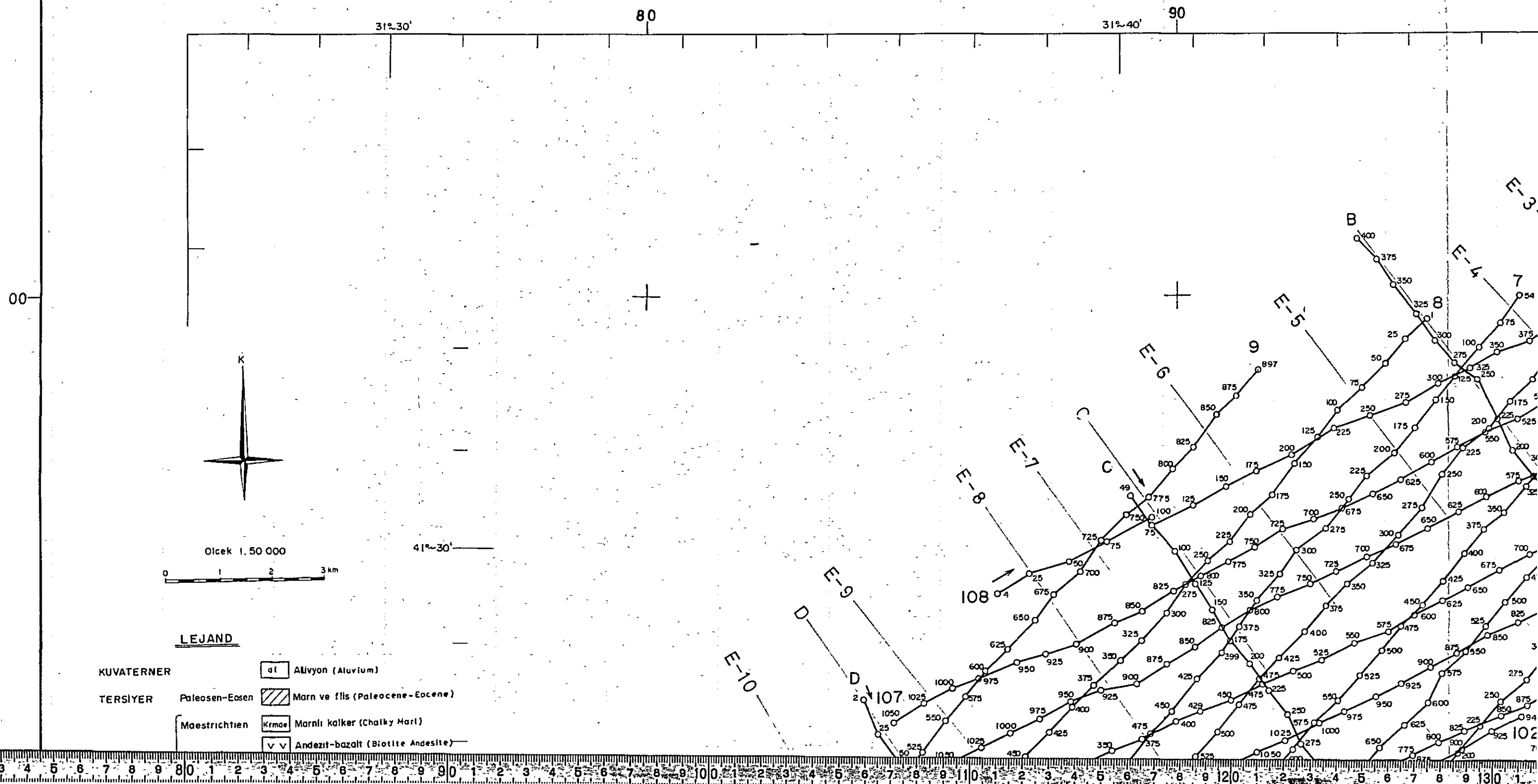


Part 1 · Geology & U/G Drilling · Fig. 6·7·12·13·16~29

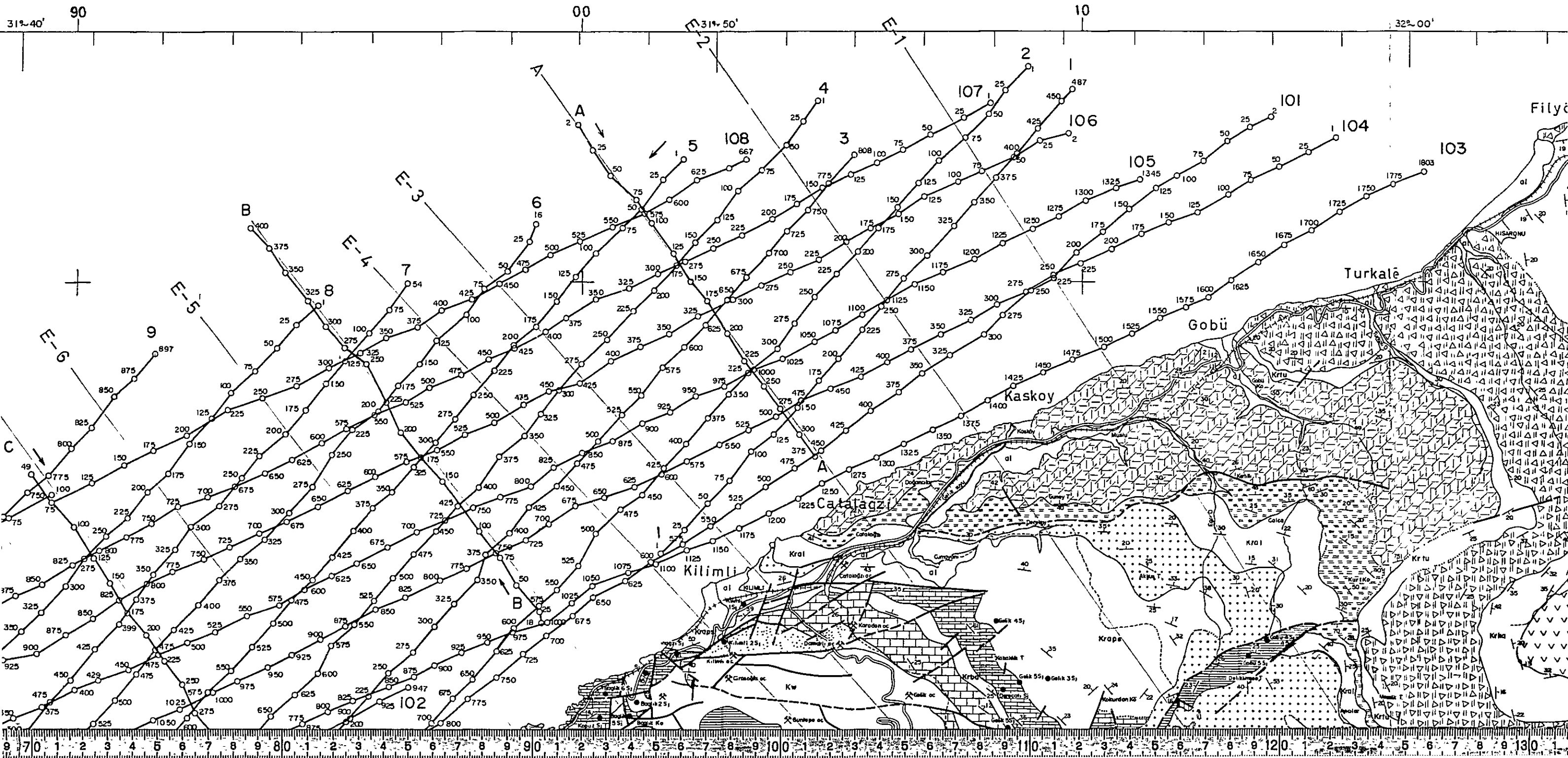
NDW
L39
#3

Figure 6. Geological Map of Zonguldak Coal Field Turkey (With Seismic Survey Lines)

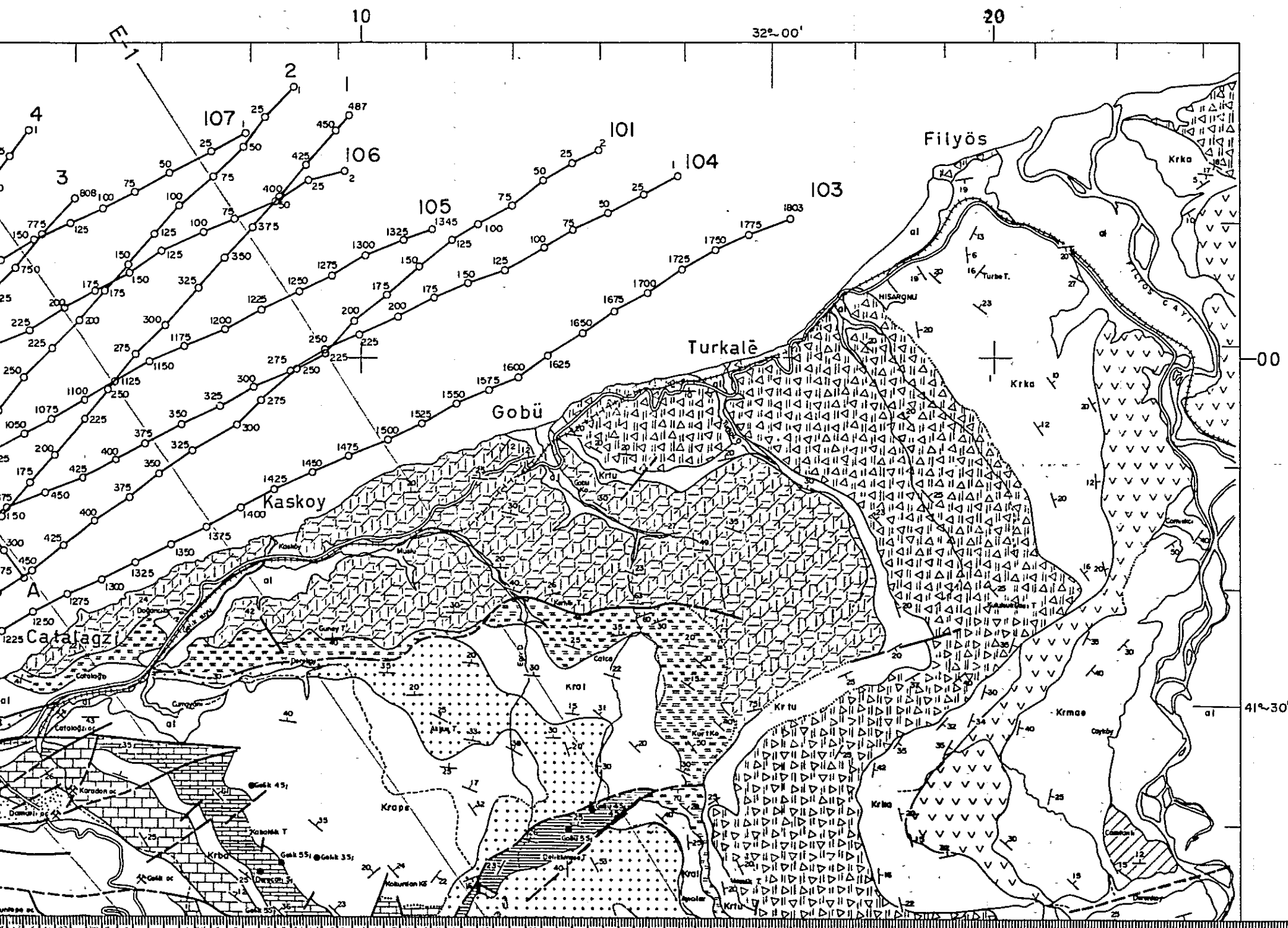


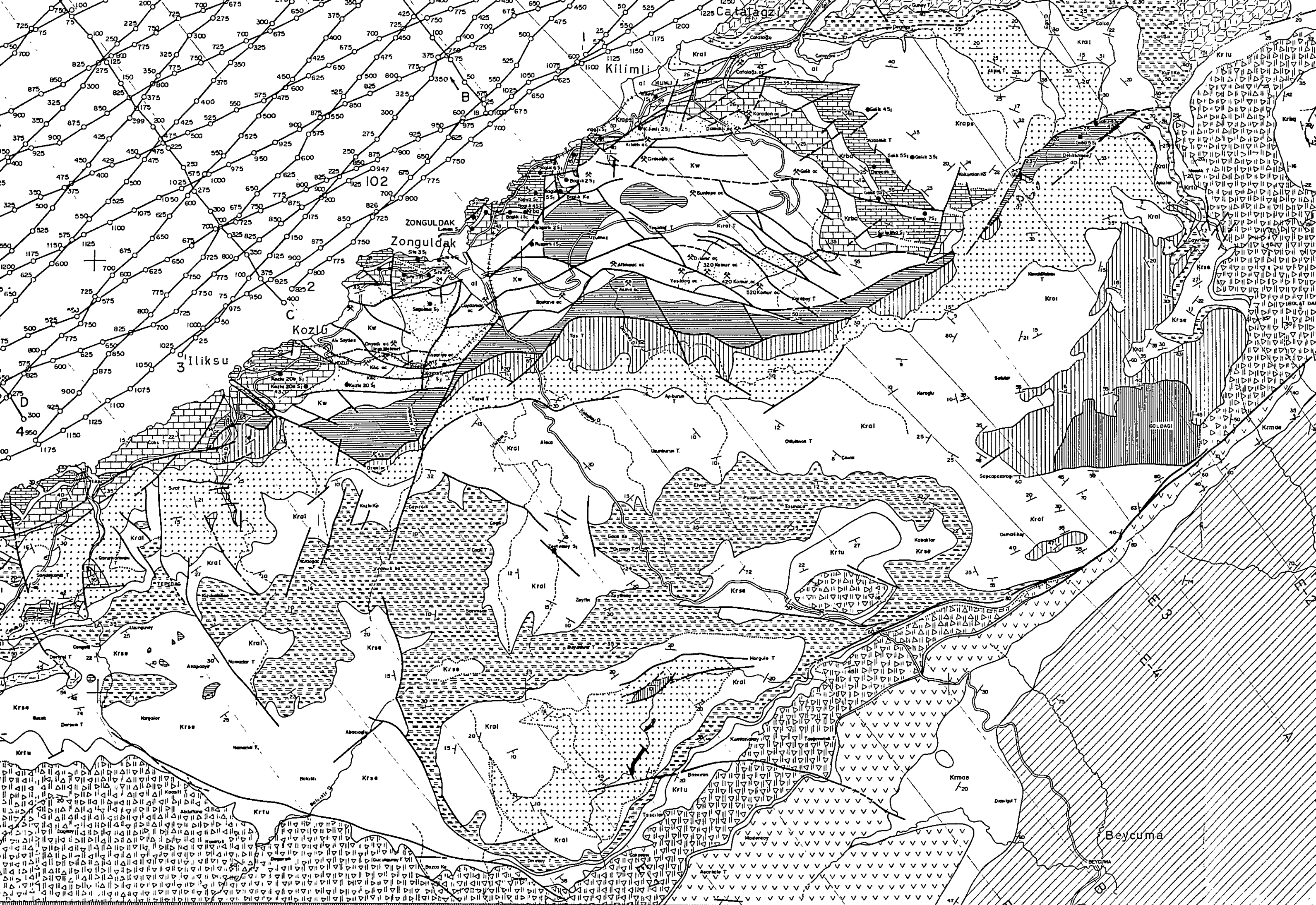
Seismic Survey Lines)

Scale 1 :








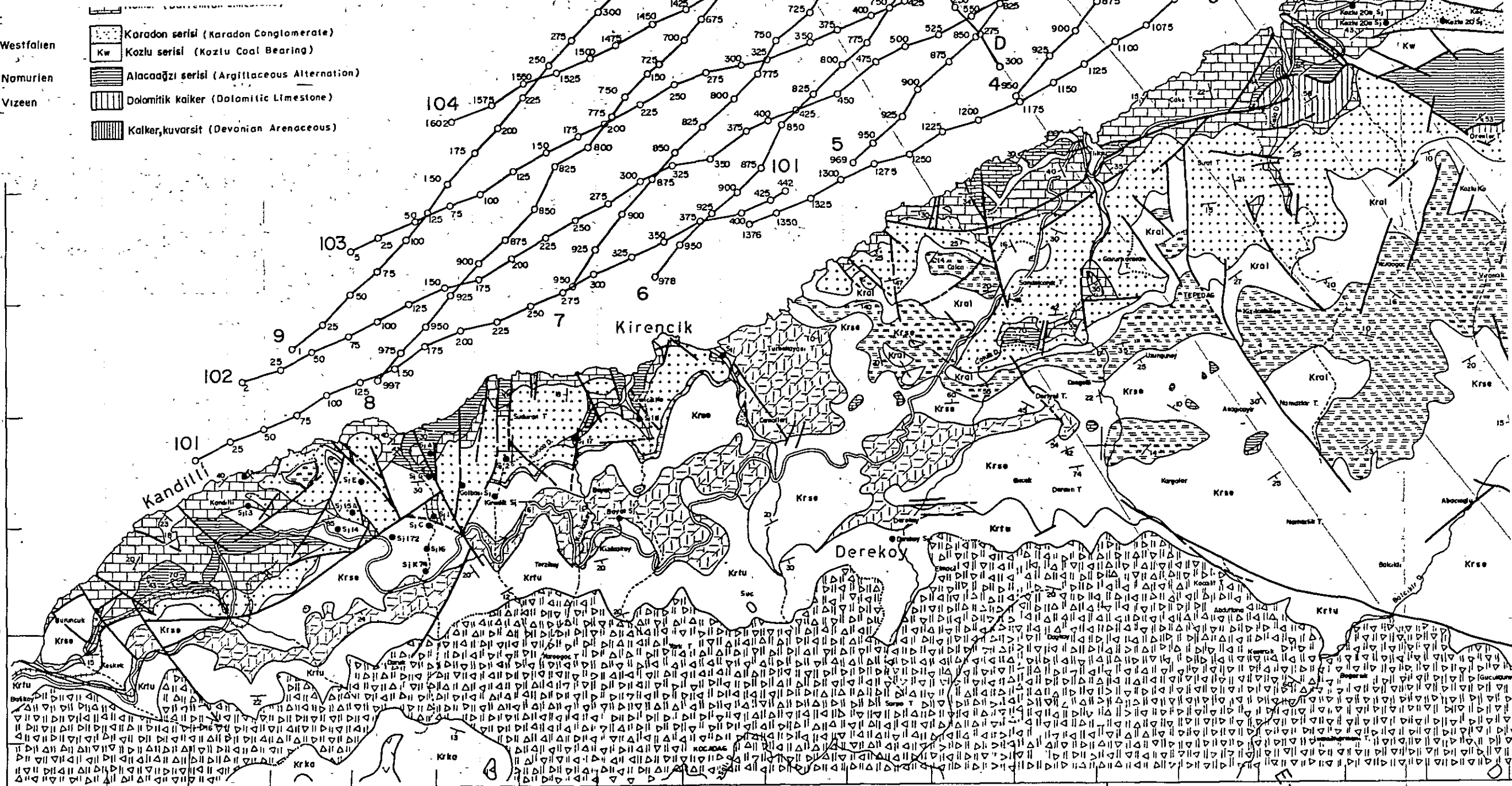
Scale 1 : 50,000





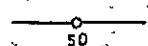
KARBONIFER
 Westfalen
 Namurien
 Vizeen
 DEVONIEN

-  Karadon serisi (Karadon Conglomerate)
-  Kozlu serisi (Kozlu Coal Bearing)
-  Alacaagazi serisi (Argillaceous Alternation)
-  Dolomitik kalker (Dolomitic Limestone)
-  Kalker, kuvarsit (Devonian Arenaceous)



Legend

E-1 ——— E-1 Geologic Section Line



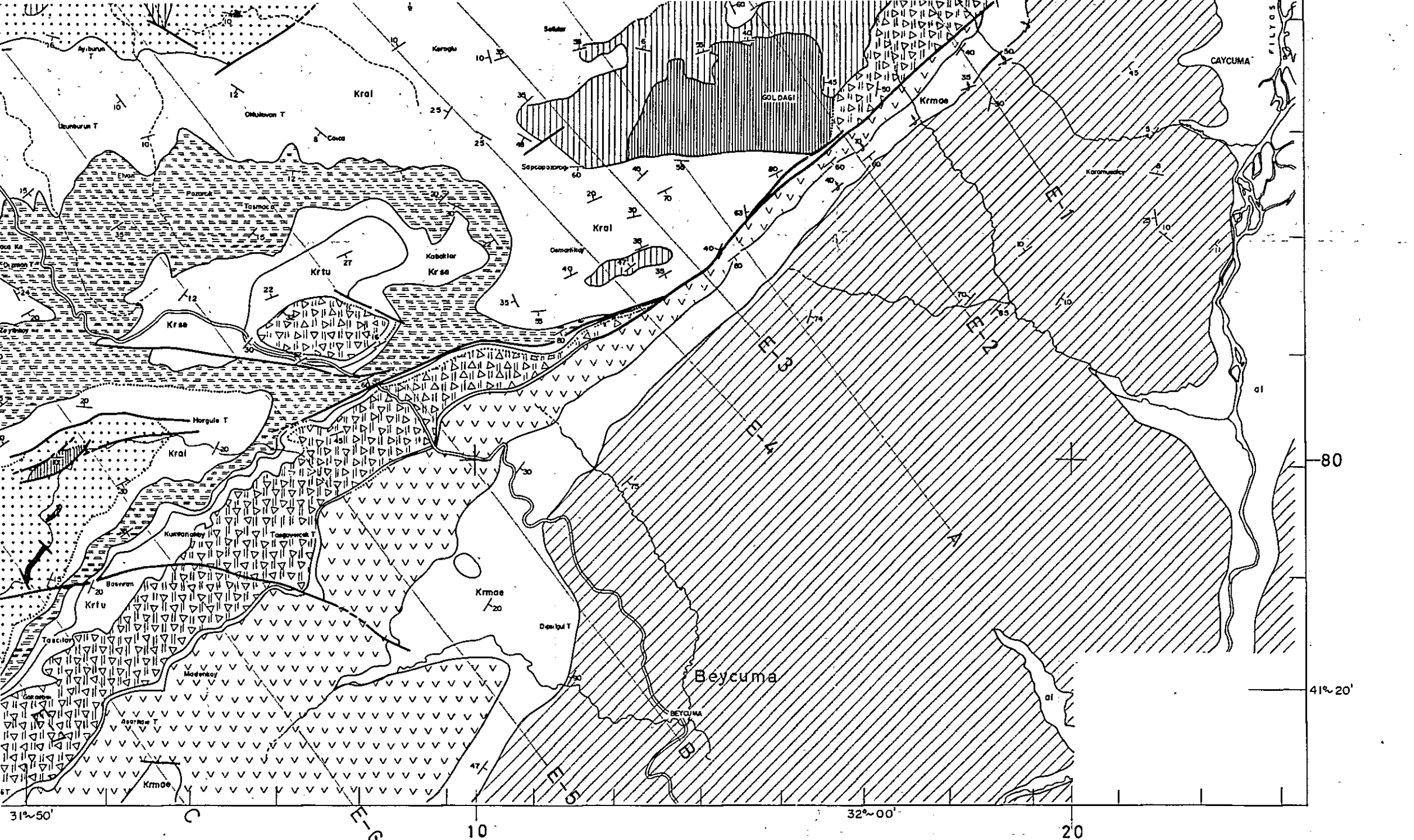
Seismic Survey Line





Geologic Section Line
Geologic Survey Line

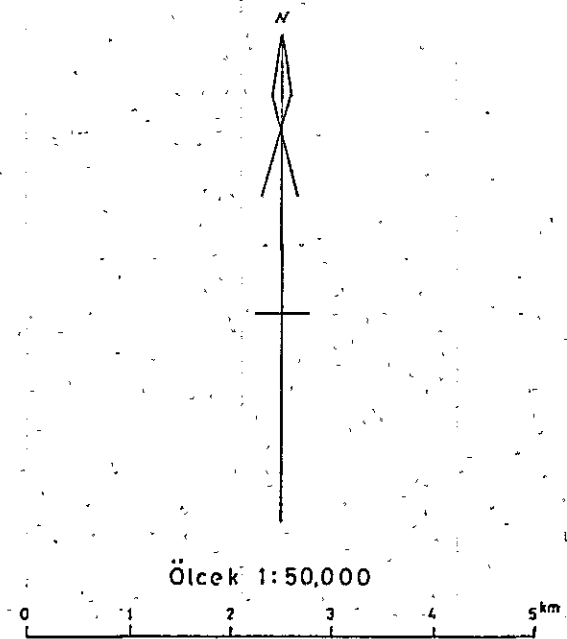




COAL DEVELOPMENT PROJECT AT OFFSHORE AREA OF ZONGULDAK COAL FIELD	
Geological Map of Zonguldak Coal Field, Turkey (With Seismic Survey Lines)	
Scale 1:50,000	
Japan International Cooperation Agency (JICA)	
Date: Aug., 1982	Fig 6



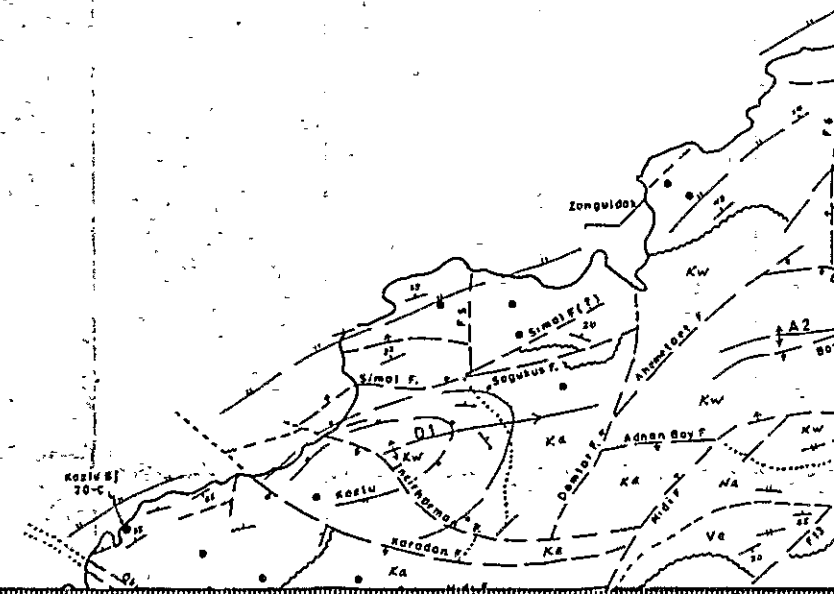
Figure 7 Structural Map of Zonguldak Coal Field, Turkey

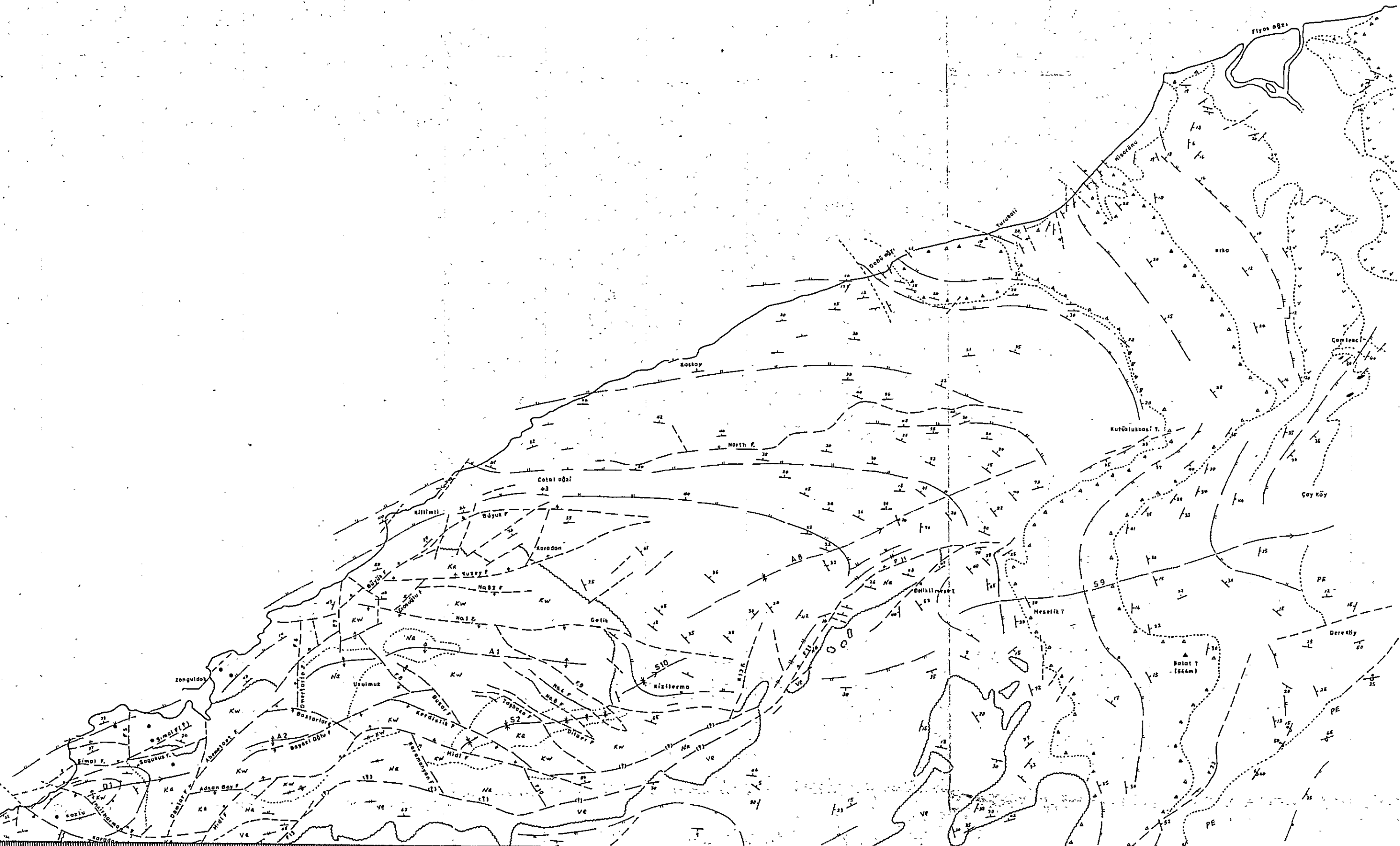


LEGEND

- Dip & Stricke
- Fault contact
- Unconformity contact
- Anticlinal axes
- Sinclinal axes
- General stricke direction & dipping
- Ditto, steep dipping part

- Paleocen-Eocene
 - Cenonian-Coniasian Agglomerate, Tuff, Sandstone
 - Karadon-formation
 - Kozlu formation
 - Namurian
- Carboniferous





- Sinclinal axes
- General strike direction & dipping
- Ditto, steep dipping part

- Paleocen-Eocene
- Cenonian-Coniasian Agglomerate, Tuff, Sandstone
- Karadon formation
- Kozlu formation
- Namurian
- Visean
- Devonian

Carboniferous

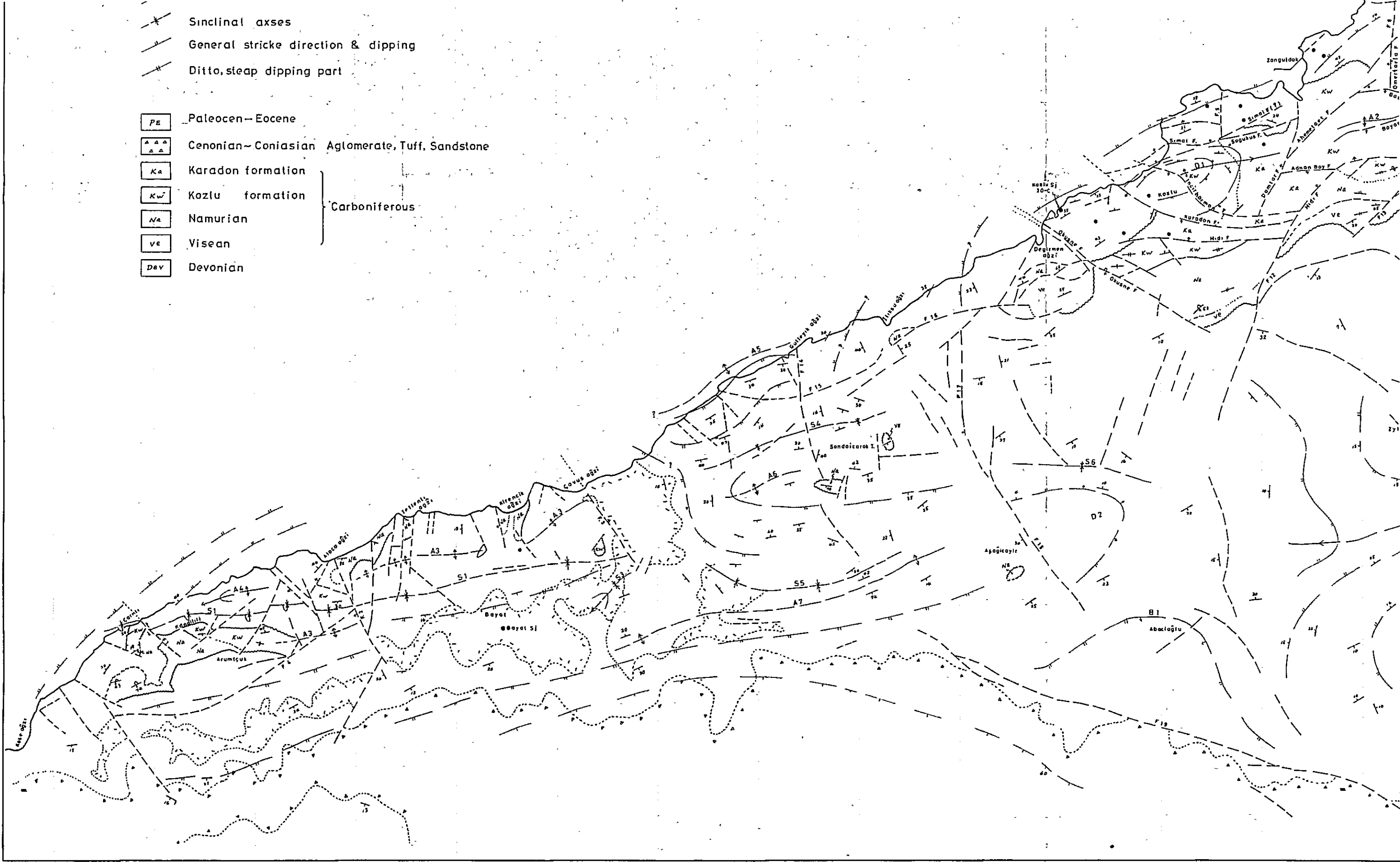
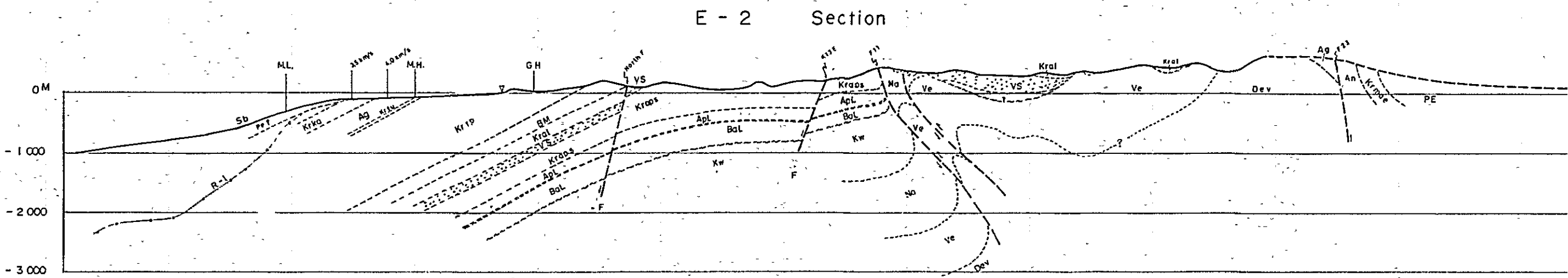
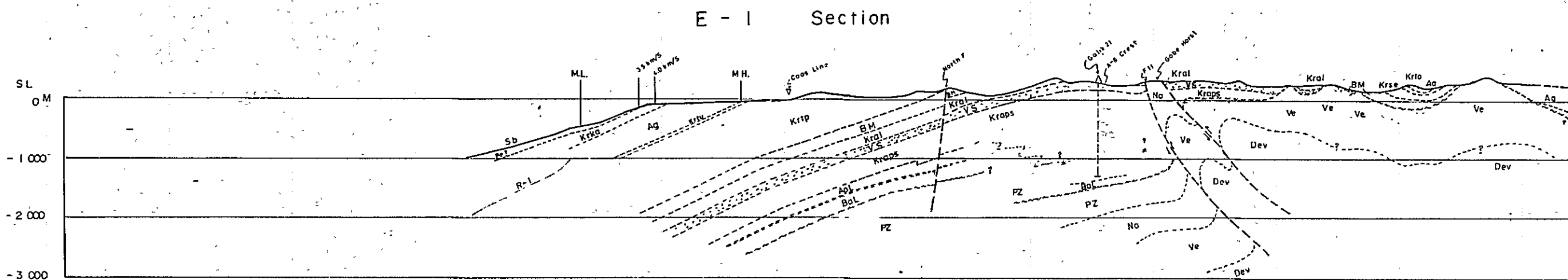


Figure 12

Typical Geologic Sections in The Zonguldak Coal Field, Turkey

Scale : 1:50,000



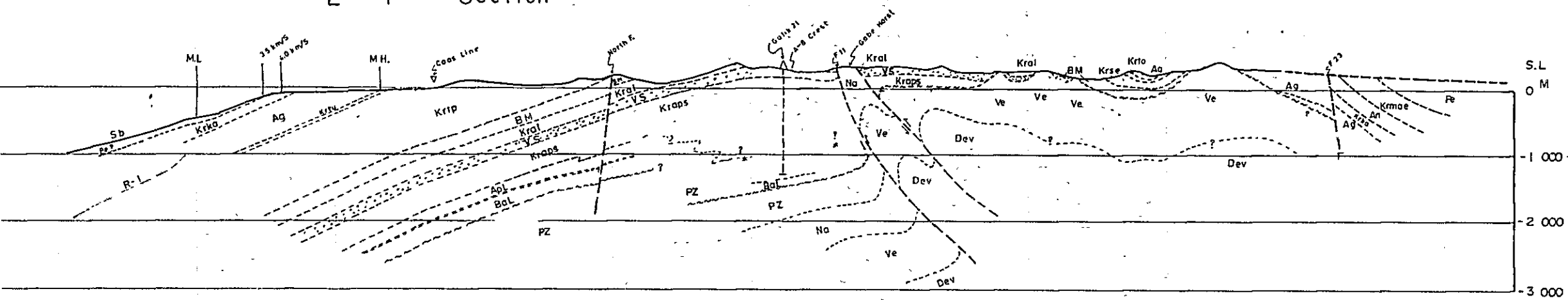
A Section



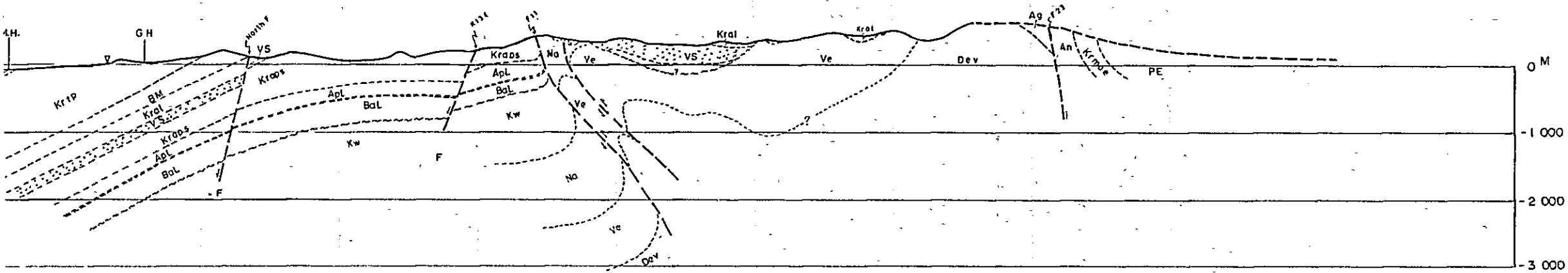
Typical Geologic Sections in The Zonguldak Coal Field, Turkey

Scale: 1:50,000

E - 1 Section

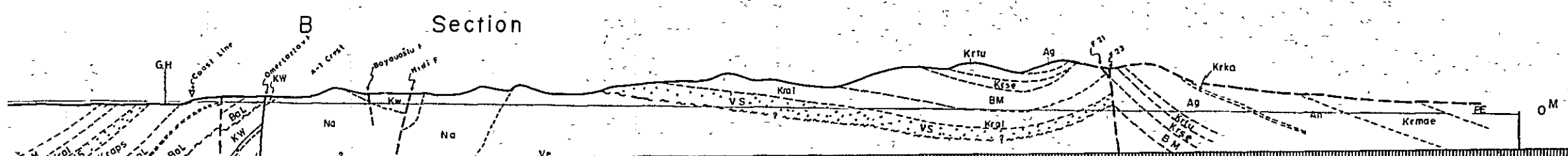
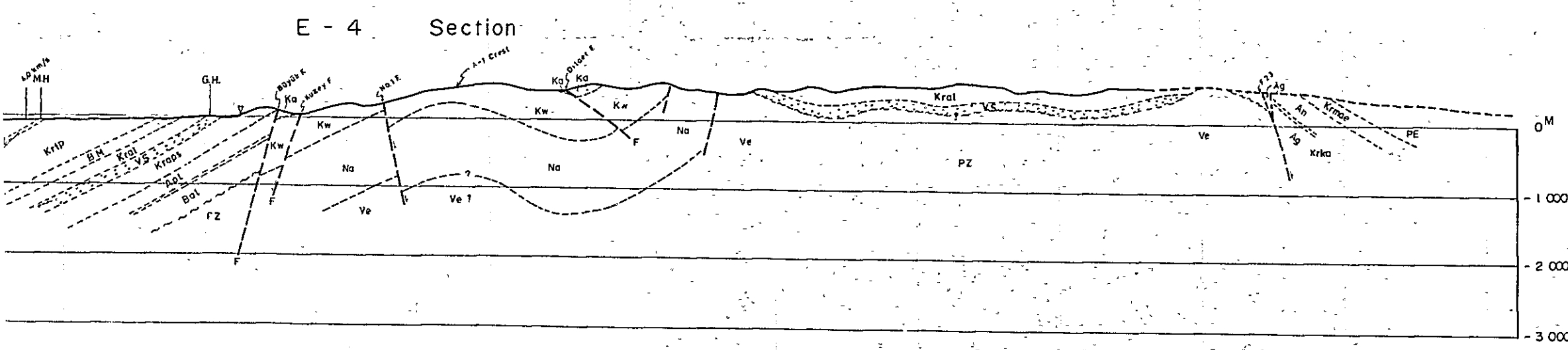
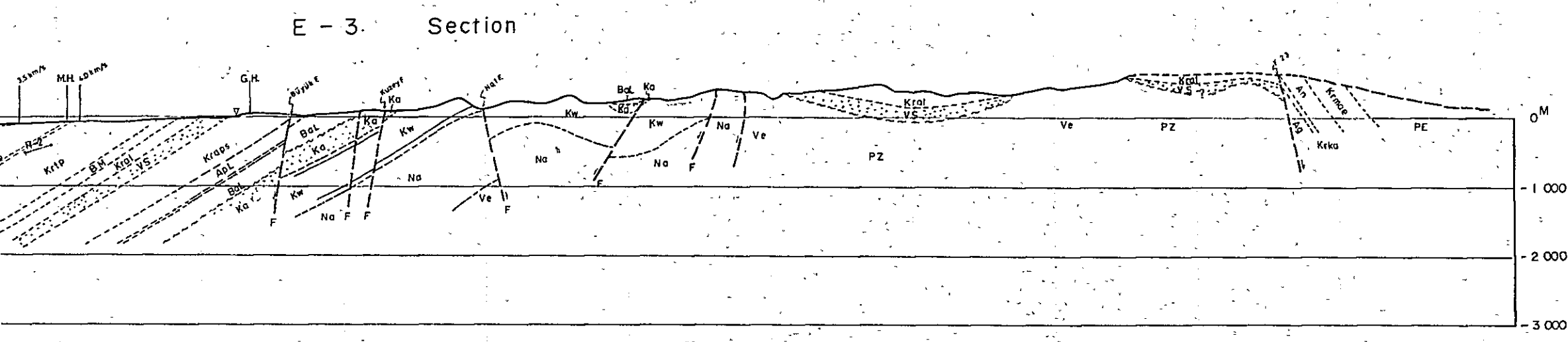
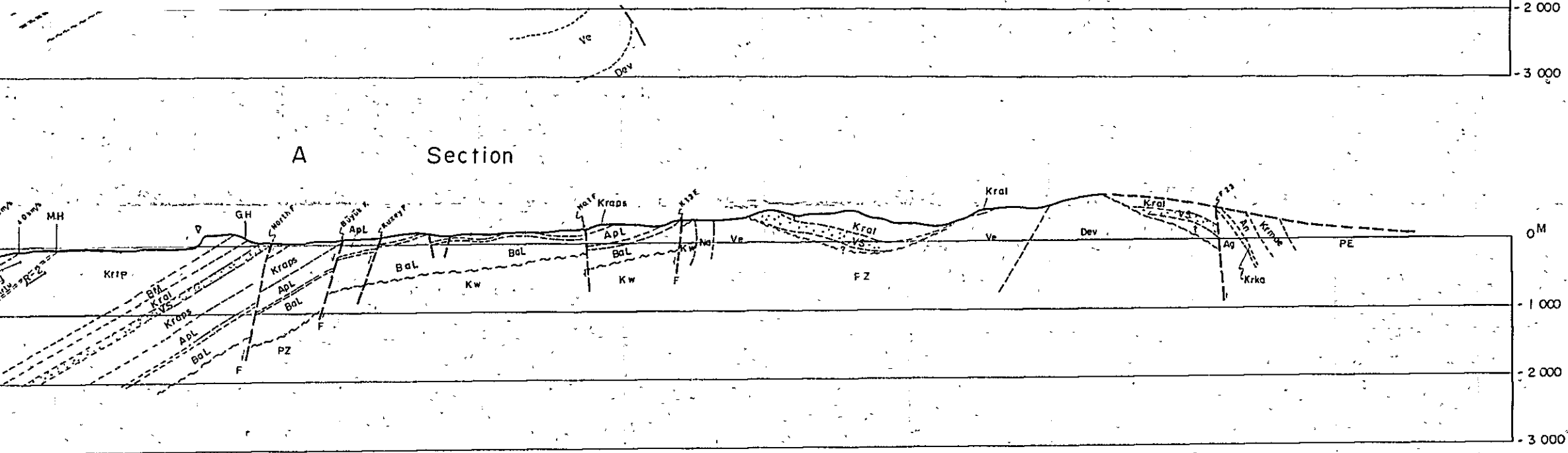


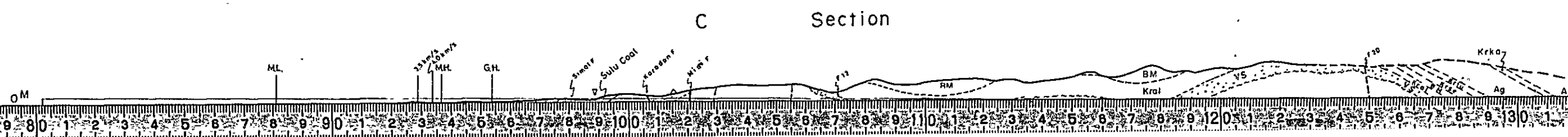
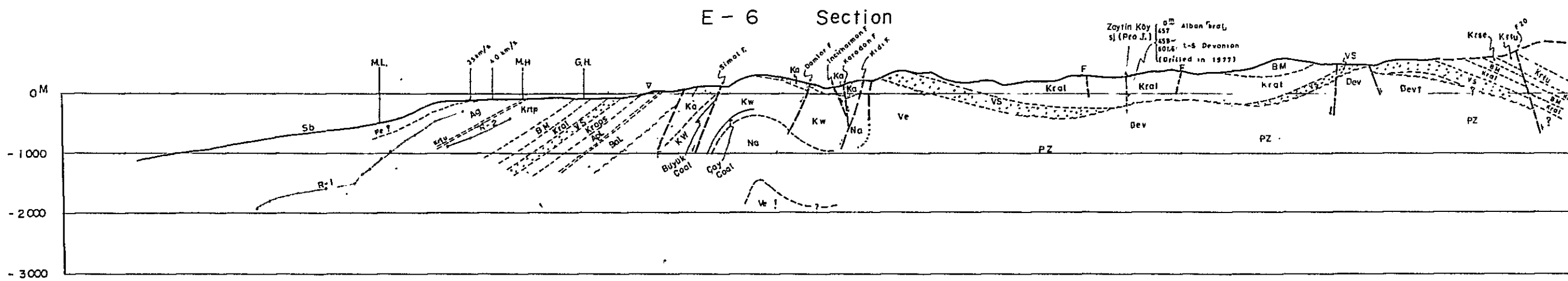
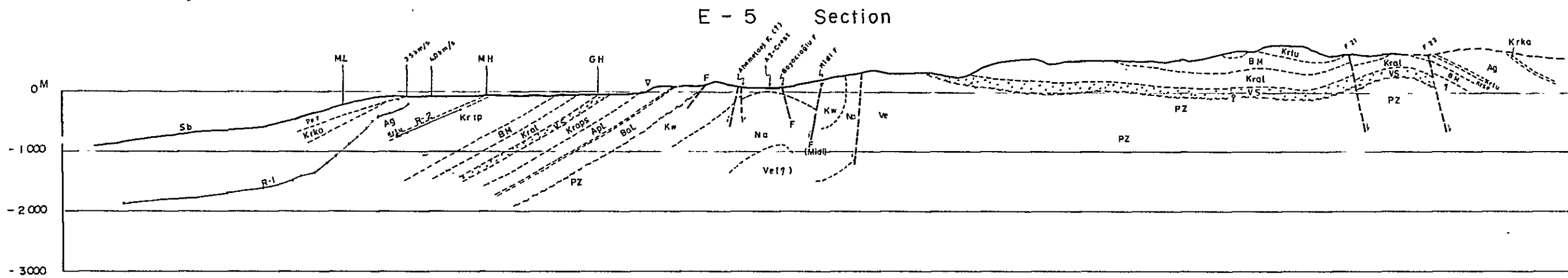
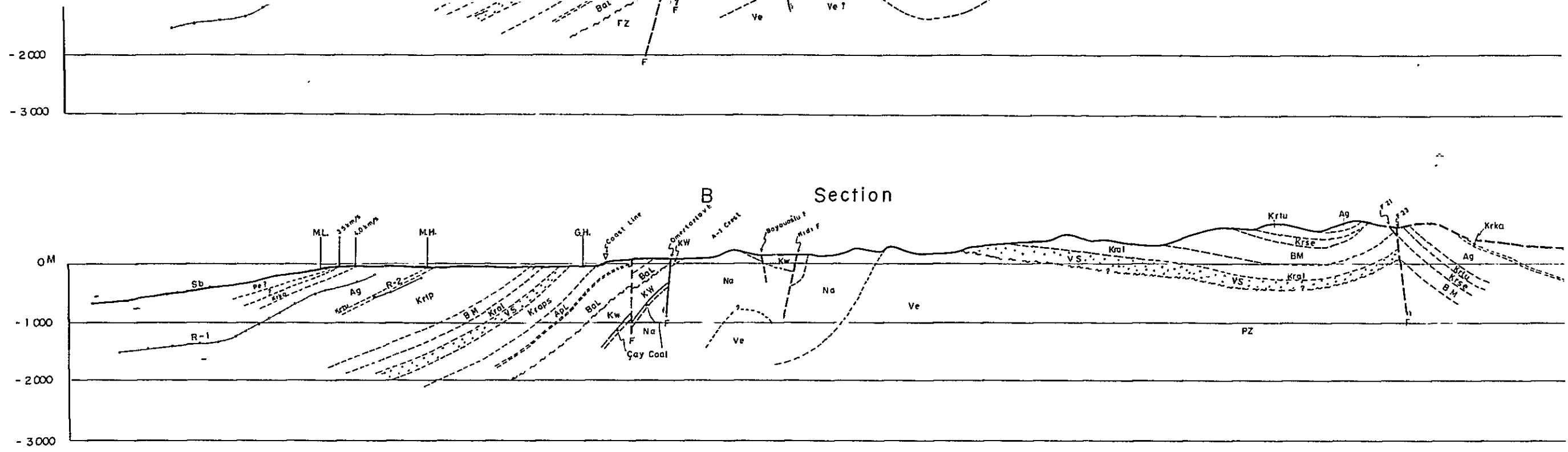
E - 2 Section

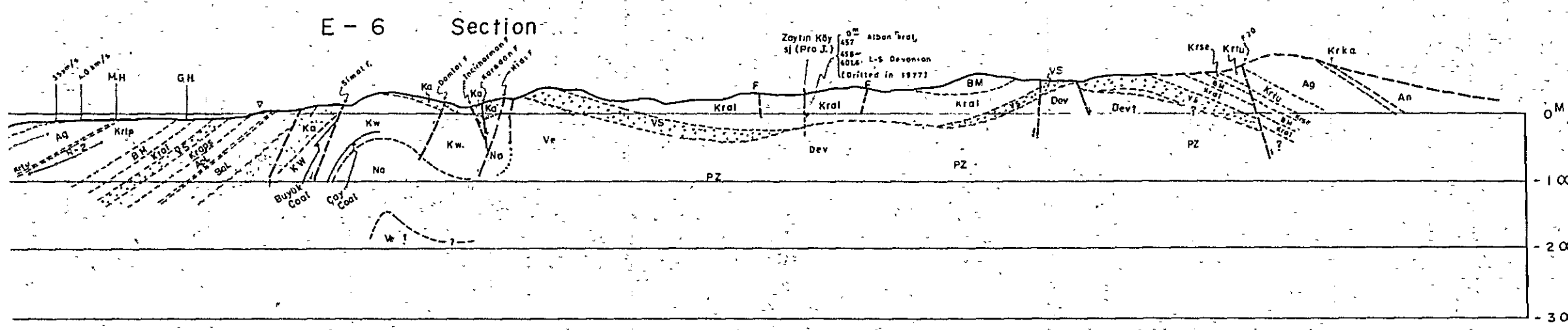
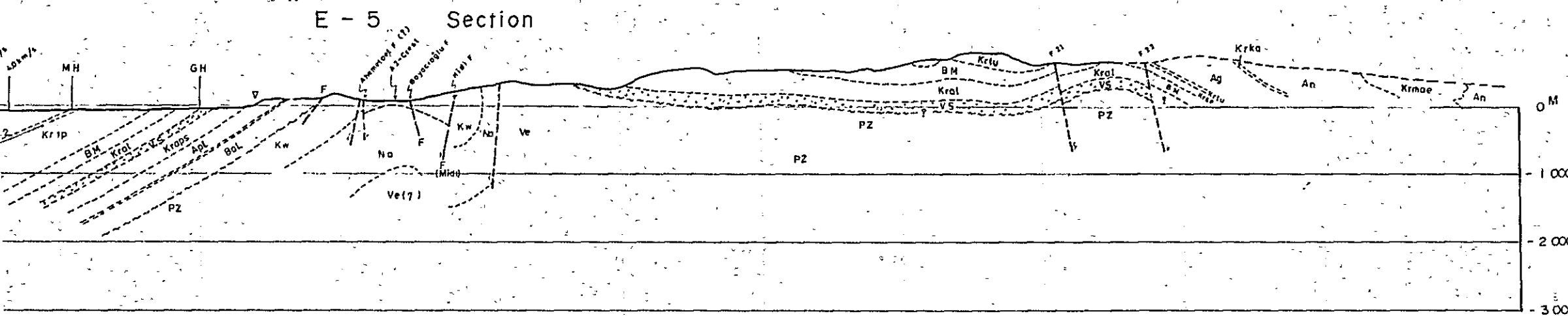
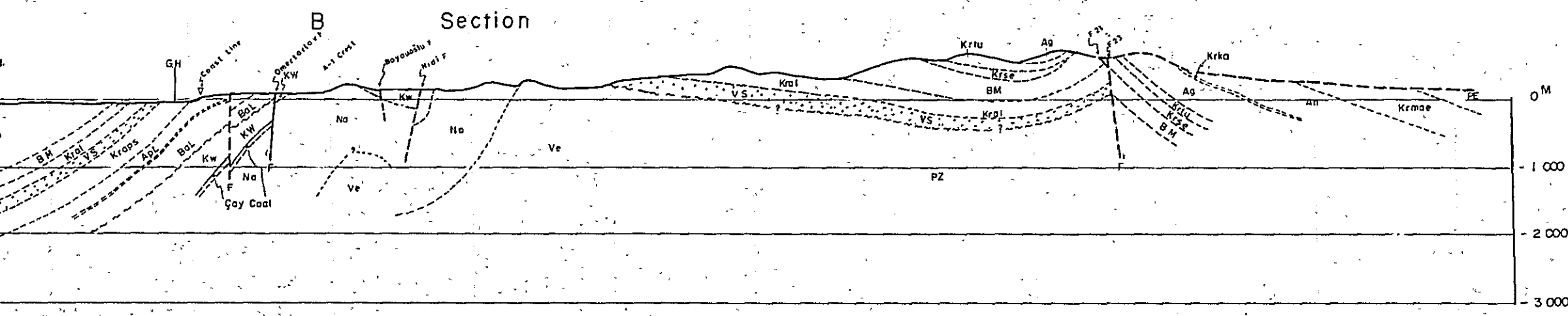
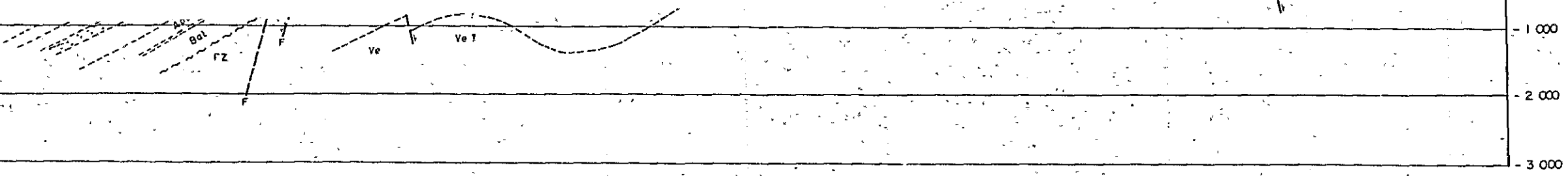


A Section



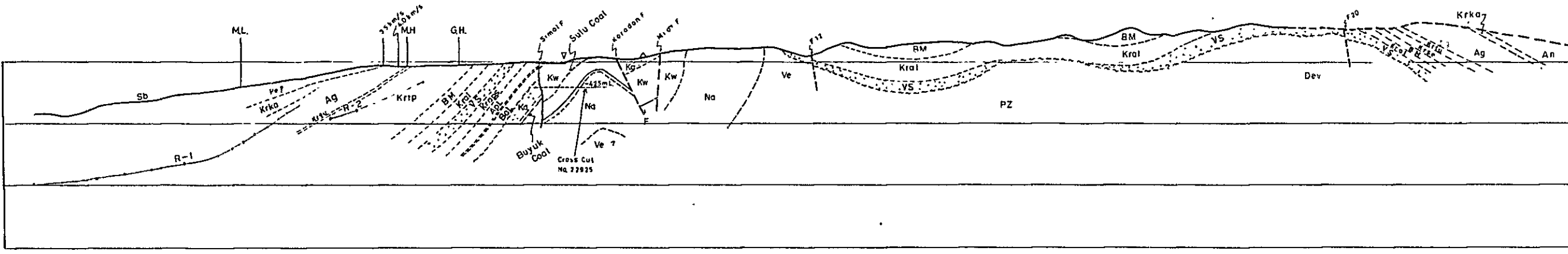




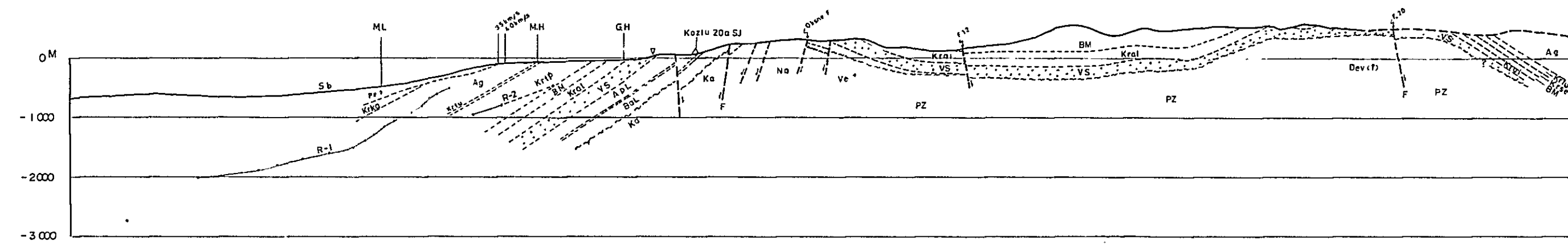


- 3000
0M
- 1000
- 2000
- 3000

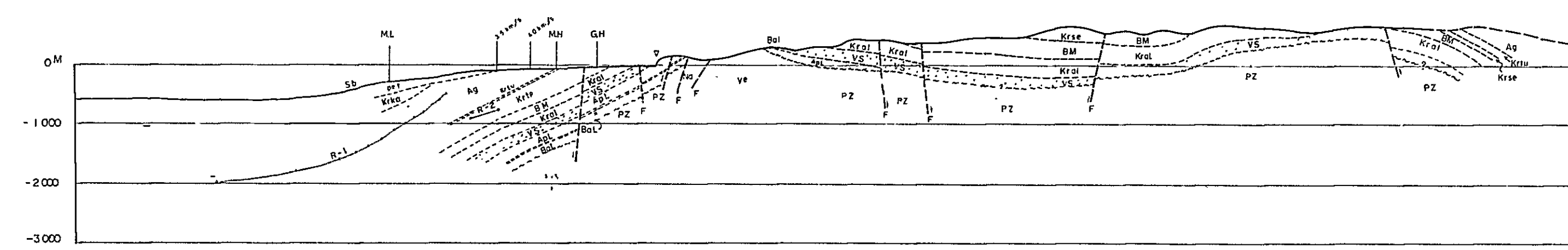
C Section



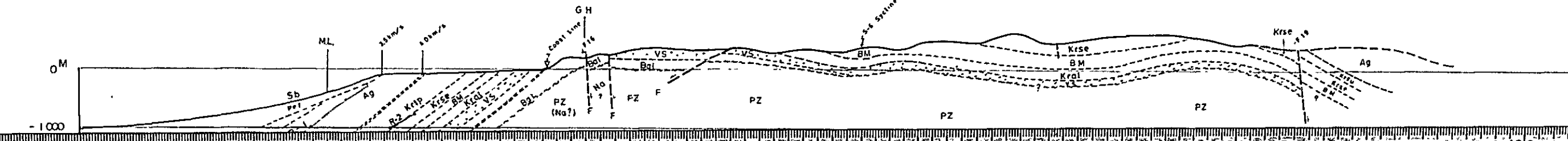
E - 7 Section

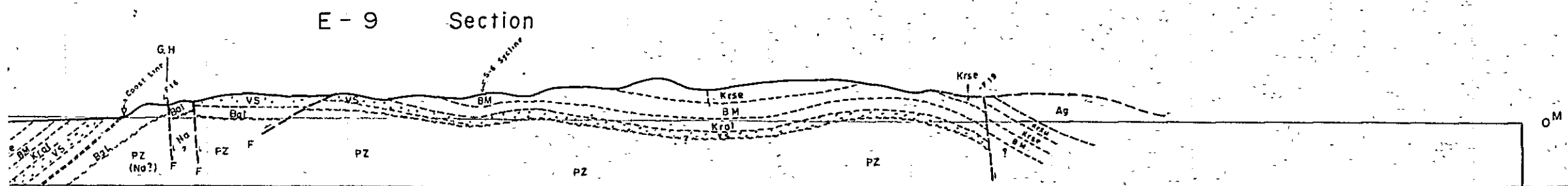
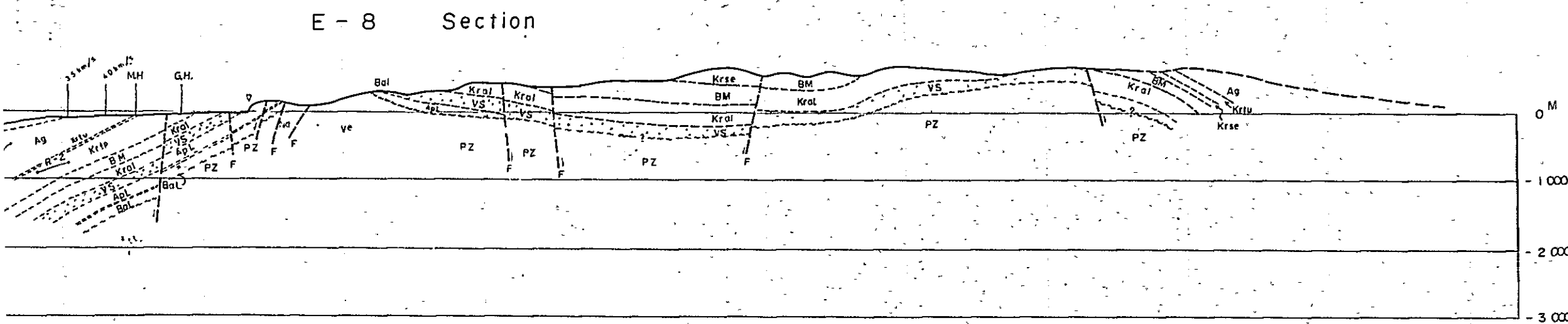
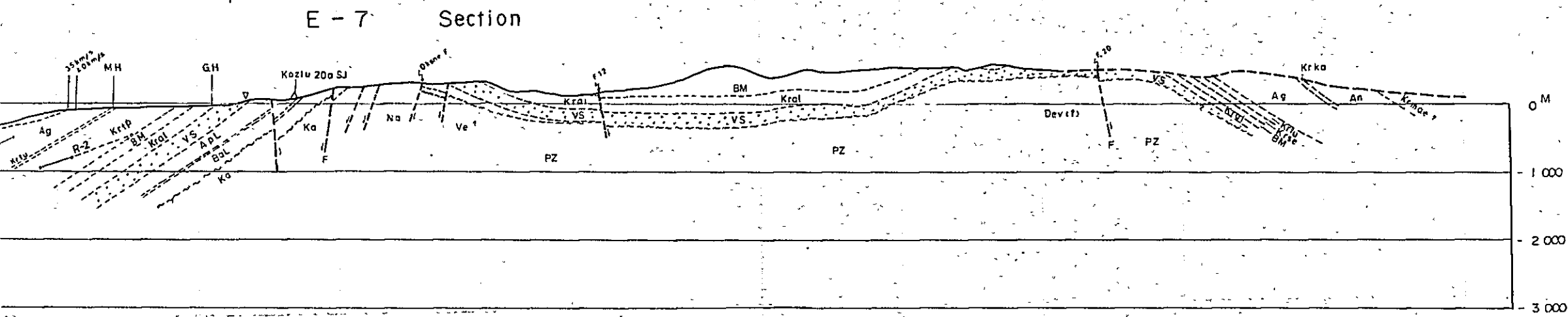
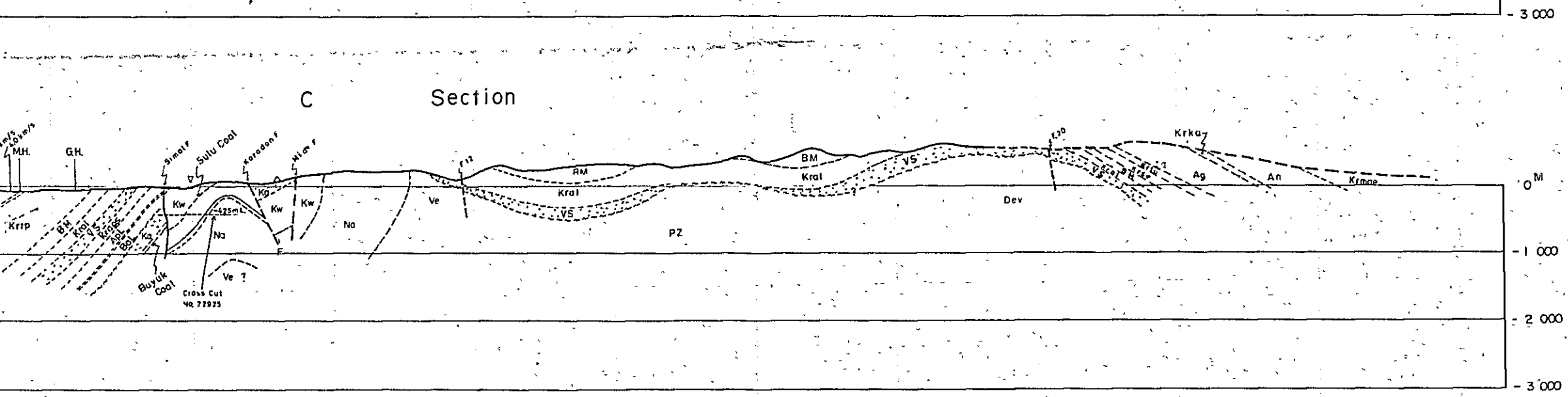


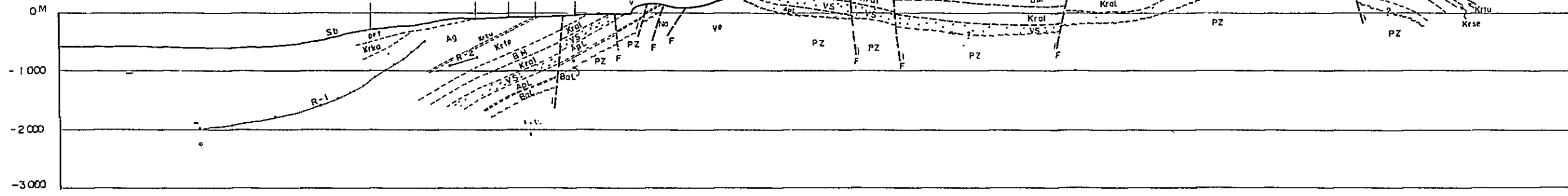
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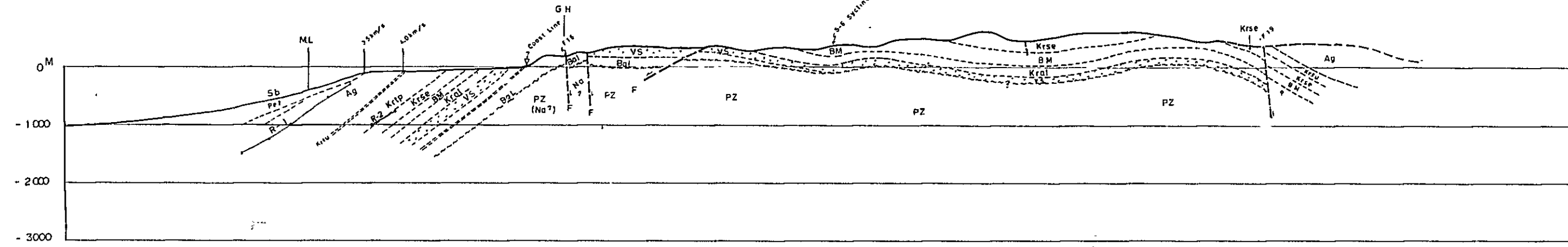
E - 9 Section



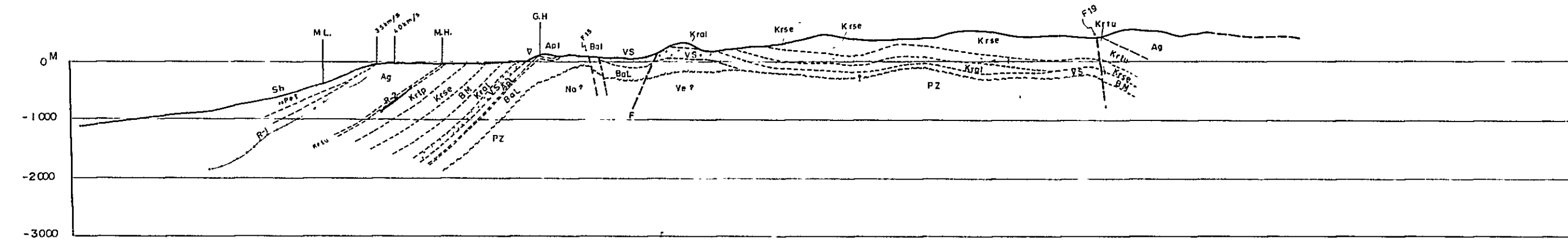




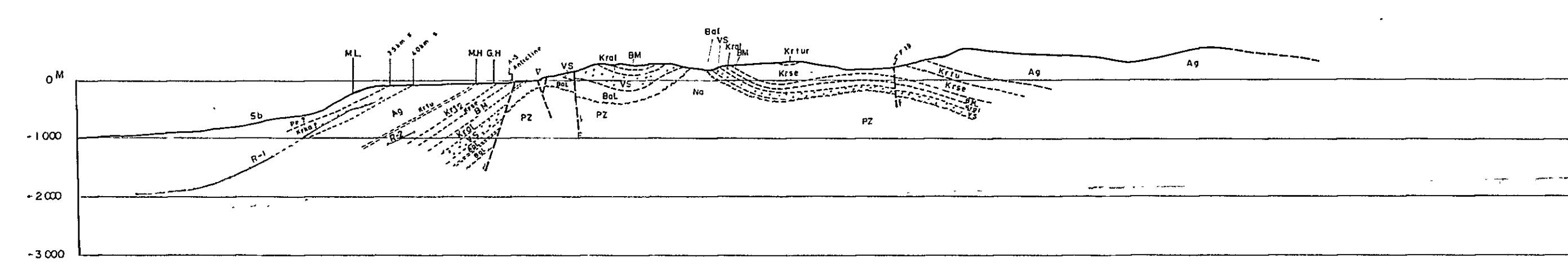
E - 9 Section



D Section



E - 10 Section

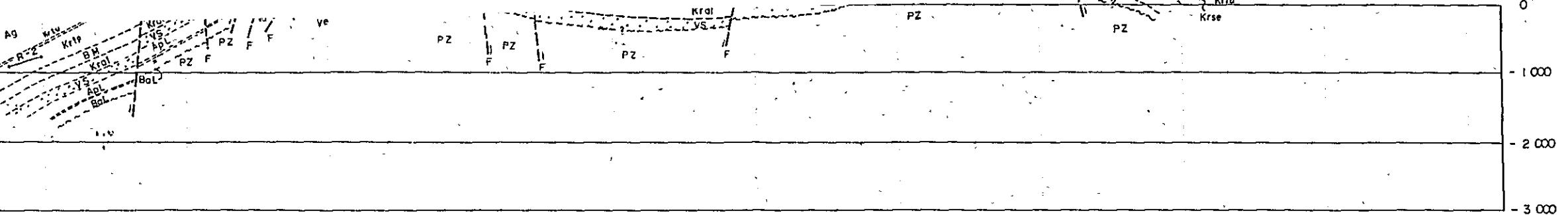


LEJAND

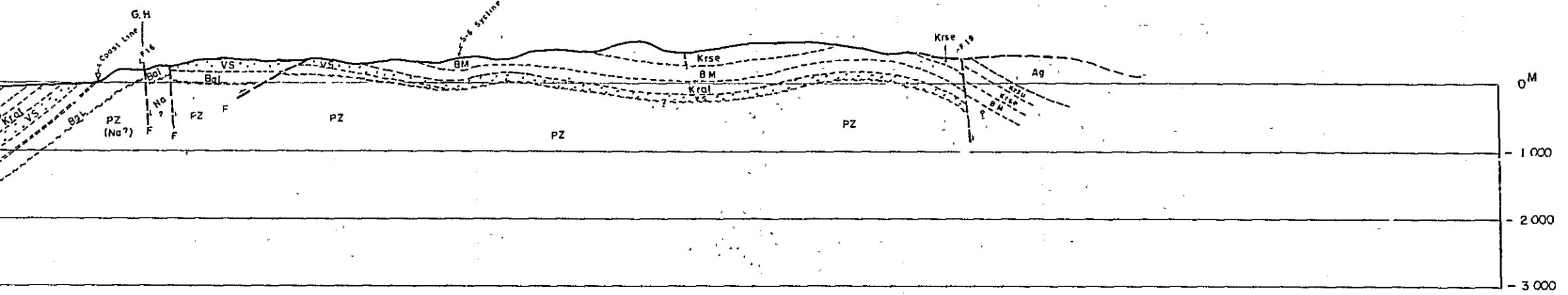
A1 Aluwyon (Aluvium)

KUVATERNER

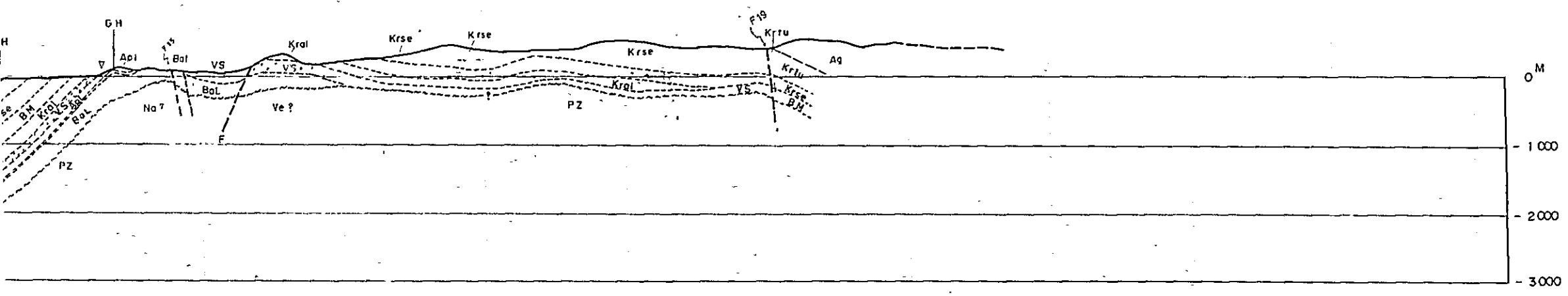




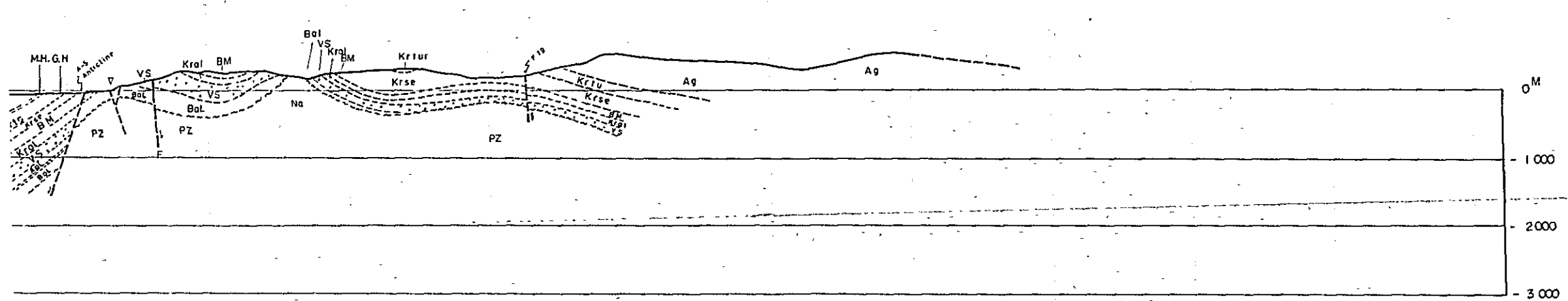
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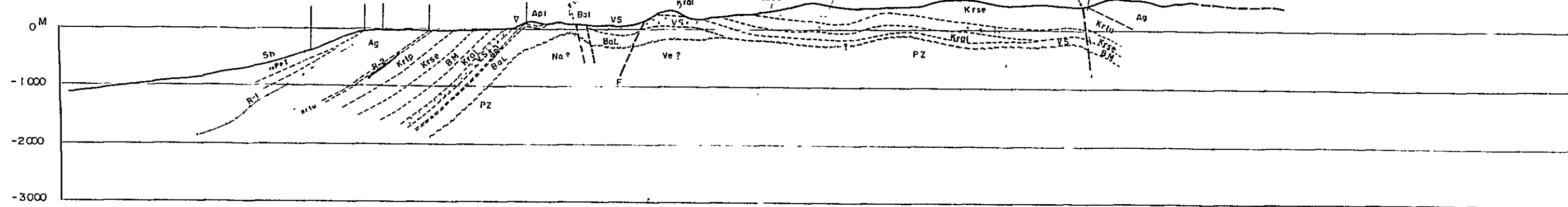


D Section

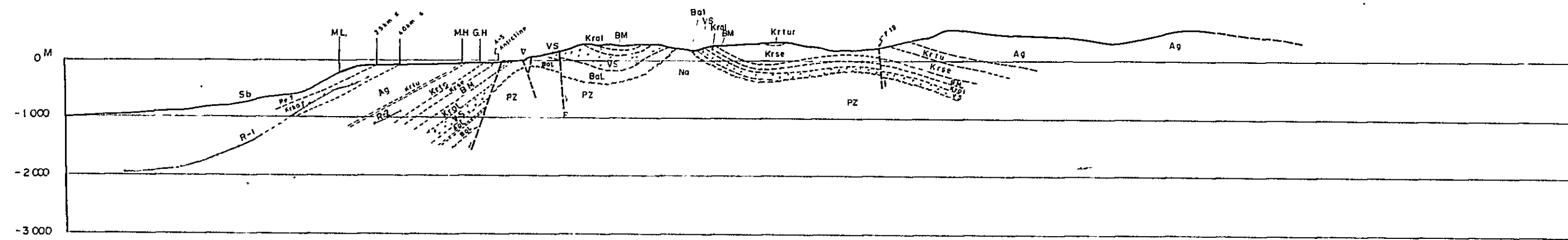


E - 10 Section





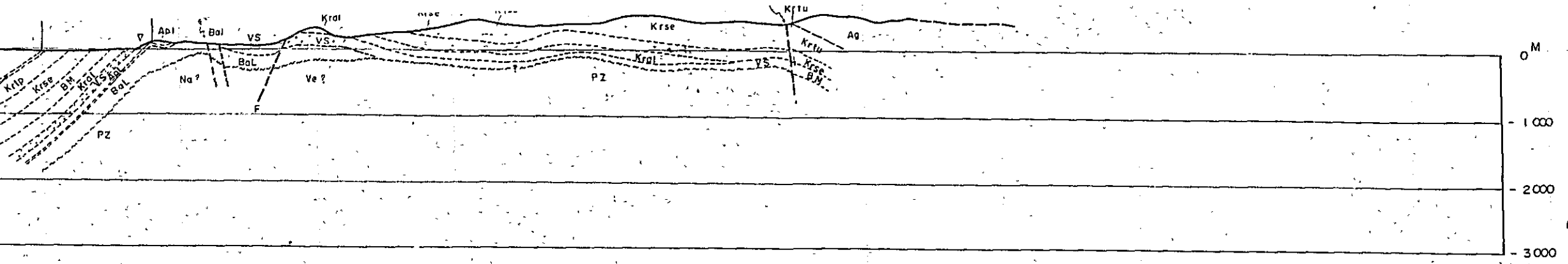
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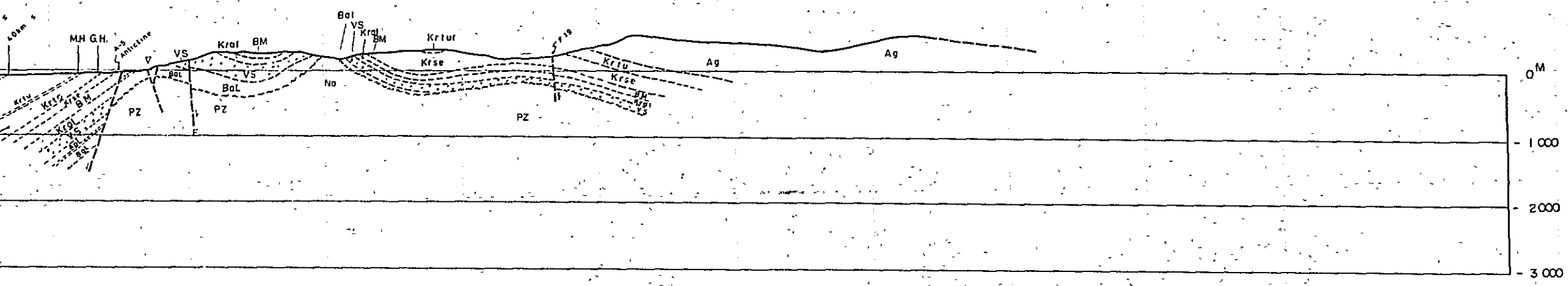
LEJAND

KUVATERNER	Al Alüvyon (Aluvium)	
TERSİYER	Pe Morn ve flis (Paleocene - Eocene)	Sb Sea Bottom
KRETASE	Krmae Maestrictien Marnli Kalker (Chalky Marl)	R-1 Green Horizon
	An Kampanien Andezit-bazalt (Biotite Andesite)	R-2 Brown Horizon
	Krka Santonien Marnli Kalçer (Marly Alternation)	GH Axis of High Gravity Anomaly
	Ag Santonien Aglomera, tuf, Kumtasi (Agglomerate)	MH Axis of High Magnetic Anomaly
	Krtu Turonien Marnli kalker (Bedded Marl)	ML Axis of Low Magnetic Anomaly
	Krip Turonien Volkanit, Pillow-lava (Glaucanitic Alternation)	4.0 km/sec Contour Line for Velocity 4.0 km/sec
	Krse Senomanien Flis (Flisch)	3.5 km/sec Contour Line for Velocity 3.5 km/sec (Correlatable to the Base of Tertiary System)
	BM Senomanien Mavi marn (Blue Marl)	
	Kral Albien Glukonili kumtasi (Glaucanitic Sandstone)	
	VS Apsien Velibey kumtasi (Velibey Sandstone)	
Krops Apsien Marn, flis (Marly flisch)		
ApL Apsien Kalker (Apcian Limestone)		
Krba Barremien Incüvez serisi (Incüvez)		
BaL Barremien Kalker (Barremian Limestone)		
KARBONİFER	Ka Westfalen Karadon serisi (Karadon Conglomerate)	
	KW Westfalen Kozlu serisi (Kozlu Coal Bearing)	
	Na Namurien Alacağzı serisi (Argillaceous Alternation)	
Ve Vizeen Dolomitik kalker (Dolomitic Limestone)		
DEVONİEN	Dev Kalker, kuvarsit (Devonian Arenaceous)	





E - 10 Section



- a) sb Sea Bottom
- (e) R-1 Green Horizon
- on) R-2 Brown Horizon
- erate) G.H. Axis of High Gravity Anomaly
- tic Alternation) M.H. Axis of High Magnetic Anomaly
- Sandstone) M.L. Axis of Low Magnetic Anomaly
- idstone) 4.0 km/sec Contour Line for Velocity 4.0 km/sec
-) 3.5 km/sec Contour Line for Velocity 3.5 km/sec (Correlatable to the Base of Tertiary System)
- glomerate)
- ring)
- s Alternation)
- mestone)
- naceous)

COAL DEVELOPMENT PROJECT AT OFFSHORE AREA OF ZONGULDAK COAL FIELD

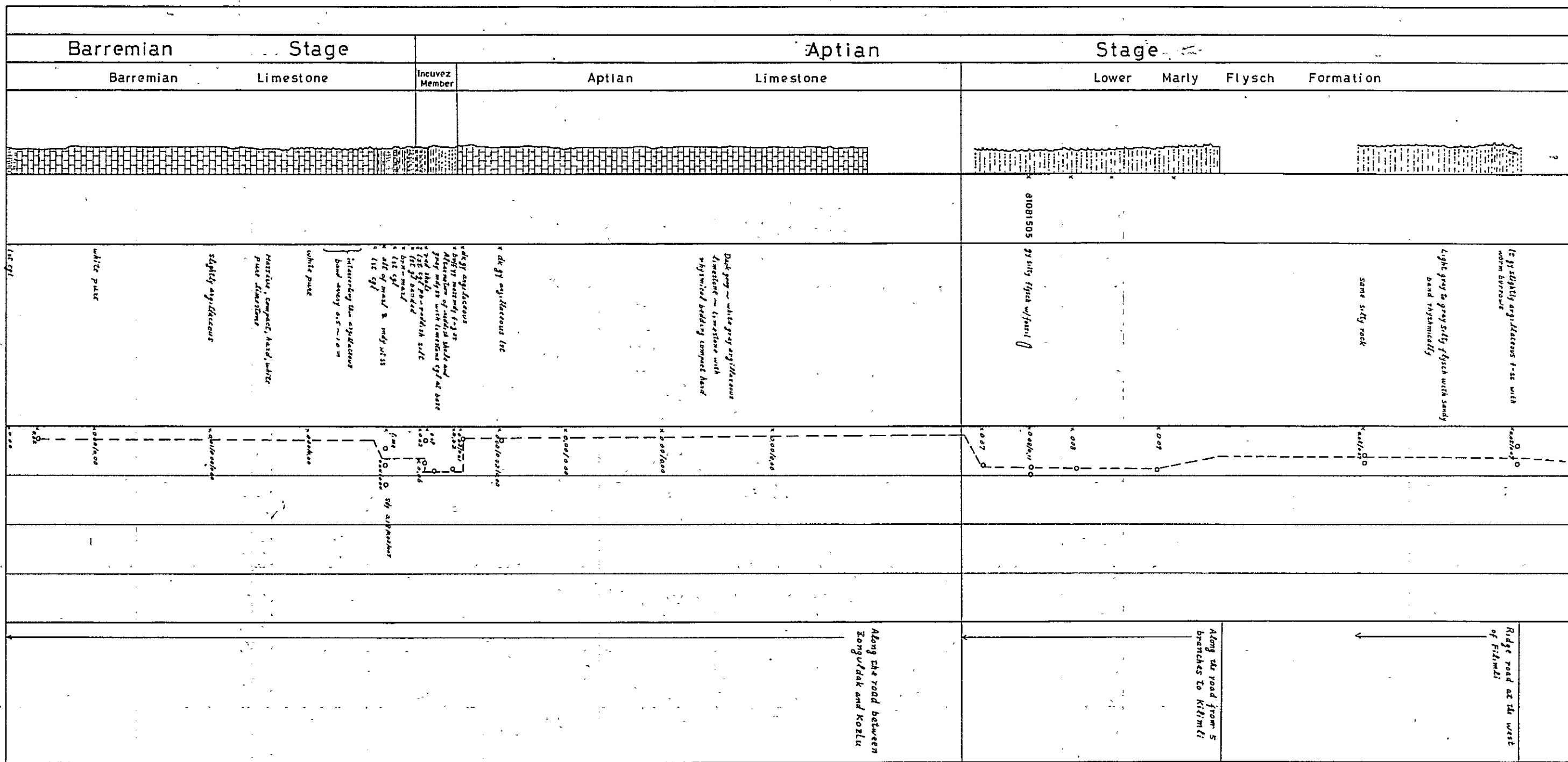
TYPICAL GEOLOGIC SECTIONS IN THE ZONGULDAK COAL FIELD, TURKEY

Scale 1 : 50,000

Japan International Cooperation Agency (JICA)

Date: Aug, 1982 Fig. 12



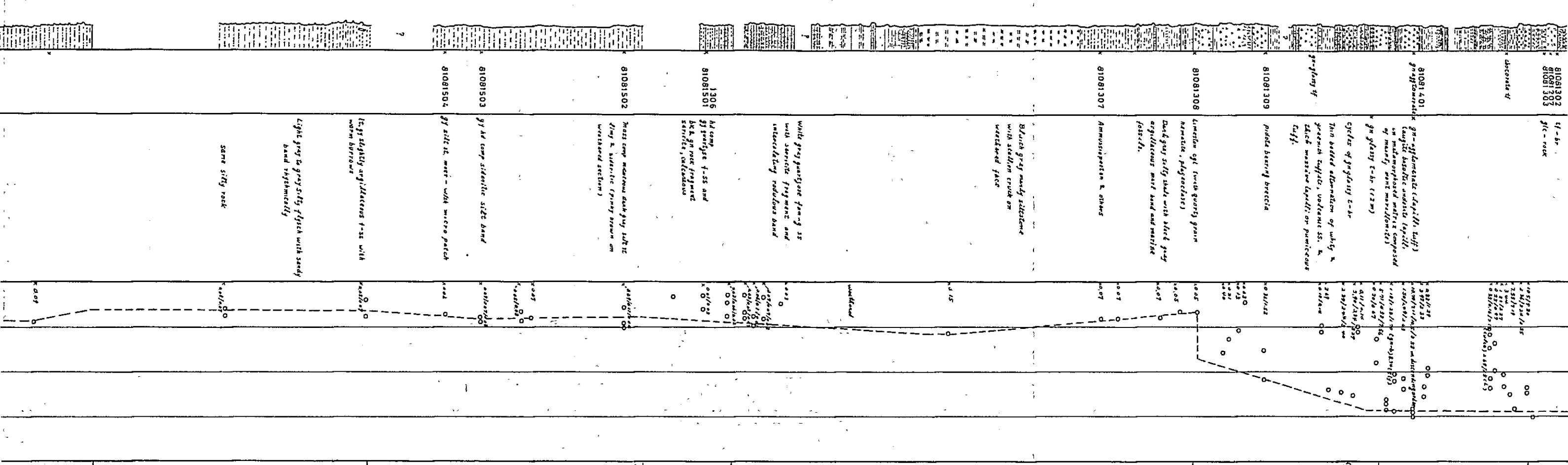


Cretaceous

Stage

er Marly Flysch Formation Albian Stage Cenomanian Stage Turoni

er Marly Flysch Formation Marly Siltstone Calcareous Fine Grained Sandstone Blue Marl Upper Flysch Lower Glauconitic Alternation Member



81081302
81081303

cf - br
gic - rock

North-East of Dogançilar

81081401

gn-siltstone (Lapilli tuff)
Lignite basaltic and siliceous tuff
or metamorphosed matrix composed
of mainly white marlstone
gn-siltstone (Lapilli tuff)

North-East of Dogançilar
(gn-siltstone + breccia + siltstone)

81081309

gn-siltstone
Thin bedded alternation of white &
greenish tuffite, volcanic ss. &
black massive lapilli or pumiceous
tuff.

North-East of Dogançilar
(gn-siltstone + breccia + siltstone)

81081308

limestone opt. (with quartz grain
hercynite, phyllosilicates)
Dark grey siltstone with black grey
argillaceous marl band and marl
fossils.

North-East of Sateçler

81081307

Ammonitiferous & others

North-East of Sateçler

1306
81081501

Bluish grey muddy siltstone
with stadiolite cracks on
weathered face

North-East of Sateçler

81081502

Mass comp. medium dark grey siltite
(grey & siliceous (grey brown on
weathered sections))

North-East of Sateçler

81081503

White grey quartzose fine-gr. ss
with sericite fragments and
interbedded reddish band

North-East of Sateçler

81081504

At comp
gy-siltstone f-ss and
ht & gn rock fragment
sericite, calcareous

North-East of Sateçler

81081502

Mass comp. medium dark grey siltite
(grey & siliceous (grey brown on
weathered sections))

North-East of Sateçler

81081503

gy-ht comp. siliceous siltite band

North-East of Sateçler

81081504

gy-siltite, marl - with macro patch

North-East of Sateçler

81081502

Light grey to grey siltite flysch with sandy
band physically

North-East of Sateçler

81081502

Light grey to grey siltite flysch with sandy
band physically

North-East of Sateçler

81081502

Light grey to grey siltite flysch with sandy
band physically

North-East of Sateçler

81081502

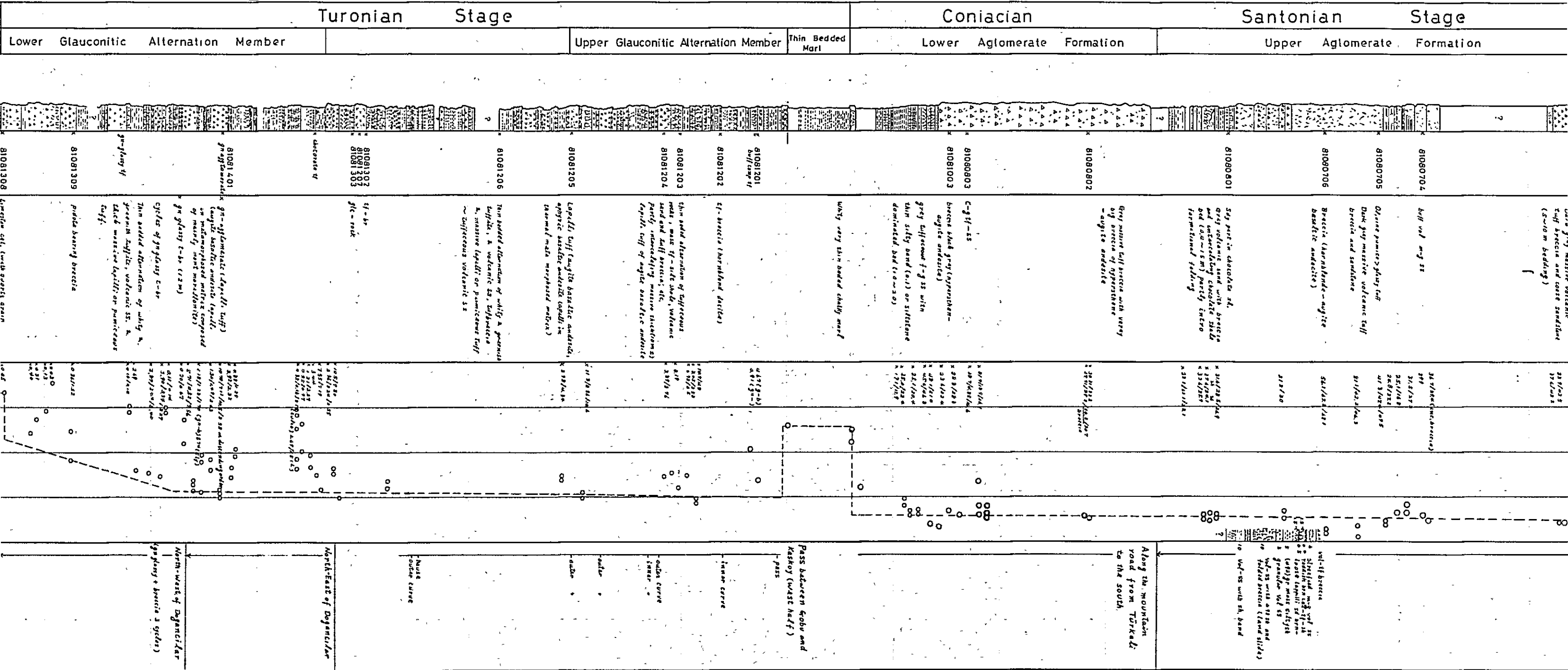
Light grey to grey siltite flysch with sandy
band physically

North-East of Sateçler

Along the road from S branches
in between Kilimli
Sateçler (Near Armutçuk)
Ridge road at the west
of Filimli
Along the road from S
branches to Kilimli



Cretaceous System



Along the mountain road from Türkali to the south

Pass between Elobu and Kaskoy (west half)

North-East of Dogancilar

North-west of Dogancilar (pyroclastic breccia & siltstone)



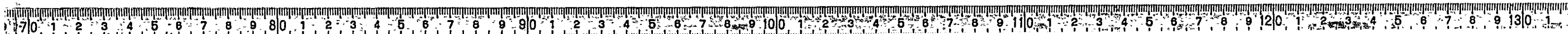
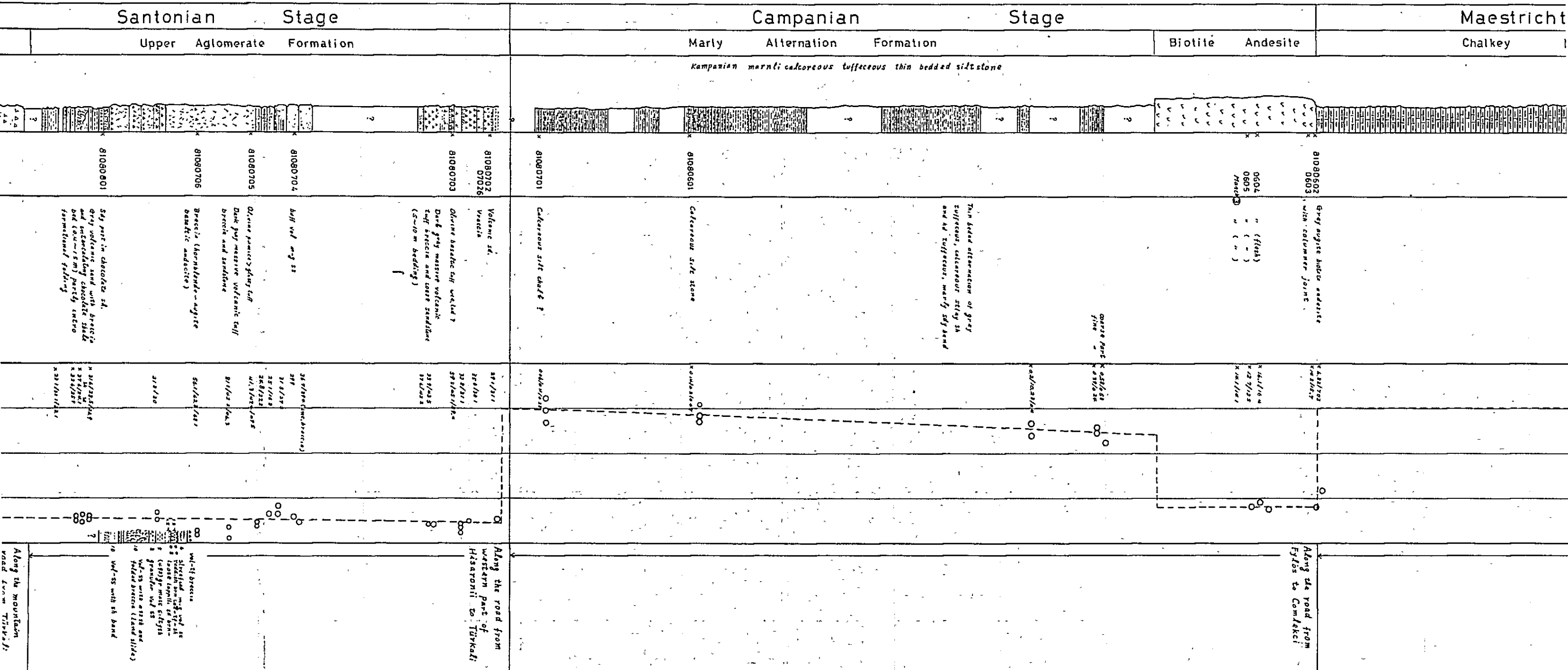


Figure 13
 The Summarized Stratigraphic Section of Cretaceous System
 in the Eastern Area of Zonguldak Coal Field, Turkey
 (With Magnetic Susceptibility)

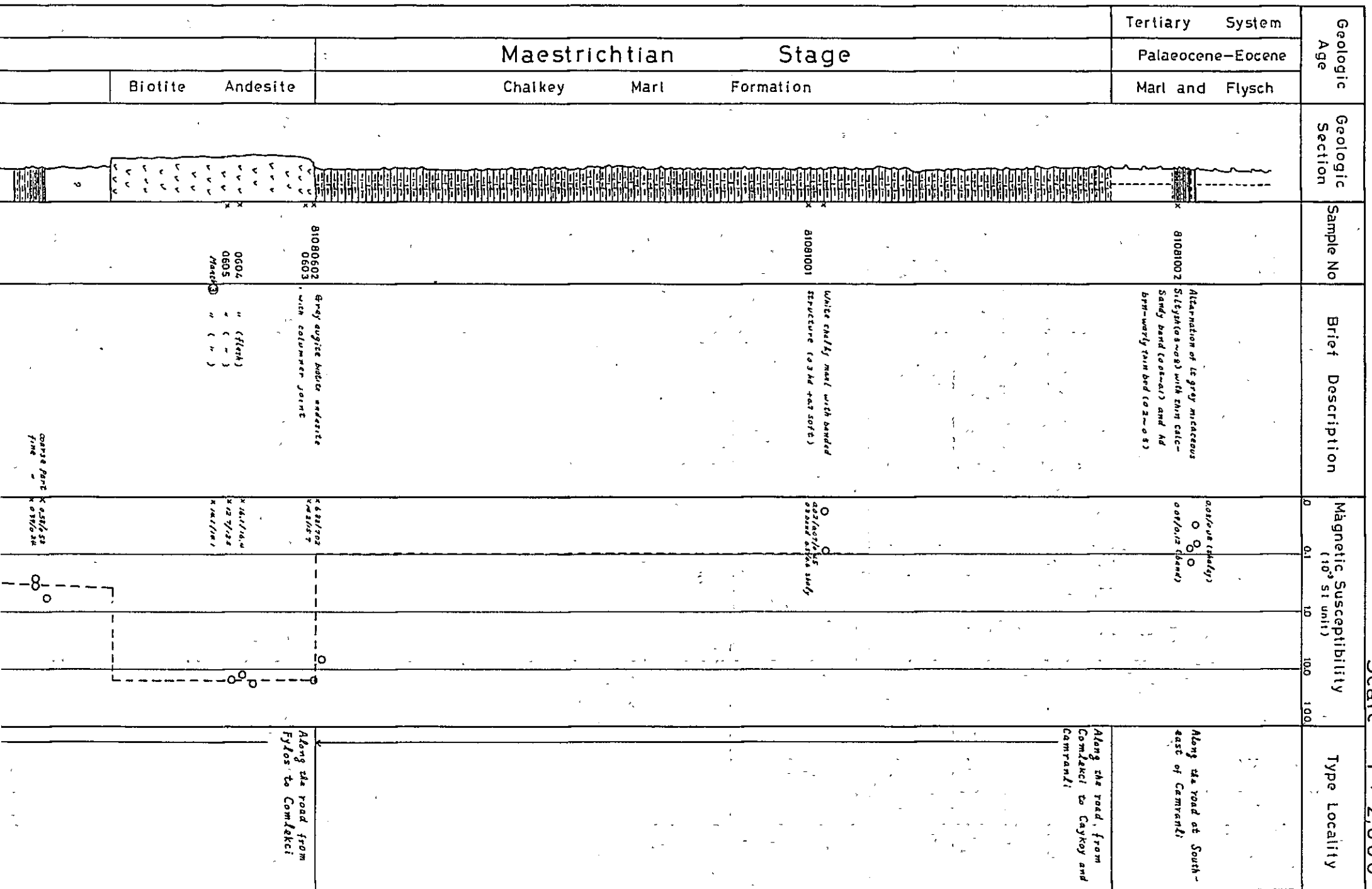


Figure 16 LITHO-LOG OF DRILL HOLE 22926 No.1

Location: Gallery 22926(-425Level) Drilling Method : WireLine & Reverse Circulation Coordinate : X-48.60500
 Drill Hole No. : JICA No.1 Hole Inclination : +5° Y:46.07200
 Name of Equipment : KOKEN EP-1 Direction of Hole: Parallel to the Gallery Z:-417.50
 Start of Drilling: June 30, 1981 Rig Down: August 17, 1981 Total Depth: 62.42m Scale : 1 : 100

Progress (Date)	Total Length of Hole	Advance/ coring	Total Length of Recovered core	True Thickness Recovered	Thickness on the core	Core Recovery (%)	True Thickness of rock	Inclination on the core	No. of Core Box	Geologic Age	Litho-Log	Lithologic Description	Magnetic Susceptibility (x) $\times 10^{-3}$ SI unit	Remarks
6/30	3.15	3.15	3.15	3.15	3.15	100		60°	1		Cement			
7/1	6.65	3.50	3.50	3.50	3.50	100					White (grey) massive medium grained very hard sandstone with a little mica. Mainly quartzose but including grains of black shale, green rock & feldspar, etc. with black shif laminae.			
7/2	13.00	6.50	6.50	6.50	6.50	100					White grey mass very hard medium fine grained sandstone same with above S.S. from 13 to 15m slightly fractured.			10-176 10-183
7/16	15.00	3.00	3.00	3.00	3.00	100					Same sandstone with above. intercalating black carbonaceous laminae dark grey shaly laminae (5% thick) and carbonaceous black shale patch (1.5 diameter)			
7/17	18.00	3.00	3.00	3.00	3.00	100		40°	2		Same S.S. with above			
7/18	21.00	3.00	3.00	3.00	3.00	100		40°	3		Same S.S. with above below 20.5m somewhat fractured			
7/19	22.00	1.00	1.00	1.00	1.00	100		47°			Same S.S. with above. slightly fractured			
7/20	23.00										White grey medium grained very hard massive S.S. with granular laminae at 27.4m (Not so much fractured)			
7/21	24.00										Same S.S. above down to 27.85m light grey (slightly bluish) massive very hard fine grained S.S. not so much fractured but brecciated by fault at 30.35-39.65m fault clay and breccia Ca or calc shale sheared			
7/22	26.50	2.50	2.50	2.50	2.50	100		65°	4		Slightly brownish grey argillaceous fine			
7/23	31.50	5.00	5.00	5.00	5.00	100		60°	5		Brownish grey very fine fine-grained massive argillaceous S.S. with black argillaceous carbonaceous laminae			
7/24	36.00	4.50	4.50	4.50	4.50	100		40°	6		Same S.S. with above stripe at 5m interval from 36.5 to 38.7m			
7/25	37.00	1.00	1.00	1.00	1.00	100		40°			Dark grey very fine sandy siltstone with carbonaceous laminae (fractured)			
7/26	39.00	2.00	2.00	2.00	2.00	100					Dark grey to black grey siltstone with carbonaceous matter (fractured)			
7/27	41.00	2.00	2.00	2.00	2.00	100					Same siltstone with above with white grey sandy laminae (fractured)			
7/28	42.00										Same siltstone with above			
7/29	43.00										lack of core			
7/30	44.00										good soft friable coal with strong gas (12 Kg/cm ² +)			
7/31	45.00													



Time	Depth (m)	Dip	Core No.	Formation	Description	Notes
7/16	15.00	40°		Kozlu Formation (Westphalian A Series)	Same sandstone with above. Intercalating black carbonaceous laminae dark grey shaly laminae (5% thick) and carbonaceous black shale patch (1cm diameter)	10-172
7/17	15.00	40°			Same SS with above	X01604
7/17	16.00	40°			Same SS with above slightly fractured	X01604
7/17	17.00	40°			White grey medium grained very hard massive SS with granular laminae at 17.4m (Not so much fractured)	X01604
7/17	18.00	40°			Same SS above down to 27.85m light grey (slightly bluish) massive very hard fine grained SS not so much fractured but brecciated by fault at 20.35-20.85m. fault clay and breccia Ca or calc shale sheared	X01607
7/17	19.00	40°			Slightly brownish grey argillaceous fine	X01607
7/17	20.00	40°			Brownish grey very fine line-grained massive argillaceous SS with black argillaceous carbonaceous laminae	X01607
7/17	21.00	40°			Same SS with above strike at 5-7m interval from 36.5 to 36.7m	X01607
7/17	22.00	40°			Dark grey very fine sandy siltstone with carbonaceous laminae (fractured)	X01607
7/17	23.00	40°			Dark grey to black grey siltstone with carbonaceous matter (fractured)	X01607
7/17	24.00	40°		Same siltstone with above with white grey sandy laminae (fractured)	X01607	
7/17	25.00	40°		Same siltstone with above	X01607	
7/17	26.00	40°		good soft friable coal with strong gas (1.2 Mg/cm ³)	X01607	
7/17	27.00	40°		Brownish grey argillaceous massive fine grained SS very hard & with carbonaceous laminae	X01607	
7/17	28.00	40°		Brownish grey siltstone strongly fractured.	X01607	
7/17	29.00	40°		Brownish dark grey siltstone strongly fractured + very fine sandy silt with stripes + silty very fine SS striated	X01607	
7/17	30.00	40°		grey hard massive fine grained SS partly fractured with argillaceous laminae partly	X01607	
7/17	31.00	40°		Dark grey silty shale with siltstone band shaly part fractured.	X01607	
7/17	32.00	40°		Dark grey siltstone with shaly laminae (fractured)	X01607	
7/17	33.00	40°		fault clay lime was collected	X01607	
7/17	34.00	40°		Dark grey silty shale with white stripes slightly fractured	X01607	
7/17	35.00	40°		Dark grey stratified very fine SS and sandy siltstone with carbon matter highly crushed	X01607	
7/17	36.00	40°		Dark grey sandy siltstone - silty very fine SS with carbon matter. highly crushed	X01607	
7/17	37.00	40°		lack of core		
7/17	38.00	40°		lack of core		
7/17	39.00	40°		lack of core		
7/17	40.00	40°		lack of core		
7/17	41.00	40°		lack of core		
7/17	42.00	40°		lack of core		
7/17	43.00	40°		lack of core		
7/17	44.00	40°		lack of core		
7/17	45.00	40°		lack of core		
7/17	46.00	40°		lack of core		
7/17	47.00	40°		lack of core		
7/17	48.00	40°		lack of core		
7/17	49.00	40°		lack of core		
7/17	50.00	40°		lack of core		
7/17	51.00	40°		lack of core		
7/17	52.00	40°		lack of core		
7/17	53.00	40°		lack of core		
7/17	54.00	40°		lack of core		
7/17	55.00	40°		lack of core		
7/17	56.00	40°		lack of core		
7/17	57.00	40°		lack of core		
7/17	58.00	40°		lack of core		
7/17	59.00	40°		lack of core		
7/17	60.00	40°		lack of core		
7/17	61.00	40°		lack of core		
7/17	62.00	40°		lack of core		
7/17	63.00	40°		lack of core		
7/17	64.00	40°		lack of core		
7/17	65.00	40°		lack of core		
7/17	66.00	40°		lack of core		
7/17	67.00	40°		lack of core		
7/17	68.00	40°		lack of core		
7/17	69.00	40°		lack of core		
7/17	70.00	40°		lack of core		
7/17	71.00	40°		lack of core		
7/17	72.00	40°		lack of core		
7/17	73.00	40°		lack of core		
7/17	74.00	40°		lack of core		
7/17	75.00	40°		lack of core		
7/17	76.00	40°		lack of core		
7/17	77.00	40°		lack of core		
7/17	78.00	40°		lack of core		
7/17	79.00	40°		lack of core		
7/17	80.00	40°		lack of core		
7/17	81.00	40°		lack of core		
7/17	82.00	40°		lack of core		
7/17	83.00	40°		lack of core		
7/17	84.00	40°		lack of core		
7/17	85.00	40°		lack of core		
7/17	86.00	40°		lack of core		
7/17	87.00	40°		lack of core		
7/17	88.00	40°		lack of core		
7/17	89.00	40°		lack of core		
7/17	90.00	40°		lack of core		
7/17	91.00	40°		lack of core		
7/17	92.00	40°		lack of core		
7/17	93.00	40°		lack of core		
7/17	94.00	40°		lack of core		
7/17	95.00	40°		lack of core		
7/17	96.00	40°		lack of core		
7/17	97.00	40°		lack of core		
7/17	98.00	40°		lack of core		
7/17	99.00	40°		lack of core		
7/17	100.00	40°		lack of core		



Figure 17 LITHO-LOG OF DRILL HOLE 22926 No. 2

Location Gallery 22926(425 Level) Drilling Method Wireline & Reverse Circulation Coordinate X:48,605.00
 Drill Hole No.: JICA No. 2 Hole Inclination +5° Bering 355° Y:46,072.00
 Name of Equipment :KOKEN ER-1 Direction of Hole :Parallel to the Gallery Z :417.50
 Start of Drilling : August 28, 1981 Rigdown : November 13, 1981 Total Depth 120.60m SCALE : 1:100

Progress (Date)	Total length of hole	Advance/one coring	Total length of recovered core	Thickness recovered	Core recovery (%)	Depth of each rock	True thickness of each rock	Inclination on the core	No of core box	Geologic age	Litho Log	Lithologic Description	Magnetic Susceptibility (X) $\times 10^{-3}$ unit	Remarks	100 Sample No.
8/28	3.60	3.60	2.50	2.50	69.0										
8/31	4.10	0.50	3.00	0.50	100										
9/2	4.85	0.75	3.75	0.75	100										
9/3	5.95	1.10	4.50	0.75	62			45°							
9/11	8.65	2.70	5.40	0.90	33.3	7.75	5.48								
						8.65	0.64								
						11.25	1.49								
						11.60	0.70	55°							
	11.90	3.25	8.65	3.25	100										
						13.75	1.85								
						14.75	0.90	35°							
						16.81	1.69	40°							
9/12	16.81	3.06	13.55	3.06	100										
						20.25	3.24								
						20.75	0.55	27°							
9/14	21.12	1.77	17.67	1.77	100			29°							
						22.35	1.22								
						24.25	3.03								
						25.25	0.87								
9/15	28.61	1.38	26.28	1.06	38.3										
9/16	30.02	1.41	26.28	0	0										
						30.30	1.61								
						33.70	2.90								
						34.00	0.30								
						36.00	1.53								
						39.00	2.61								
						40.10	0.99								
						40.70	0.62								
						42.00	1.15								
						44.00	1.41	45°							

Kozlu Formation (Westphalian A Series)

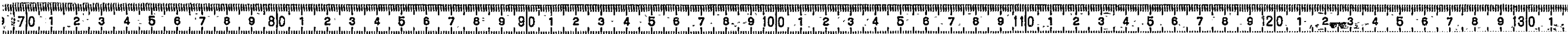
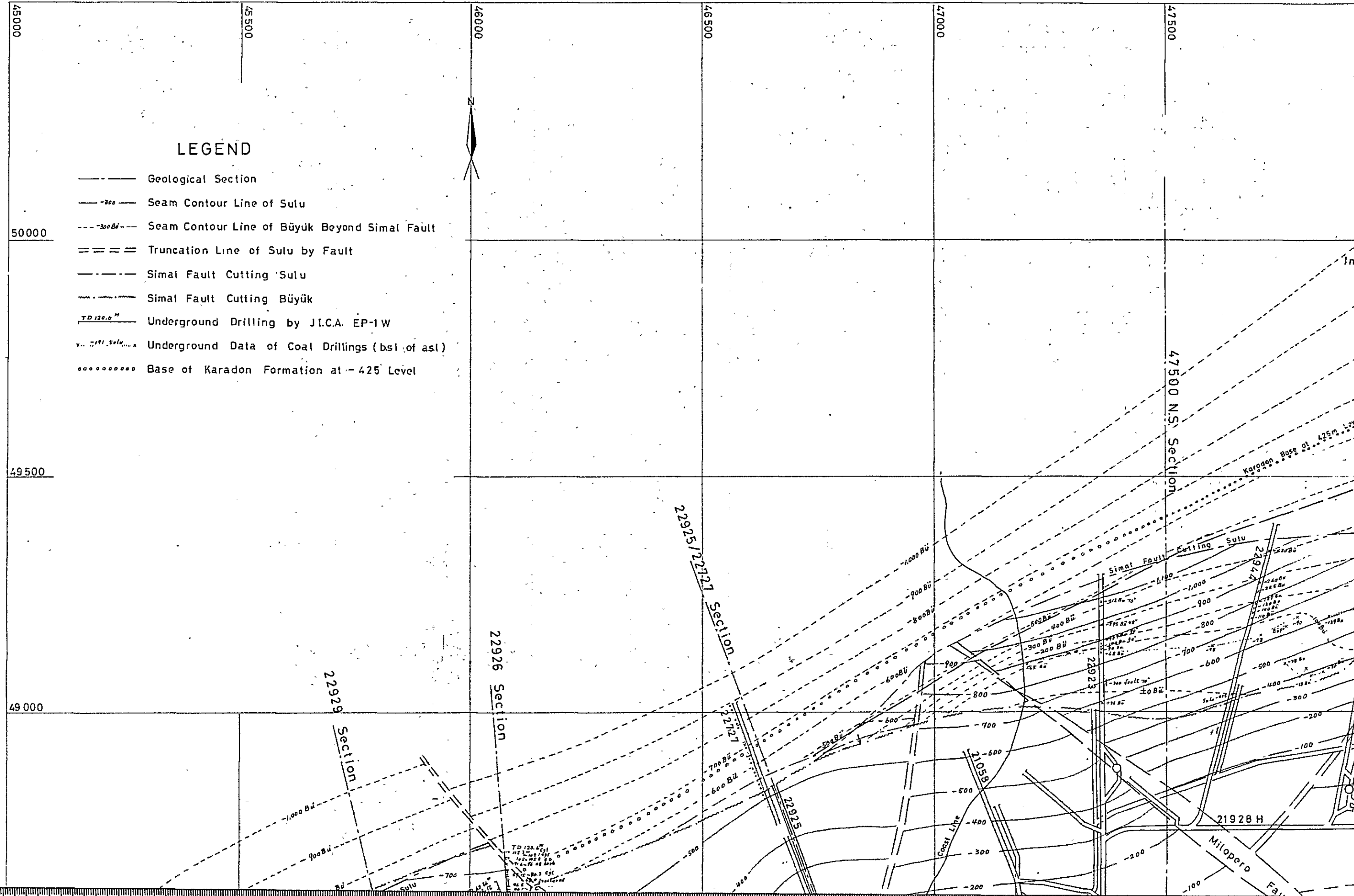


Figure 18 Geological Structure of Sulu and Büyük Seams at The North-Western Part of Kozlu Mine, Zonguldak



LEGEND

- Geological Section
- 300— Seam Contour Line of Sulu
- - -300Bü- - - Seam Contour Line of Büyük Beyond Simal Fault
- ==== Truncation Line of Sulu by Fault
- - - - Simal Fault Cutting Sulu
- - - - Simal Fault Cutting Büyük
- TD 120.6 M Underground Drilling by J.I.C.A. EP-1W
- x... x... x... Underground Data of Coal Drillings (bsl. of asl)
- Base of Karadon Formation at -425 Level



50000

49500

49000

47500 N.S. Section

22929 Section

22926 Section

22927 Section

22925 Section

22923 Section

21928 H

Coast Line

Milopero Fault

Simal Fault Cutting Sulu

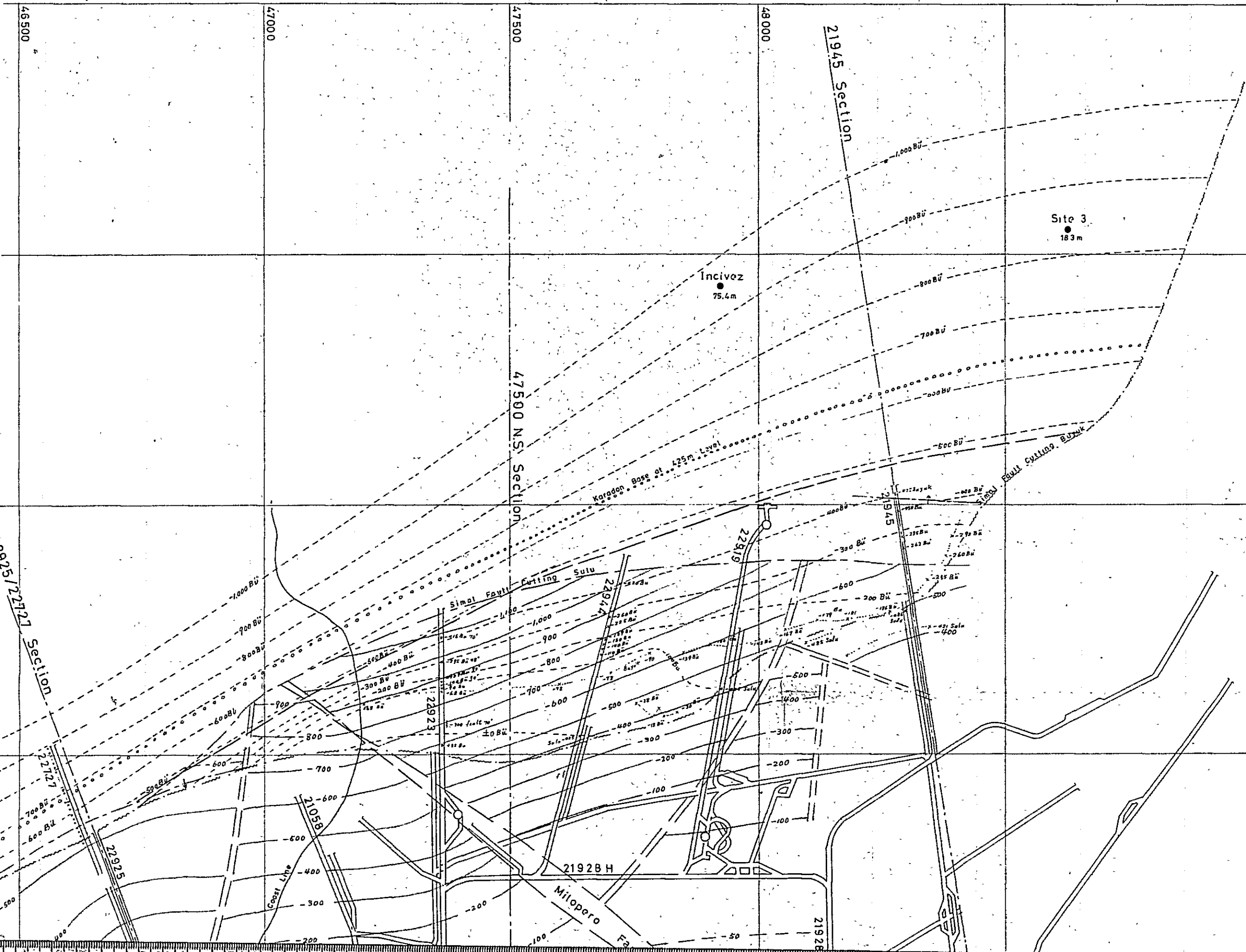
Simal Fault Cutting Büyük

Karadon Base of -425m Level



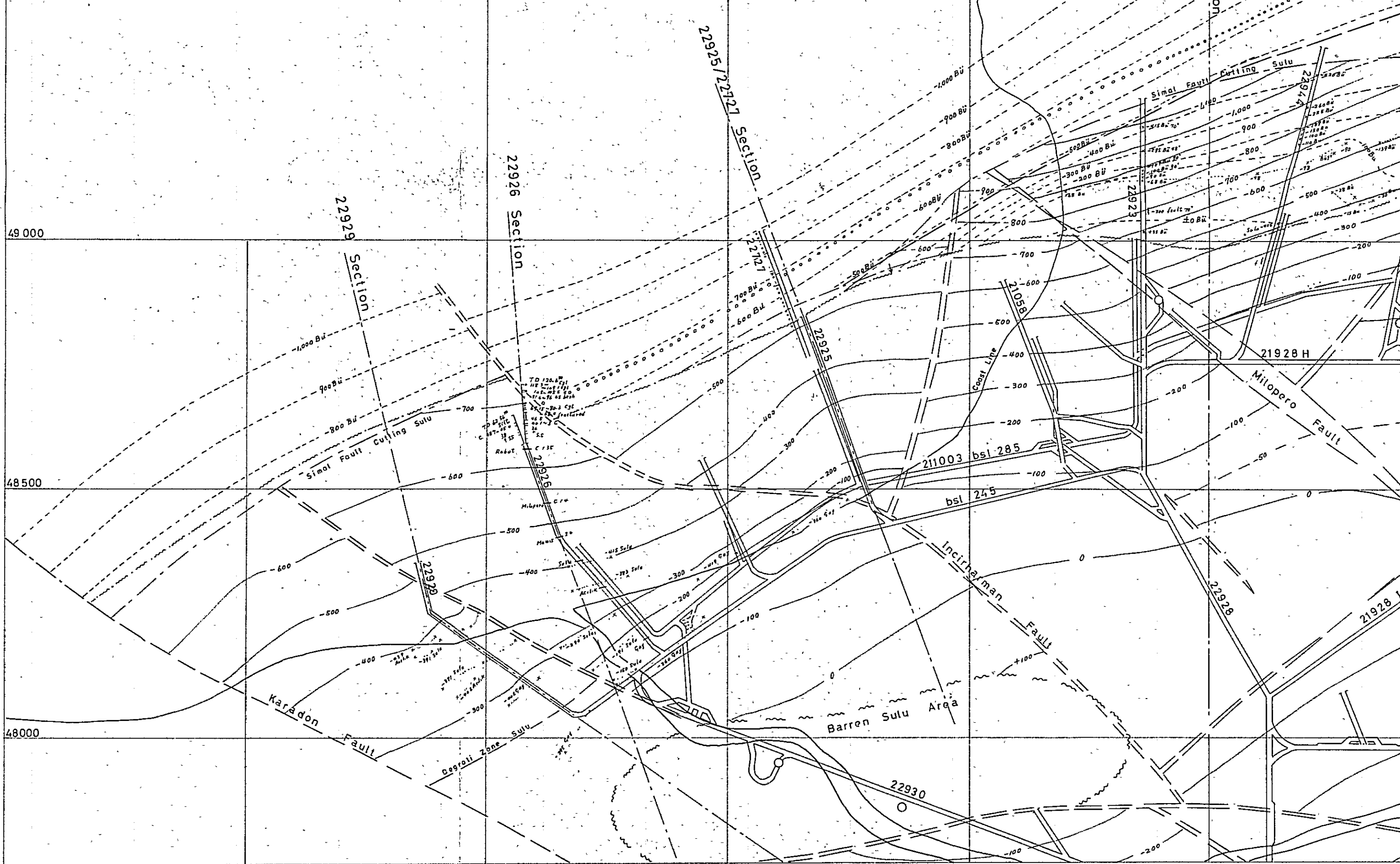
Plans at The North-Western Part of Kozlu Mine, Zonguldak

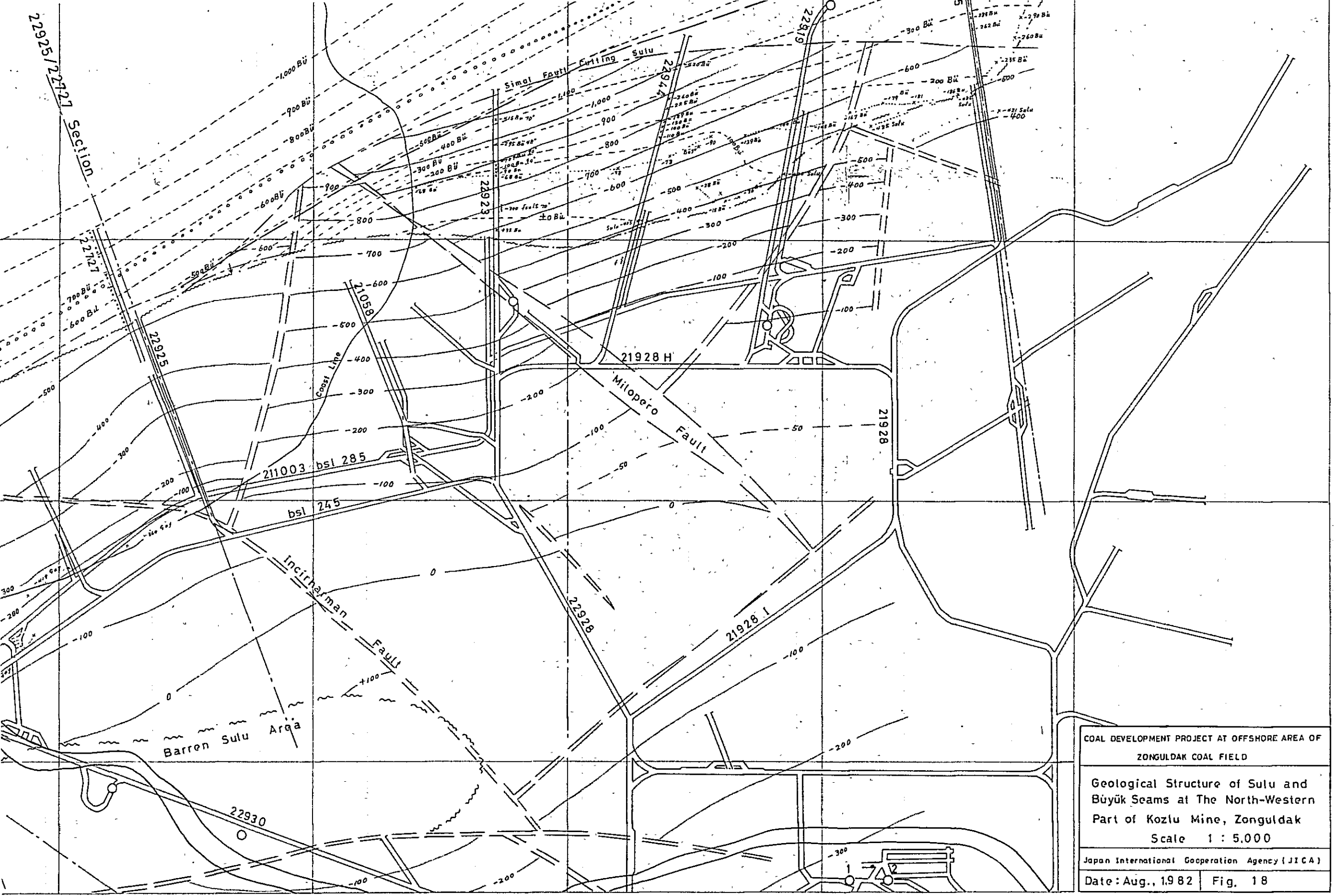
Scale 1 : 5,000



Section 22127







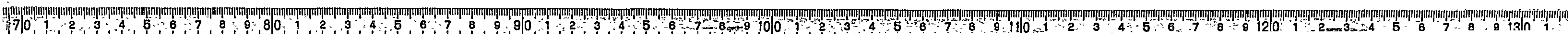
COAL DEVELOPMENT PROJECT AT OFFSHORE AREA OF ZONGULDAK COAL FIELD

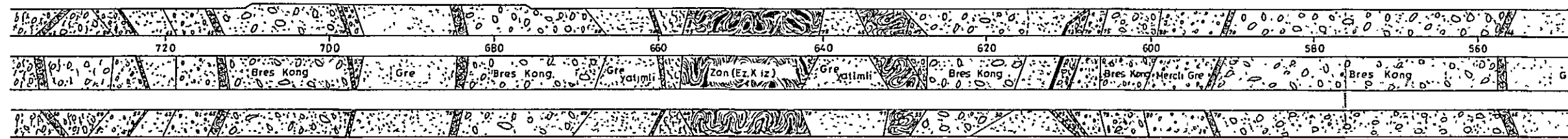
Geological Structure of Sulu and Büyük Seams at The North-Western Part of Kozlu Mine, Zonguldak

Scale 1 : 5,000

Japan International Cooperation Agency (JICA)

Date: Aug., 1982 | Fig. 18





Karadon Formation

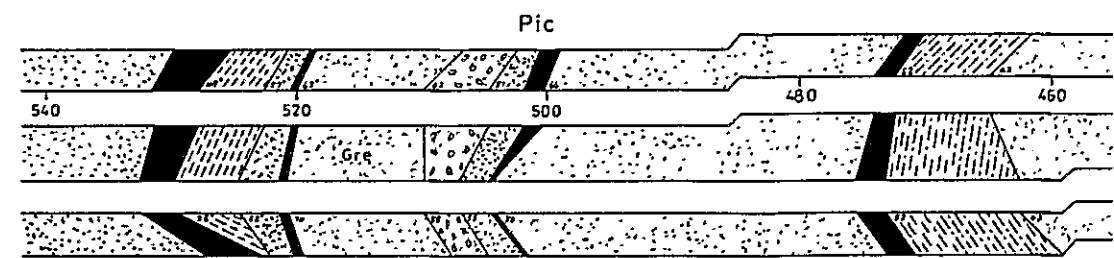
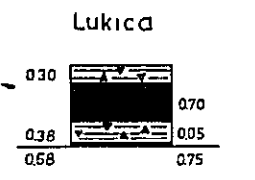
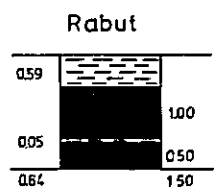
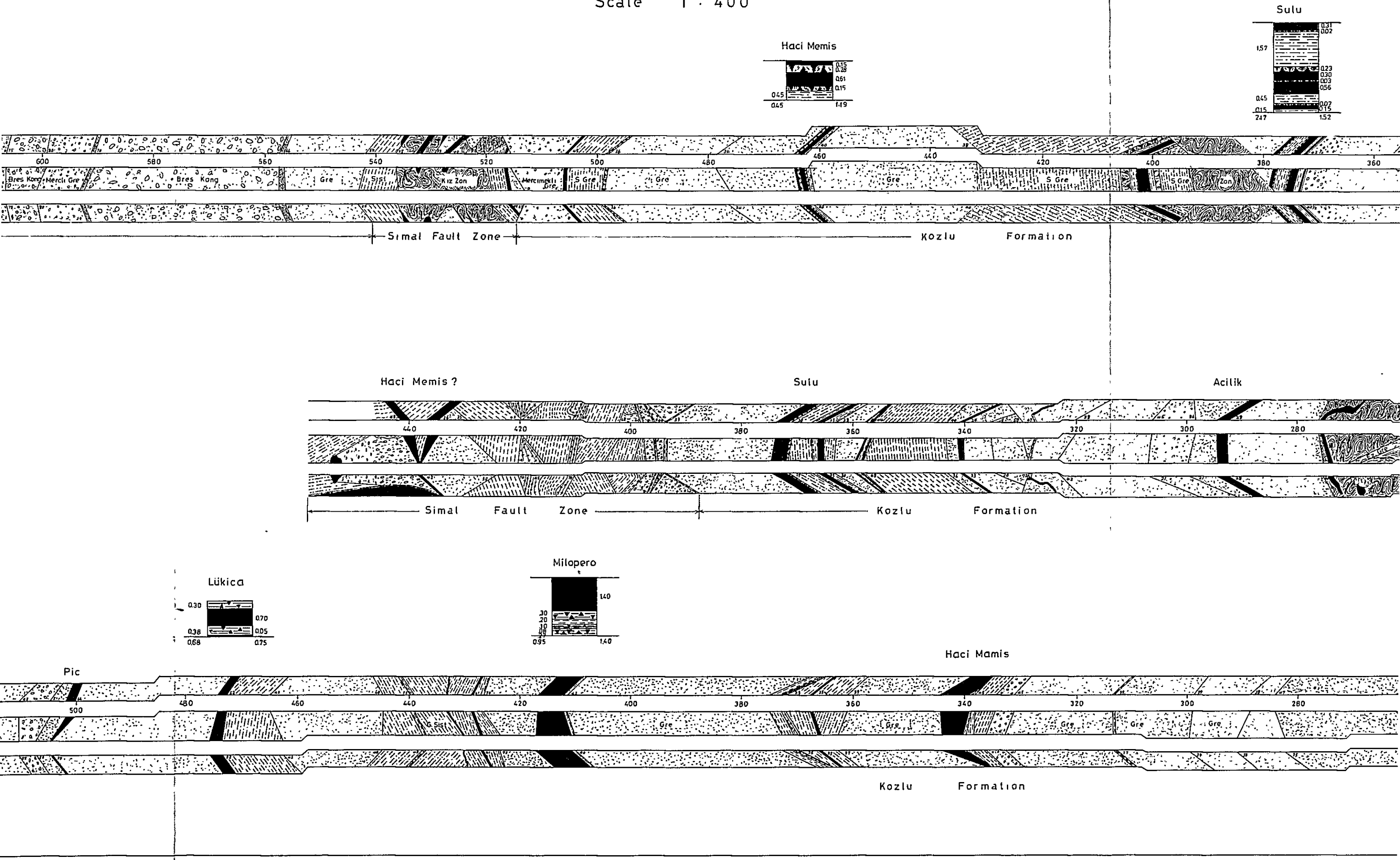
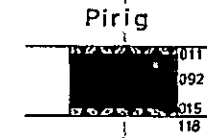
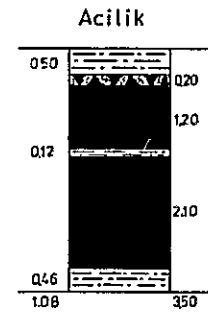
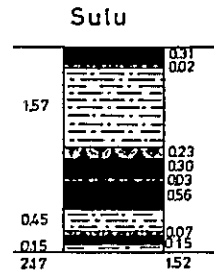


Figure 19

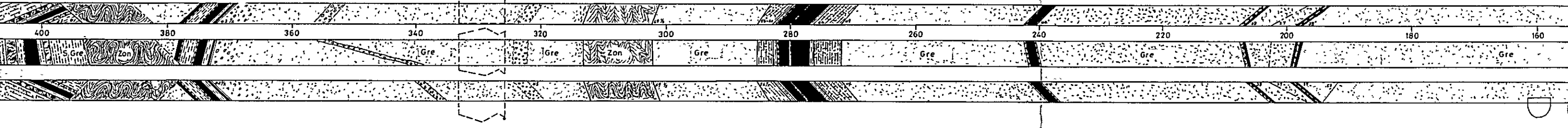
Geological Sketch of Galleries No. 22727, 22925 and 22926 at -425 m. Level in Kozlu Coal Mine, Zonguldak
Scale 1 : 400



lu Coal Mine, Zonguldak

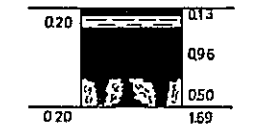
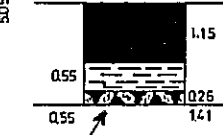
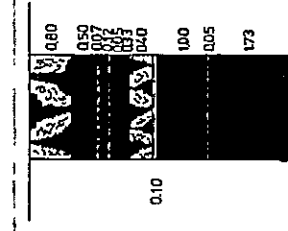
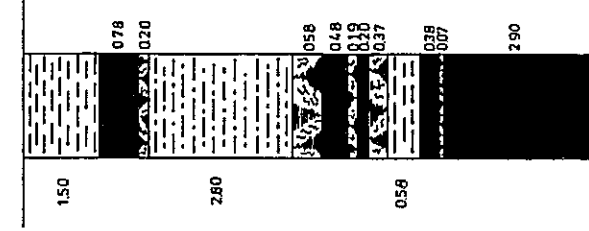


No. 22727



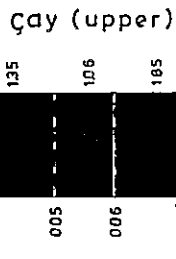
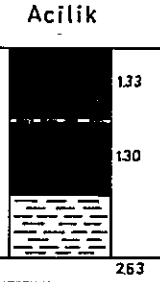
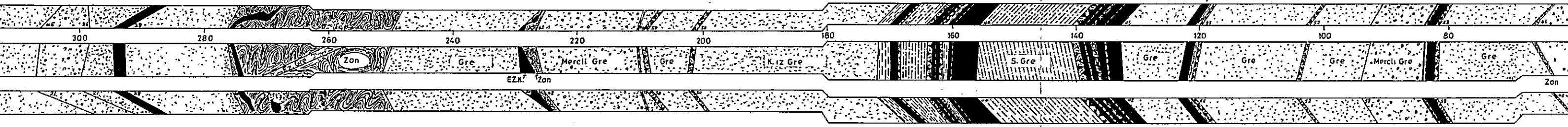
çay (upper)

çay (lower)



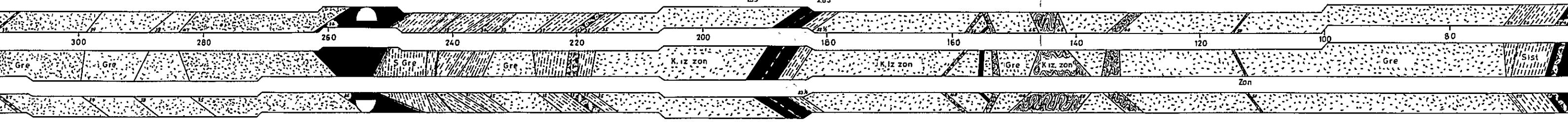
No. 22925

Acilik



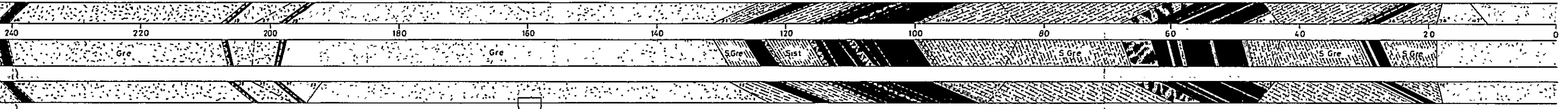
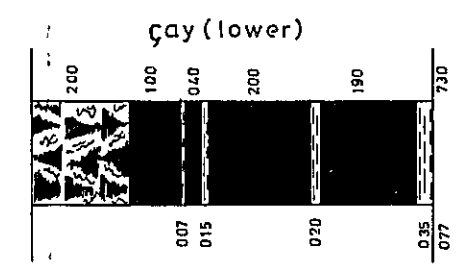
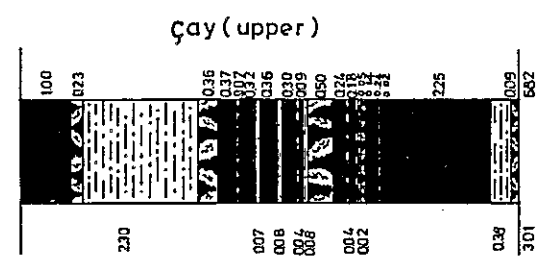
No. 22926

Sulu

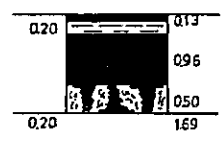
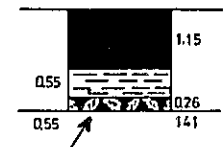


irig
011
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118

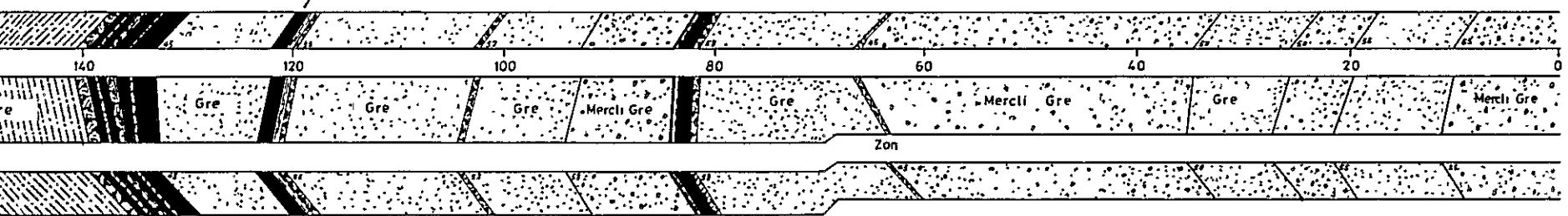
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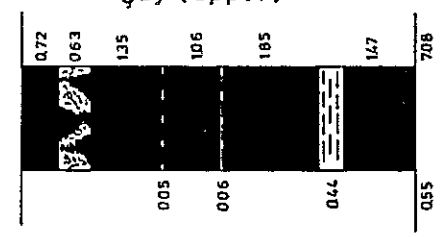
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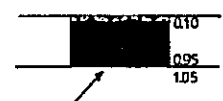
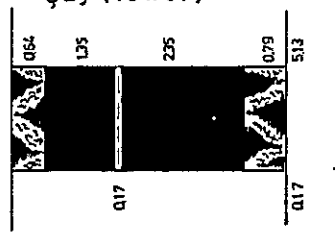
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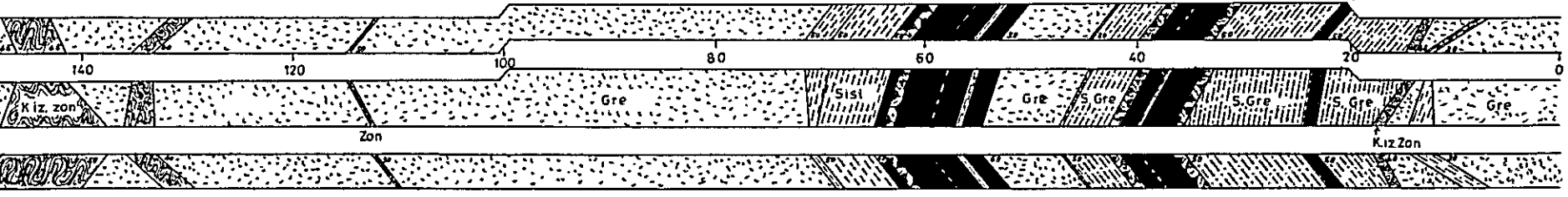
çay (upper)



çay (lower)



No. 22926



COAL DEVELOPMENT PROJECT AT OFFSHORE AREA OF
ZONGULDAK COAL FIELD

GEOLOGICAL SKETCH OF GALLERIES
No. 22727, 22925 AND 22926 AT -425^m
LEVEL IN KOZLU COAL MINE,
ZONGULDAK, REPUBLIC OF TURKEY
SCALE 1 : 400

Japan International Cooperation Agency (JICA)

Date : Aug , 1982 Fig. 19



Figure 20 Estimated Geological Section Through 22925 & 22727 Galleries

Scale 1: 5,000

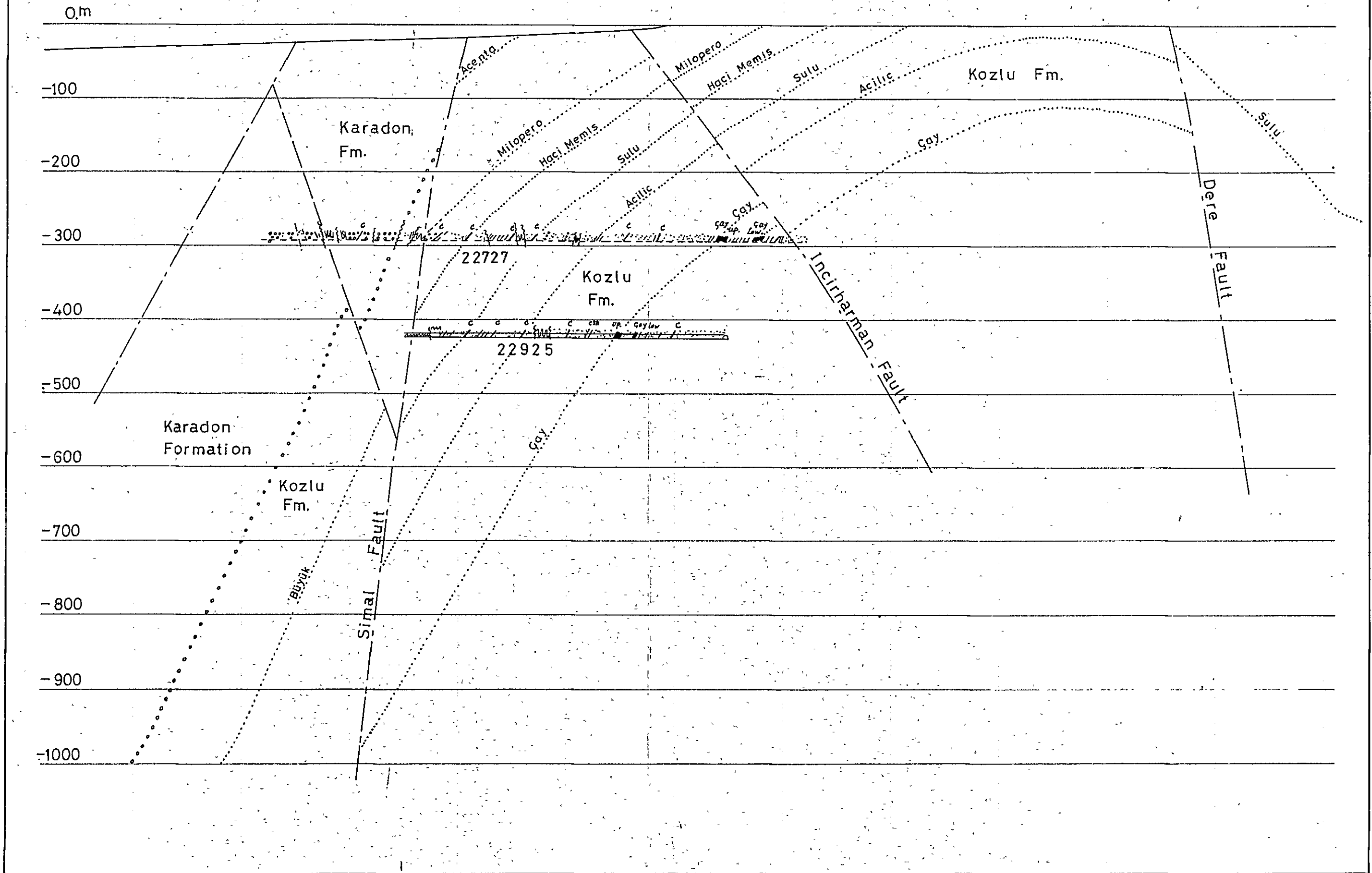


Figure 21 Estimated Geological Section Through 22926 Gallery

Scale 1:5000

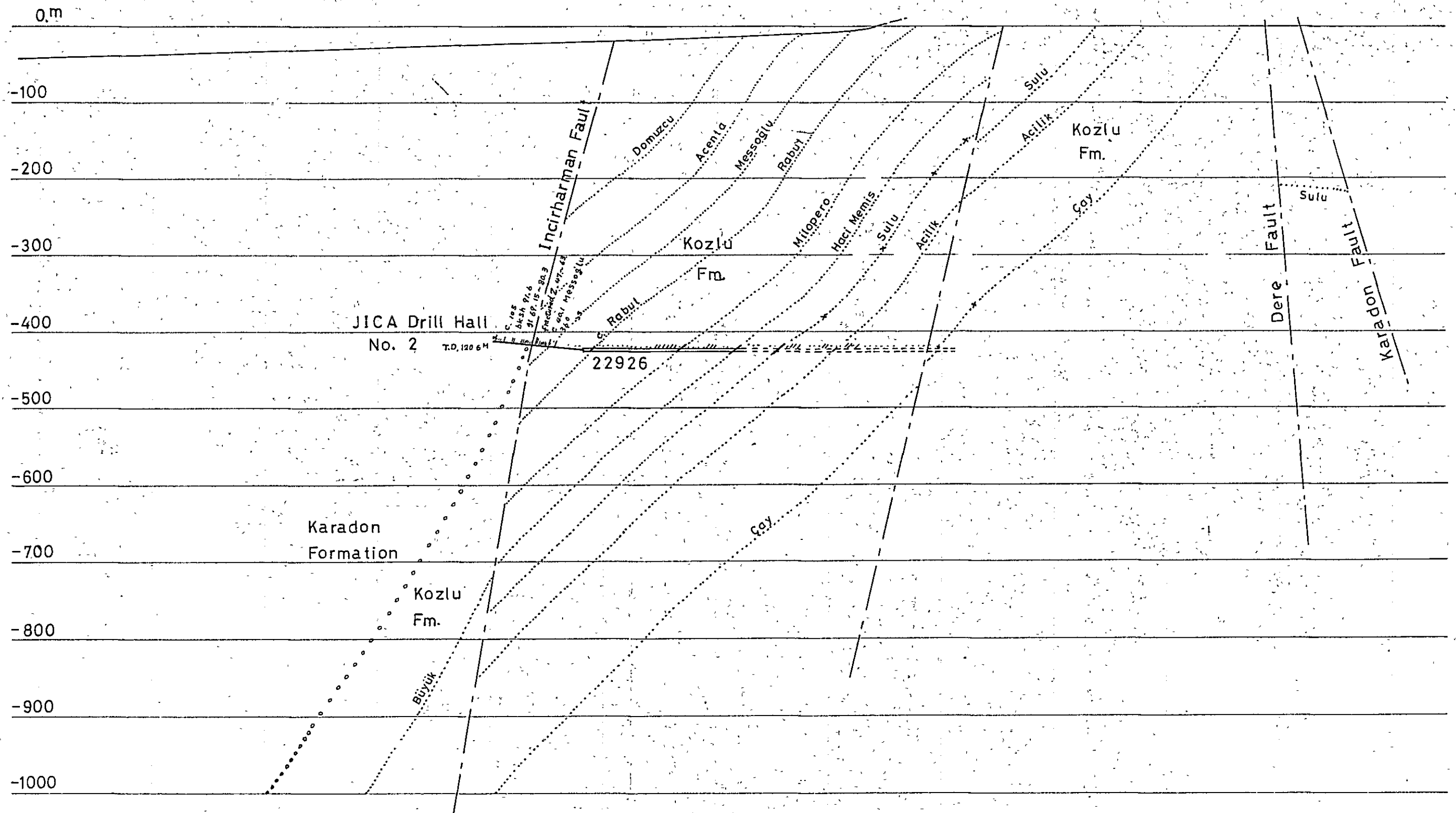


Figure 22 Estimated Geological Section Through 21945 Gallery

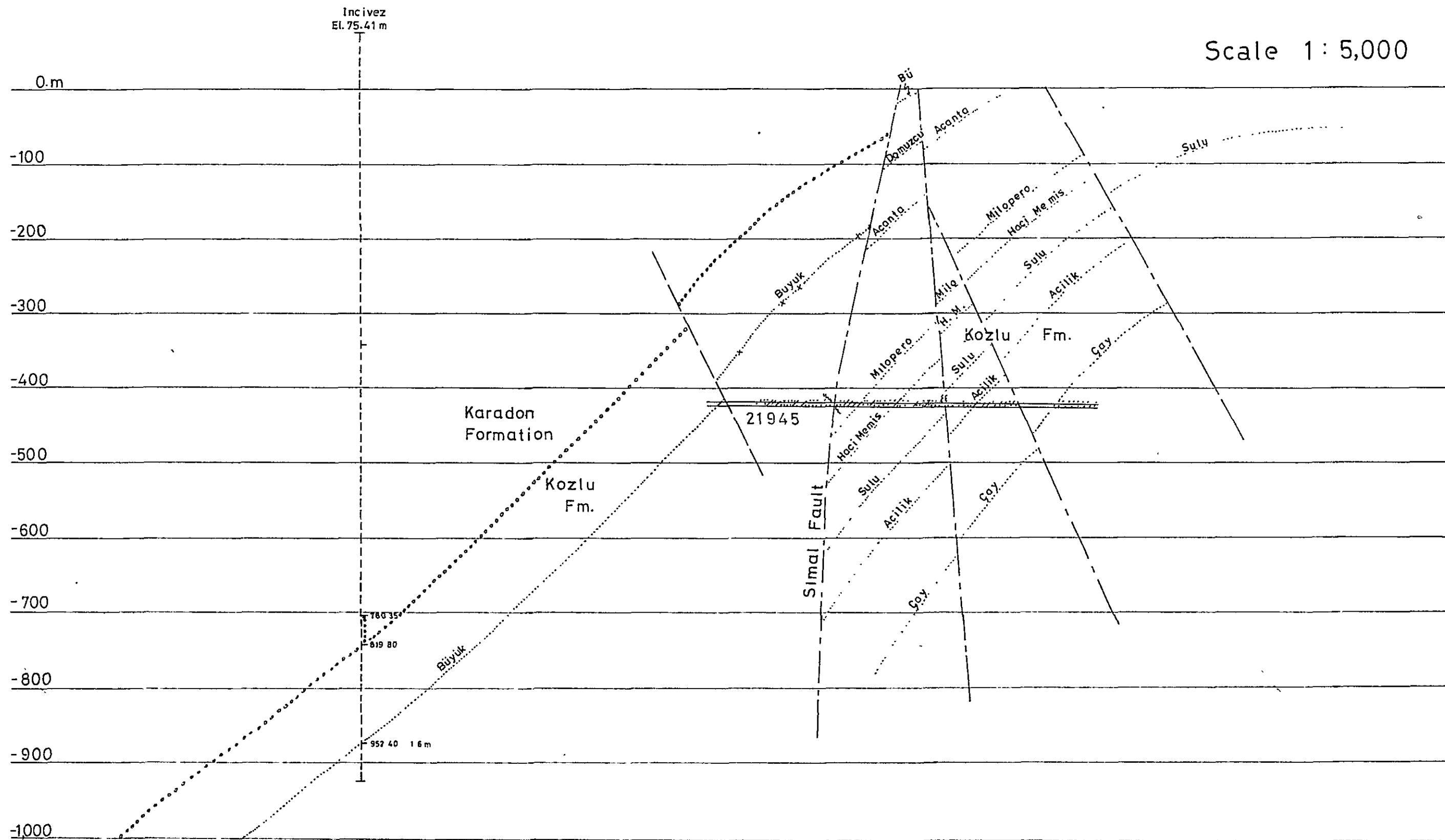


Figure 23 Estimated Geological Section Through 22929 Gallery

Scale 1: 5,000

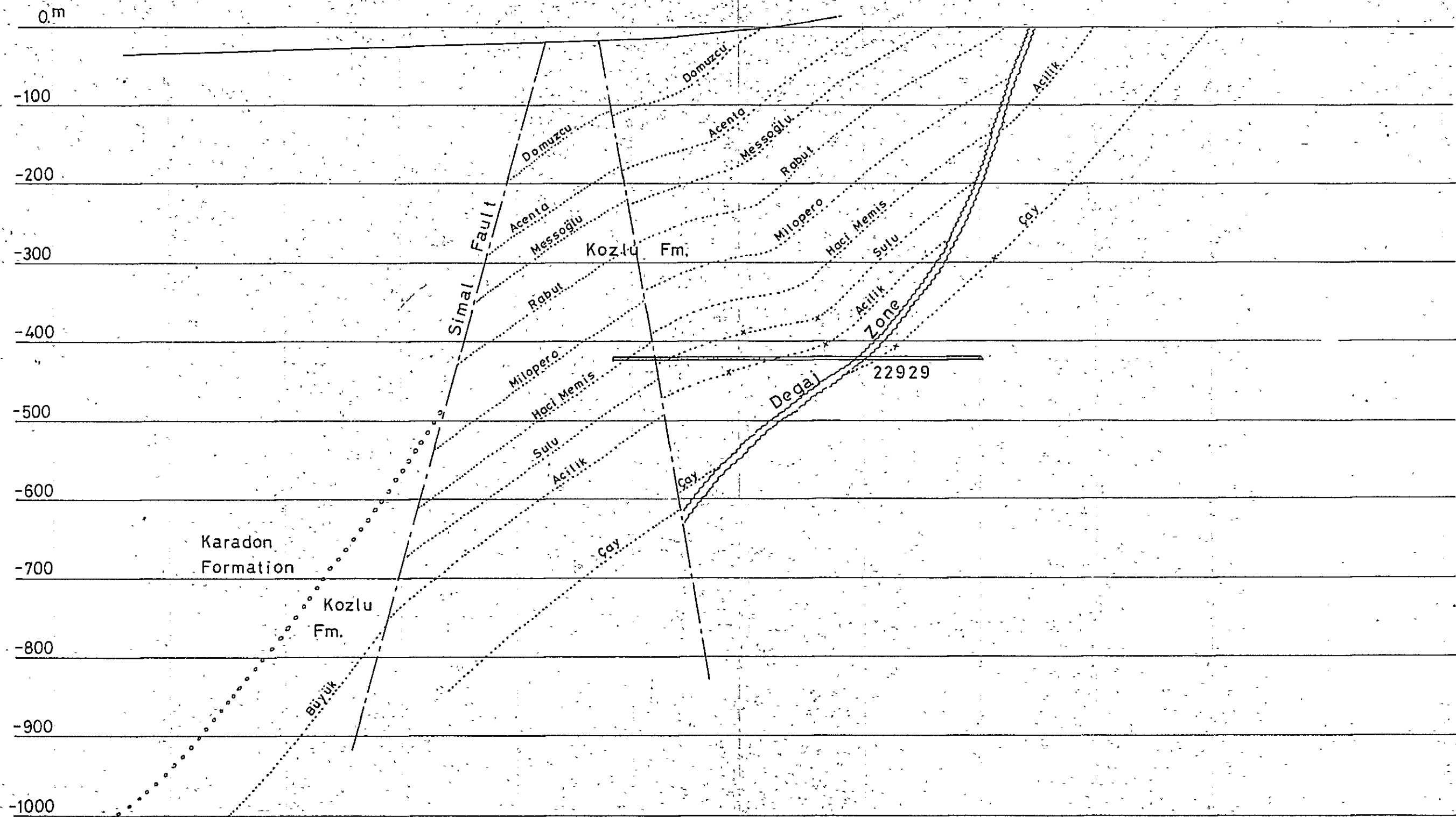


Figure 24 Estimated Geological Section of Grid Line 47500 E

Scale 1:5,000

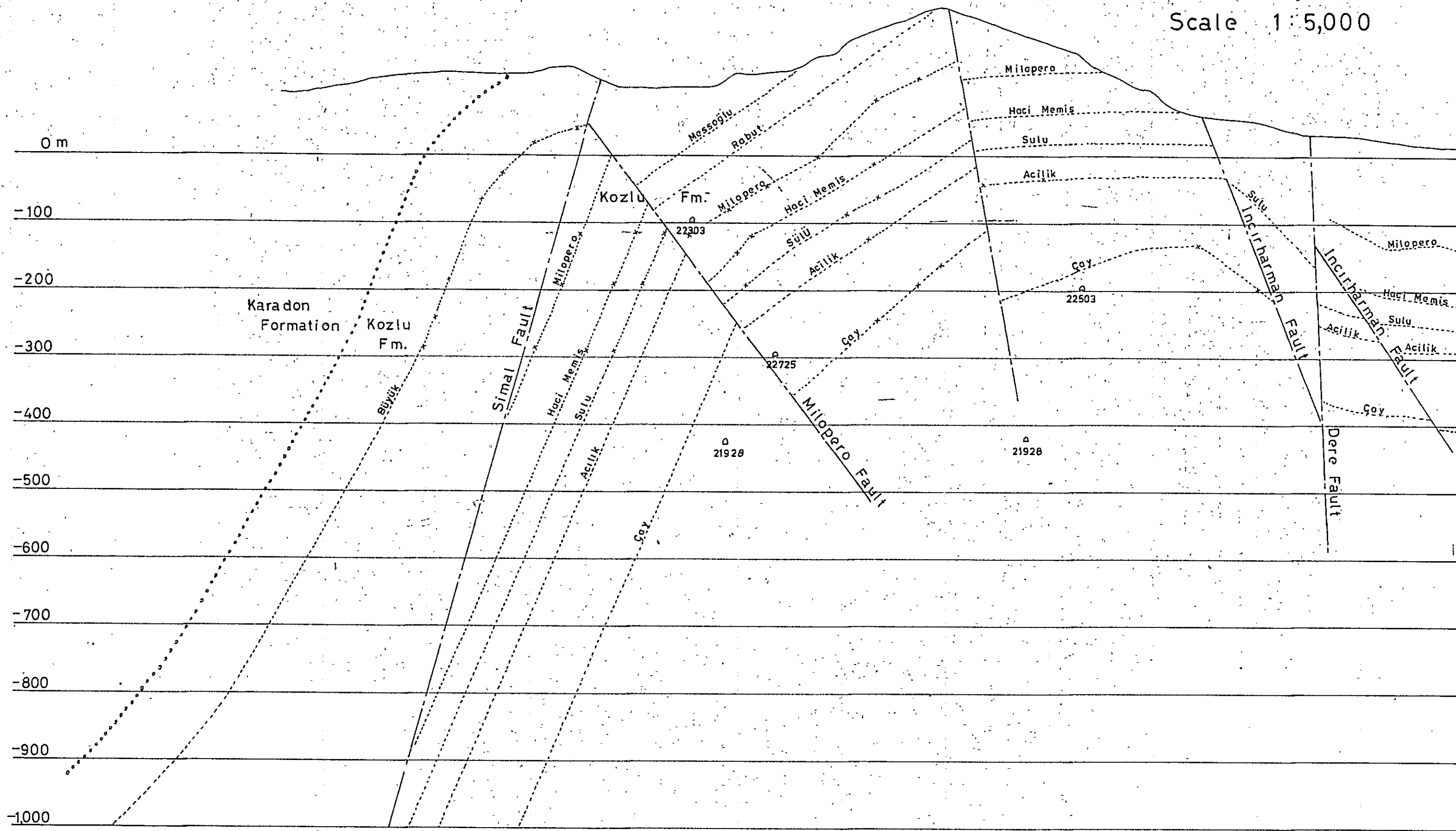
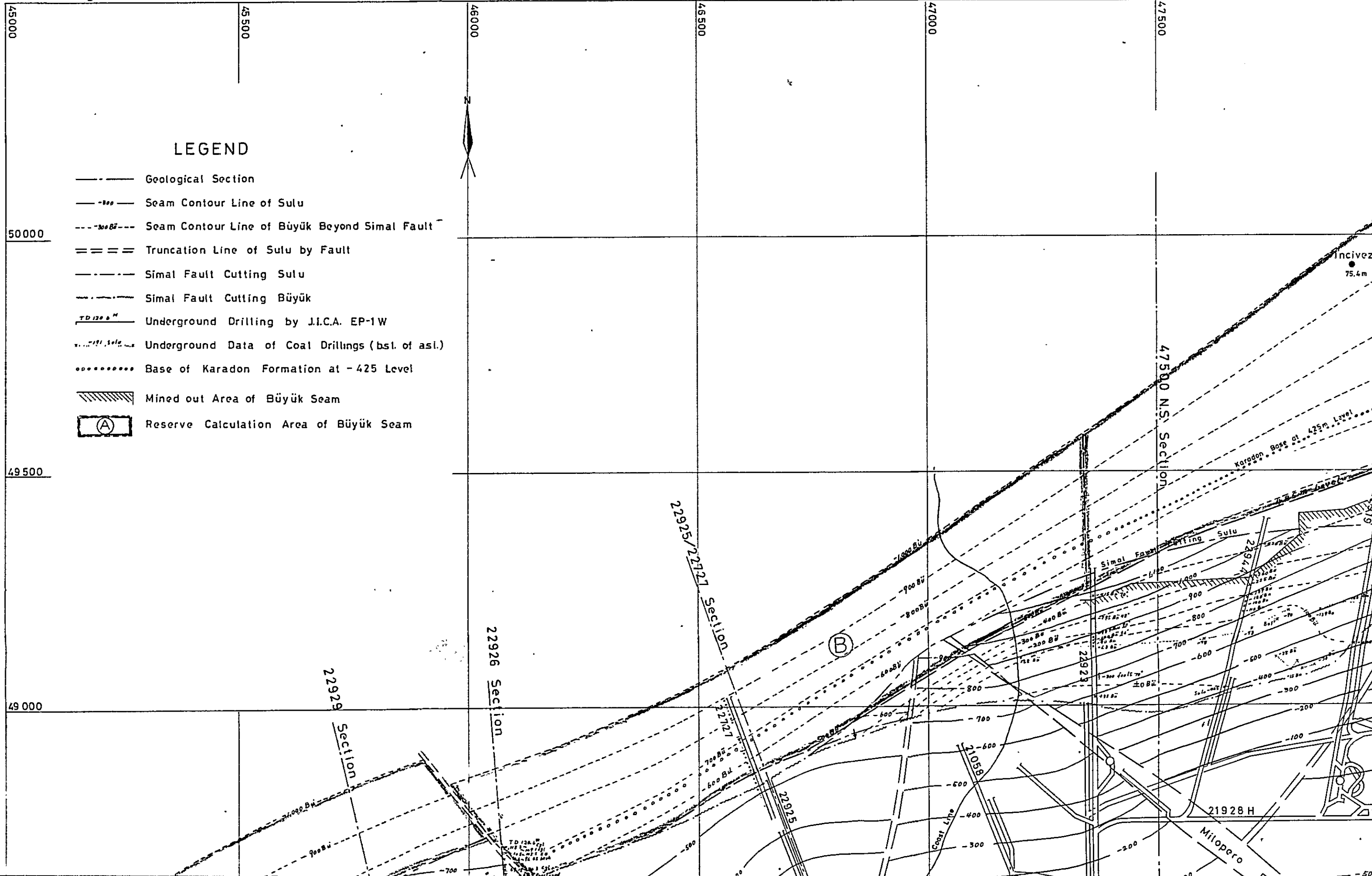


Figure 25 Reserve Calculation Map of Büyük Seam at Kozlu Mine, Zonguldak



LEGEND

- — — — — Geological Section
- — — — — Seam Contour Line of Sulu
- - - - - Seam Contour Line of Büyük Beyond Simal Fault
- ==== Truncation Line of Sulu by Fault
- - - - - Simal Fault Cutting Sulu
- - - - - Simal Fault Cutting Büyük
- — — — — TD 120 2 M Underground Drilling by J.I.C.A. EP-1W
- Underground Data of Coal Drillings (bst. of asl.)
- Base of Karadon Formation at -425 Level
- ▨ Mined out Area of Büyük Seam
- Ⓐ Reserve Calculation Area of Büyük Seam

50000

49500

49000

Incivez
75.4 m

47500 N.S. Section

22925/22921 Section

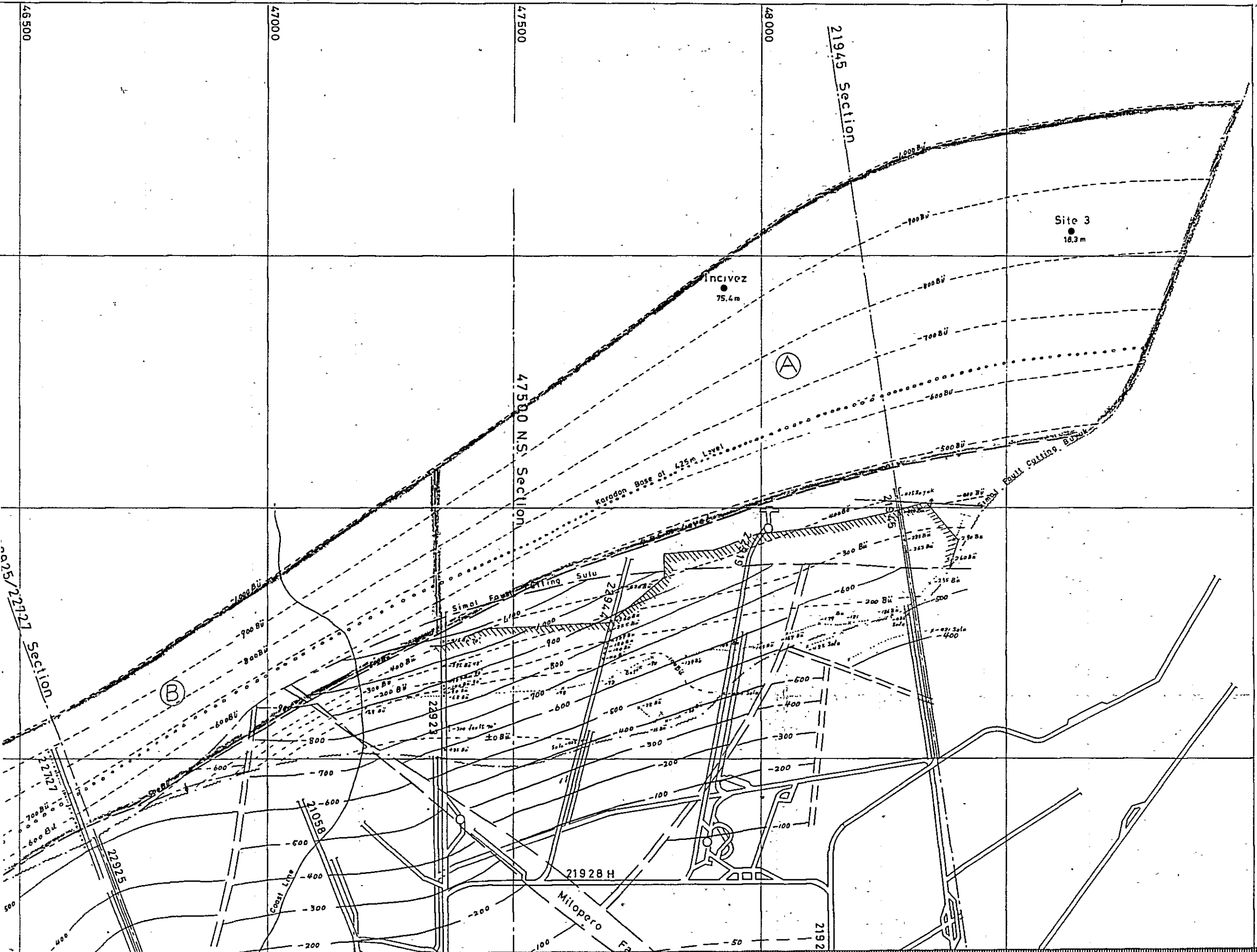
22926 Section

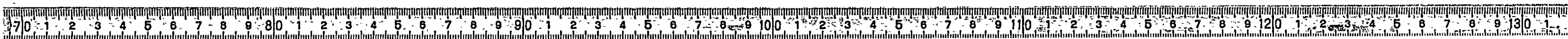
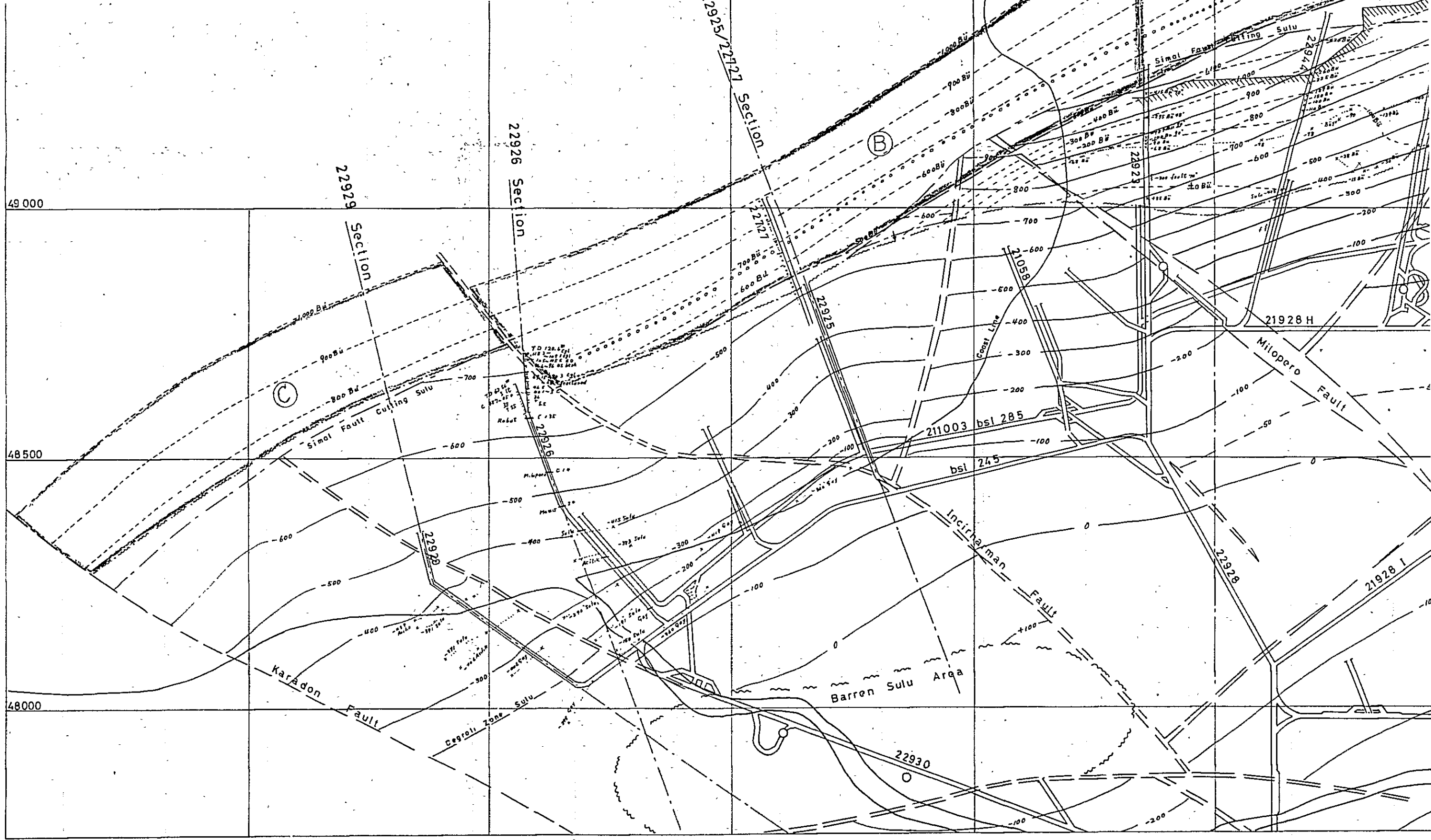
22929 Section

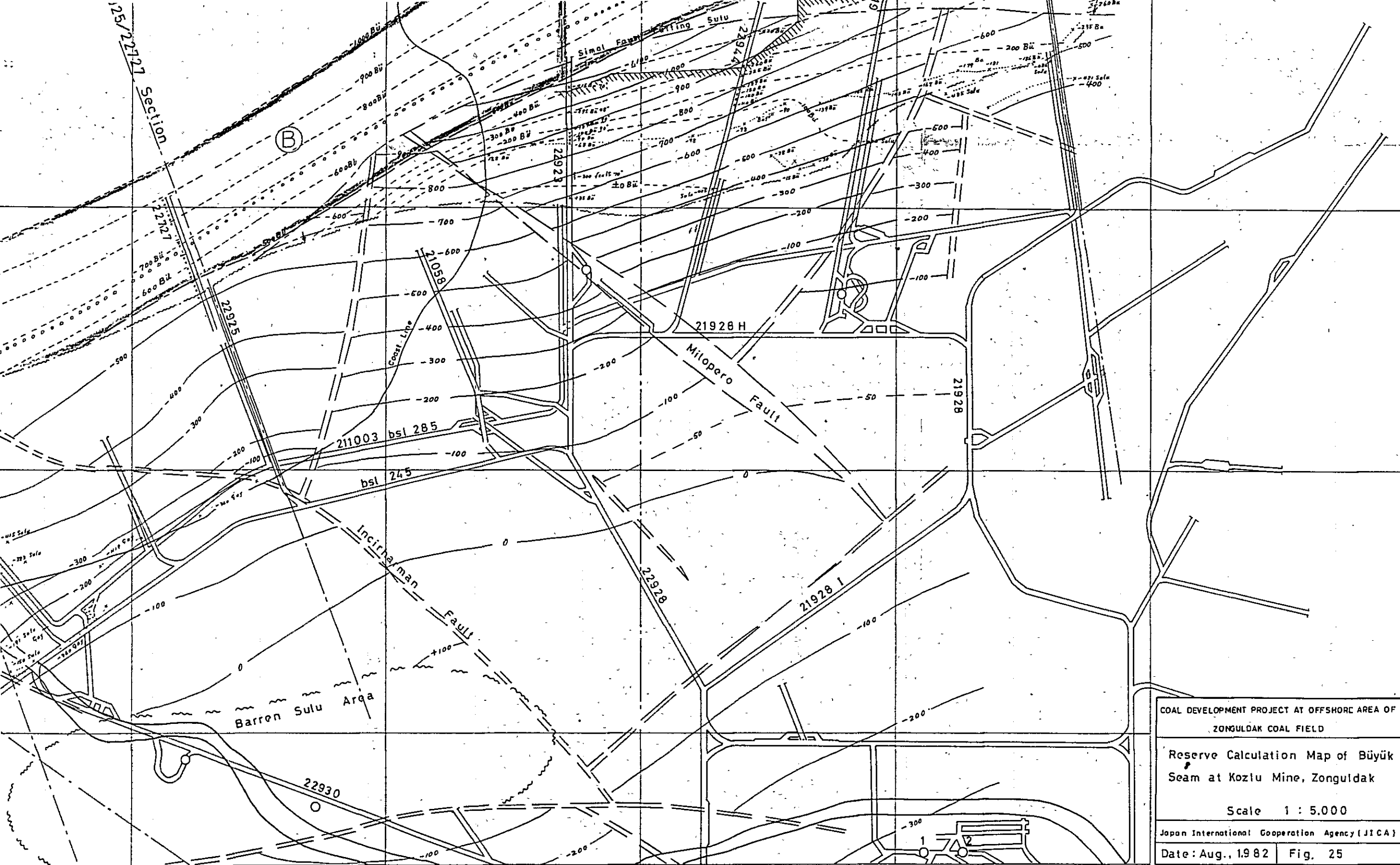
21928 H

Mitopero
















COAL DEVELOPMENT PROJECT AT OFFSHORE AREA OF ZONGULDAK COAL FIELD	
Reserve Calculation Map of Büyük Seam at Kozlu Mine, Zonguldak	
Scale 1 : 5,000	
Japan International Cooperation Agency (JICA)	
Date: Aug., 1982	Fig. 25

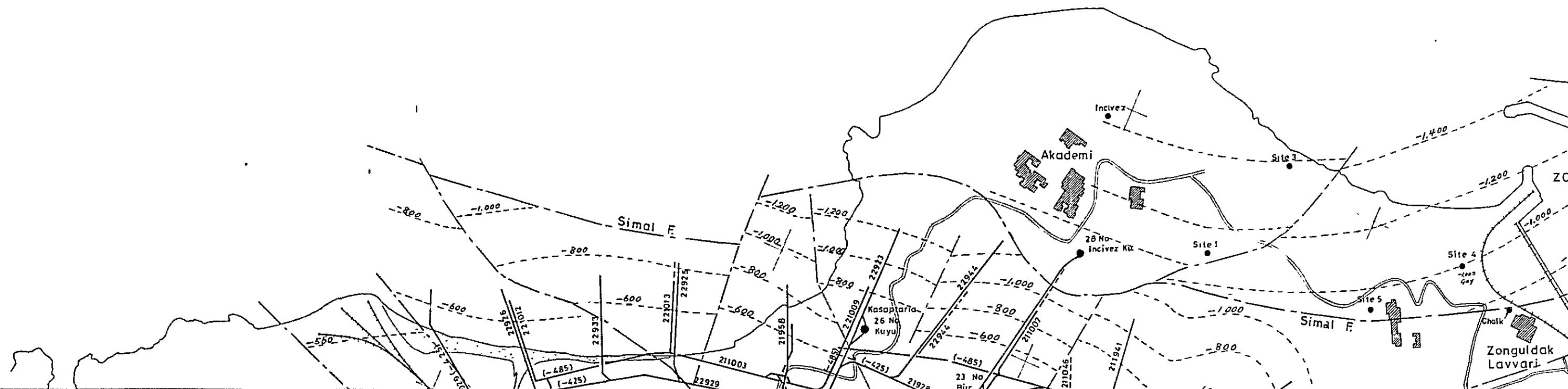


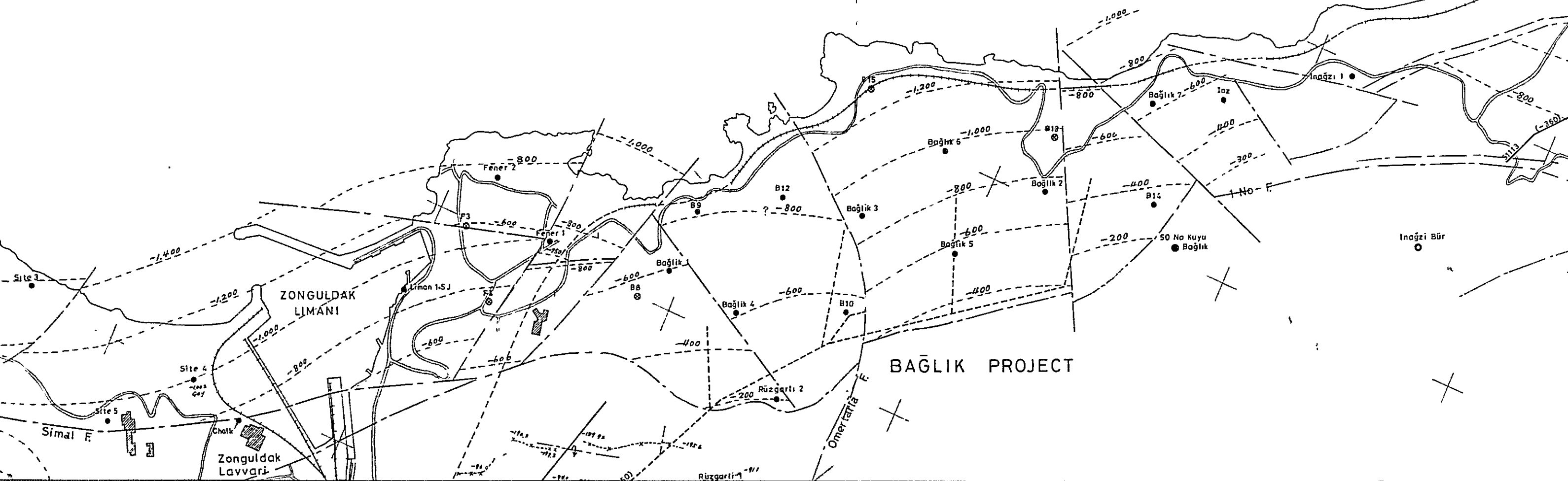
Figure 26 Main Structure of Each Coal Mine in Zonguldak Coal Field

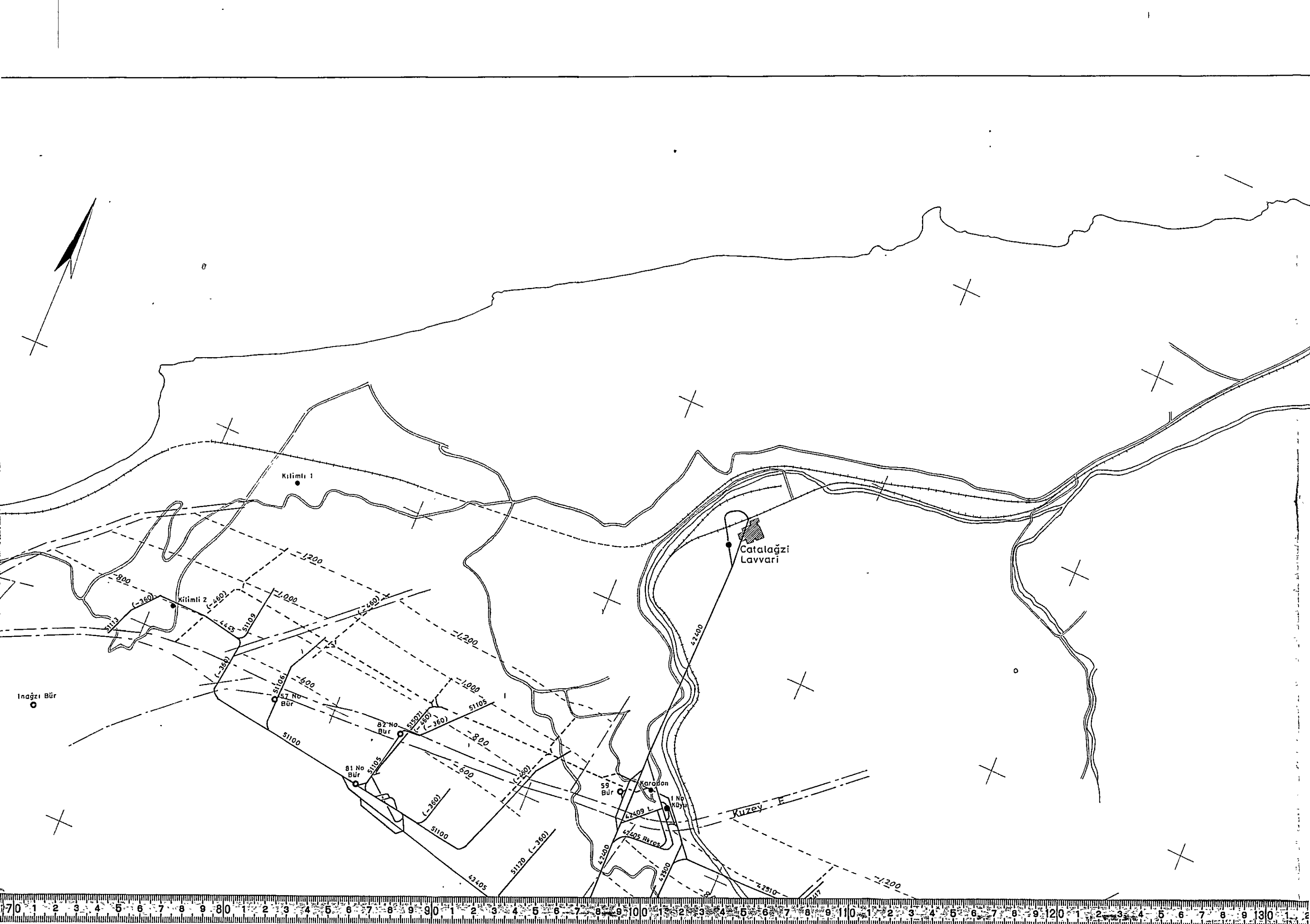
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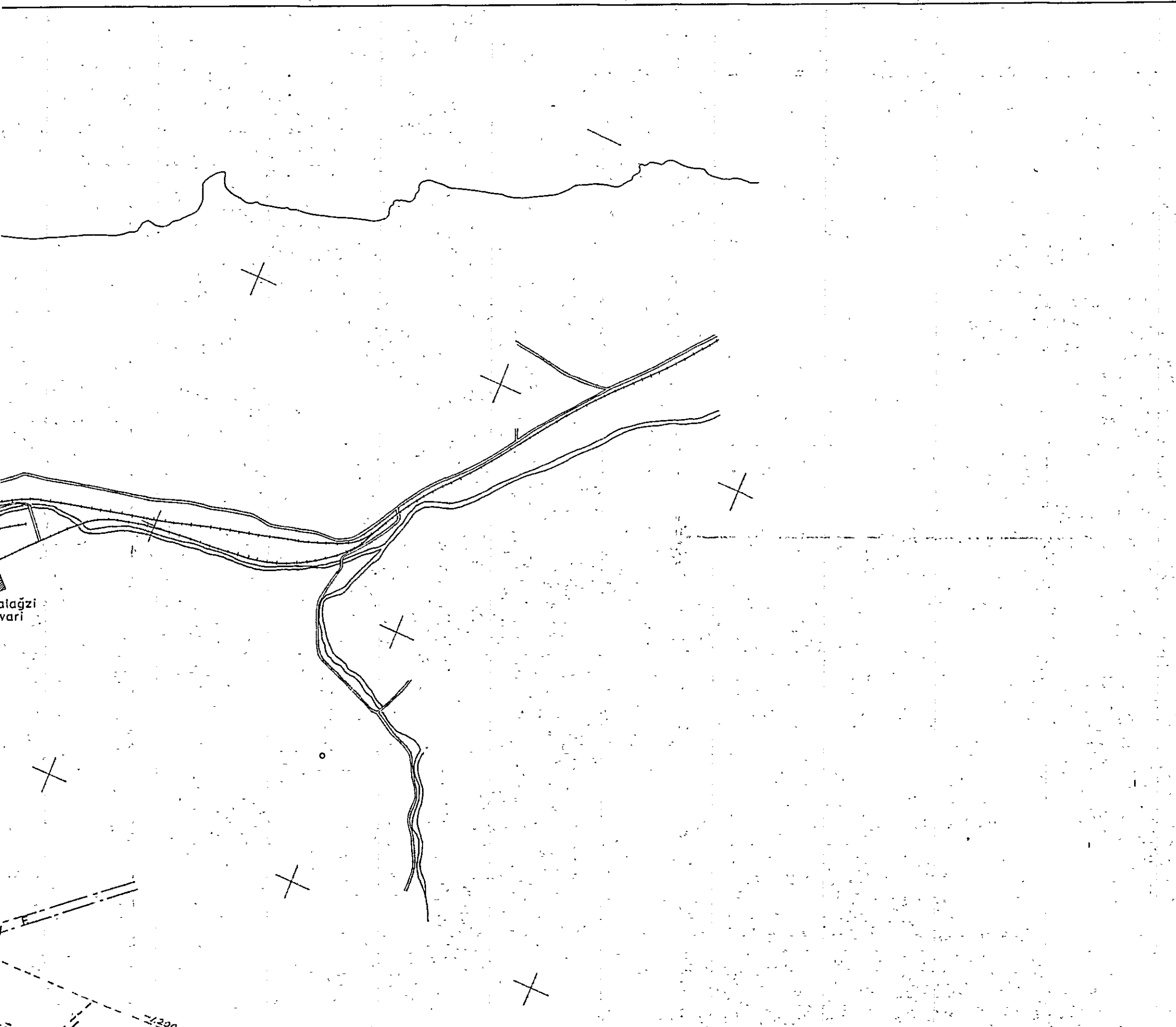
LEGEND

-  22926 Drifted Trunk Gallery
-  Programmed Trunk Gallery
-  Vertical Shaft
-  Drill Hole
-  Fault Line
-  Çay Seam Contour Line
-  Programmed Hole



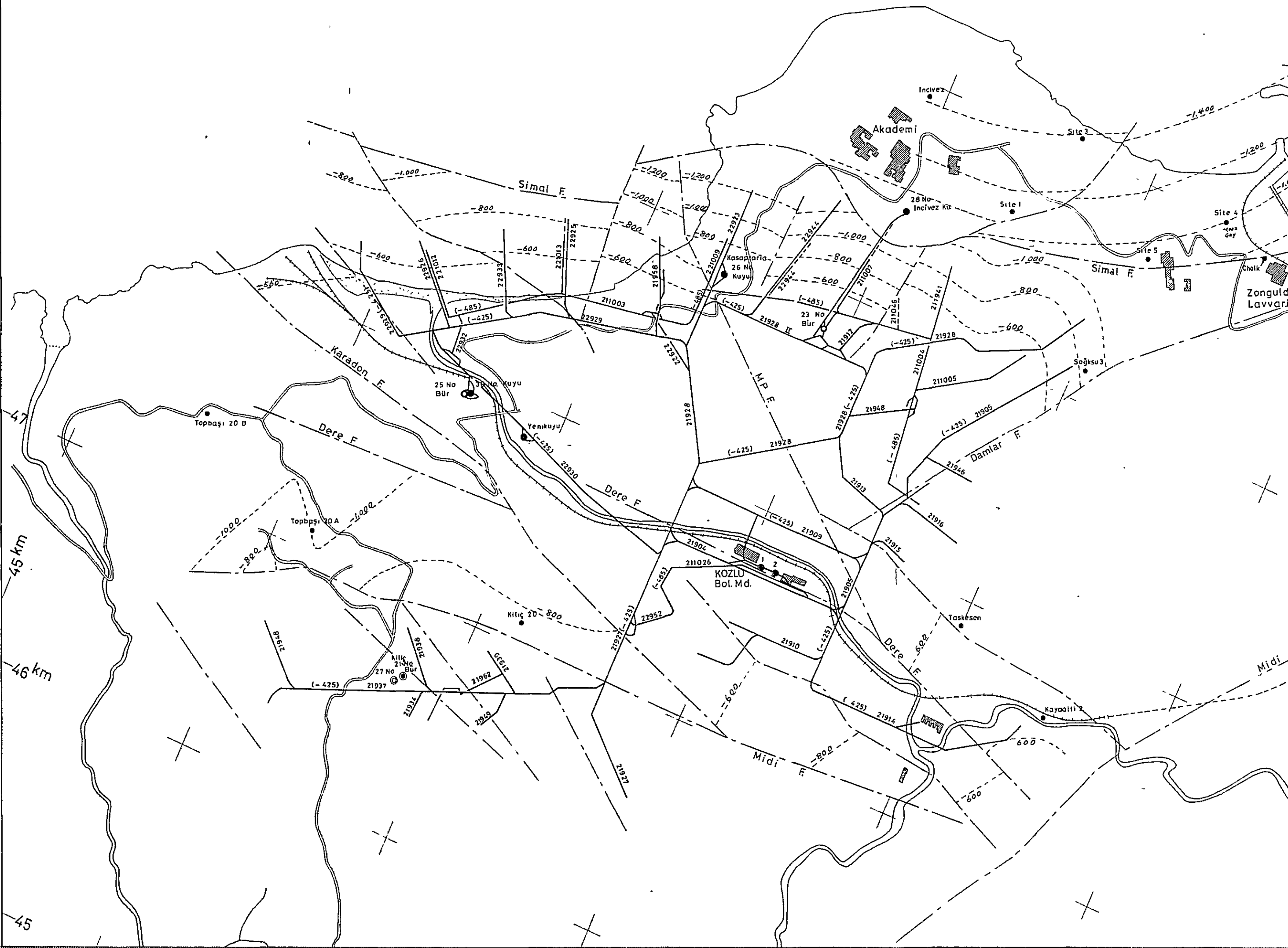


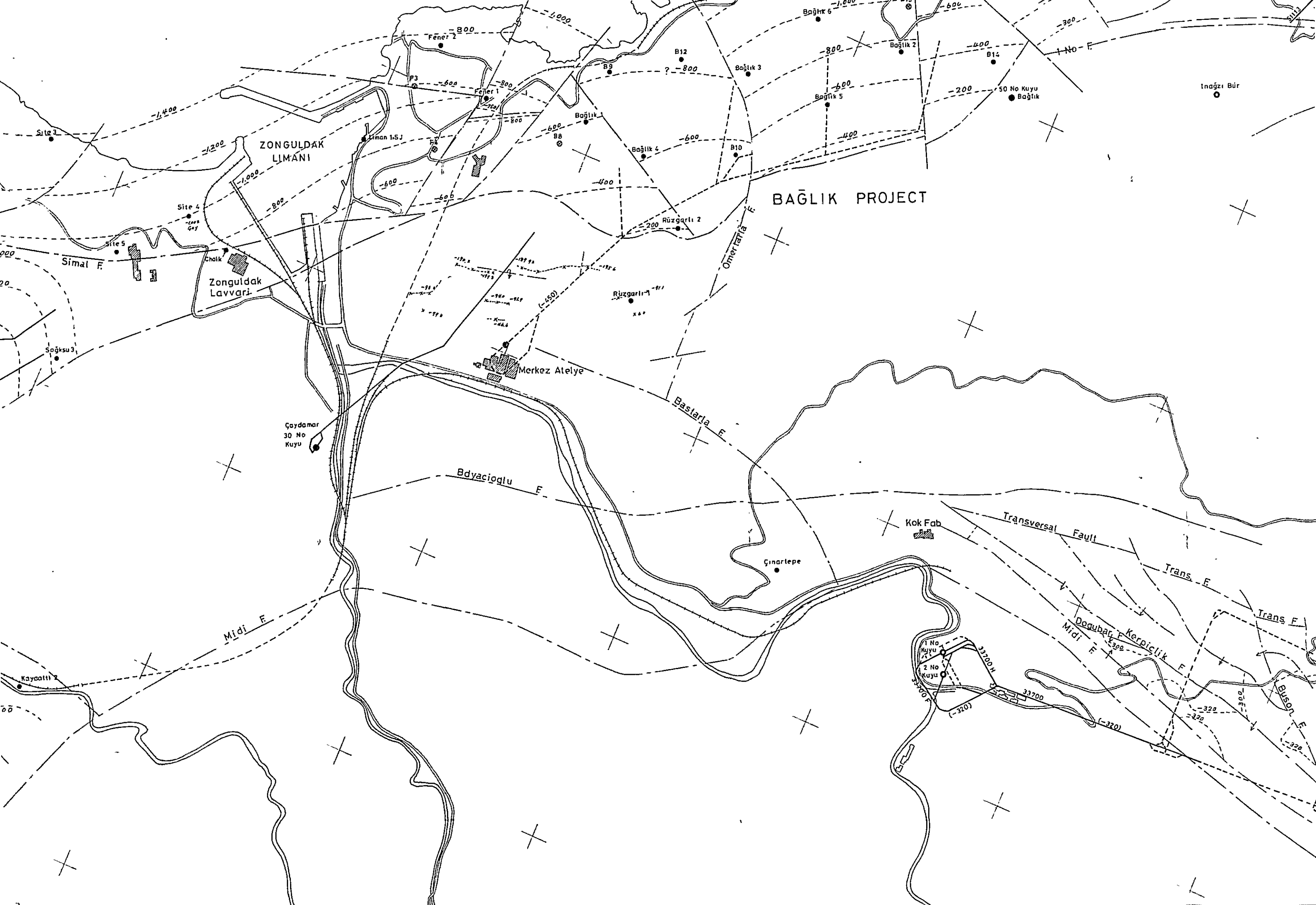




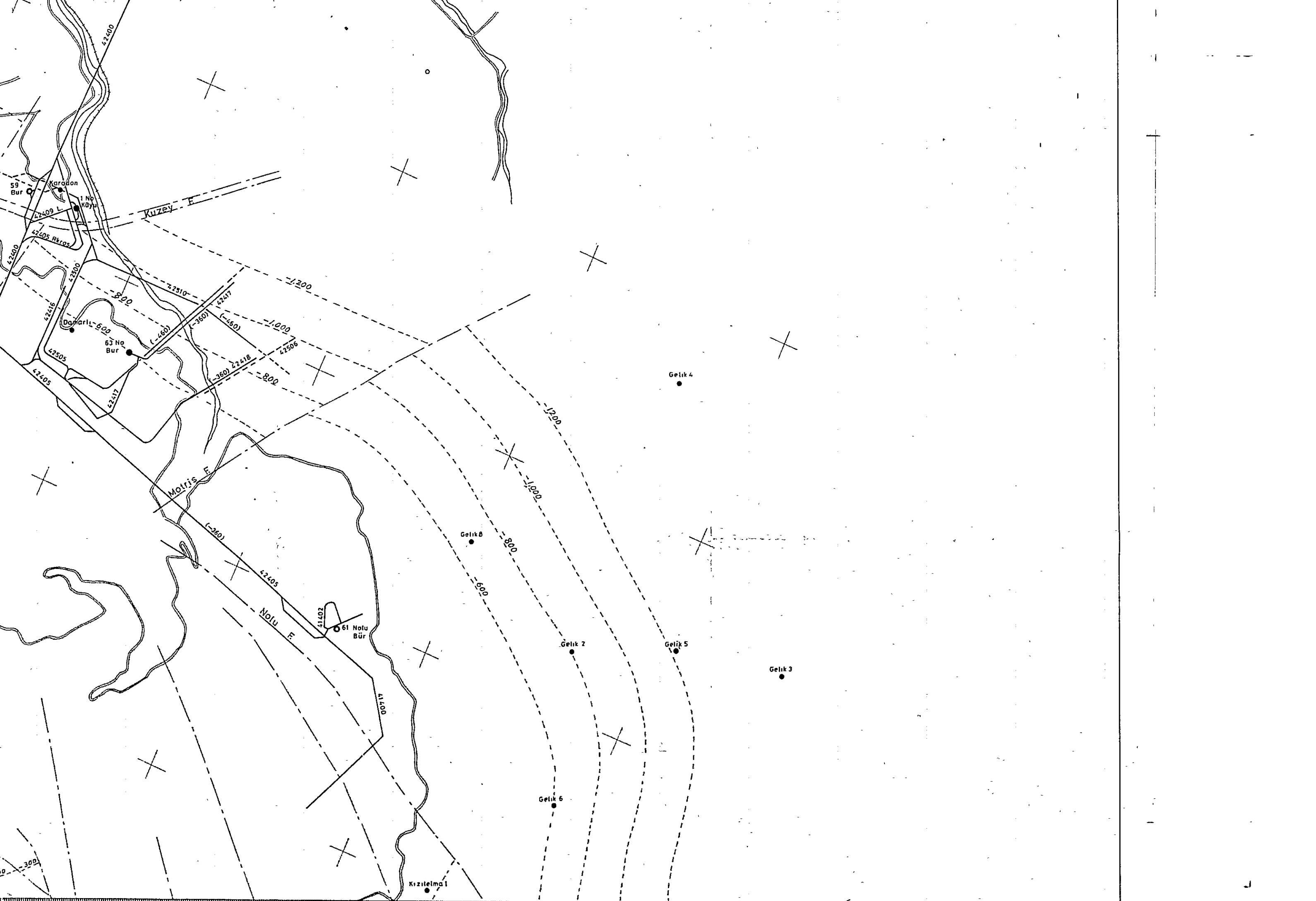
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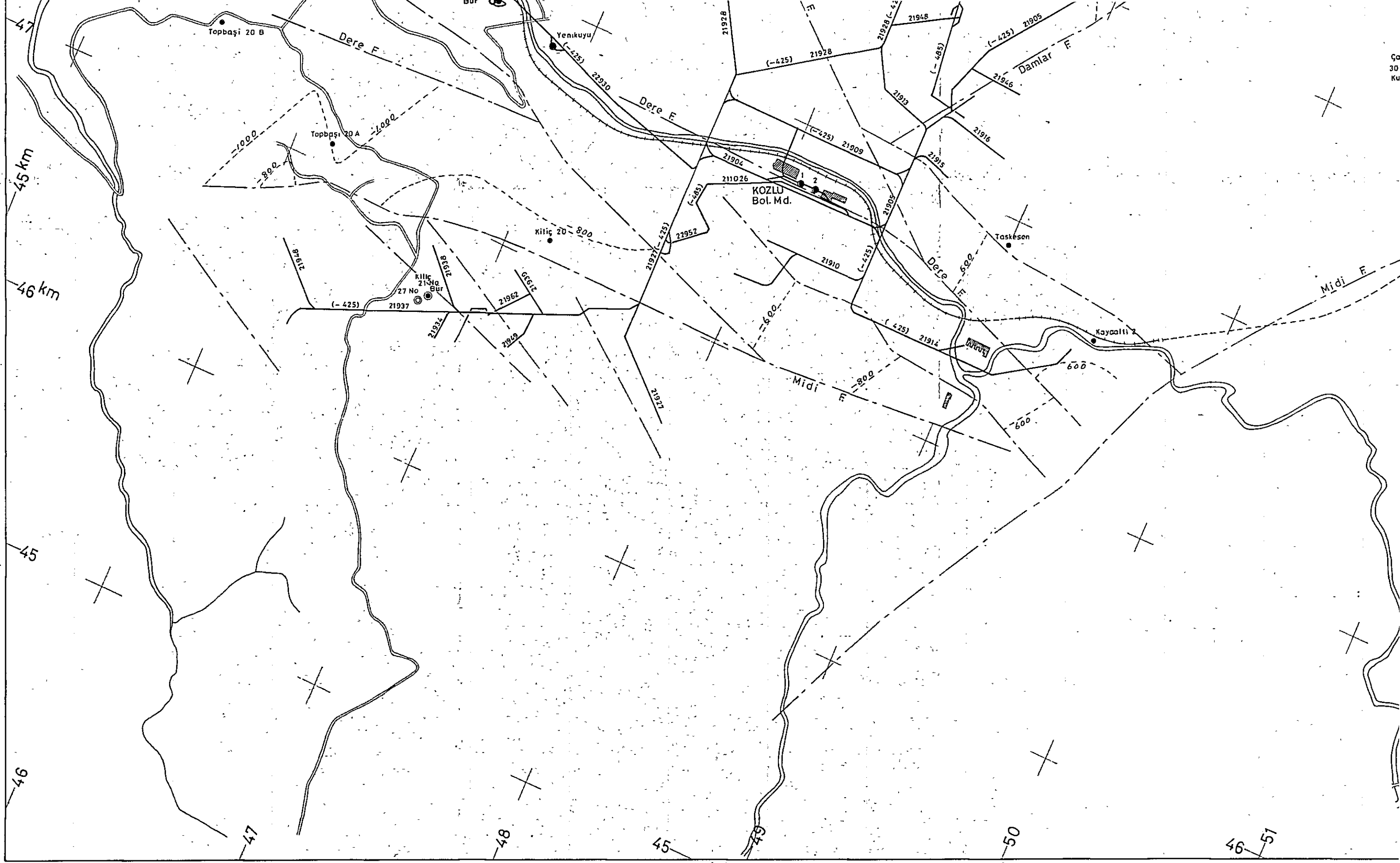


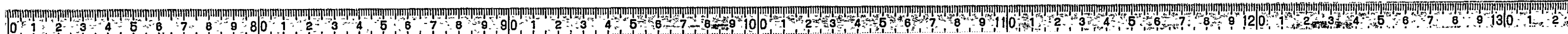
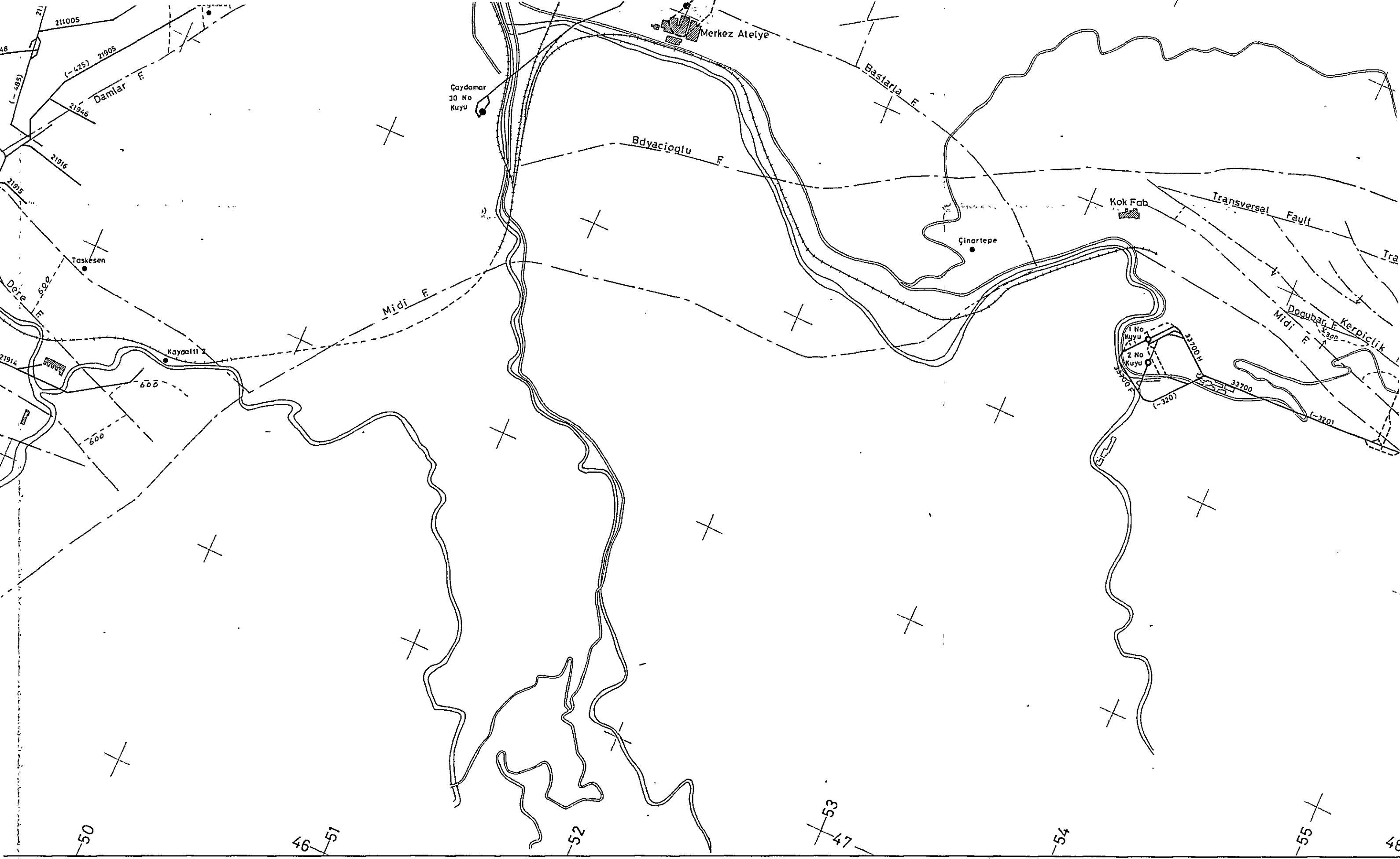


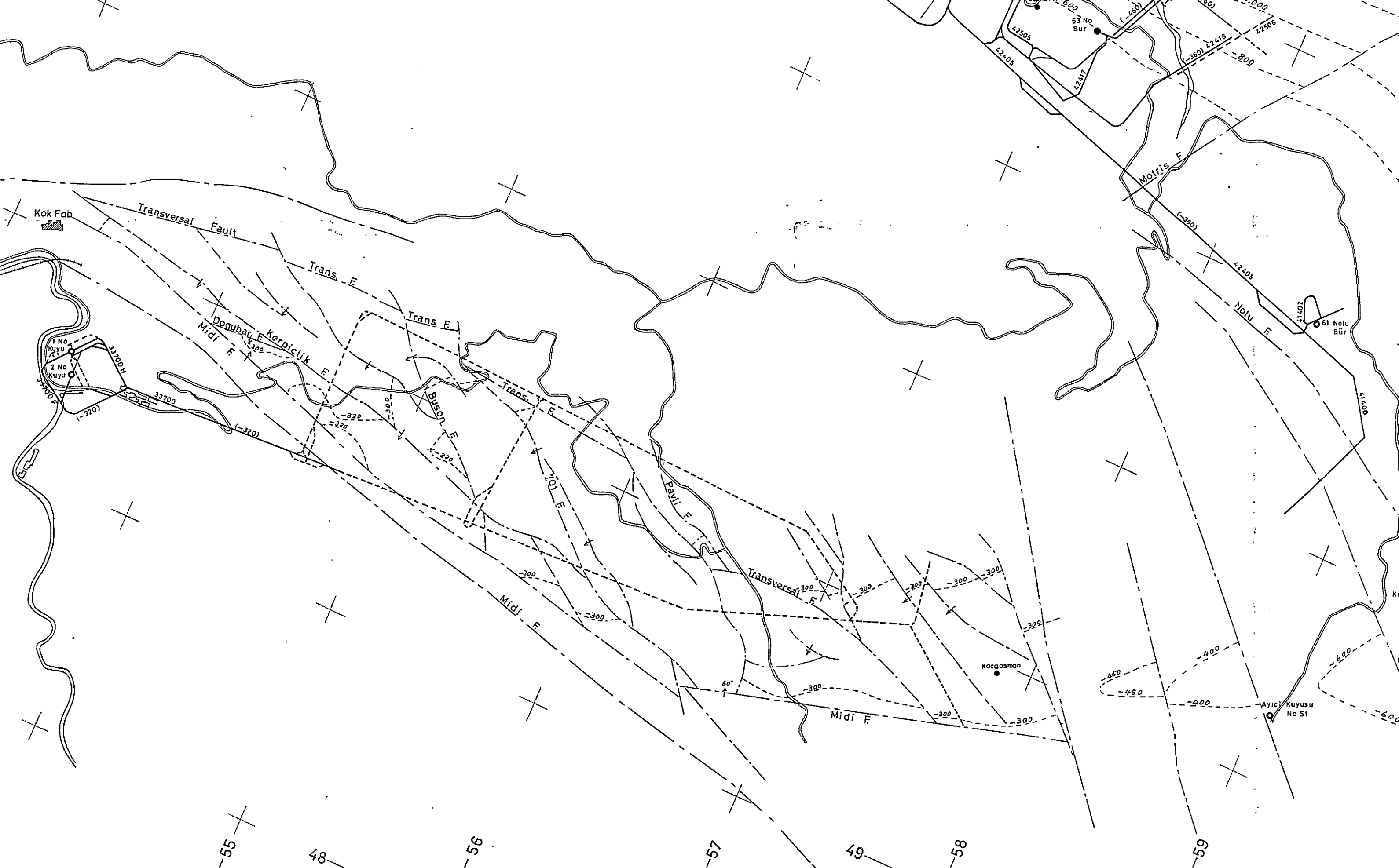


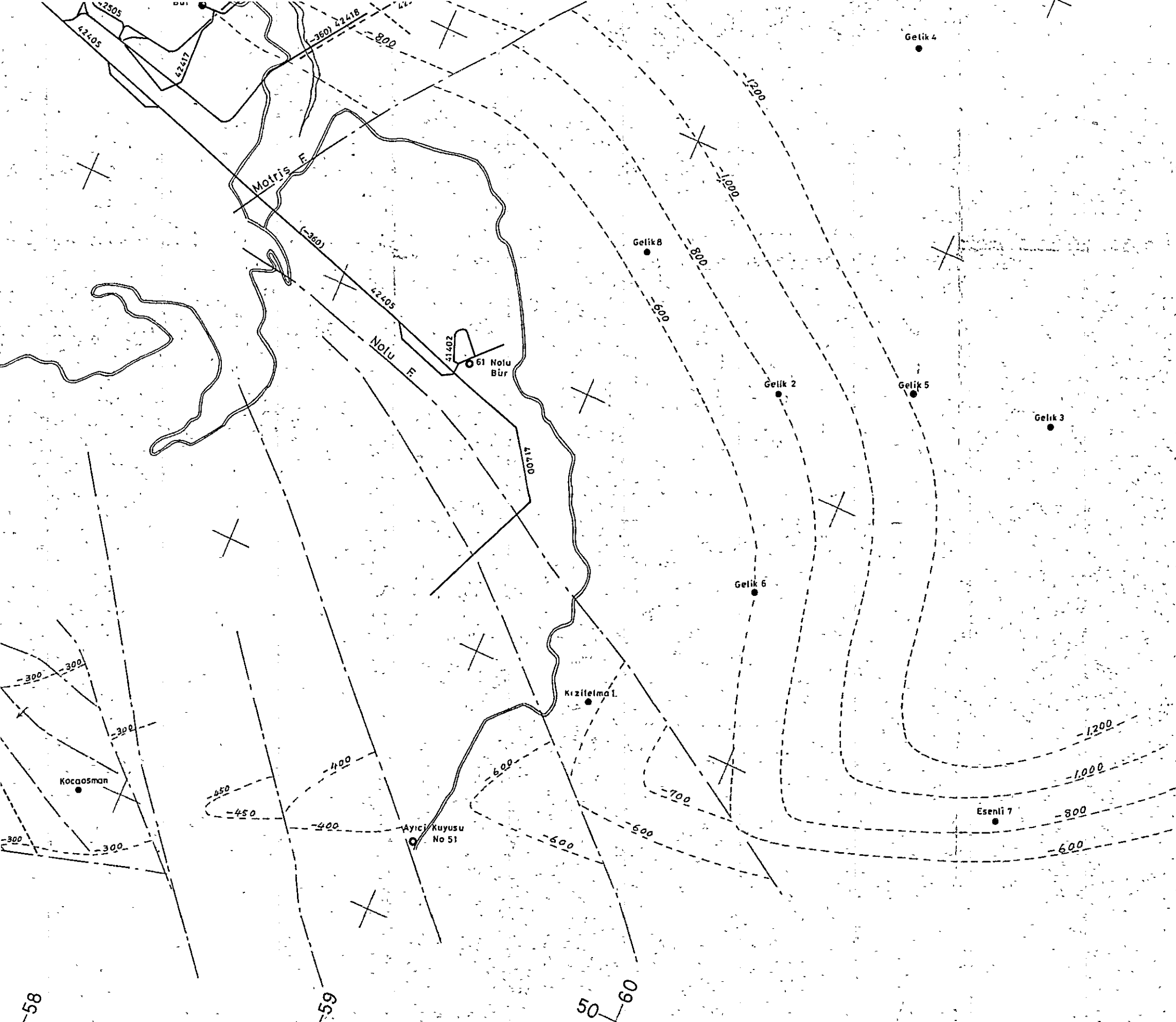












COAL DEVELOPMENT PROJECT AT OFFSHORE AREA OF ZONGULDAK COAL FIELD	
Main Structure of Each Coal Mine in Zonguldak Coal Field	
Scale 1:10,000	
Japan International Cooperation Agency (JICA)	
Date: Aug., 1982	Fig. 26

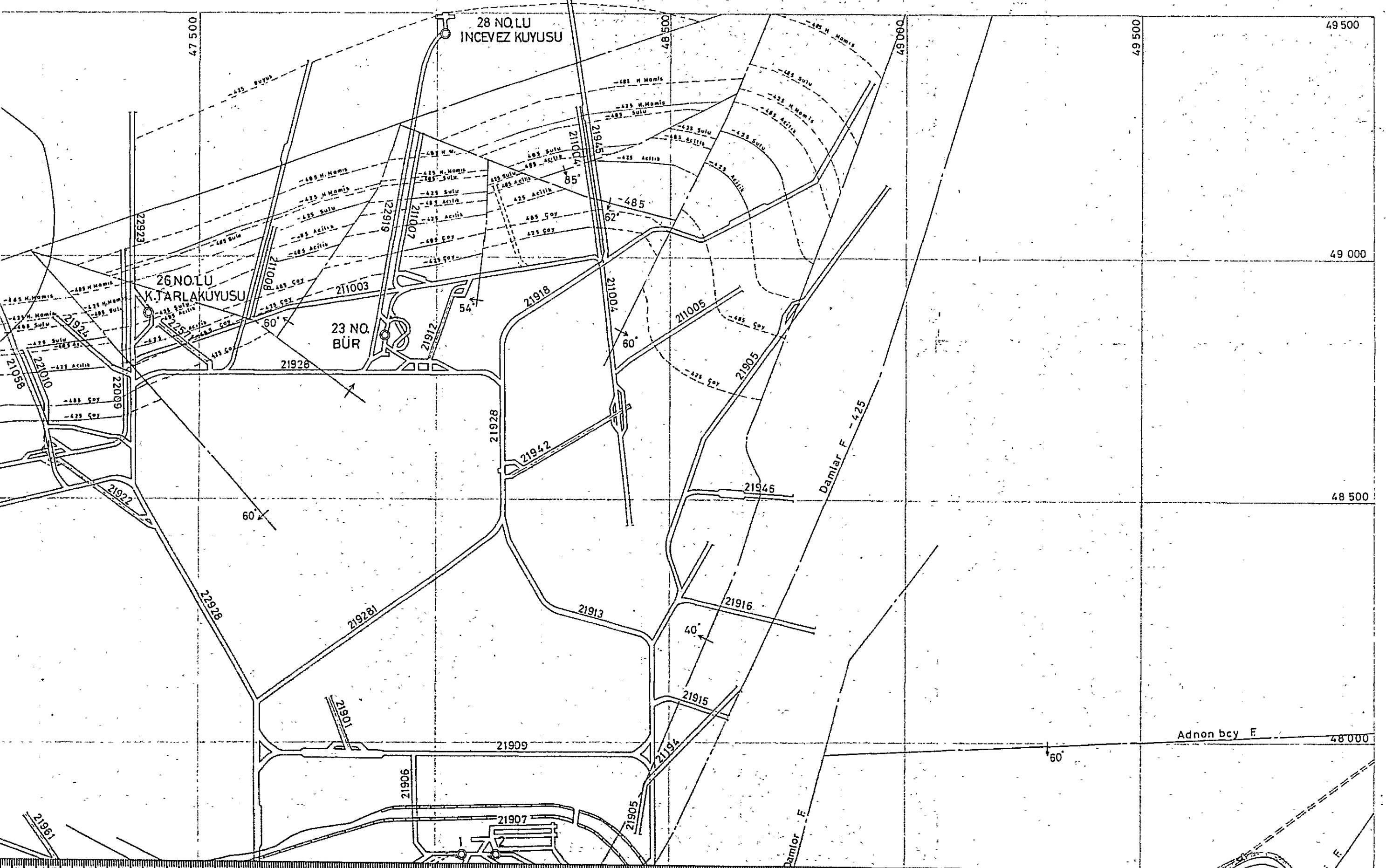


Figure 27 -425/-485 Level Underground Working Map of Kozlu Mine, Zonguldak Coal Field



Coal Field

Scale 1 : 5,000

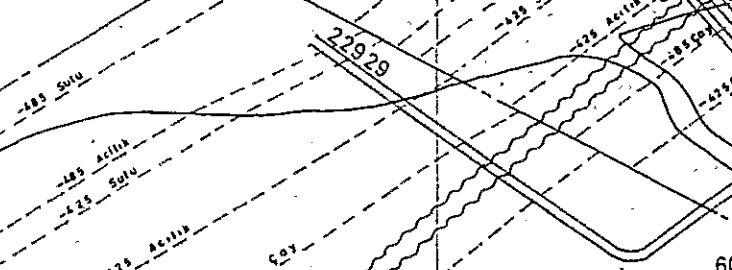


48 000

47 500

47 000

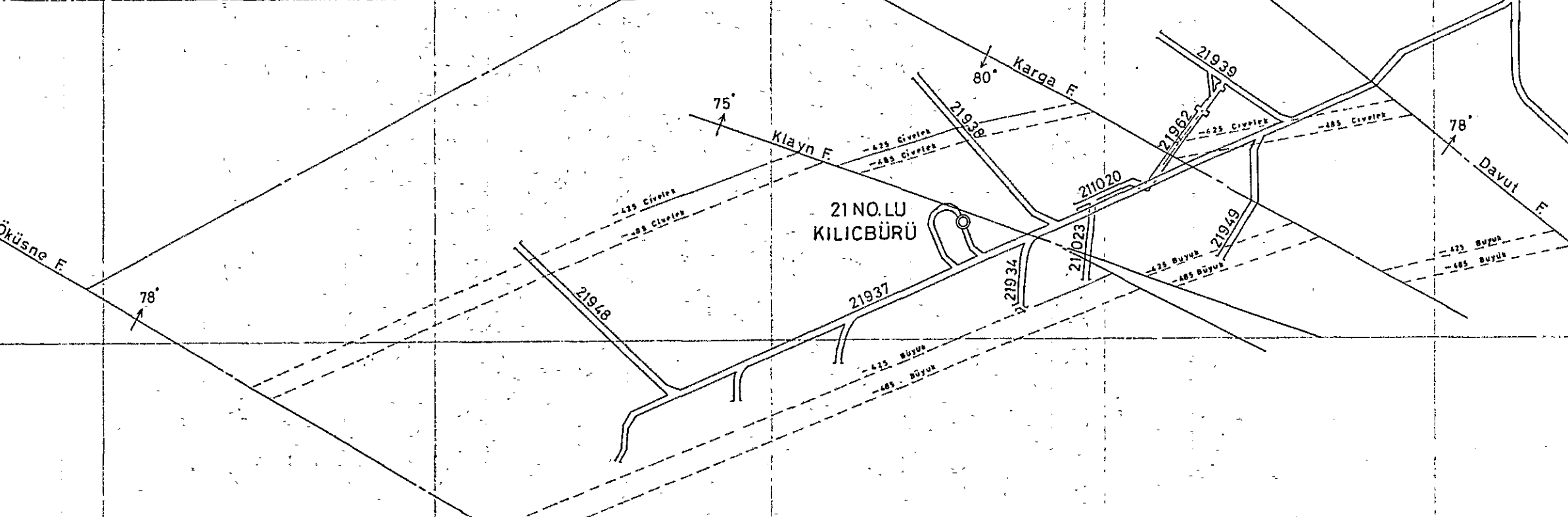
46 500

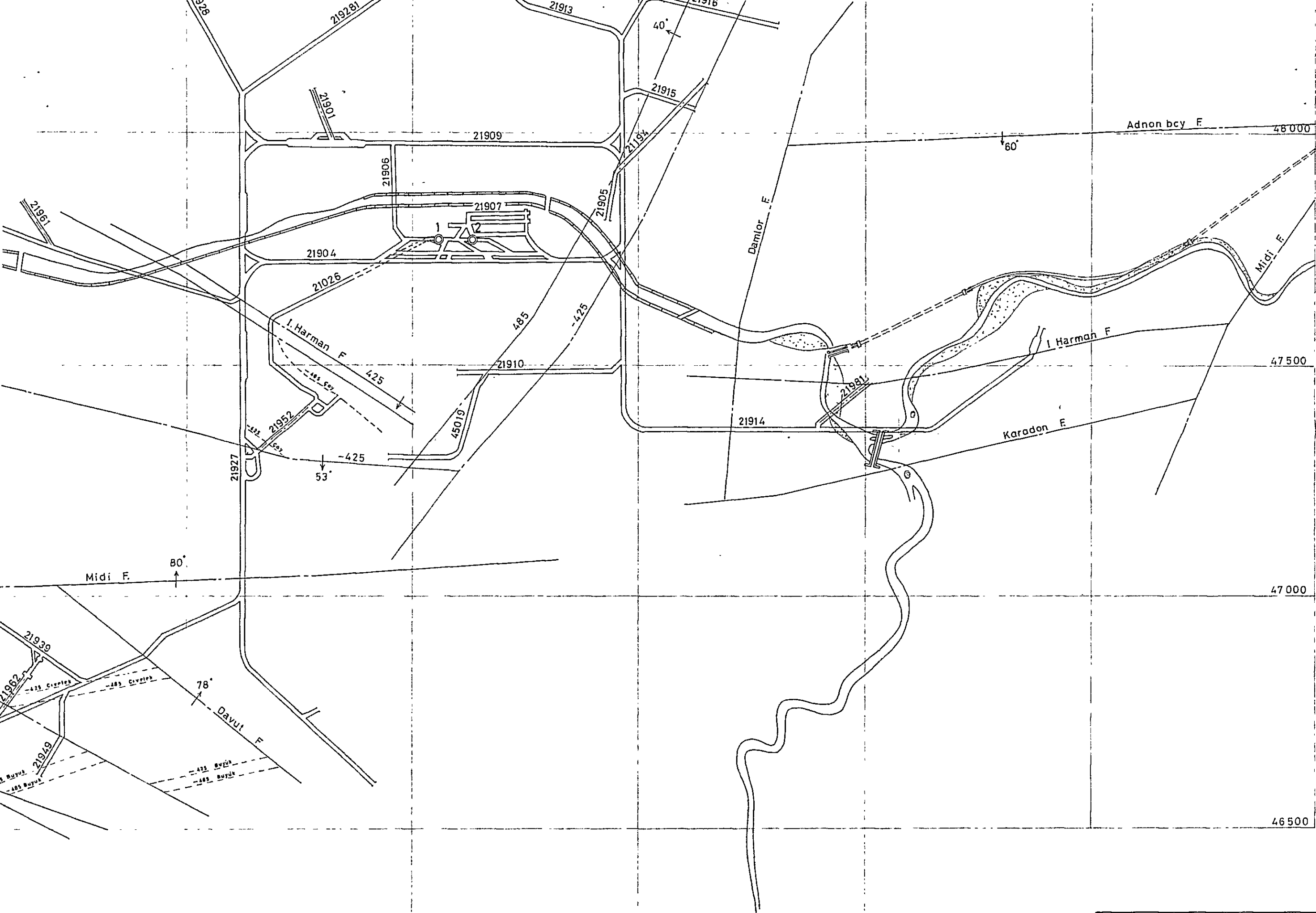


30 NO.LU
A. SOYDAŞKUYUSU

YENI KUYU

Kozlu Deresi





COAL DEVELOPMENT PROJECT AT OFFSHORE AREA OF
 ZONGULDAK COAL FIELD
 -425/-485 Level Underground
 Working Map of Kozlu Mine,



47 000

46 500

45 000 E
46 000

45 500

46 000

46 500

47 000

47 500

Öküsne F.

78°

Kıyın F.

75°

21 NO.LU
KILICBÜRÜ

Karga F.

80°

Midi F.

80°

Davut F.

78°

21927

53°

21952

21939

21962

21020

21023

21949

21948

21937

21934

-425 Cıvotok
-485 Cıvotok

-425 Cıvotok
-485 Cıvotok

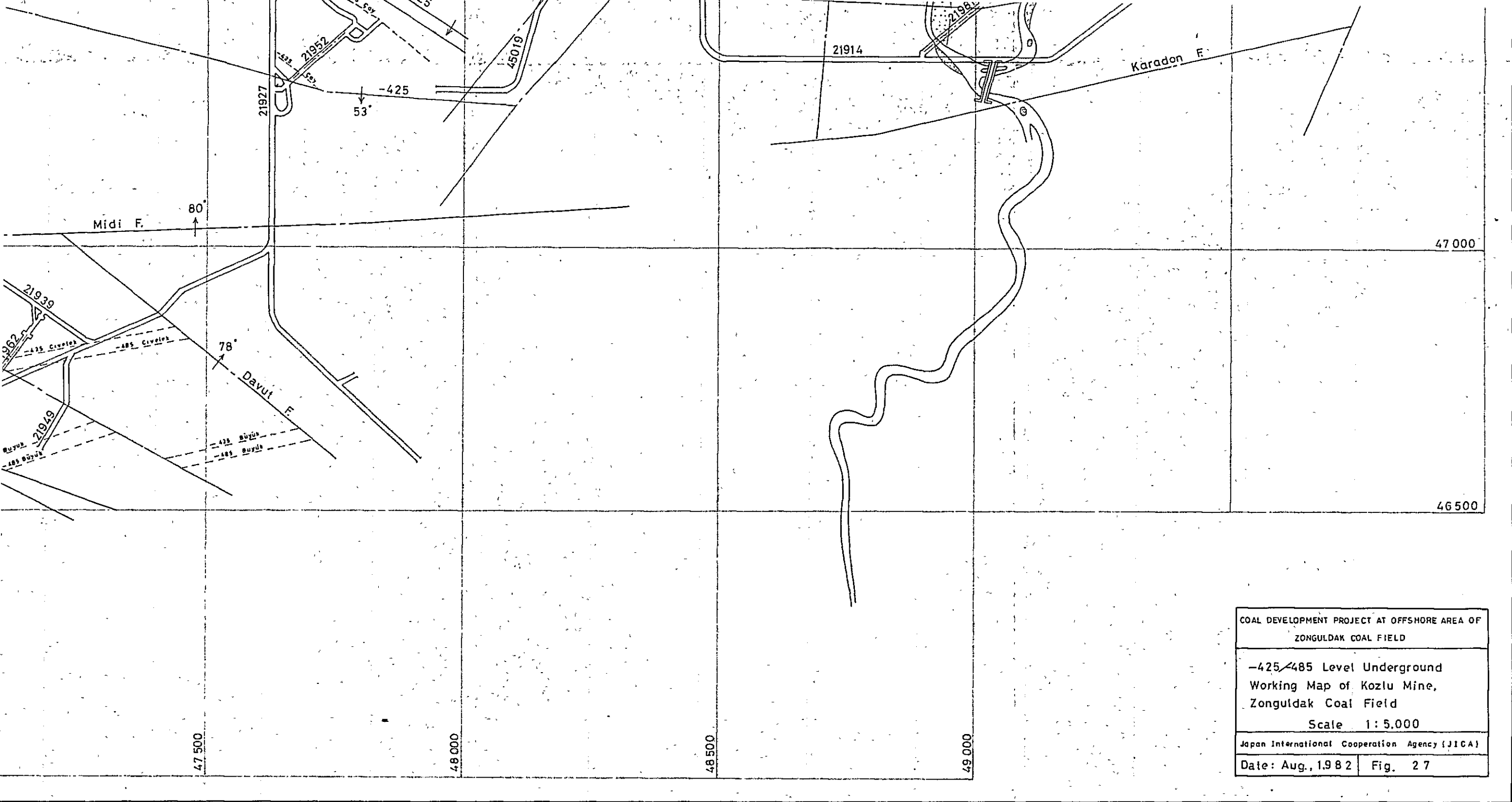
-425 Cıvotok
-485 Cıvotok

-425 Büyük
-485 Büyük

-425 Büyük
-485 Büyük

-425 Büyük
-485 Büyük





COAL DEVELOPMENT PROJECT AT OFFSHORE AREA OF
 ZONGULDAK COAL FIELD

-425/485 Level Underground
 Working Map of Kozlu Mine,
 Zonguldak Coal Field

Scale 1:5,000

Japan International Cooperation Agency (JICA)

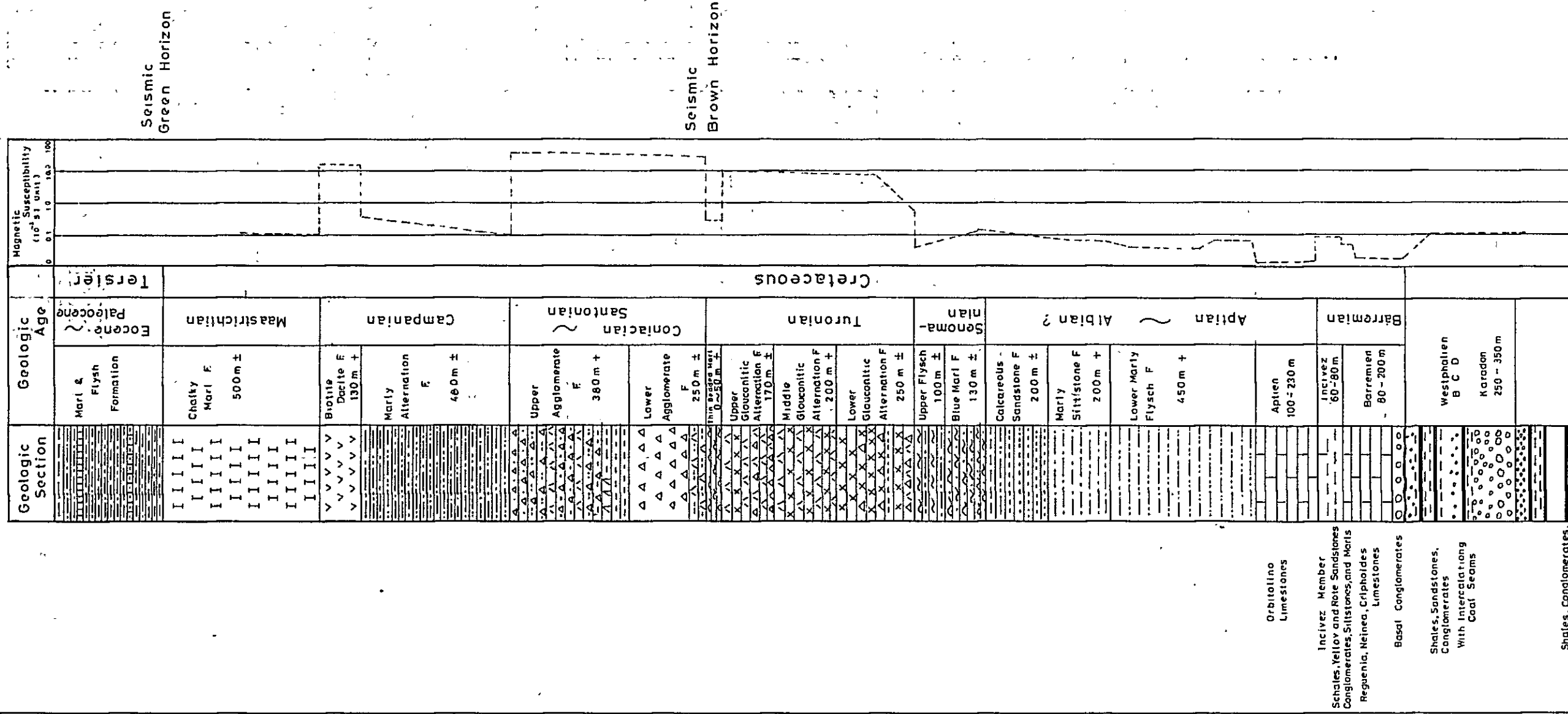
Date: Aug., 1982 Fig. 27



Figure 28

Standard Columnar Section of
Zonguldak Coal Field
(E. K. I.)

Scale 1:10,000



Orbitolino Limestones

Incivez Member
Shales, Yellow and Red Sandstones
Conglomerates, Siltstones, and Marls
Regencia, Neinea, Ciplialides
Limestones

Basal Conglomerates

Shales, Sandstones,
Conglomerates
With Interstratified
Coal Seams

Shales, Conglomerates,

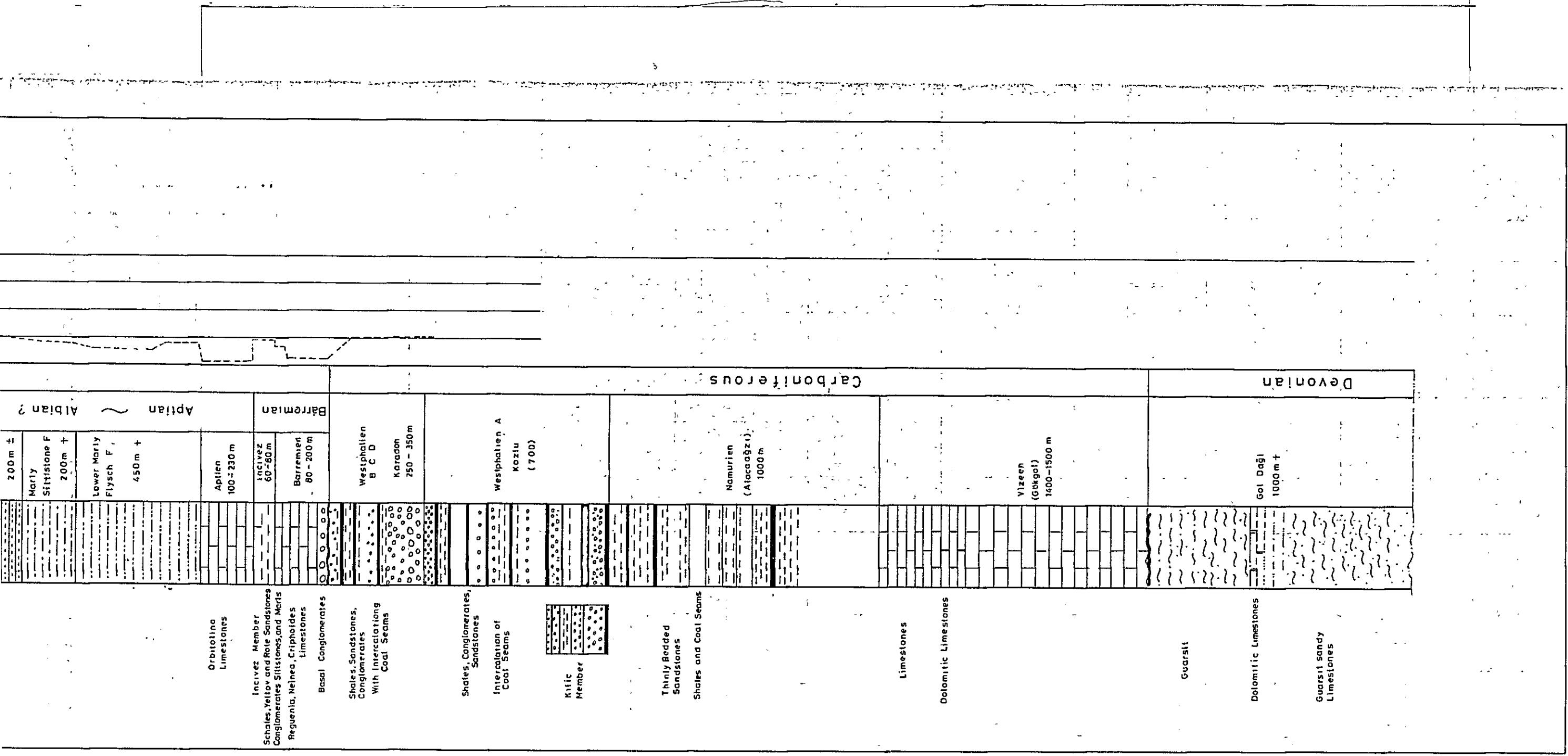
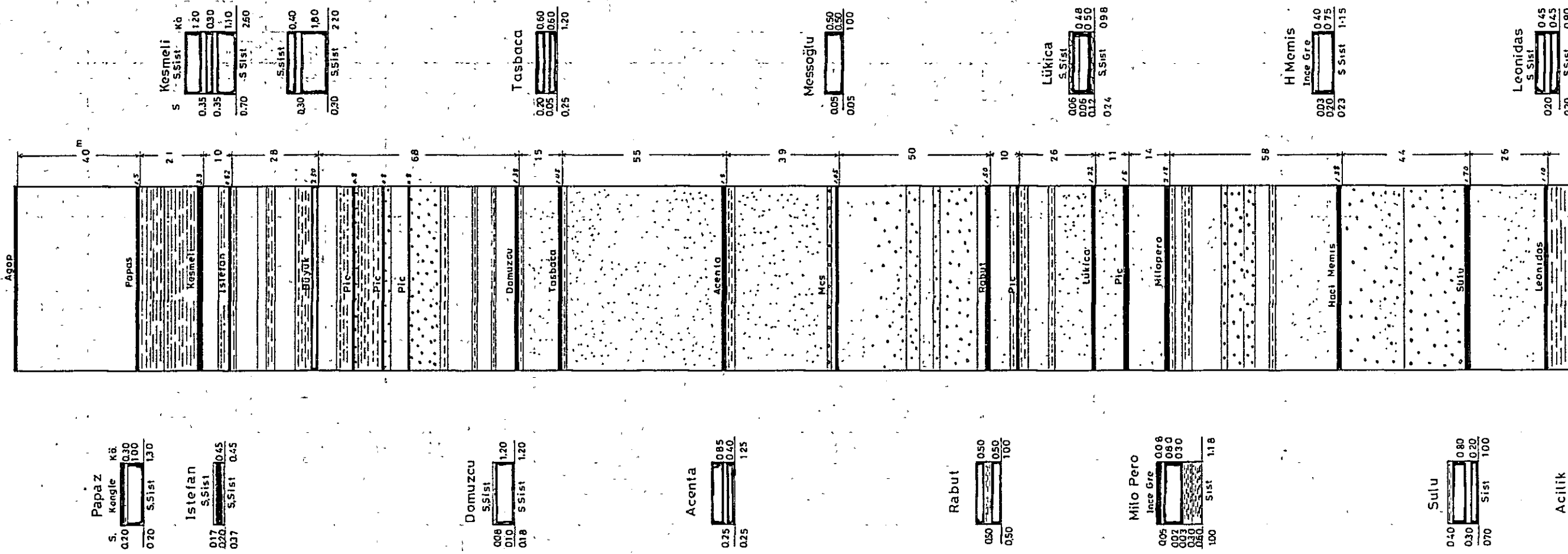
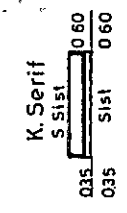
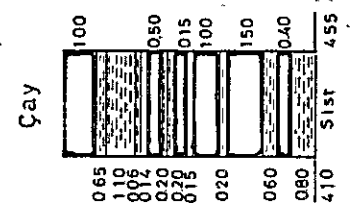
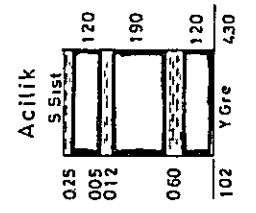
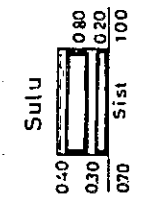
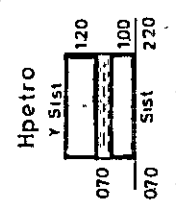
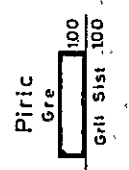
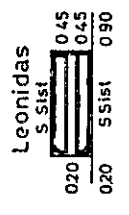
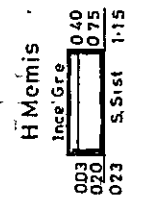
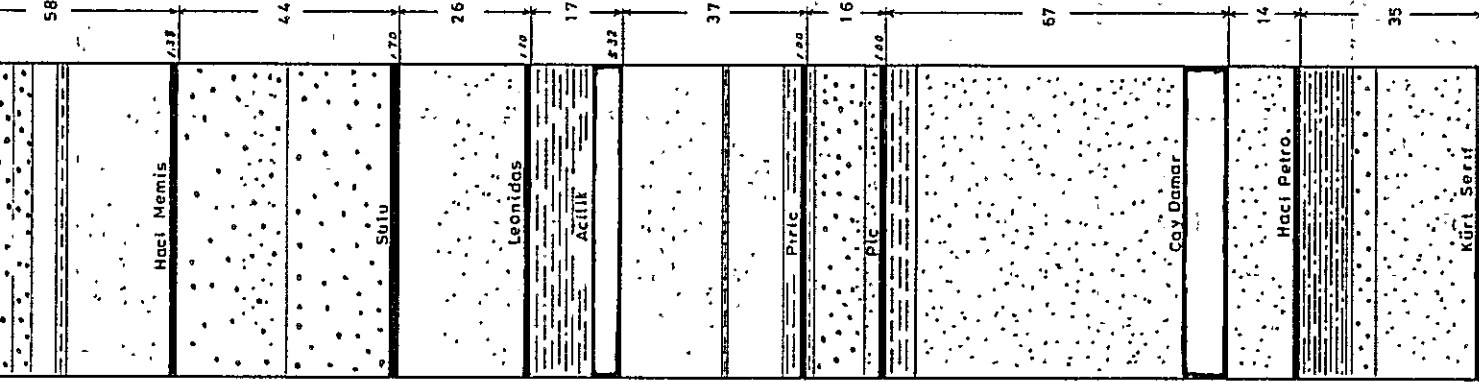


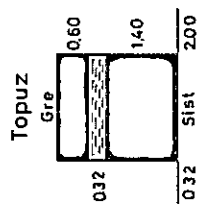
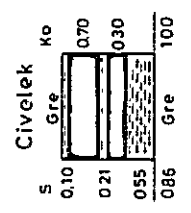
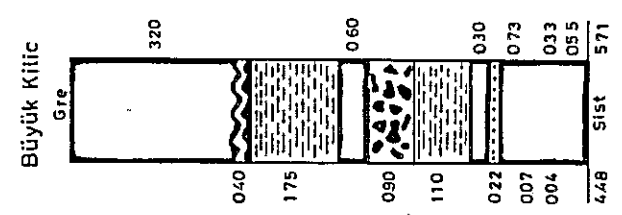
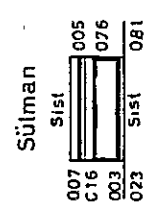
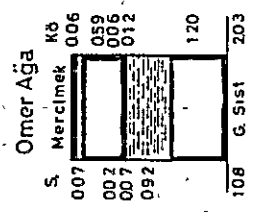
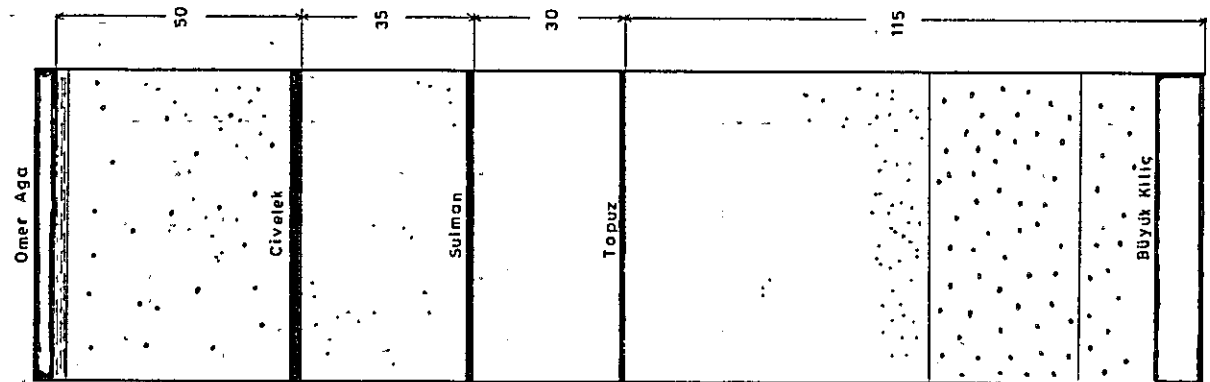
Figure 29 Standard Columnar Section of Kozlu Formation (E.K.I.)

Scale 1:1,000





KILIÇ DAMARLAKI



ISARETLER (INDEX)

- Gre (Sandstone)
- Sist (Shale)
- Konglomera (Conglomerate)
- S Gre (Shaly Sandstone)
- Kongle Gre (Conglomeratic Sandstone)

