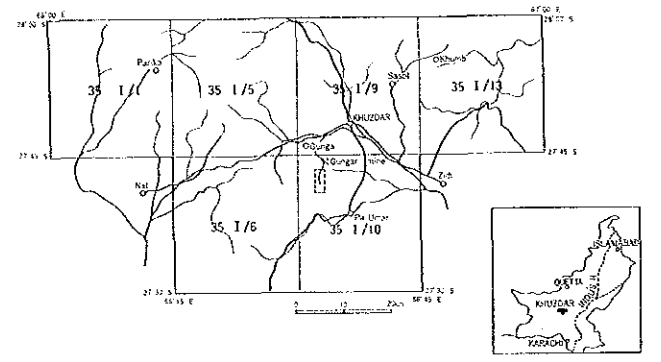


REPORT ON THE COOPERATIVE MINERAL EXPLORATION
 IN
 KHUZDAR AREA OF BALUCHISTAN
 IN
 THE ISLAMIC REPUBLIC OF PAKISTAN
 PHASE I

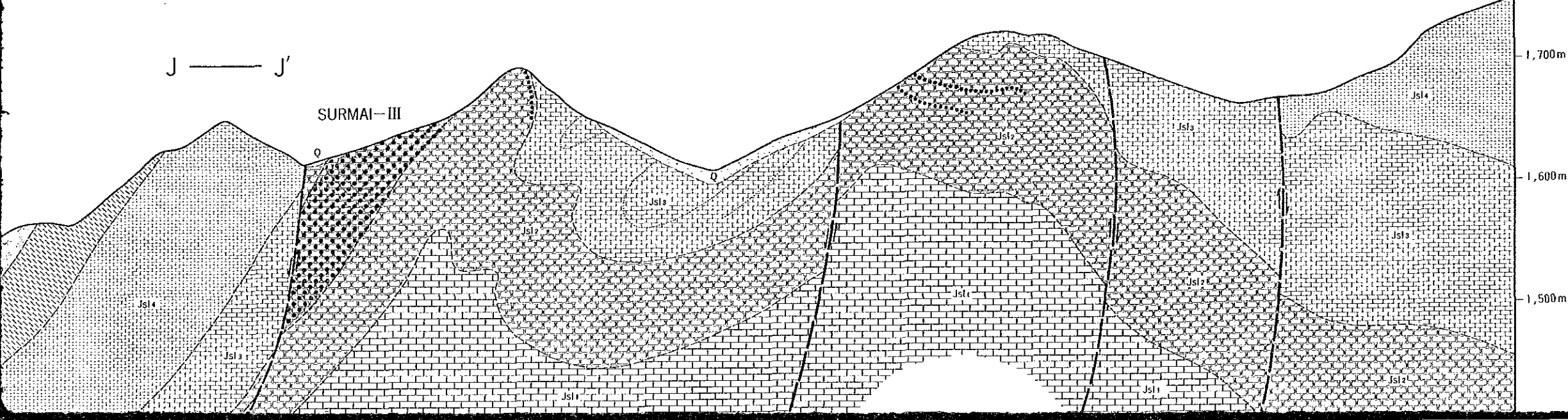
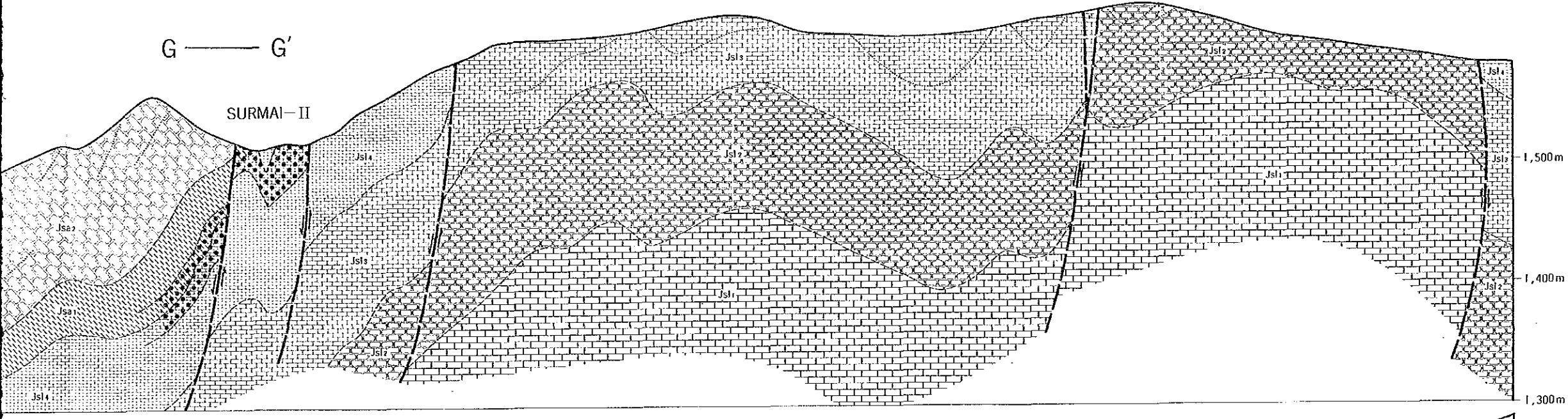
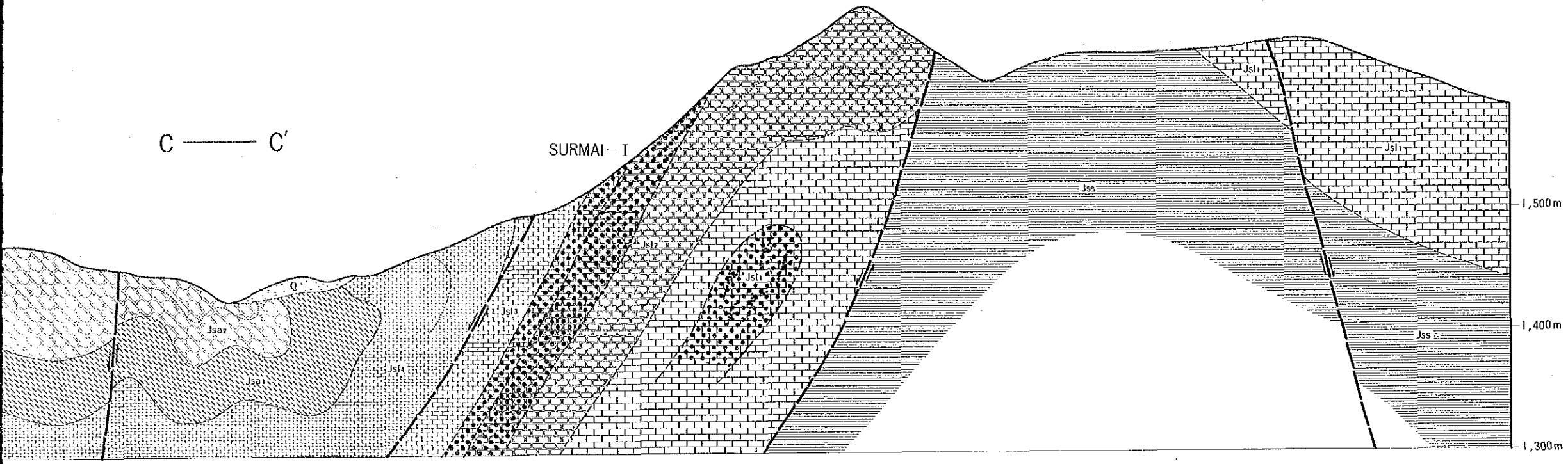
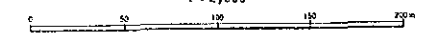
GEOLOGICAL PROFILE OF SURMAI SURVEY AREA



MAY - 1987

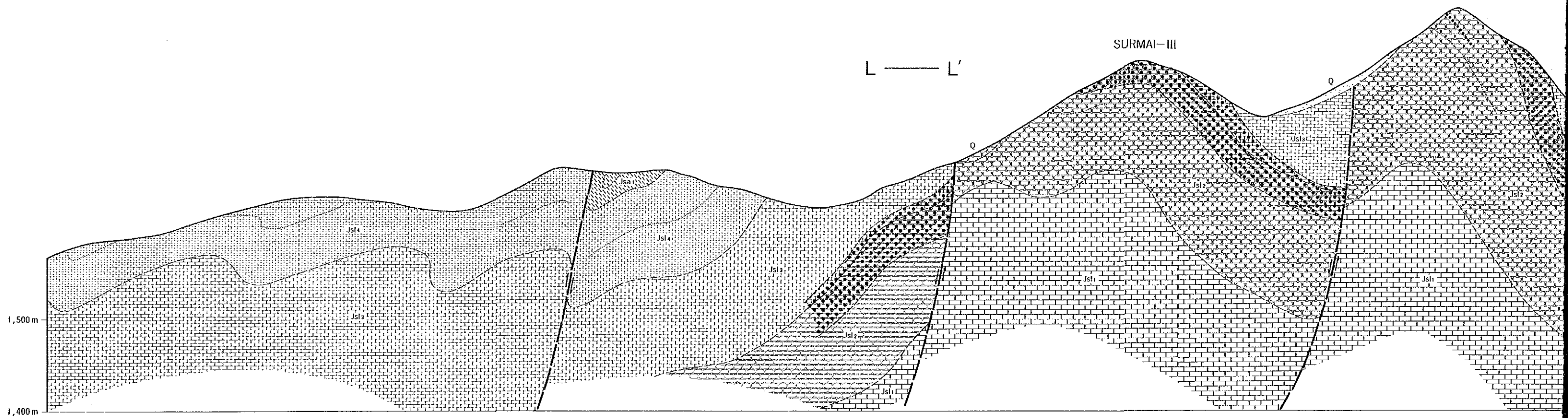
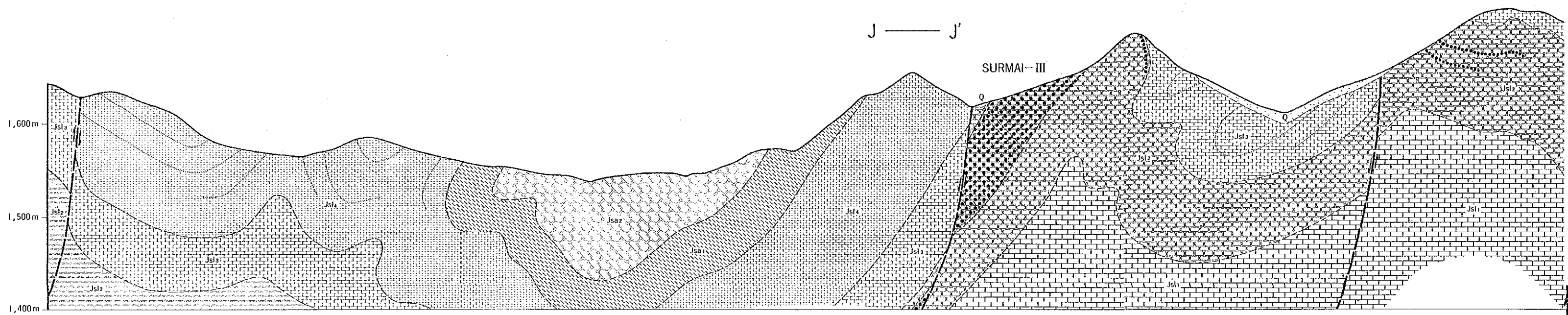
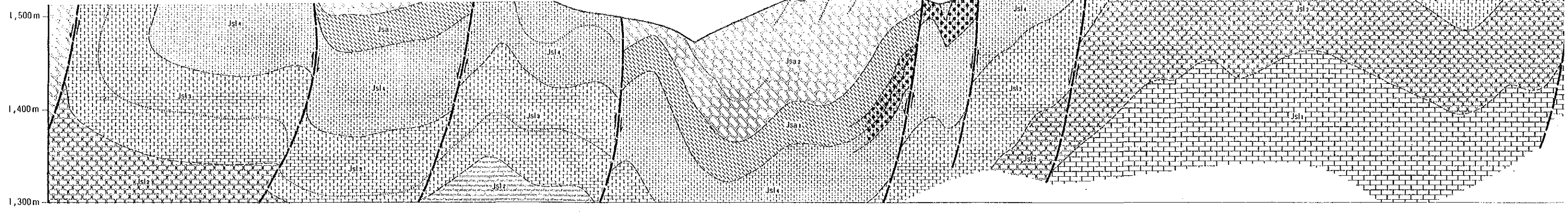
JAPAN INTERNATIONAL COOPERATION AGENCY
 METAL MINING AGENCY OF JAPAN

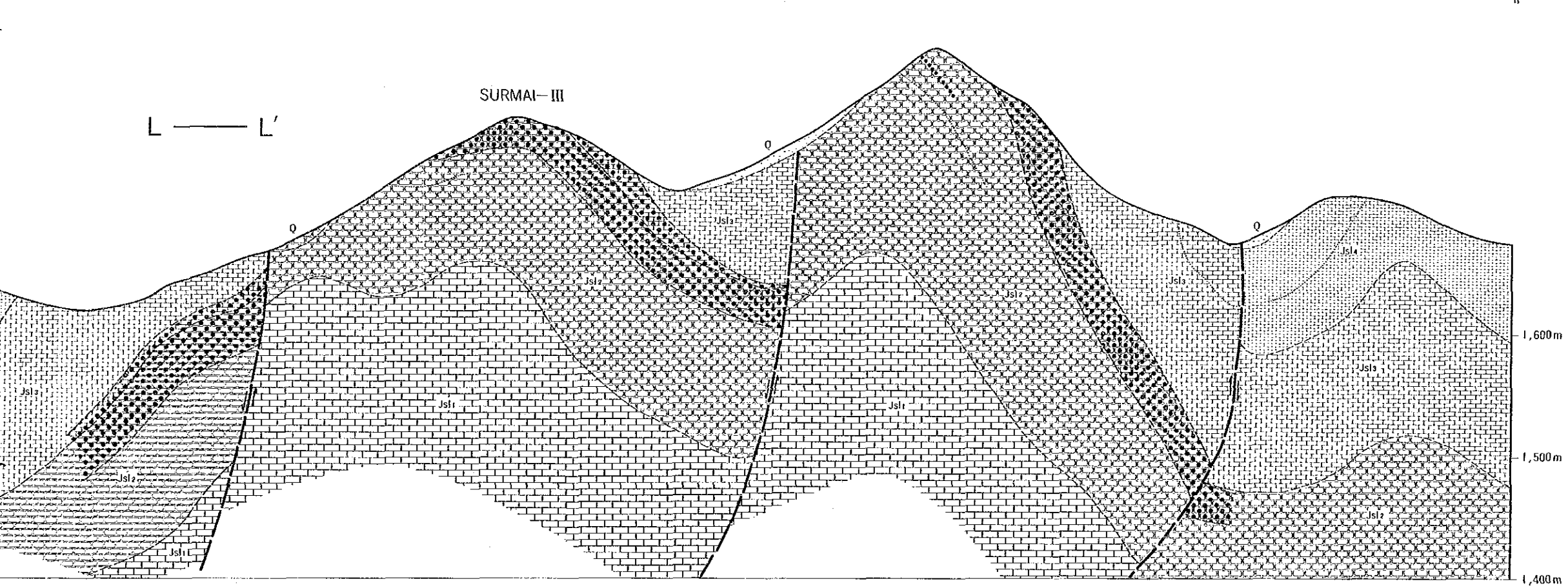
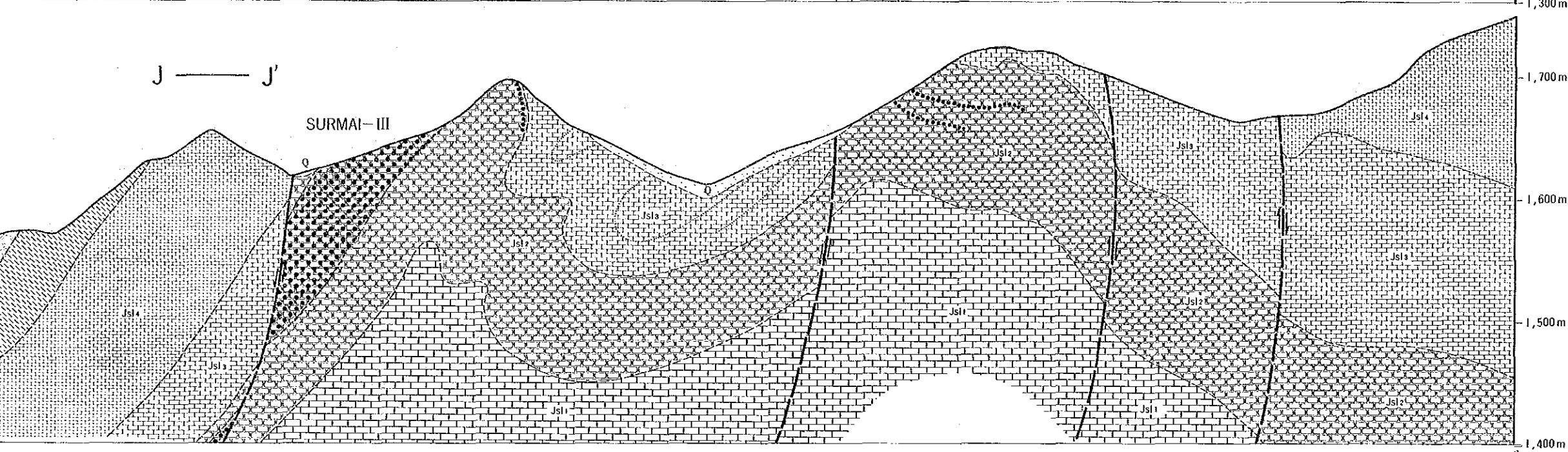
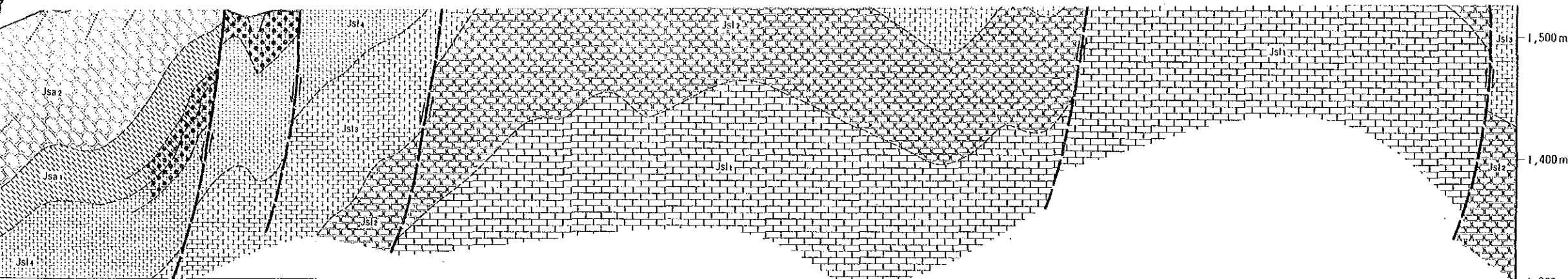
1 : 2,000



LEGEND

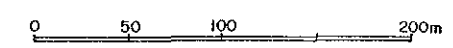
Age	Formation	Member	Unit	Lithological description
QUATERNARY			Q	Alluvium/Colluvium
			Jsa1	Bedded limestone
LOWER JURASSIC	Anjira		Jsa2	Interbedded limestone and shale. Limestone thin bedded having ammonite fossils.
			Jsa3	Interbedded limestone and shale. Limestone thin to thick bedded contains ammonites.
			Jsa4	Limestone grey, thick to massive, mottled with a zone or thin interbedded limestone and shale.
			Jsa5	Limestone and shale interbedded. Limestone dark grey, thin to medium bedded, mottled, fossiliferous.
	Shirinaab		Jsa6	Limestone with very minor shale. Limestone grey thick to massive with some oolitic beds. (is changed to gossan where replaced by mineralizing solutions)
			Jsa7	Interbedded limestone and shale with minor marl. Limestone grey, thin bedded, mottled and oolitic occasionally. Shale of black colour.
	Springwar		Jss	Interbedded sandstone and shale
			Min	Mineralization
				Dip (Normal)
				Dip (Overturned)
			Anticline	
			Syncline	
			Fault	
			Bedding traces	

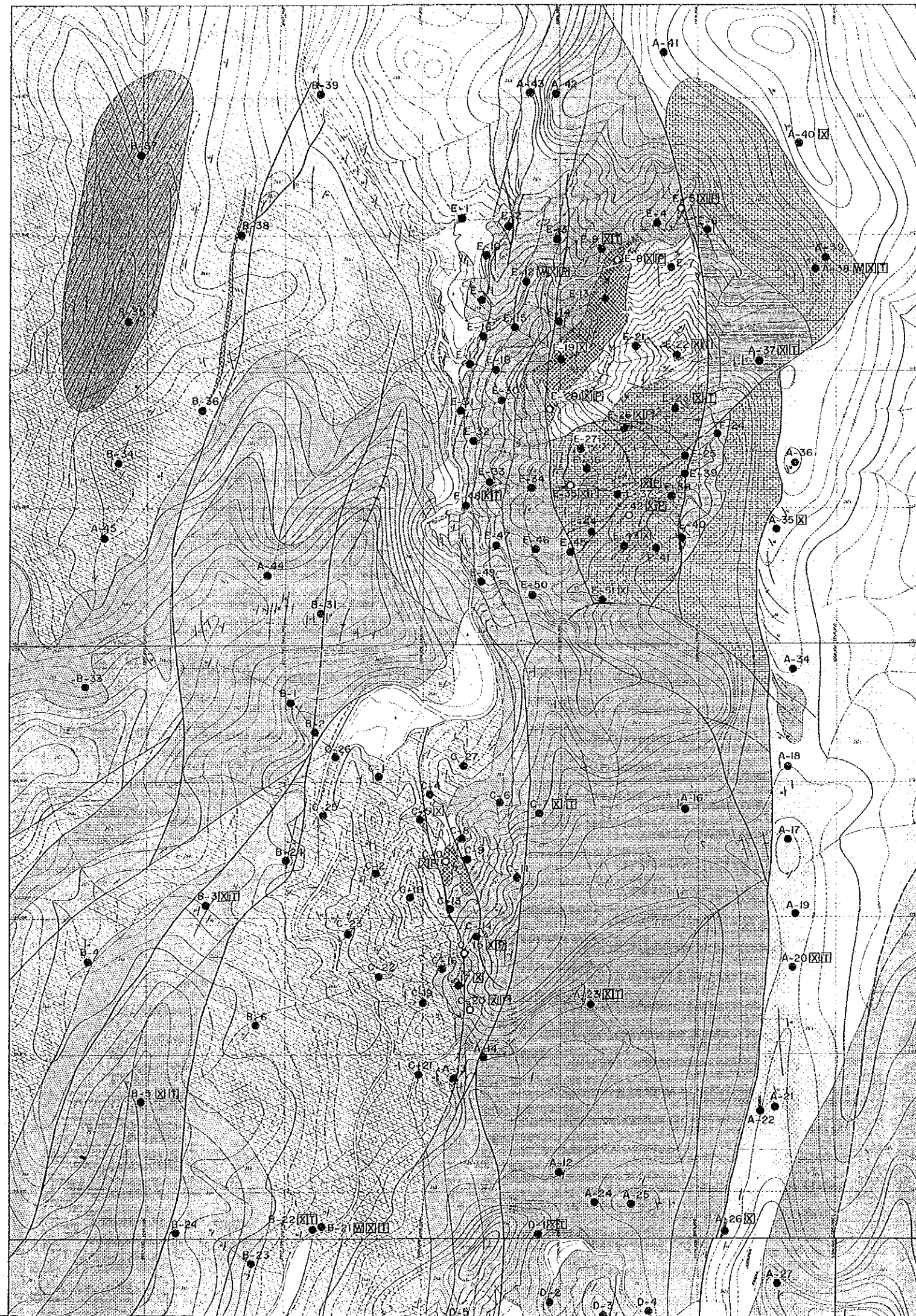




LEGEND

Age	Formation	Member	Unit	Lithological description
QUATERNARY			Q	Alluvium/Colluvium
			Jsa3	Bedded limestone
			Jsa2	Interbedded limestone and shale. Limestone thin bedded having ammonite fossils.
LOWER JURASSIC	Anjira	Jsa1	Interbedded limestone and shale. Limestone thin to thick bedded contains ammonites.	
		Jsl4	Limestone grey, thick to massive, mottled with a zone or thin interbedded limestone and shale.	
		Lorelai	Jsl3	Limestone and shale interbedded. Limestone dark grey, thin to medium bedded, mottled, fossiliferous.
			Jsl2	Limestone with very minor shale. Limestone grey thick to massive with some oolitic beds. (It changed to gossan where replaced by mineralizing solutions)
	Jsl1	Jsl1	Interbedded limestone and shale with minor marl. Limestone grey, thin bedded, mottled and oolitic occasionally. Shale of black colour.	
		Jss	Interbedded sandstone and shale	
	Spingwar	Jss	Interbedded sandstone and shale	
		Min	Mineralization	
		Dip (Normal)	Dip (Normal)	
		Dip (Overturned)	Dip (Overturned)	
	Anticline	Anticline		
	Syncline	Syncline		
	Fault	Fault		
	Bedding traces	Bedding traces		

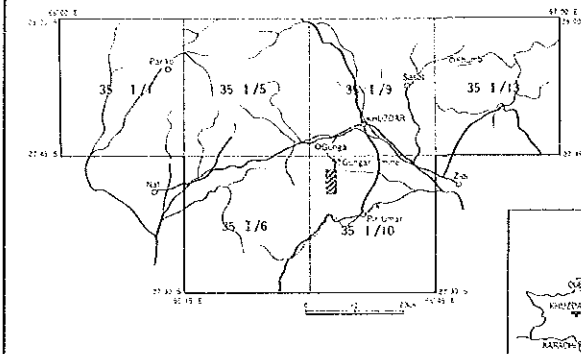




REPORT ON THE COOPERATIVE MINERAL EXPLORATION
 IN
 KHUZDAR AREA OF BALUCHISTAN
 IN
 THE ISLAMIC REPUBLIC OF PAKISTAN
 PHASE 1

PL. III-3-1
 1742
 国務院地质部

LOCATION MAP OF ROCK SAMPLES
 IN SURMAI SURVEY AREA



Geochemical and Geological Survey Area
 Geological Survey and Detailed Geological Survey Area

MAY - 1987

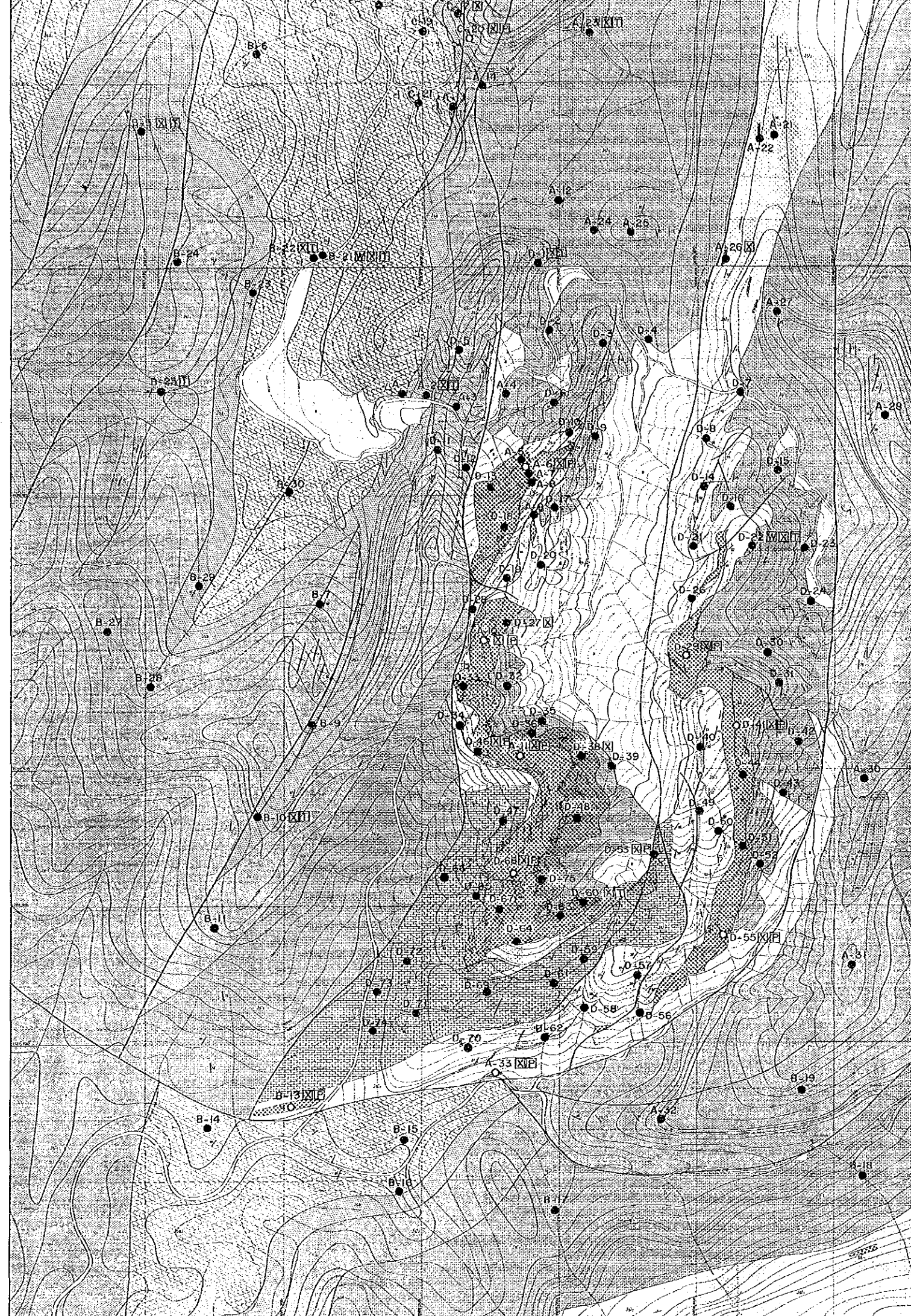
JAPAN INTERNATIONAL COOPERATION AGENCY
 METAL MINING AGENCY OF JAPAN

1 : 5,000
 0 10 20 30 40 50 km

LEGEND

Age	Formation	Member	Unit	Lithological description
QUATERNARY			Q	Alluvium/Colluvium
			Jsa3	Bedded limestone
			Jsa2	Interbedded limestone and shale. Limestone thin bedded having ammonite fossils.
LOWER JURASSIC	Anjira		Jsa	Interbedded limestone and shale. Limestone thin to thick bedded contains ammonites.
			Jsl1	Limestone grey, thick to massive, mottled with a zone or thin interbedded limestone and shale.
			Jsl2	Limestone and shale interbedded. Limestone dark grey, thin to medium bedded, mottled, fossiliferous.
	Shirwab		Jsl3	Limestone with very minor shale. Limestone grey thick to massive with some oolitic beds. (is changed to gossan where replaced by mineralizing solutions)
			Jsl4	Interbedded limestone and shale with minor marl. Limestone grey, thin bedded, mottled and oolitic occasionally. Shale of black colour.
			Jss	Interbedded sandstone and shale
		Min	Mineralization	
			Dip (Normal)	
			Dip (Overturned)	
			Anticline	
			Syncline	
			Fault	
			Bedding traces	
			A---A' Profile line	

A-1 Number and Location of Geochemical Samples

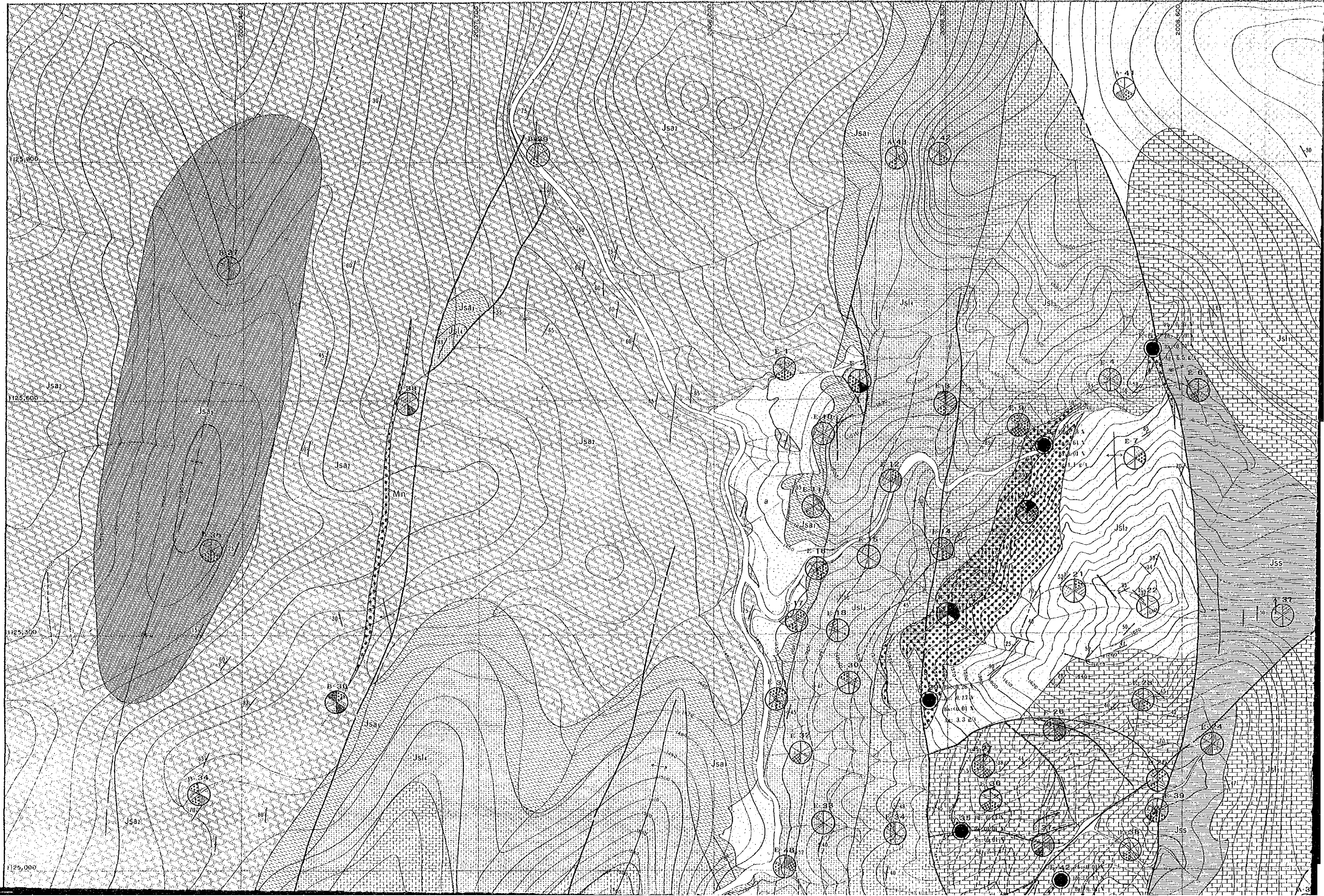


Jst. Interbedded limestone and shale with minor marl. Limestone grey, thin bedded, mottled and oolitic occasionally. Shale of black colour.

- Springer [Symbol] Jss Interbedded sandstone and shale
- [Symbol] Min Mineralization
- [Symbol] Dip (Normal)
- [Symbol] Dip (Overturned)
- [Symbol] Anticline
- [Symbol] Syncline
- [Symbol] Fault
- [Symbol] Bedding traces
- A—A Profile line

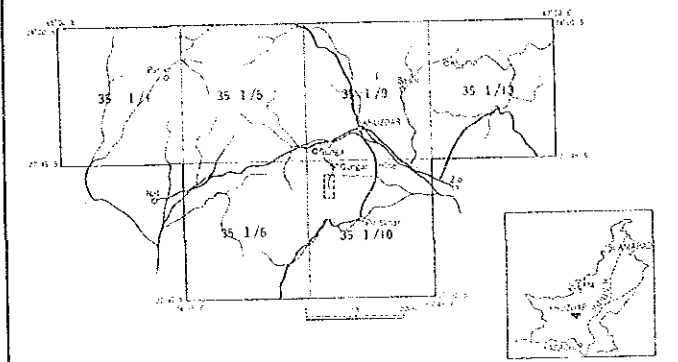
A-1 Number and Location of Geochemical Samples

- Geochemical Analysis
- Chemical Analysis
- [W] Whole Rock Analysis
- [X] X-Ray Diffraction Analysis
- [P] Polished Specimen
- [T] Thin Section



REPORT ON THE COOPERATIVE MINERAL EXPLORATION
IN
KHUZDAR AREA OF BALUCHISTAN
IN
THE ISLAMIC REPUBLIC OF PAKISTAN
PHASE 1

GEOCHEMICAL ANOMALOUS AREA
IN SURMAI SURVEY AREA (SURMAI-1)

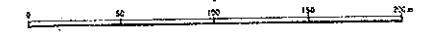


Geological and Geological Survey Area
Geological Survey and Detailed Geological Survey Area

MAY - 1987

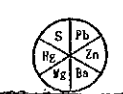
JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN

1 : 2,000

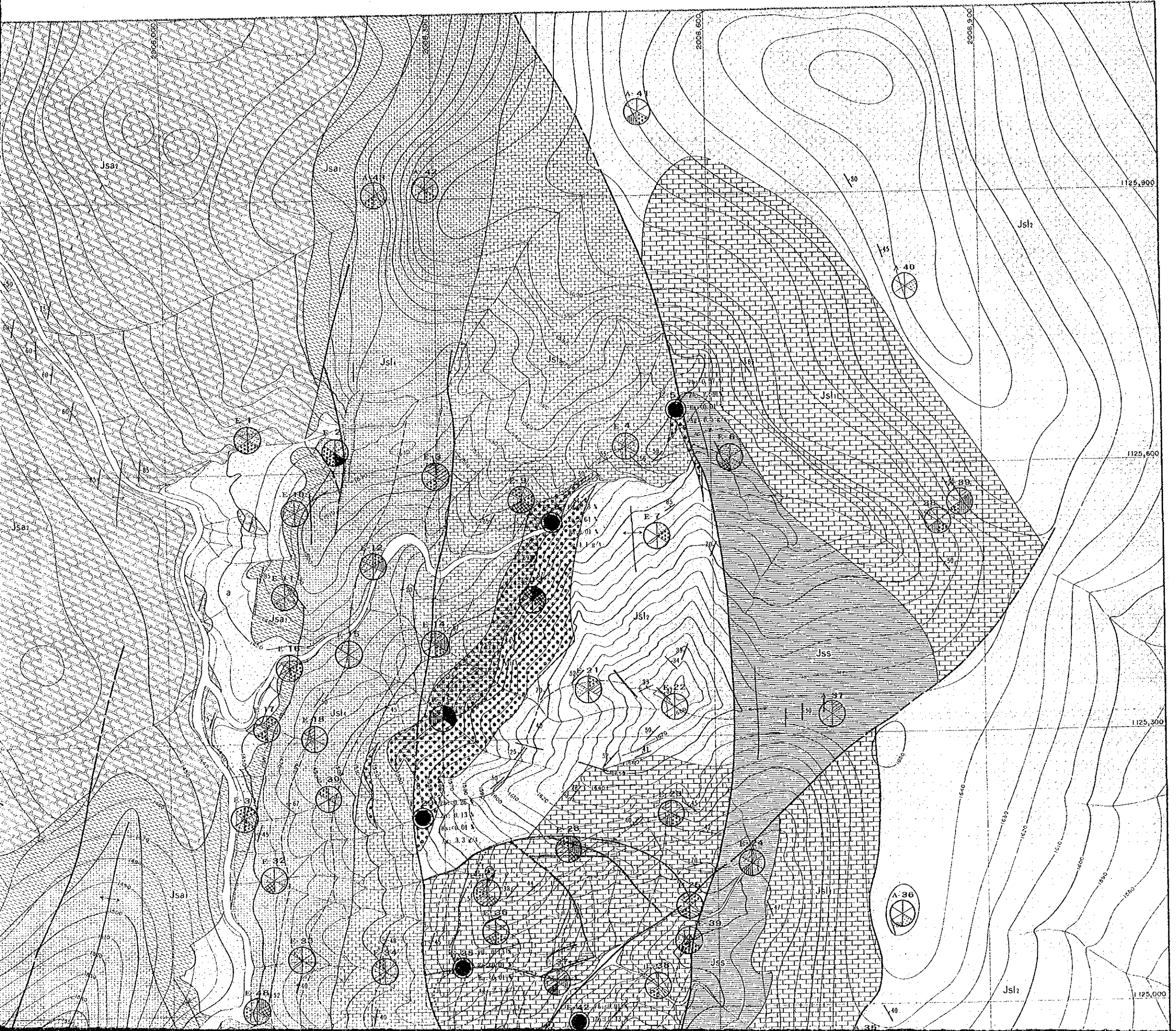


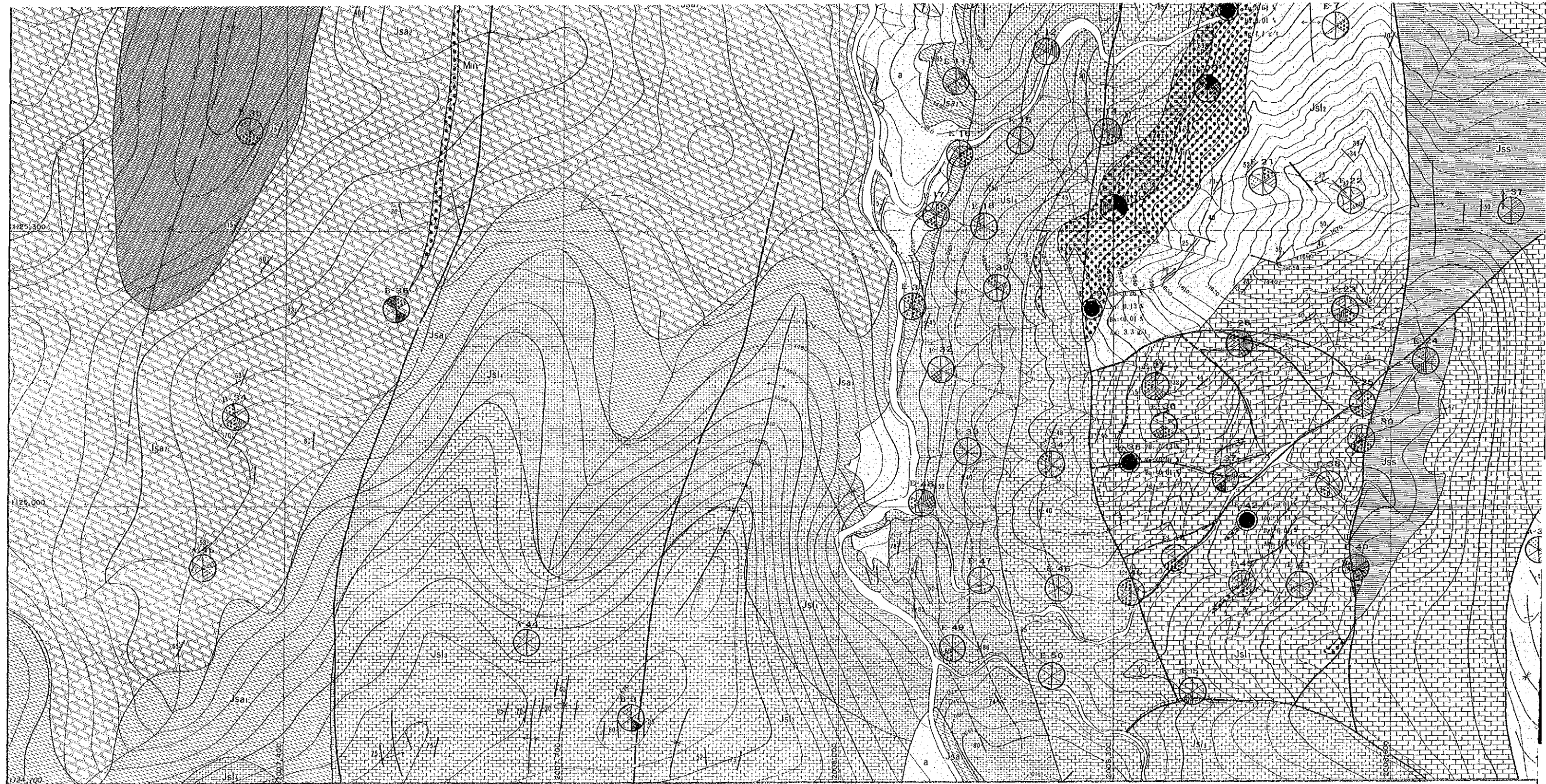
LEGEND

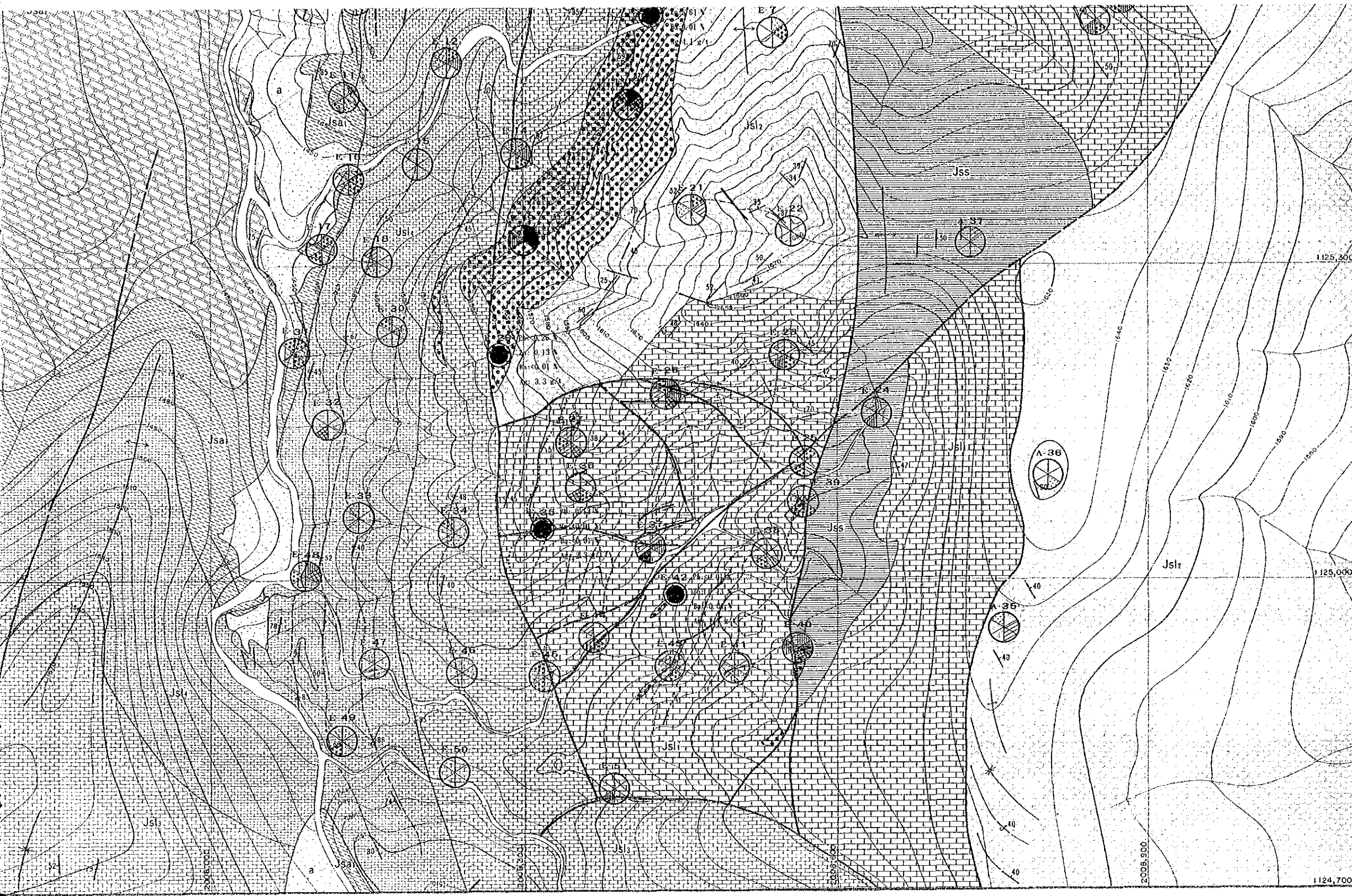
Age	Formation	Member	Unit	Lithological description
QUATERNARY			Q	Alluvium/Colluvium
			Jsa1	Bedded limestone
			Jsa2	Interbedded limestone and shale. Limestone thin bedded having ammonite localities.
LOWER JURASSIC	Shingai	Saural	Jsa	Interbedded limestone and shale. Limestone thin to thick bedded contains ammonites.
			Jsb	Limestone grey, thick to massive, bedded with a zone of thin interbedded limestone and shale.
			Jsc	Limestone and shale interbedded. Limestone dark grey, thin to medium bedded, mottled, fossiliferous.
			Jsd	Limestone with very minor shales. Limestone grey thick to massive with some conifer beds. It is changed to green and red bedded by mineralizing solutions.
			Jse	Interbedded limestone and shale with minor marl. Limestone grey, thin to medium bedded and oolitic occasionally. Shale of black colour.
			Jsf	Interbedded sandstone and shale.
			Mn	Mineralization
				Dip/Normal
				Dip/Overthrust
				Anticline
				Syncline
				Fault
				Building bases



System Mark of Grade







LEGEND

Age	Formation	Member	Unit	Lithological description
QUATERNARY			Q	Alluvium/Collosum
			Jsa3	Bedded limestone
			Jsa2	Interbedded limestone and shale. Limestone thin bedded having abundant fossils.
LOWER JURASSIC	Anjira	Jsa	Interbedded limestone and shale. Limestone thin to thick bedded contains ammonites.	
		Jsb	Limestone grey, thick to massive, mottled with a zone of thin interbedded sandstone and shale.	
		Jsc	Limestone and shale interbedded. Limestone dark grey, thin to medium bedded mottled fossiliferous.	
		Jsd	Limestone a in very minor shale. Limestone grey thick to massive with some oolitic beds. (is changed to gossier water impregnated by mineralizing solution)	
		Jse	Interbedded limestone and shale with minor mass. Limestone grey, thin bedded, mottled and oolitic occasional. Shale of black colour.	
		Jsf	Interbedded sandstone and shale	
		Jsg	Mineralization	
		Jsh	Optional	
		Jsi	Reverted	
		Jsj	Asymptote	
Jsk	Syncline			
Jsl	Fault			
Jsm	Bedding traces			

Symbol Mark of Grade

Pb	> 2,450	Zn	> 2,550	Hg	> 970
(ppa)	2,000-2,449	(ppa)	1,000-2,549	(ppb)	750-969
	400-1,999		215-999		400-749
	67-399		133-214		107-399
	26-66		100-132		64-166
	11-25		48-99		35-63
Ba	> 500	Mg	> 32,112	S	> 0.128
(ppa)	569-899	(ppa)	16,650	(A)	0.063-0.127
	420-568		10,500-16,650		0.036-0.062
	359-419		8,546-10,500		0.015-0.035
	226-358		4,671-8,545		0.009-0.014
	204-226		4,384-4,670		0.003-0.008

● Location of Ore Sample