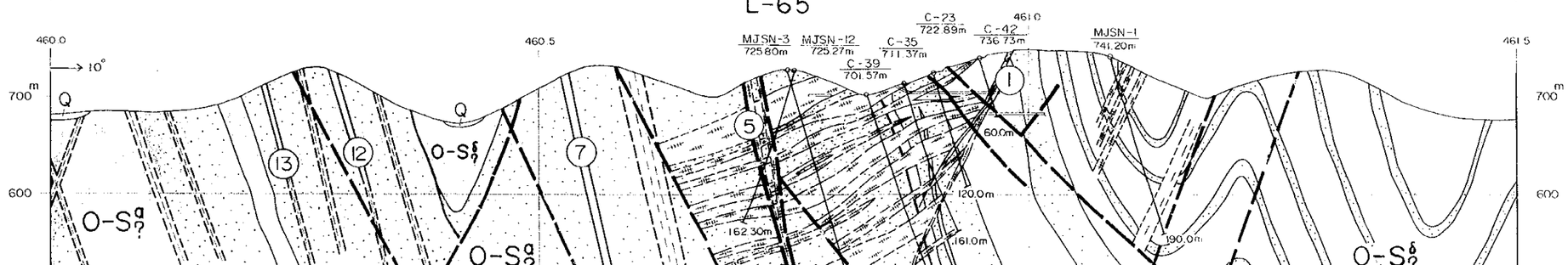
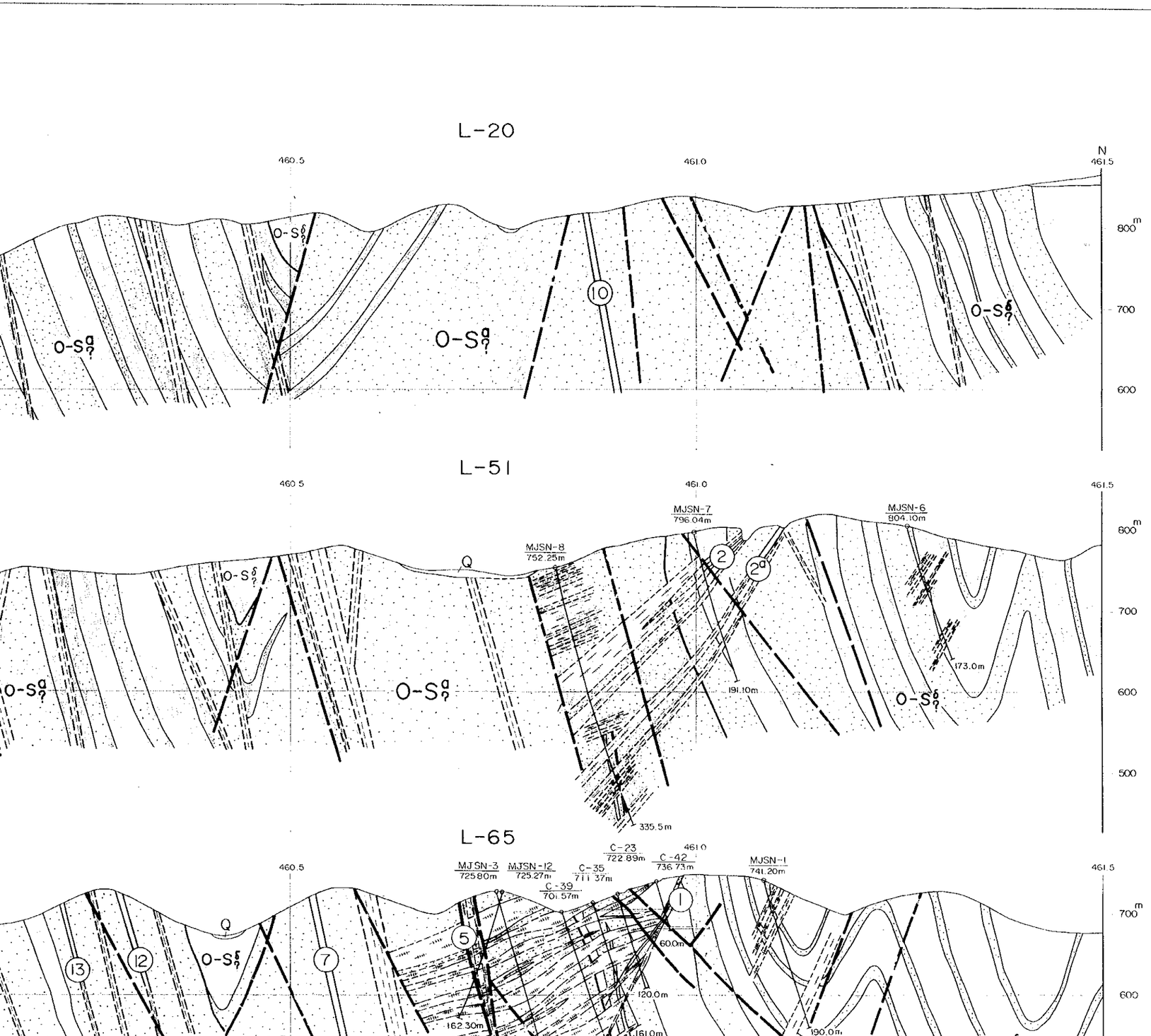


Quaternary

Lower Silurian

Silurian
|
Ordovician

Dyke



PL. II-1-1-2

THE MINERAL EXPLORATION IN THE SOUTHERN NURATAU AREA THE REPUBLIC OF UZBEKISTAN (PHASE II) GEOLOGIC CROSS SECTION OF THE ALTYNSAI DEPOSIT

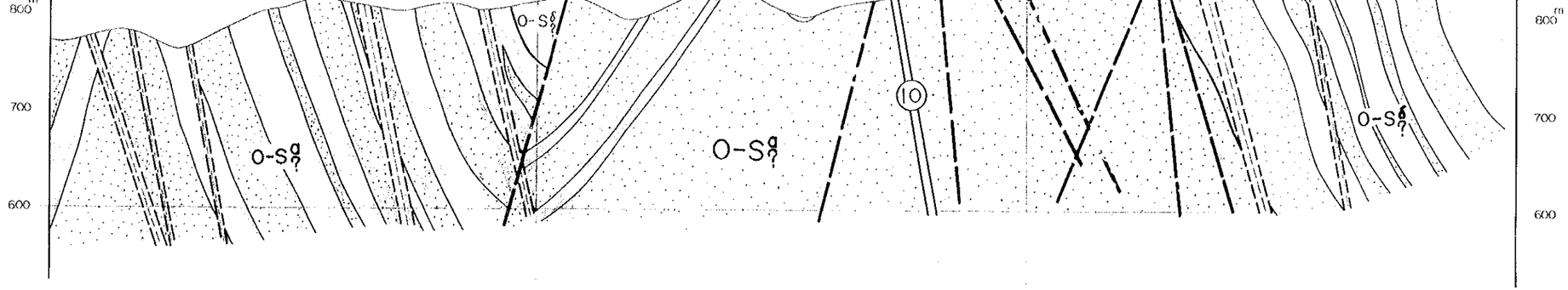
JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN
FEBRURARY 1999
PREPARED BY MINDECO

0 100 200 300 m
Scale 1 : 2,500

Legend

Quaternary	Q	Talus, gravel, sand
Lower Silurian		Slates, Siltstones
		Quartz sandstones
Silurian	O-S$^{\delta}_{?}$	Cherty slates
	O-S$^{\delta}_{?}$	Sandstones
Ordovician	O-S$^{a}_{?}$	Cherty slates
	O-S$^{a}_{?}$	Sandstones
Dyke		Lamprophyres
		Fractures : 1. Traced 2. Supposed
		Zones of brecciation and silicification
		Zones of quartz veins and veinlets
		Ore zone and its number
	MJSN	Drillholes : 1. Existed 2. MMAJ(1997,1998)

Middle Formation
Lower Formation



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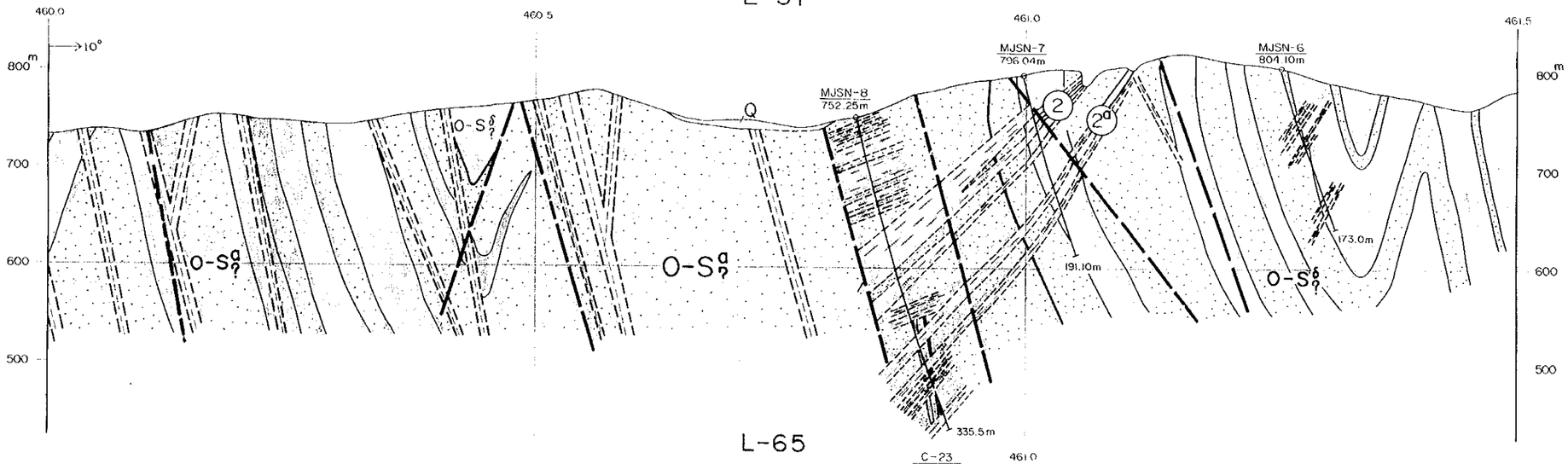

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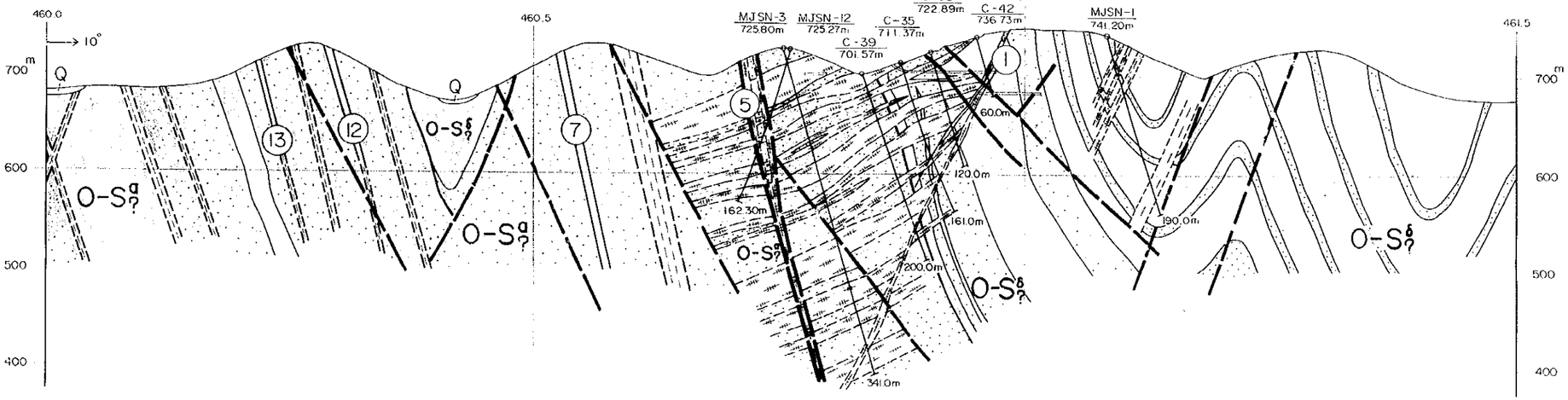


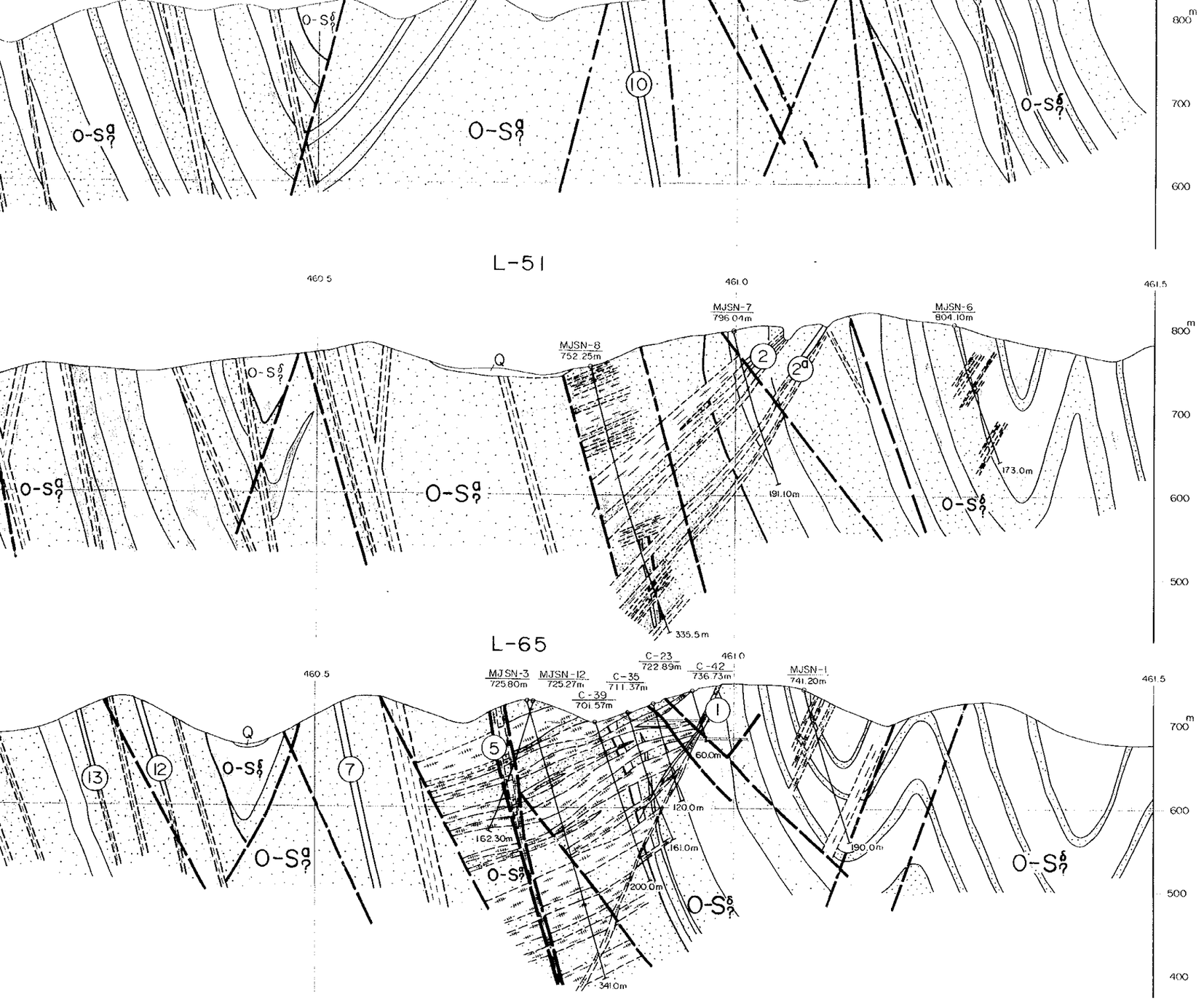
Quaternary

Lower Silurian

Silurian

Ordovician

Dyke

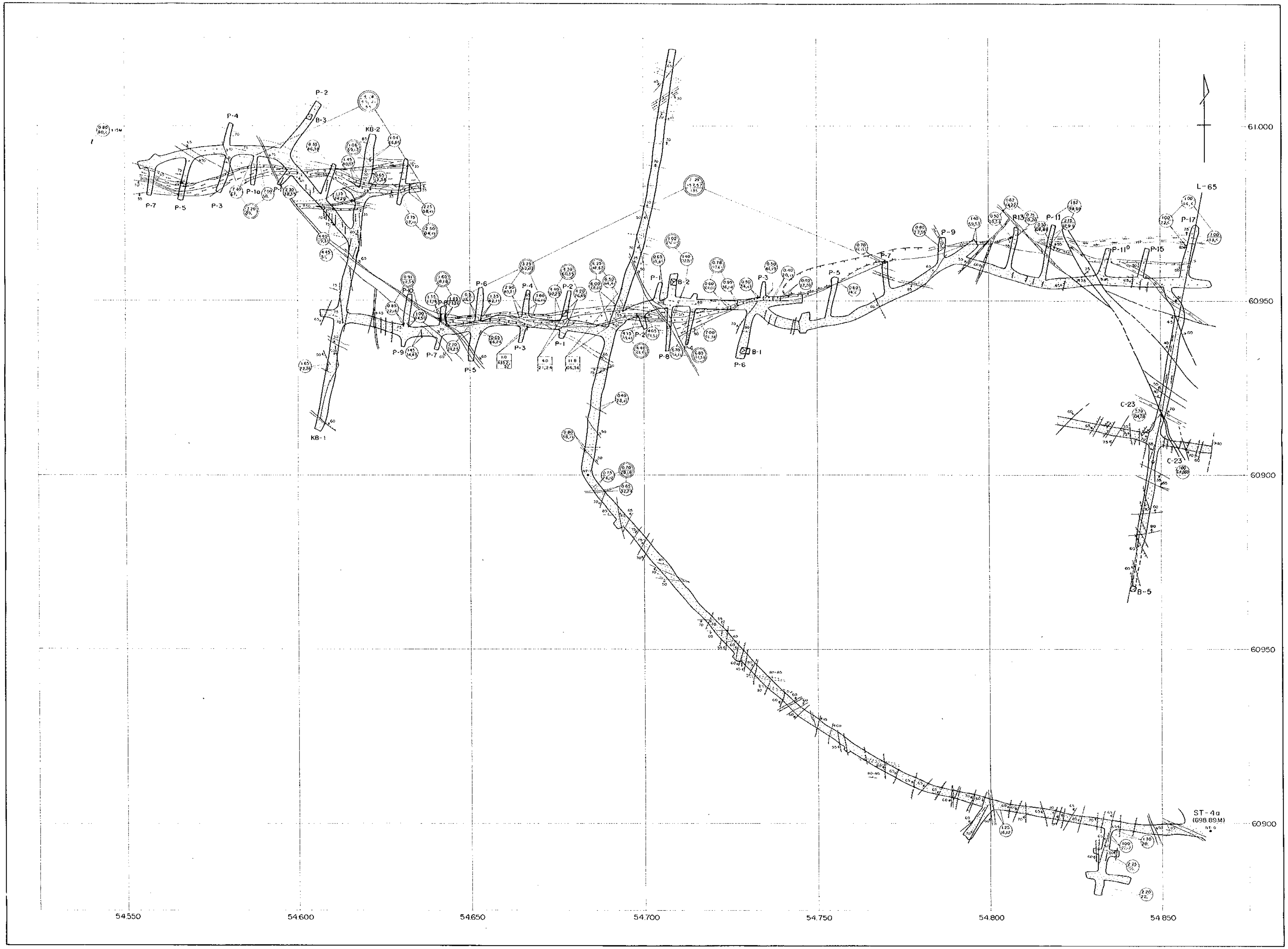


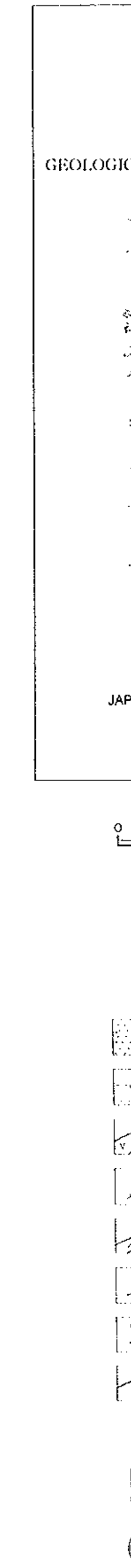
JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN
FEBRURARY 1999
PREPARED BY MINDECO

0 100 200 300m
Scale 1 : 2,500

Legend

- Quaternary — Q — Talus, gravel, sand
- Lower Silurian — Slates, Siltstones
- Lower Silurian — Quartz sandstones
- Silurian — Cherty slates — Middle Formation
- Silurian — Sandstones — Middle Formation
- Ordovician — Cherty slates — Lower Formation
- Ordovician — Sandstones — Lower Formation
- Dyke — Lamprophyres
- Fractures : 1. Traced 2. Supposed
- Zones of brecciation and silicification
- Zones of quartz veins and veinlets
- (9) — Ore zone and its number
- MJSN1 — Drillholes : 1. Existed 2. MMAJ(1997,1998)

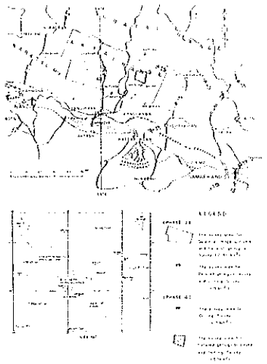

54.550
54.600
54.650
54.700
54.750
54.800
54.850
61.000
60.950
60.900
60.950
60.900
P-2
P-4
B-3
KB-2
KB-1
P-7
P-5
P-3
P-1a
P-10
P-6
P-9
P-8
P-1
B-2
B-1
P-13
P-11
P-15
P-17
L-65
C-23
B-5
ST-4a
(698.89M)


GEOLOGIC M
JAPAN

PL II-1-1-3

THE MINERAL EXPLORATION IN THE SOUTHERN NURATAU AREA THE REPUBLIC OF UZBEKISTAN (PHASE II)

GEOLOGIC MAP OF THE ADIT No. 4 (1698.89M LEVEL) OF THE ALTYNSAI DEPOSIT



JAPAN INTERNATIONAL COOPERATION AGENCY

METAL MINING AGENCY OF JAPAN

FEBRURARY 1999

PREPARED BY MINDECO

0 10 20 30 40 50m

Scale 1 : 500

61.000

60.950

60.900

60950

60900

54.600 54.650 54.700 54.750 54.800 54.850

P-2 P-4 P-3 KB-2 P-7 P-5 P-3 P-10 P-1 KB-1 P-6 P-4 P-2 P-3 P-1 P-9 P-7 P-5 P-1 B-2 P-3 P-5 P-7 P-9 P-8 P-6 B-1 P-11 B13 P-11a P-15 L-65 P-17 C-23 C-23 B-5 ST-4a (698.89M)

Legend

- Sandstone
- Slate
- Quartz vein
- Quarz veinlets
- Shear zone
- Fault
- Strike and dip of bedding plane
- Ore zone (Au ≧ 2g/t)
- Thickness(m) Au(g/t) ; Ag(g/t) — Existing data
- Thickness(m) Au(g/t) ; Ag(g/t) — MMAJ(1997)
- Average thickness(m) Au (g/t) ; Ag(g/t) Length of ore body(m)

PL. II-2-1-1

THE MINERAL EXPLORATION IN THE SOUTHERN NURATAU AREA THE REPUBLIC OF UZBEKISTAN (PHASE II)

GEOLOGIC MAP OF THE MAUTYAN DISTRICT

JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN
FEBRURARY 1999
PREPARED BY MINDECO

Scale 10,000

Legend

Blanket

Quaternary	Q	sand gravel silt

Basement Complex

Carboniferous	C₂?dr	Darasai formation slate sandstone limestone
	S₂-C₂?ak	Aktau formation marble
Siluruian	S₁dz	Dzhazbulak formation sandstone siltsone slate conglomerate phyllite
	S₁nkr	Nakrut formation slate siltsone sandstone hornfels phyllite
Ordovician	Obd	Badamchain formation shale siltstone sandstone
Cambrian	€kl	Kalasarin formation limestone slate

Intrusive Body

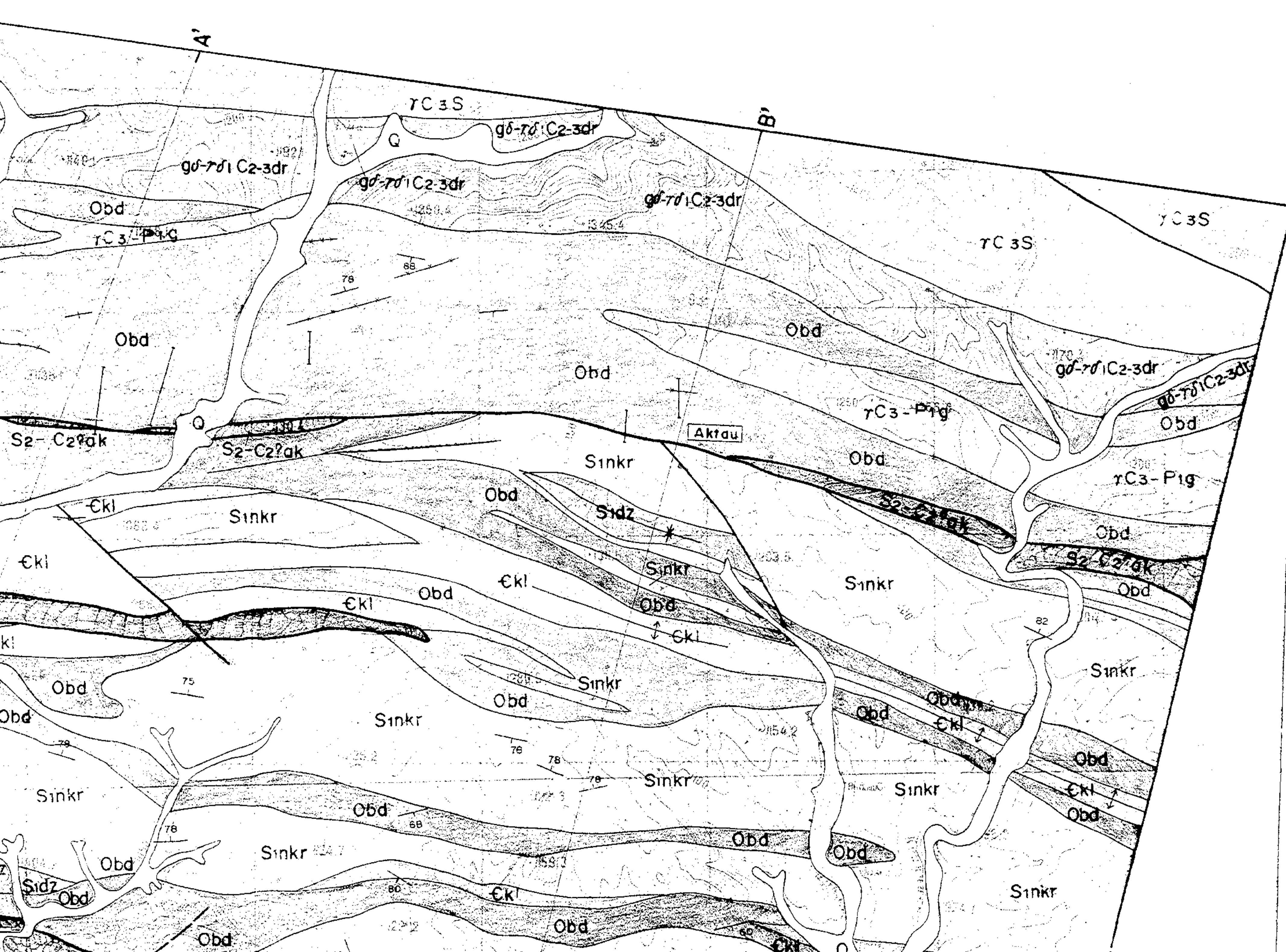
Permian	γC₃-P₁g	Gatchin granitoids pegmatite
Carboniferous	γC₃s	Shurak granitoids two mica granite (Aktau granitoid complex)
	gδ-γδC₂dr	Darasai granitoids granodiorite

Dike

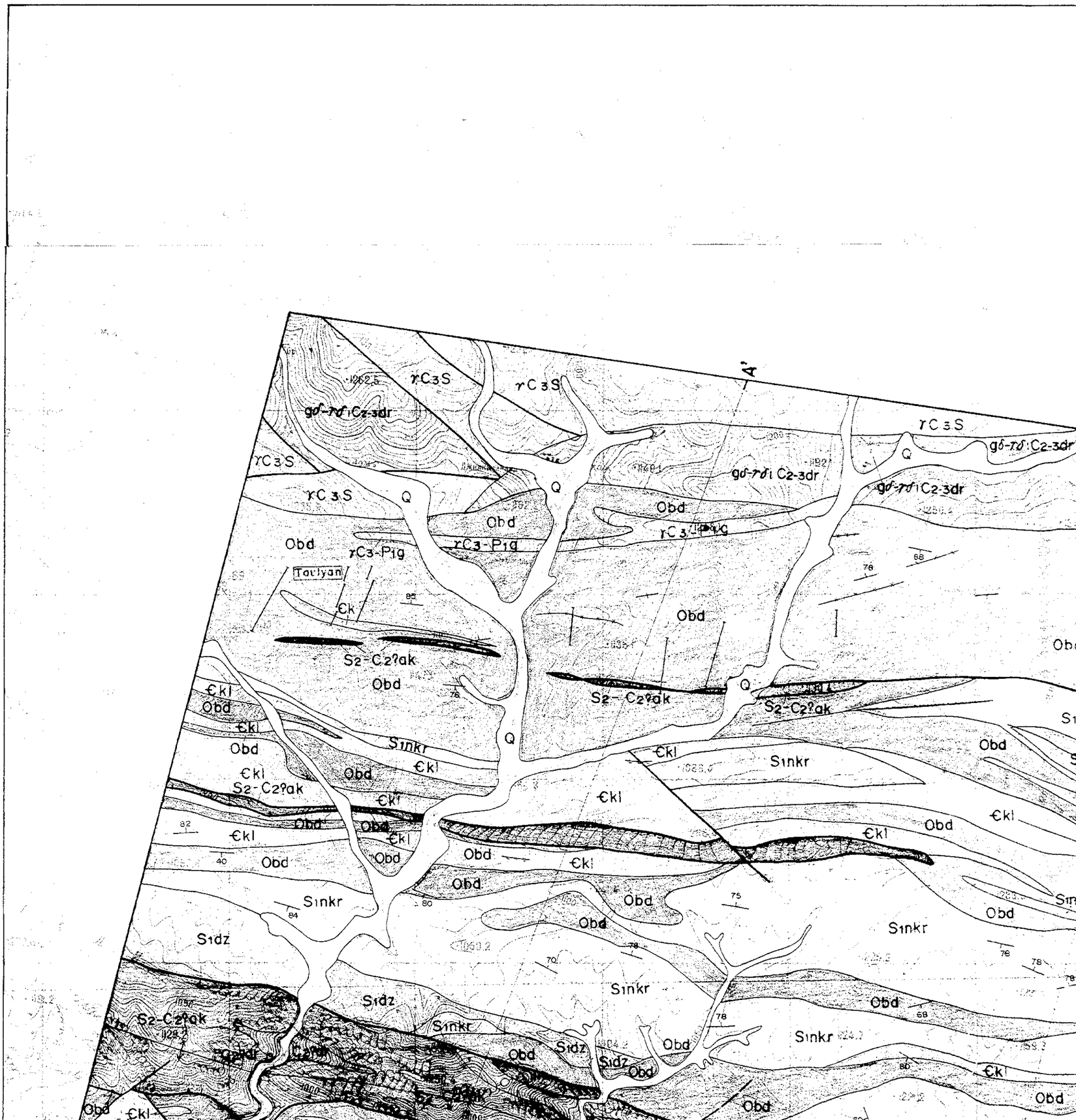
- aplite pegmatite
- diabase
- lamprophyre

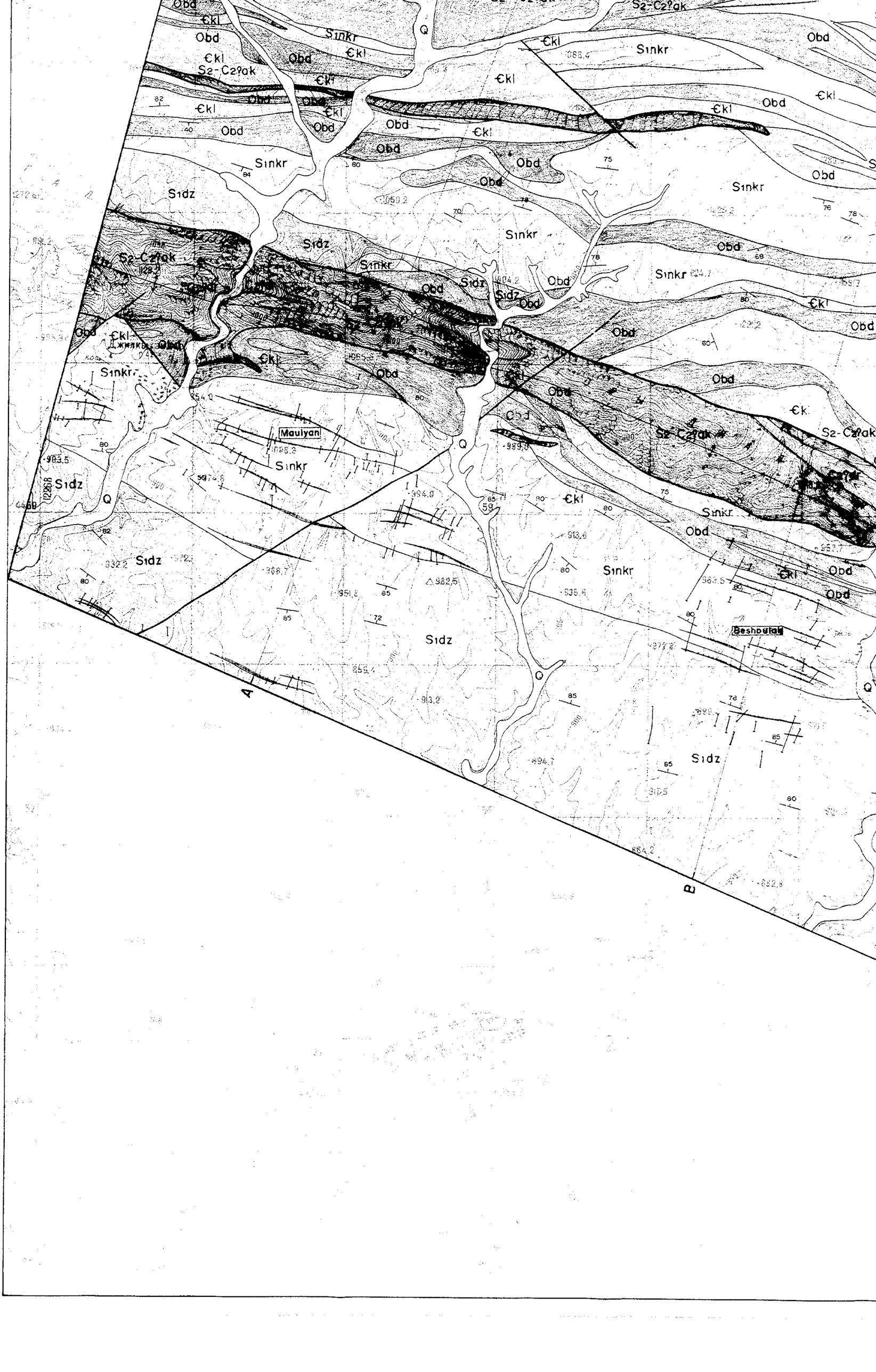
Others

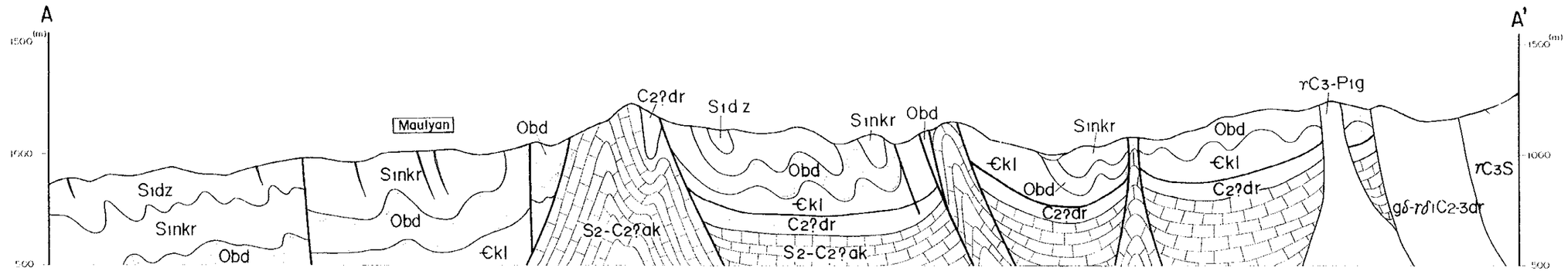
- fault
- syncline
- anticline
- fracture zone with quartz vein
- dip and strike

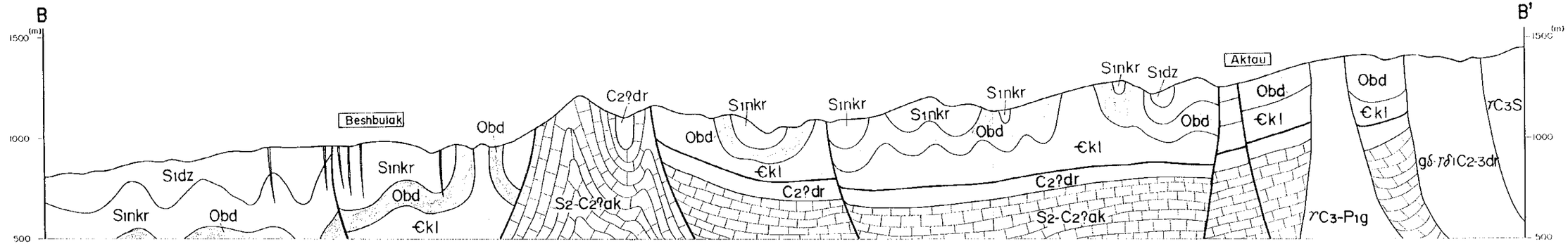


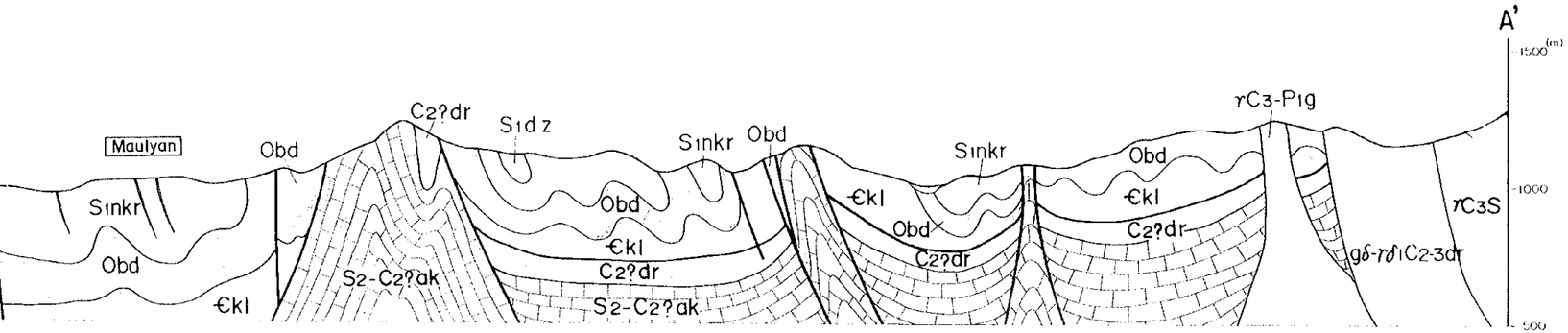
Obd
Sınkr
Sıdz
Ckl
S2-C2?ak

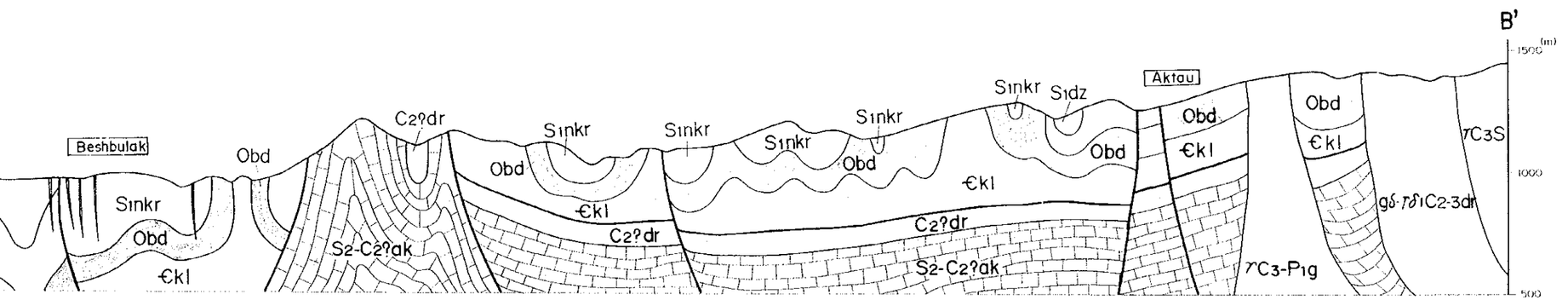

γC3S
gδ-γδiC2-3dr
Q
Obd
γC3-P1g
Taulyan
€k
S2-C2?ak
€kl
Sınkr
Sıdz


Obd
€kl
Sinkr
Sidz
S2-C2?ak
Maulyan
Beshoutak
A
B
Q


A
A'
1500 (m)
1000
500
Maulyan
Sıdz
Sınkr
Obd
€kl
C2?dr
S2-C2?ak
Sıdz
Sınkr
Obd
€kl
C2?dr
S2-C2?ak
Sınkr
Obd
€kl
C2?dr
S2-C2?ak
Sınkr
Obd
€kl
C2?dr
γC3-P1g
gδ-γδ1C2-3dr
γC3S


B
B'
1500 (m)
1000
500
Beshbulak
Aktau
Sıdz
Sınkr
Obd
€kl
C2?dr
S2-C2?ak
γC3-P1g
gδ-γδ1C2-3dr
γC3S





PL. II-2-1-2

THE MINERAL EXPLORATION IN THE SOUTHERN NURATAU AREA THE REPUBLIC OF UZBEKISTAN (PHASE II) GEOLOGIC CROSS SECTION OF THE MAUTYAN DISTRICT

JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN
FEBRURARY 1999
PREPARED BY MMAJ/JICA

0 500 1000(m)
Scale 10,000

Legend

Blanket

- Quaternary — Q — sand,gravel,silt

Basement Complex

- Carboniferous — C?dr — Darasai formation;slate,sandstone, limestone
- Carboniferous — S_2-C?ak — Aktau formation;marble
- Siluruian — S1dz — Dzhazbulak formation;sandstone,siltsone,slate, conglomerate,phyllite
- Siluruian — Sinkr — Nakrut formation;slate,siltsone,sandstone hornfels,phyllite
- Ordovician — Obd — Badamchalin formation;shale,siltstone,sandstone
- Cambrian — €kl — Kalasanin formation;limestone,slate

Intrusive Body

- Permian — γC3-P1g — Gatchin granitoids;pegmatite
- Carboniferous — γC3s — Shurak granitoids;two mica granite
- Carboniferous — gδ-γδC2-3dr — Darasai granitoids;granodiorite

Aktau granitoid complex

Dike

- aplite,pegmatite
- diabase
- lamprophyre

Others

- fault
- syncline
- anticline
- fracture zone with quartz vein
- dip and strike