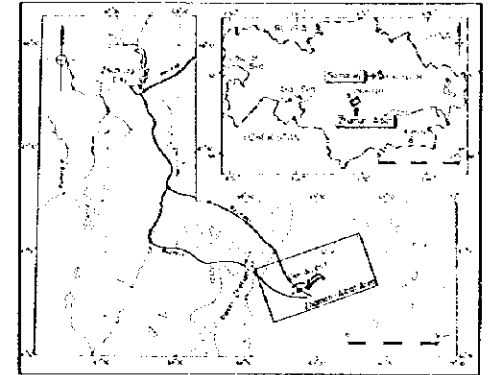


SCALE = 1 : 25,000



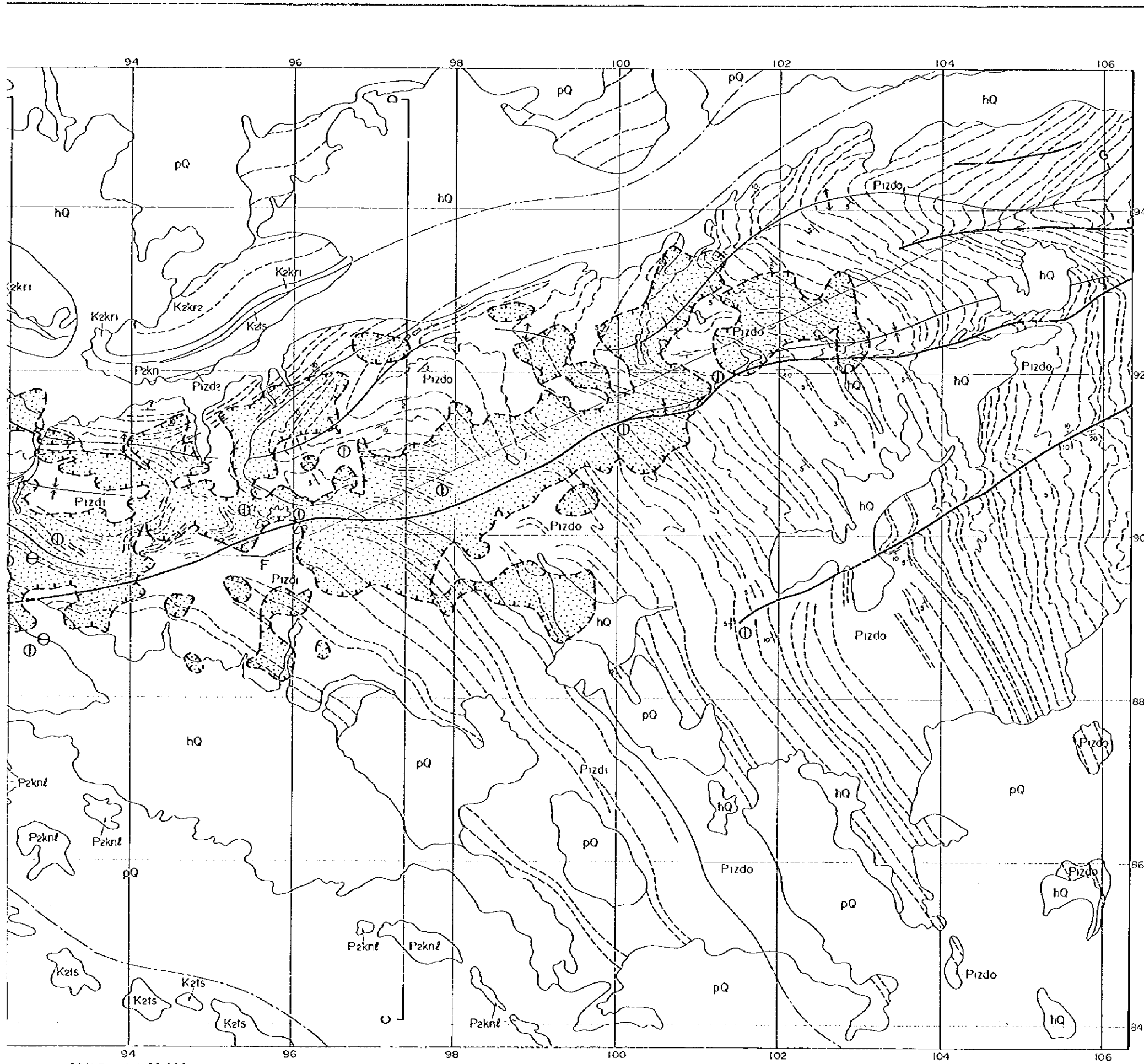
Report on the Mineral Exploration
in
the Zhaman Aibat and Sanarsky Area, Republic of Kazakhstan
(Phase II)

Geologic Map and Cross Section
of
the Zhaman-Aibat Area



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February 1996

Scale 1 : 25,000
0 2 km



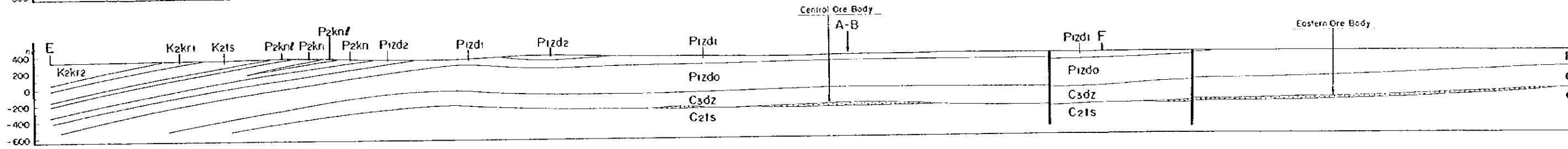
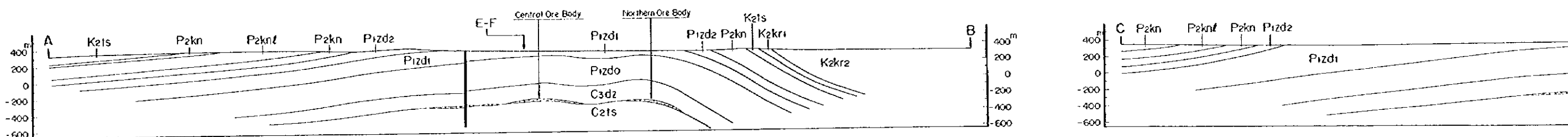
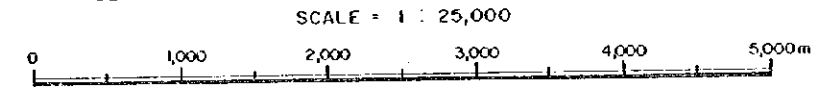
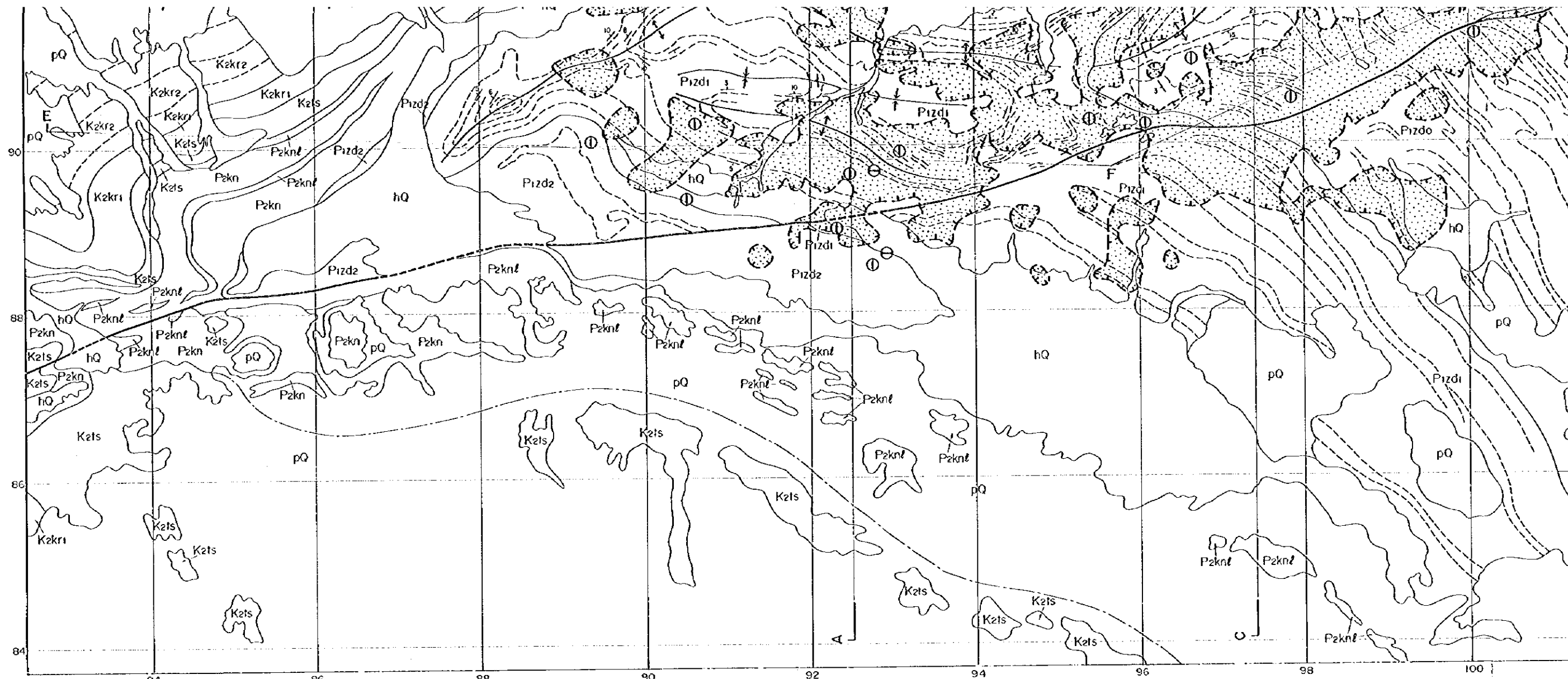
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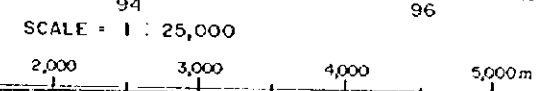
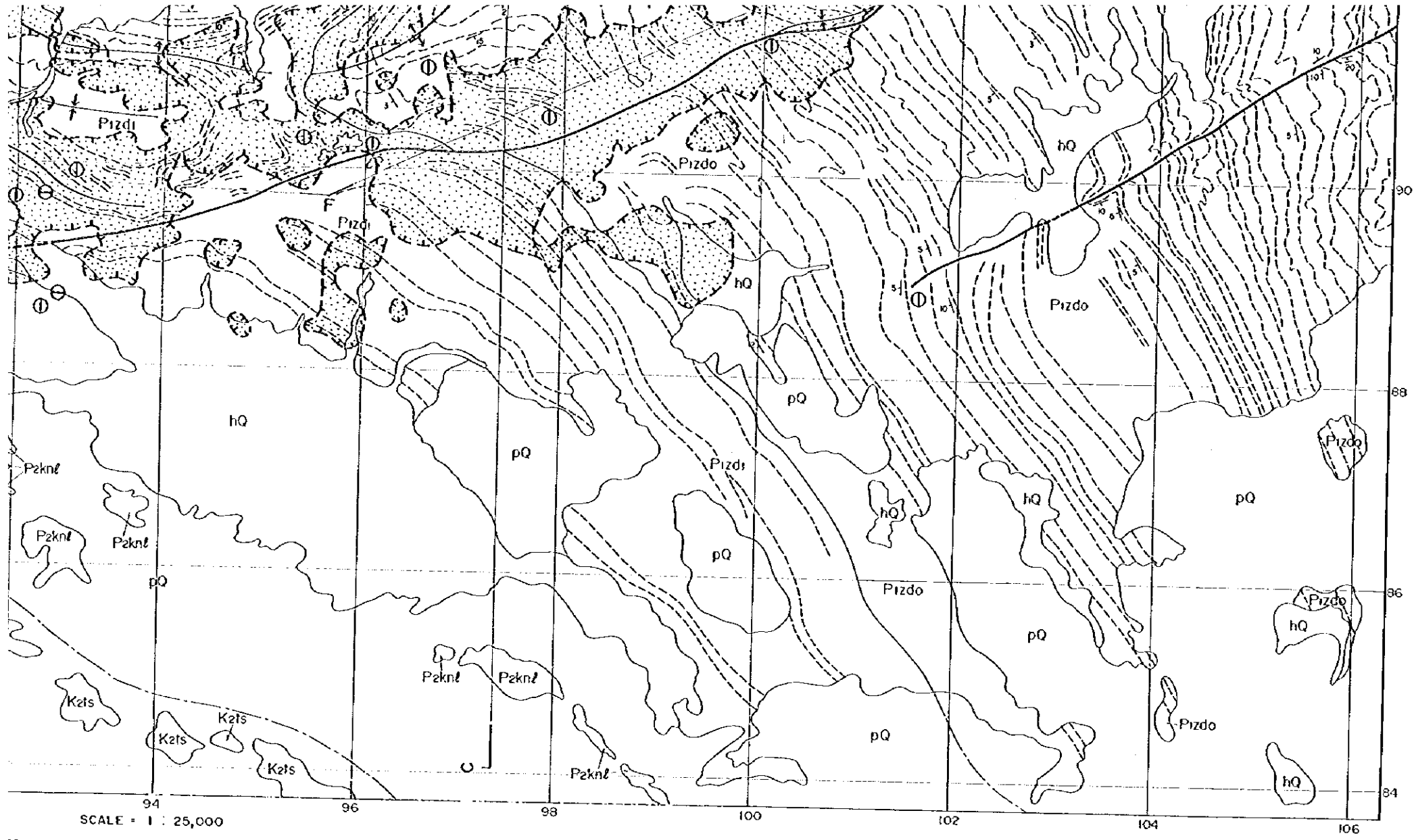
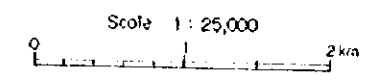
0 2,000 3,000 4,000 5,000m

LEGEND

- | | | |
|----------------------|-------|---|
| Quaternary System | hQ | Holocene
Colluvium-alluvium sediments |
| | pQ | Pleistocene
Eolian-Colluvium sediments |
| Cretaceous System | Kzkrz | Karakoin Formation
Alternation beds of sandstone and siltstone |
| | Kzkr1 | Karakoin Formation
Granule-pebble conglomerate |
| | Kzts | Taskuro Formation
Mainly finny siltstone |
| Permian System | Pzkn1 | Kengir Formation
Limestone, limy siltstone |
| | Pzkn | Kengir Formation
Siltstone and sandstone including veins of gypsum and calcite |
| | Pzdz | Zhideliso1 Formation (Upper)
Bright brown siltstone with thin interlayers of gypsum-anhydrite |
| | Pzdi | Zhideliso1 Formation (Middle)
Reddish brown siltstone and sandstone |
| | Pzdo | Zhideliso1 Formation (Lower)
Reddish brown siltstone and sandstone with thin interlayers of gypsum-anhydrite-selenite |
| Carboniferous System | Czdz | Zhezkazgan Formation
Alternation beds of gray sandstone and siltstone, with interformational conglomerate layers and main ore horizon 4-1' at the bottom |
| | Czts | Taskuduk Formation
Reddish brown siltstone and sandstone |

— Geological boundary
- - - Geological boundary, covered by recent sediments

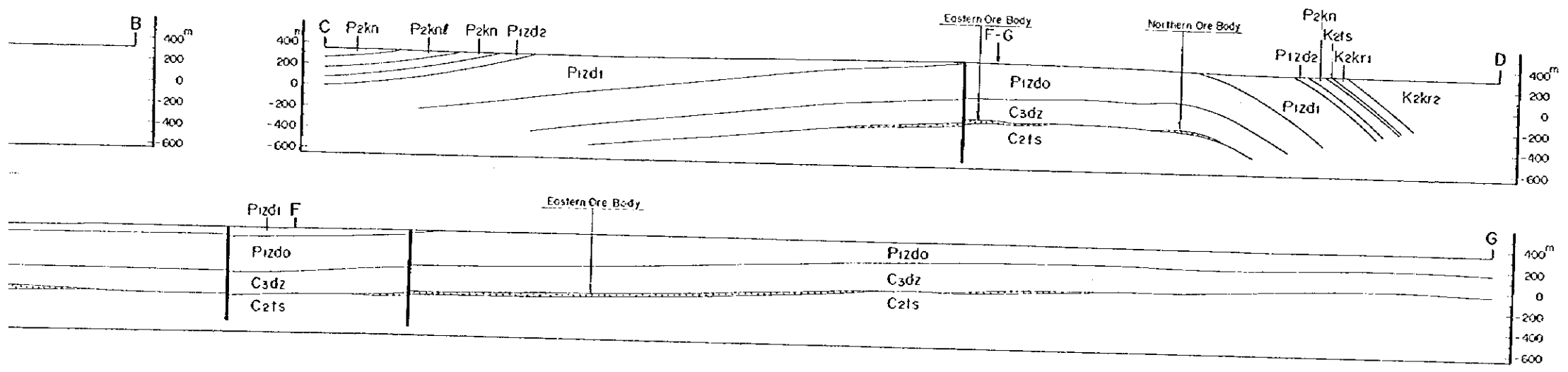




LEGEND

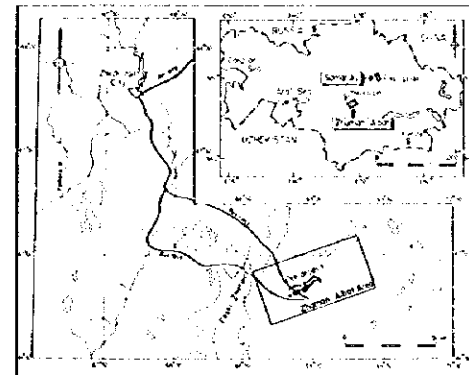
- Quaternary System**
 - hQ** Holocene
Colluvium-alluvium sediments
 - pQ** Pleistocene
Eolian - Colluvium sediments
- Cretaceous System**
 - Kzkr2** Korokoin Formation
Alternation beds of sandstone and siltstone
 - Kzkr1** Korokoin Formation
Granule-pebble conglomerate
 - Kzks** Taskura Formation
Mainly finny siltstone
- Permian System**
 - Pzkn2** Kengir Formation
Limestone, limy siltstone
 - Pzkn** Kengir Formation
Siltstone and sandstone including veins of gypsum and calcite
 - Pzdz** Zhidelsai Formation (Upper)
Bright brown siltstone with thin interlayers of gypsum-anhydrite
 - Pzdi** Zhidelsai Formation (Middle)
Reddish brown siltstone and sandstone
 - Pzdo** Zhidelsai Formation (Lower)
Reddish brown siltstone and sandstone with thin interlayers of gypsum-anhydrite-selenite
- Carboniferous System**
 - Csdz** Zhezkozen Formation
Alternation beds of gray sandstone and siltstone, with interformational conglomerate layers and main ore horizon 4-1' at the bottom
 - Czt** Taskuduk Formation
Reddish brown siltstone and sandstone

- Geological boundary
- Geological boundary, covered by recent sediments
- Bedding structure
- Fault
- Fault, covered by recent sediments
- Anticline
- Syncline
- Bedding, dip indicated (>5°)
- Outline of ore body (0.4% Cu - Cut off)
- Line of section
- Copper mineralization
- Bituminous sandstone



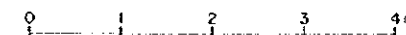
Report on the Mineral Exploration
in
the Zhanan Abat and Somasky Area, Republic of Kazakhstan
(Phase II)

Lithostratigraphic Units
of "Raimundo" Conglomerates
and Ore Grade
in the Central Orebody along Line 32

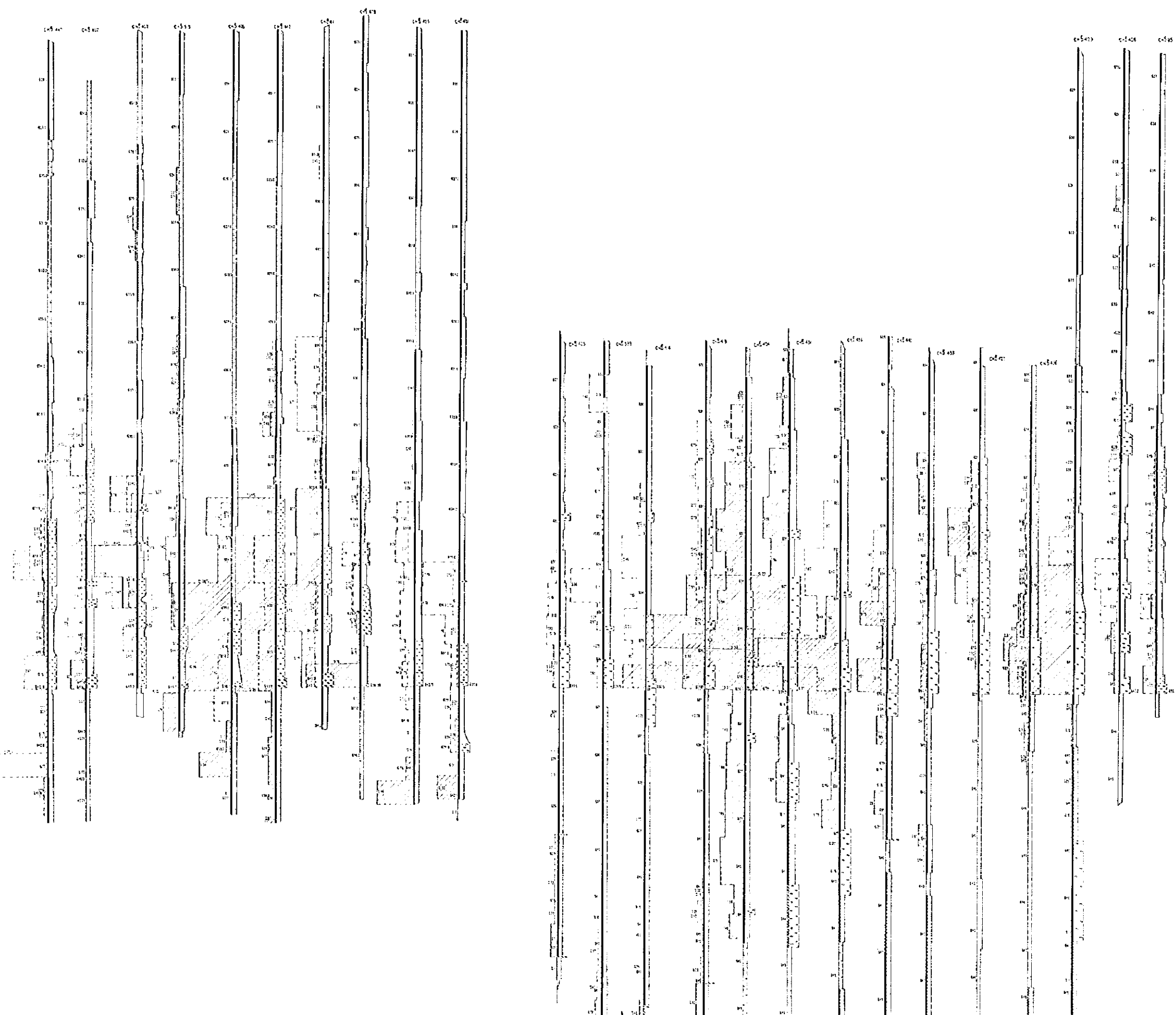
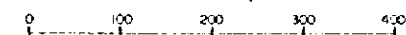


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Scale 1 : 40 (Vertical)

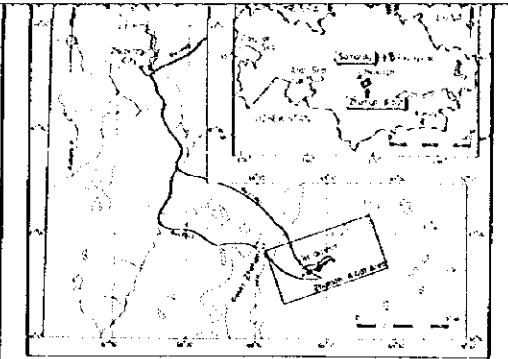


Scale 1 : 4,000

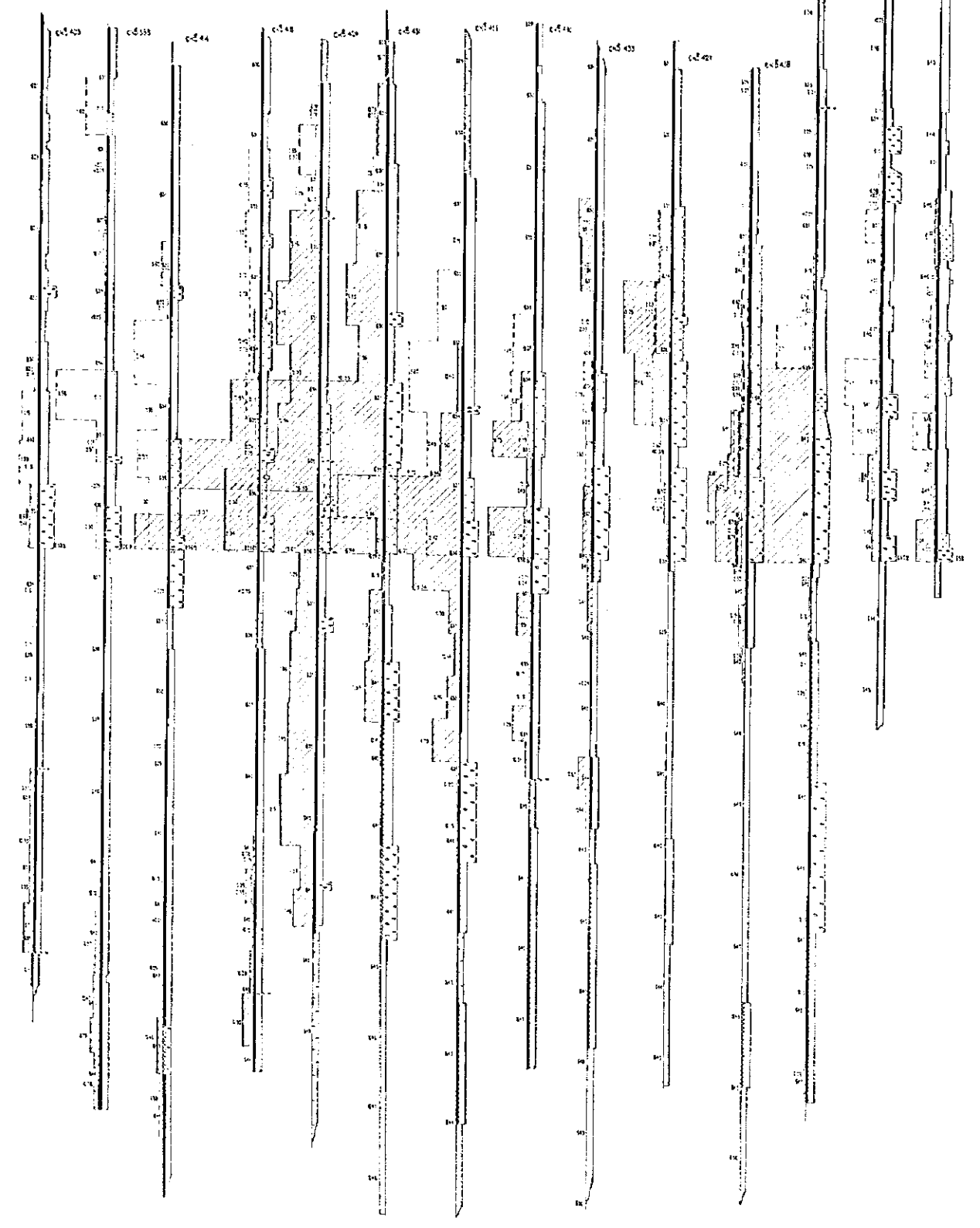
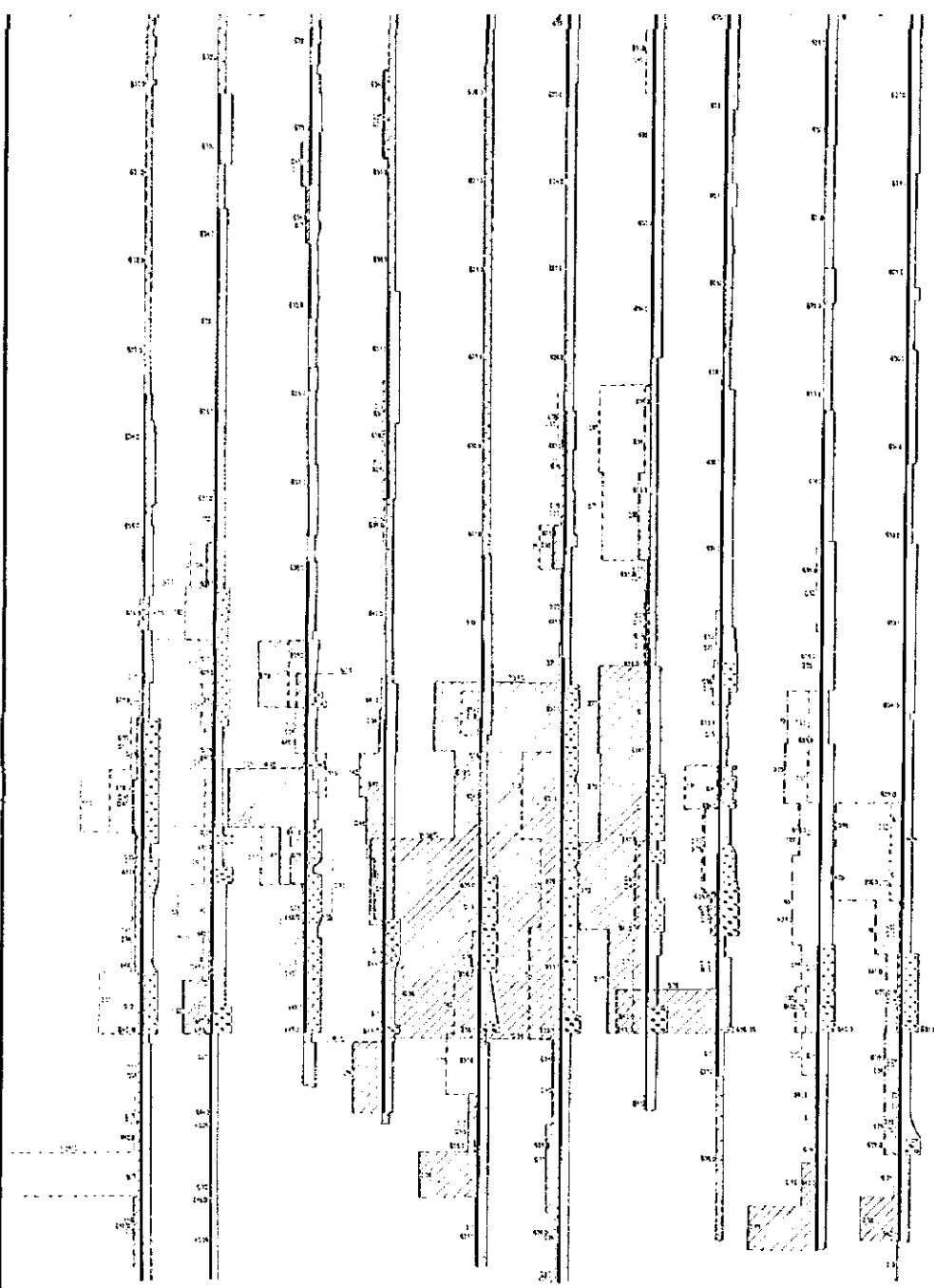
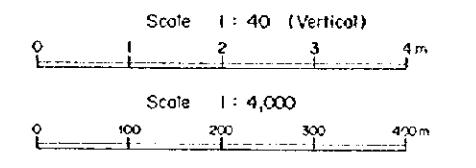


LEGEND

- Graptolites (10 x per 05 m)
- Crinoid
- Leaf
- Zinc
- red / grey } Brecciate
- red / grey } Sandstones fine grained above sandstones
- red / grey / greyish and reddish grey } Sandstones fine grained
- red / grey / greyish red / reddish red } Sandstones medium coarse grained
- red / grey } Gypsiferous (dolomitic) (red)
- red / grey } Gypsiferous (dolomitic) (black)
- red / grey } Conglomerates (red natural)
- red / grey } Conglomerates (black natural)



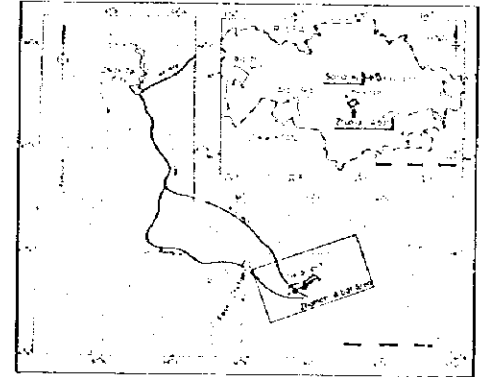
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Metal Mining Agency of Japan
February 1996



- LEGEND**
Grade (tons/10⁴ m³ per 0.5 m)
- Copper
 - Lead
 - Zinc
 - red grey } Argillite
 - red grey } Sandstones fine grained argill sandstones
 - red grey } Sandstones fine grained
 - greyish red } Sandstones fine grained
 - reddish grey } Sandstones fine grained
 - red grey } Sandstones medium coarse grained
 - greyish red } Sandstones medium coarse grained
 - reddish red } Sandstones medium coarse grained
 - red grey } Gneiss (interfoliated)
 - red grey } Gneiss (interfoliated, foliated)
 - red grey } Conglomerates (interfoliated)
 - red grey } Conglomerates (interfoliated, foliated)

Report on the Mineral Exploration
in
the Zhaiton Apsit and Samorsky Area, Republic of Kazakhstan
(Phase II.1)

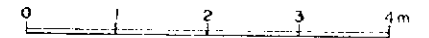
Lithostratigraphic Units
of "Raimundo" Conglomerates
and Ore Grade
in the Eastern Orebody along Line 195



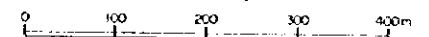
Japan International Cooperation Agency
Metal Mining Agency of Japan

February 1996

Scale 1 : 40 (Vertical)



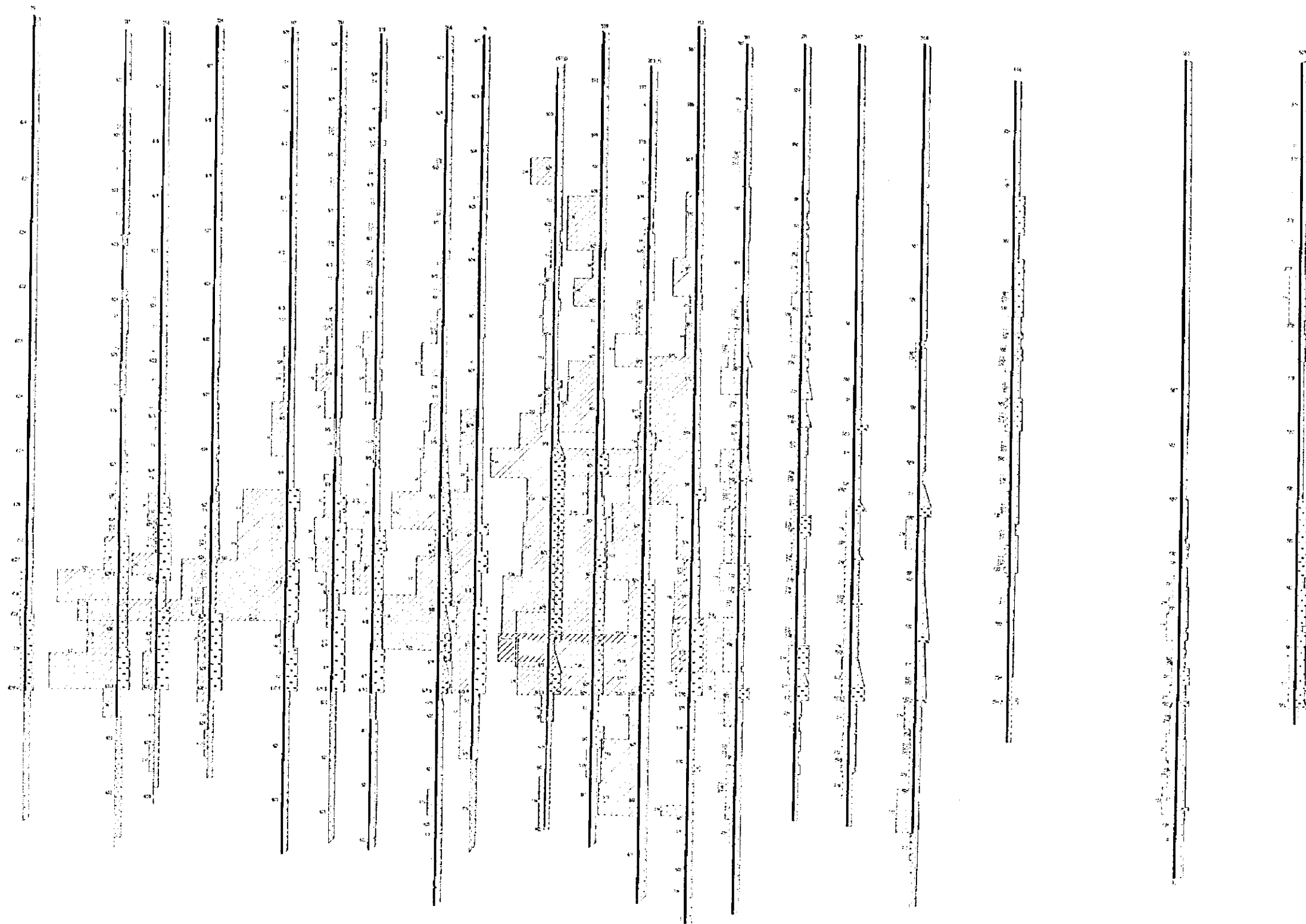
Scale 1 : 4,000



LEGEND

- Grade chert (10% or 0.5%)
- Copper
- Lead
- Zinc

- red } Alunite
- grey }
- red } Sandstone fine grained albino sandstone
- grey }
- red } Sandstone fine grained
- grey sh red }
- red sh grey }
- red } Sandstone medium coarse grained
- grey sh red }
- red sh red }
- red } Gabbro (intr. Amudarya)
- grey }
- red } Gabbro (intr. Amudarya) (Raimundo)
- grey }
- red } Conglomerates (intr. Amudarya)
- grey }
- red } Conglomerates (intr. Amudarya) (Raimundo)
- grey }



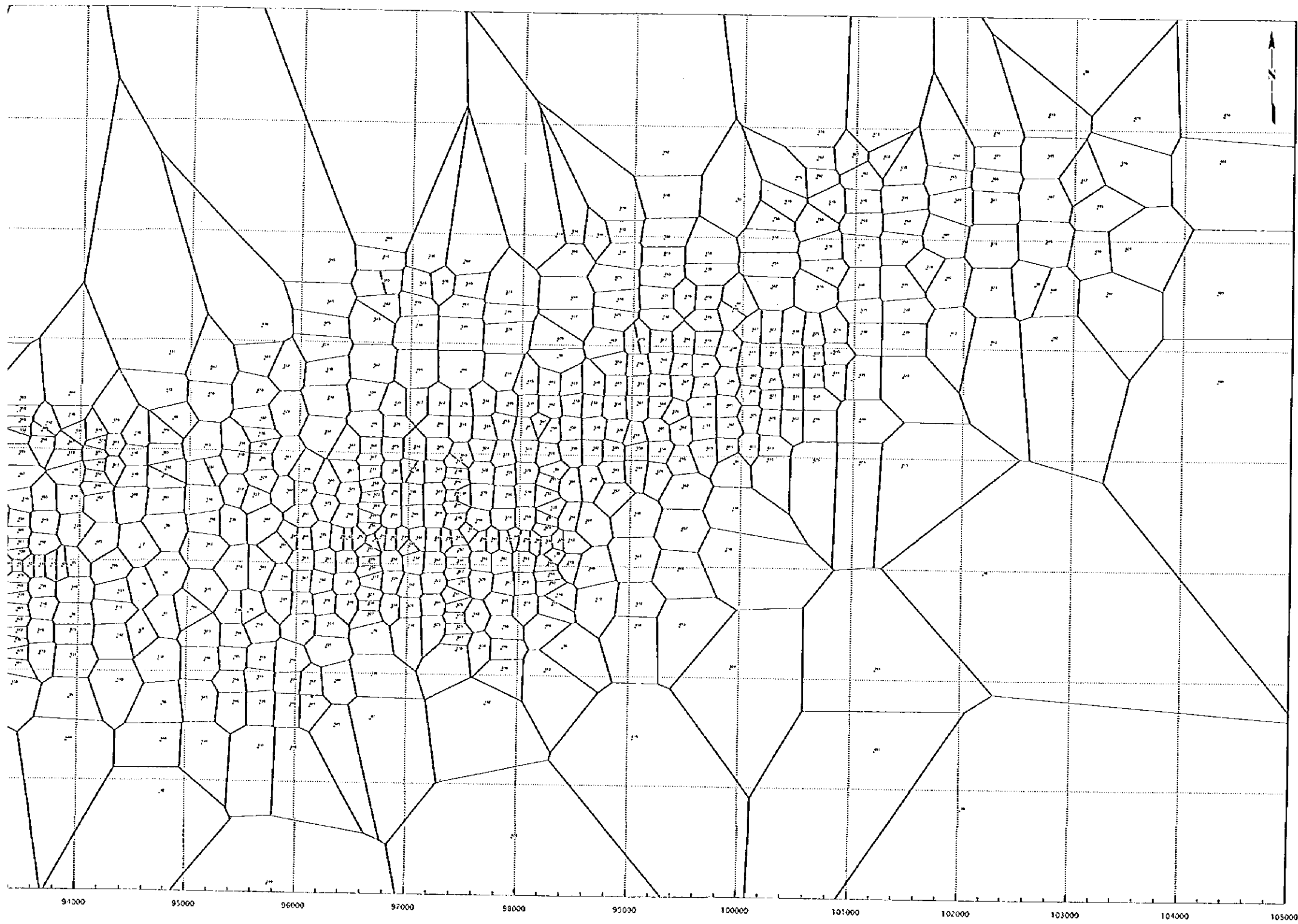
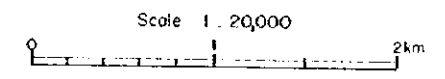


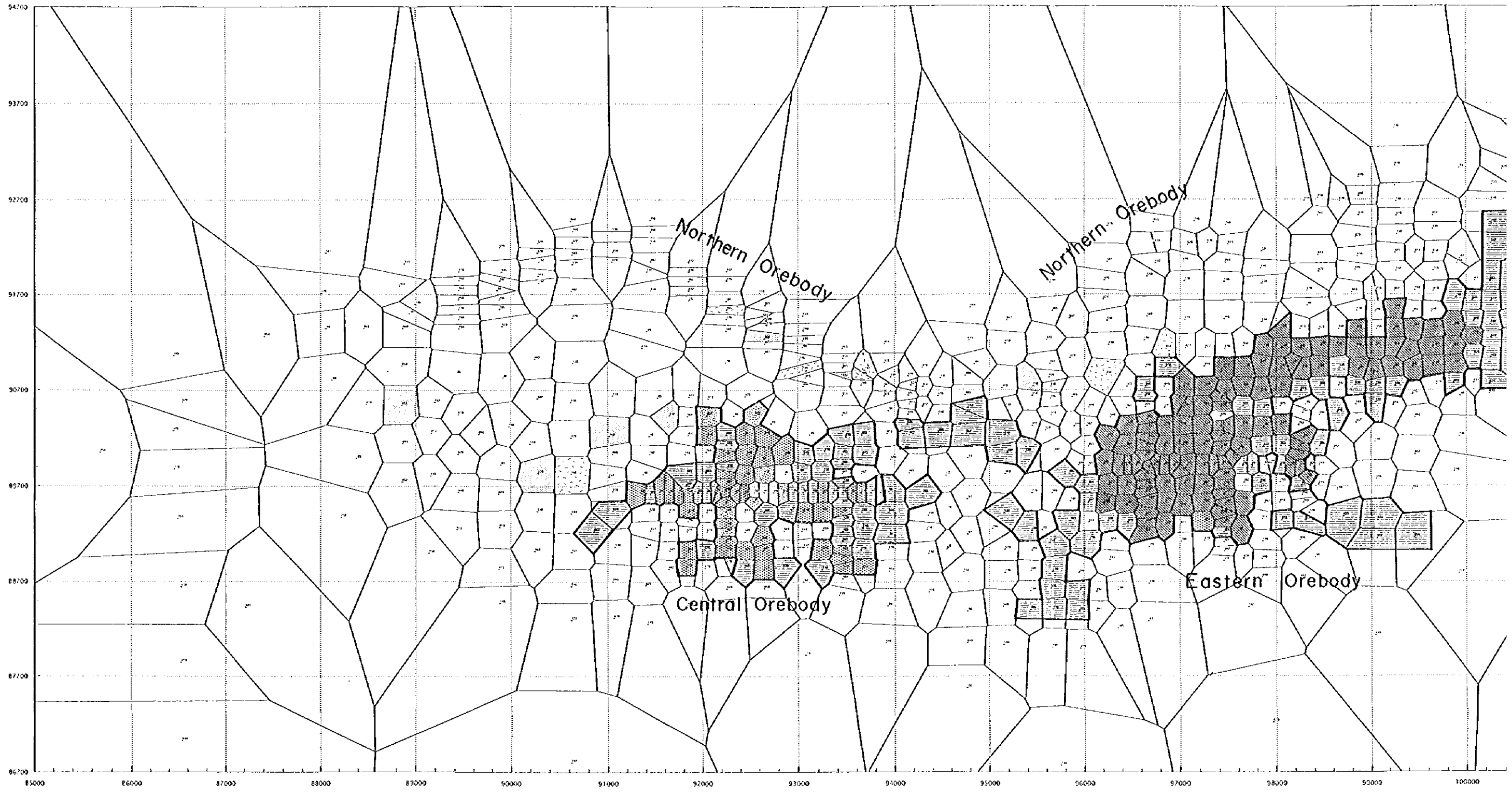
Plate 4

Report on the Mineral Exploration
in
the Zhaman Aibat and Suntarsky Area, Republic of Kazakhstan
(Phase II)

**Polygonal Sub-Blocks
of
the Zhaman-Aibat Ore Deposit**

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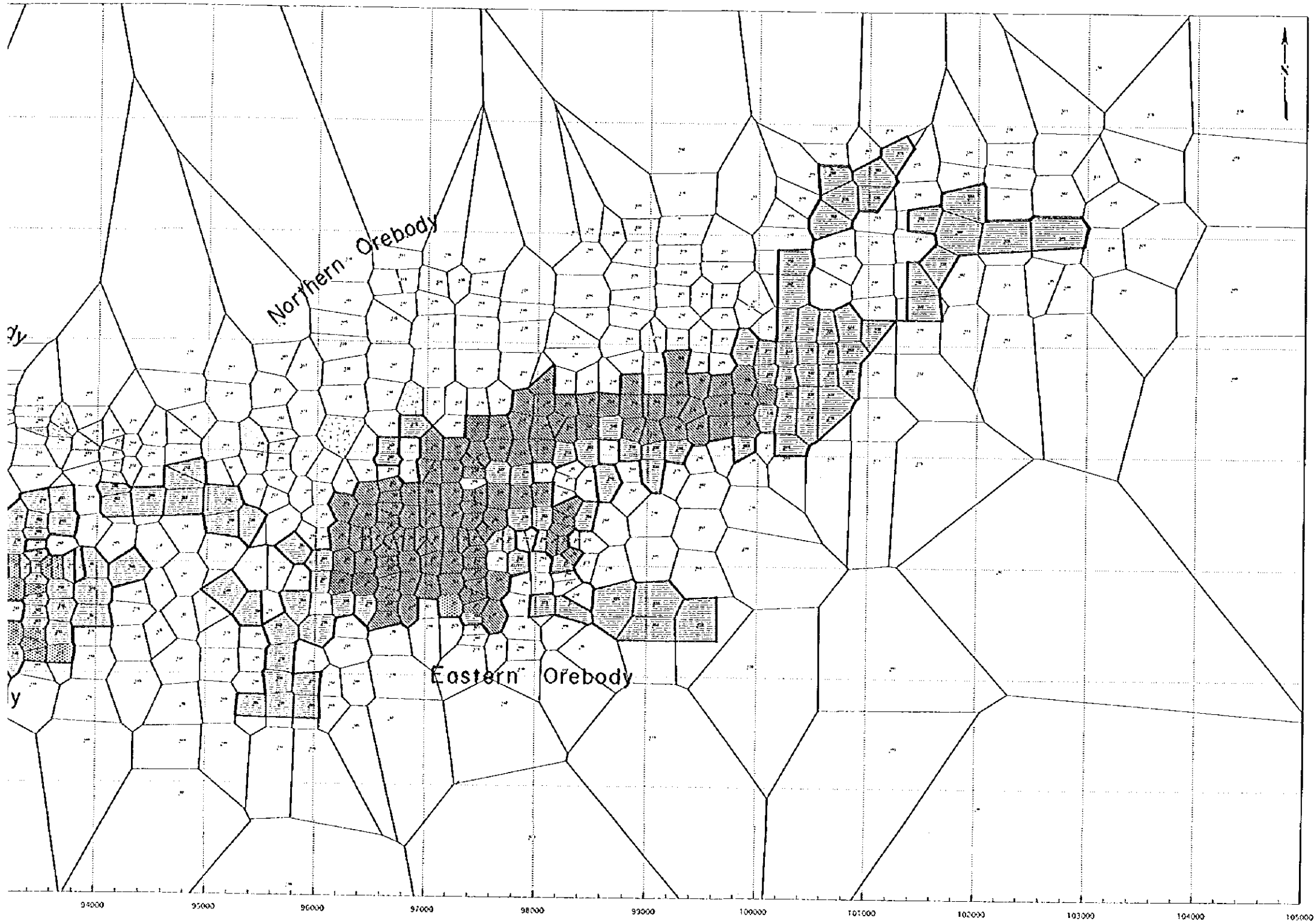
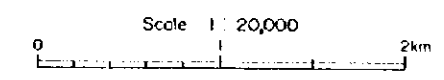


Plate 5

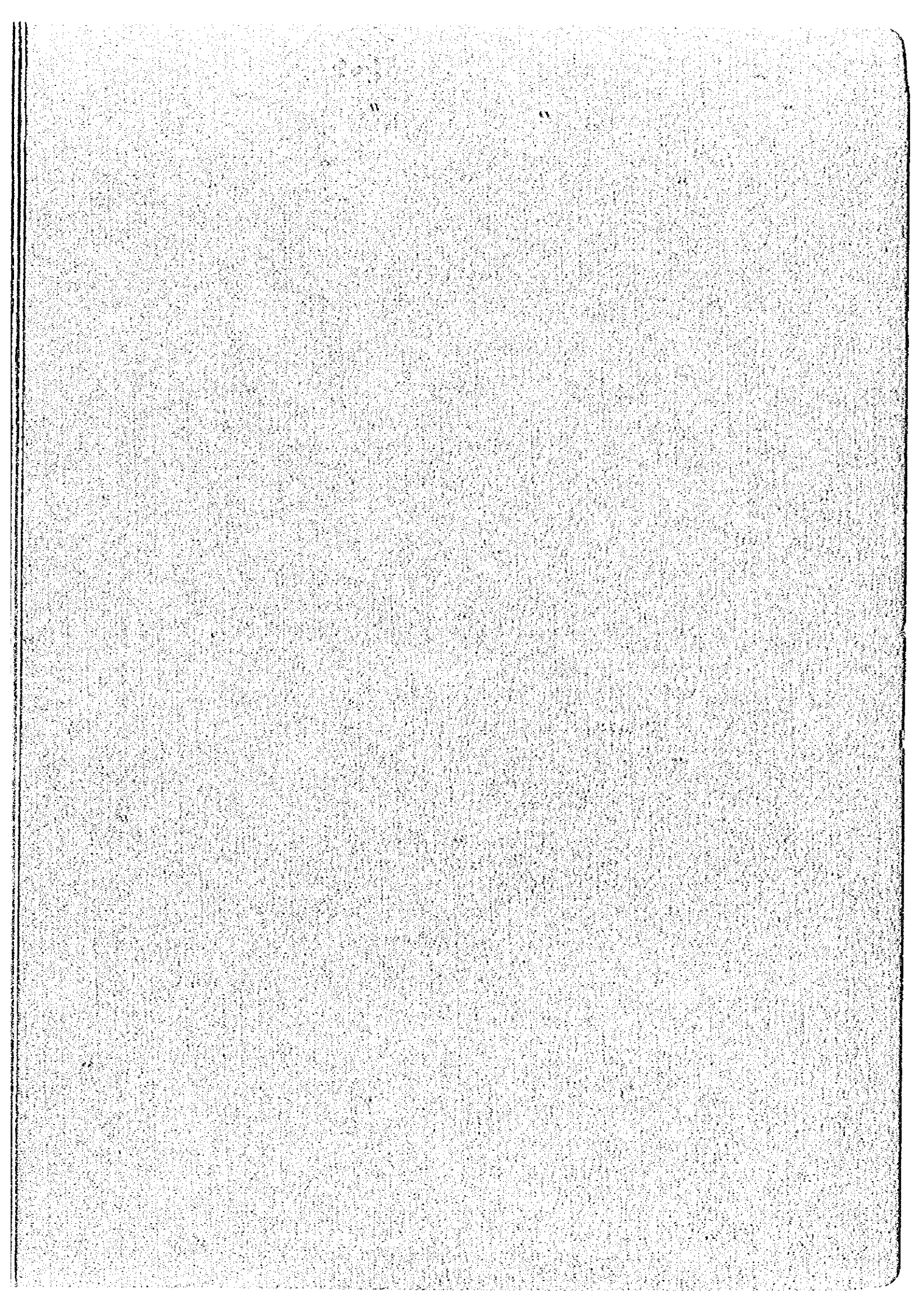
Report on the Mineral Exploration
in
the Zhunan Area and Samarky Area, Republic of Kazakhstan
(Phase II)

Interpretation Map
for the Ore Reserve Estimation
of the Eastern and Main Part
of the Central Orebody

Japan International Cooperation Agency
Metal Mining Agency of Japan
February 1986



- LEGEND
- Copper Ore, not calculated
 - Copper Ore, calculated
 - Copper Ore, calculated (BLOCK-A)
 - Complex Ore, not calculated
 - Complex Ore, calculated
 - Complex Ore, calculated (BLOCK-A)
 - Pb + Zn Ore, not calculated
 - Pb + Zn Ore, calculated
- Copper Ore 0.4% ≤ Cu
 Copper Ore 0.3% ≤ Cu and 0.8% ≤ Pb + Zn
 Pb + Zn Ore 1.1% ≤ Pb + Zn



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