the andesite host rock. In addition to this, much chlorite and calcite was found through x-ray diffraction examination.

Available existing data records maximum gold grades of 20g/t forthe quartz veins, but chemical analysis of four samples taken in this survey yielded a maximum gold value of only 0.014g/t, and for copper a maximum value of only 0.25%. Because of its small size, the fact that there is only one trench in this quartz vein, and there are few other quartzveins observed in the vicinity, the potential for gold occurrences in this district is considered to be low.

2.3.2 Satellite image anomaly

The 21 Satellite image anomaly areas, picked up by TM image analysis in the First phase survey, were decided to survey considering it's priority (rank A~B) and geological importance.

(1) IA-68 (refer to Fig. 25)

The central part of the area is located in 45km SSW in Bayanhongor, the capital of Bayanhongor Aimag and It's geographical coordinates is Lat. 45° 50′ 10″ N and Long. 100° 29′ 10″ E. The topography is gentle, and elevations ranges from 700m to 1,800m.

According to the existing data, this area is belonged in the Saran Uul district of the Khungui-Baidrag metallogenic zone of north Mongolian metallogenic province in the Baikalian to early Caledonian fold belt of the northern megablock that is the main geotectonic unit of Mongolia and is located at southeastern periphery of Hangai mountain areas in central Mongolia.

The local geology consists of Permian volcanic rocks and hypabyssalplutonic rocks.

Alteration zones form gentle circular hills. The main alterationzone has dia. 500m to 600m in size, extend more than 1km along a ENE-WSW direction. Tow types of alteration have been recognized, one is propylitic alteration in brecciated dioritic porphyrite and the other is silicification and argillization in ryolitic volcanics. The brecciated dioriticporphyrite extends 250m in N-S direction with 100m width(E-W). Gold bearing porphyry copper mineralization occurs in this dioritic stock accompanying visible fracture filling copper and small amount of pyrite, chalcopyrite, spharelite, and Fe hydrooxide are recognized by microscopic observation. Chlorite and sericite are detected by X-ray diffraction examination.

In 20 samples taken from dioritic stock, the maximum content of gold and copper are 0.38g/t and 0.12% respectively. The average gold content is 0.17g/t. Judging from these mineral contenst and alteration mineral distribution, it is expected that the high grade gold and copper mineralization is in subsurface level.

The other hand, white colored alteration zone characterized silicificstion and argillization occupies main part of the area extending WSW direction decreasing it's width. Intensily altered zone, that is accompanied by quartz, kaolinite, pyrophyllite and diaspore, covers the ridge of circular topography. Quartz and kaolinite dominant alteration zone suronds the silicification zone.

In 7 samples taken from this alteration zone, the content of gold is around several tens ppb order except a sample from contact zone of dioritic stock (gold value is 0.301g/t). It is possible that these alteration zone formed in late stage of porphyry copper system.

As descrived above, the area including IA-68 might be one of themost high potential area for the next stage gold-cupper exploration.

(2) IA-69 (refer to Fig. 26)

The central part of the area is located in 50km SW in Bayanhongor, the capital of Bayanhongor Aimag and It's geographical coordinates is Lat. 45° 48′ 35″ N and Long. 100° 28′ 00″ E. The topography is gentle, and elevations range from 1,700m to 1,800m.

According to the existing data, this area is belonged in the Saran Uul district of the Khungui-Baidrag metallogenic zone of north Mongolian metallogenic province in the Baikalian to early Caledonian fold belt of the northern megablock that is the main geotectonic unit of Mongolia and is located at southeastern periphery of Hangai mountain areas in central Mongolia.

The local geology is composed of upper Permian sandy tuff and rhyolite. Granite of Permian period crops out in the NW part of the area. General strike of sandy tuff shows NW-SE trend and dipping toward SW or NE gently. Rhyolite is affected by hydrothermal alteration such as silicification, argillization and hematitization, which contain discontinuous small quartz veinlets of 10cm wide. Quartz veinlets contain samll amount of limonite, hematite and pyrite.

Weathered hydrothermally altered zone is centered on a 500m diameter rhyolite. Slightly silicified zone is surrounded by limonitized rhyolite and sundy tuff. Acidic alteration zone characterized by kaoliniteforms central part of the altered zone.

In this survey, quartz veins which developed in rhyolite and tuff were sampled and chemical analysis of 5 of these were carried out. The results of analysis show gold and silver were near analytical limits, but the values of arsenic and Zinc reach 260ppm, 528ppm respectively. Some of the other element show 100ppm level. Quartz, hematite, kaolinite and sericite/montmollironite interestratified minerals were recognizedby X-ray diffraction examination of a sample from central part of alteration zone.

Available existing data reports several 100ppm of Arsenic, Cooper, Zinc from near the area. But there is no available information for gold.

Based on analytical results and field observation, gold mineralizaition is week in this area and the potentiality for gold occurrences is believed to be low.

(3) IA-60 (refer to Fig. 27)

The central part of this area is located on northern Nemegt mountains about 60km in NNW direction of Gurban Tes Sum (salt village), Umnugovi Aimag and It's geographical coordinates is Lat. 43° 43′ 10″ N and Long. 100° 48′ 20″ E. The area is surrounded relatively steep slopes with elevations range from 1,650m to 1,700m.

According to existing data, this area is belonged in the Nemegt mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The surrounding geology consists of Devonian andesitic to basaltic volcanic rocks. Extracted alteration zone is situated on the intersection zone of faults trending in N75° W and N55° W, which show distinct linear structure. Alteration zone centered on a 400m~600m diameter quartz porphyry--rhyolite stock and lies on right bank of E-W trending dry river, accompanying weak silicification and Fe-hydrooxide. Another alteration zone of circuler form has been recognized in the upper stream 800m to the east of the area. There is silicified zone with network of quartz veins without sulfide, surrounded by white argillized zone which contains pyropyllite and kaolinite. It seems like a altration of hot spring type.

Samples of the quartz veins and altered quartz porphyry～rhyolite were taken in this survey and chemical analysis of 6 of these were carried out. Even though west part of Nemegt Massif is well known as Nemegt placer gold district and now Dalanzadgad Geology Company has been conducting in explolation, based on analytical results, the potentiality forhydrothermal gold occurrences is believed to be low.

(4) IA-51 (refer to Fig. 28)

The central part of this area is located in 65km easrt to Noyon Sum of Umnugovi Aimag and It's geographical coordinate is Lat. 43° 07′ 05″ N and Long. 102° 55′ 40″ E. The topography is gentle, at elevationsof 1,500m.

According to existing data, this area is located in the eastern extensive area of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to Variscan fold belt (south govi fold belt) of thesouthern megablock that is the main geotectonic unit of Mongolia.

The surrounding geology consists of Devonian volcanics and granite. This area extends from ENE-WSW toward north trending fault zone difined by satellite image.

Hydrothermal alteration zone of silicification and argillizationoccurs in an area of 1km (N-S) x 3km (E-W), and intensily altered zone is located on the central part to the west. The alteration zone is underlain by acidic volcanic rocks which are vary from quartz porphyry to fine rhyolite and colluvial sediments composed of metamorphic rock fragments. Massive fine grained quartz body (silicification zone) occupies the central part of the alteration zone on circuler structur. Except this circuler part, lateral extention of alteration zone is parallel to the main structure (ENE-WSW). Individual silicification zones accompaning Fe-hydrooxide, extend 100m～sevral 100m long, 20m～30m width. Argillation zonesare present among the silicification zones and white colored argillation one contain kaolinite and alunite.

In this survey, chemical analysis of 9 of taken samples were carried out. A maximum gold value 0.102g/t is obtained in silicified part of circuler zone. However, the other samples showed low grade in gold, it is distinct that gold mineralization has been recognized within wide spred alteration zone of acidic volcanic rocks. Therefore, it is necessary to continue more ditail survey in the western part of this area.

(5) IA-52 (refer to Fig. 29)

The central part of this area is located in 56km east to Noyon Sum of Umnugovi Aimag and It's geographical coordinates is Lat. 43° 07′ 00″ N and Long. 102° 53′ 25″ E. Hills with elevations of 1,300m～1,500m coveres the area trending WNW-ESE.

According to existing data, this area is located in the eastern extensive area of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to Variscan fold belt (south govi fold belt) of thesouthern megablock that is the main geotectonic unit of Mongolia.

The geology of the area consists of Devonian volcanics such as rhyolite, andesite and those pyroclastics.

Altelation zone situated in an area of 400m (N-S) x 600m (E-W), and show remarkable color of pale yellow～white. The alteration zone is underlain by rhyoritic-andesitic lava which distributed along north side of ENE-WSW trending fault. Silicified zone cuvers ridge, and intensely silicified or argillized rocks occur on the valley and slope of near main fault in a parallel manner. Brecciated rocks (pipe) are present inthe alteration zone, it indicate the pass finder of hydrothermal fluid. Small quartz veins cut altered rock in some place.

Silicified breccia and argillized zone contain usially limonite, hematite, pyrite and occasionally malacite and bornite.

In this srvey, quartz veins and silicified–argillized rocks were sampled and chemical analysis of 24 of these were carried out. Although gold values were erratic, the maximum vlues of gold and silver were 1.44g/t and 8.8g/t respectively.

Argillic alteration zone usually contains kaolinite. Alunite and sericite were detected in intensely altered zone.

It is remarkable, same as IA–51, that a part of gold mineralization has been recognized within a wide spread alteration zone of acidic volcanic rocks. And gold content may increase to the depth becouse of the gold value tend to increase in argillic zone on low vally than in silisified zone on ridge.

Therefore more detail follow up survey must be recomended.

(6) IA–53 (refer to Fig. 30)

This area is located in 50km to Noyon Sum of Umunugobi Aimag, and it's geographycal coordinates is Lat. 43° 08′ 30″ N and Long. 102° 44′ 30″ E. Alteration zone with pale yellow to white in color is situated on the isolated mountains trending WNW to ESE and is restricted in a zone of 1km x 6km. I'ts eleveitions vary from 1,300m to 1,400m. It is also located in the vicinity of IA–52.

According to existing data, this area is located in the eastern extensive area of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to Variscan fold belt (south govi fold belt) of thesouthern megablock that is the main geotectonic unit of Mongolia.

The geology of surrounding area consisits of rhyolite, andesite, porphyrite, pyrocrastics and granite of lower to middle Devonian in age.

Altered fine grained rhyolite with flow band, occupys the main alteration zone and propyritized andesite–dacite, granodiorite are exposed on the foot and base of the hill. Silicified zone caps the ridge and white argillized rocks croup out on a part of valley and slope close to fault, along the main ridge.

There is brecciated part with limonite and hematite in silicification zone. The silicification and argillization are not so strong one, but in part discontinuas quartz veins (several centimeters of width) areobserved. These quartz vein sporadically contain limonite, hematite, pyrite, malacite and bornite (?).

A total of 21 samples were taken from mineralized quartz veins and altered rocks. The maximum content of gold and silver are 0.05g/t and 0.5g/t respectively, but the most show under detection limit grade. The contents of the other elements range from several ppm to several tens ppm in general, but the content of Arsenic reaches 168ppm.

Alteration minerals such as quartz, kaolinite, alunite, mixed layered mimeral have been detected by x–ray diffraction examination of white argillized rocks. Microscopic observation has proved that andesite contain augite and hypersthene and most phenocrysts have been replaced bychlorite, epidote and calcite.

As mentioned above, this area has no remarkable alteration nor mineralization. Therefore, it seems gold potentiality might be low. But, if gold mineralization may exist, it is expected to the depth becouse some samples show relativry high contents of Arsenic and mercury.

(7) IA–54 (refer to Fig. 31)

The central part of this area is located in 48km south to Noyon Sum, Umunugobi Aimag, and it's geographycal coordinates is Lat. 42° 43′ 20″ N and Long. 102° 19′ 10″ E. The alteration zone lies in a 1km (E–W) x 800m (N–S) area on the left bank of dry river, and elevations range from 1,300m to 1,400m.

According to existing data, this area is located in the eastern extensive area of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to Variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The geology of surrounding area consisits of rhyolite, andesite, porphyrite of lower to middle Carboniferous in age, and these pyrocrastics of Carboniferous in age.

The alteration zone of silicified and argillized rocks occupy the ridge and form parallel alteration belt on the WNW–ESE trending hill. Small quartz veins cut altered rock, containing limonite, hematite, pyrite, and sporadical malacite.

A total of 3 samples were taken from mineralized quartz veins and altered rocks. The maximum content of gold and silver are 0.12g/t and 0.5g/t respectively. The contents of the other elements are several tens ppm in general, but the content of mercury reaches 160ppb.

Alteration minerals such as quartz and kaolinite have been detected by x–ray diffraction examination of altered rocks. Microscopic observation has proved that the sample No.8 is andesite with intersertal texture and most phenocrysts have been replaced by chlorite and quartz.

As described above, the area has no remarkable alteration nor mineralization. Therefore, the potentiality for hydrothermal gold occurrences is believed to be low.

(8) IA–55 (refer to Fig. 32)

The central part of this area is located in 47km south to Noyon Sum, Umunugobi Aimag, and it's geographycal coordinates is Lat. 42° 44′ 10″ N and Long.102° 16′ 30″ E. The area has gentle tpographic featuers and levation is around 1,300m .

According to existing data, this area is located in the eastern extensive area of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to Variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The geology of surrounding area consists of lower to middle Carboniferous volcanic rocks.

Alteration zone covers an area of 2km (E–W) x 300~500m (N–S) and is underlain by rhyolite–dacite stocks and dikes which form small residual hills or mounds. Partly chloritized andesitic–doleritic volcanic rocks are exposed around the alteration zone. White colored argillized zone, accompanied by abundant quartz and kaolinite, distributed widely throughout the area. There are a few wholly silicified rhyolite–dacite mounds which contain abundant limonite or brecciated parts. There is also a silicified zone with minor quartz veins, is elongated 200m in NW–SE direction on the eastern margin of the area.

A total of 7 samples were analyzed chemically, however, most of them showed low gold contents. The other element gave no significant value. Therefore, the potentiality for hydrothermal gold occurrences is believed to be low.

(9) IA−61 (refer to Fig. 33)

This area is located in 15km WNW to Gurban Tes Sum, Umunugobi Aimag, and it's geographycal coordinates of western margine is Lat. 43° 15′ 30″ N and Long. 100° 48′ 30″ E, and eastern margine is Lat. 43° 17′ 20″ N and Long. 100° 55′ 00″ E. The area is elongated ENE−WSW 9km long x 1~1.5km wide. It's elevations range from 1,800~2000m.

According to existing data, this area might be belonged in the Nemegt mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The geology of surrounding area consists of Carboniferous rhyolite, dacite, andesite and sandy tuff which intruded by granite (dia. 10km) of Carboniferous~Permian age.

Silicified zone of silica concentrate volcanics is centered on the alteration zone, and forms ridge of several meter~20m wide. Silicified zone gradually changes to argillized zone which is accompanied by quartz and kaolinite. Fine grained barren quartz is main constituents of the silicified zone accompaning limonite. Quartz vein and dissemination of pyrite are sparsely recognized. But there is no remarkable mineralization in argillized zone.

It was proved that the yellow colored anomally on satellite image refrected the existence of manganoxides.

In this survey, mineralized quartz veins and altered hostrocks were sampled and chemical analysis of 14 samples were carried out. The results of analysis show a maximum gold value of 0.013g/t and silver value of 0.4g/t respectively. The other elements such as mercury (max:340 ppb), copper (max:107ppm), tellurium and Arsenic show relatively high values.

Quartz, kaolinite, pyropyllite and alunite were detected by x−ray diffraction examination.

Since alteration of hostrock and gold mineralization in this area are weak, the potentiality for gold occurrences is believed to be low. But relatively high values of mercury, copper, tellurium and arsenic suggest that there is a little posivility of gold occurrences in the underground level.

(10) IA−62 (refer to Fig. 34)

The central part of this area is located in 8km SSE to Gurban Tes Sum, Umunugobi Aimag, and it's geographycal coordinates is Lat. 43° 10′ 40″ N and 101° 05′ 20″ E. Hills with elevations of 1,700m are distributed in the area.

According to existing data, this area might be belonged in the Nemegt mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The geology of surrounding area consists of Carboniferous rhyolite, dacite and ansesitic lava of deep green in color.

Alteration zone elongate toward WSW−ENE 1.5km long, 300m wide, and is underlain by rhyolite~dacite stocks or dikes which contain phenocryst of quartz and plagioclase. Partly chloritized andesitic lava and pyroclastic rocks are exposed around the alteration zone. Pyroclastic rocks show stratification striking N50° E, dipping 30° N and it concordante to the boundary of the alteration zone. Silicification and argillization have been recognized and are strong in eastern part of the area, but the distribution of altered rocks decrease to the west.

However, quartz vein have not been found in the alteration zone, silicified rocks occasionally contain small amount of limonite. Silicification zones gradually changes to argillized zone which contain kaolinite and quartz as altaration mineral. But there is no remarkable mineralization in argillized1 zone.

Samples of the altered rocks were taken in this survey and chemical analysis of 5 of these were carried out. However, analytical results of samples from most intensely altered part show a maximum gold value of 0.015g/t, the most indicated low gold value and the other elements also indicated low values. Therefore, the potentiality for gold occurrenmces in this area is believed to be low.

(11) IA-63 (refer to Fig. 35)

The central part of this area is located in 13km SW to Gurban Tes Sum, Umunugobi Aimag, and it's geographycal coordinates is Lat. 45° 08′ 15″ N and Long. 100° 56′ 30″ E. Hills with elevations range from, 1,700m~1,900m are continue in the direccion of E-W.

According to existing data, this area might be belonged in the Nemegt mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The local geology is composed of Carboniferous rhyolite, accompanying dacite and ansesite. Platy joints developed in rhyolite, and it's striking NE-SE which is parallel to the extention of the alteration zone. Alteration zone shows yellow brown in color, and are divided into two part (NW part and SE part). Ore minerals or quartz vein have not been observed in NW part.

Alteration in NW part is less intense than in SE part, and the surface of the NW part is reddish brown due to weathering. Alteration zone in SE part elongate 1km long, 500m wide, along hills of about 50m hight. Silicification and argillization are present in this alteration zone, and discontinuos quartz veins with small amount of pyrite, limonite and hematite are found. Alunite is detected at argillized zone on the center of the alteration zone.

Samples of the quartz vein and argillized rocks were taken in this survey and chemical analysis of 9 of these were carried out. However, analytical results show a maximum gold value of 0.013g/t, silver value of 1.3g/t, among the other elements mercury and antimony indicated maximum value of 19,080ppb and 180ppm respectively.

As described above, some elements show relatively high values but gold mineralization and alteration of host rocks in this area are weak, the potentiality for gold occurrences in this area is believed to be low.

(12) IA-64 (refer to Fig. 36)

The central part of this area is located in 25km SSW to Gurban Tes Sum, Umunugobi Aimag, and it's geographycal coordinates is Lat. 43° 11′ 40″ N and Long. 100° 43′ 10″ E. Topographycally the area situated on the hills with elevations range from 2,100m~2300m and at the junctionof dry rivers which flow north and esat.

According to existing data, this area might be belonged in the Nemegt mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The local geology is composed of Carboniferous rhyolite, andesite, porphyrite and these pyroclastics.

Alteration zones are distributed in a diam. 1.6km area and are bounded on the north end and the esat end by fault. This area is underlain by silicified or argillized andesite. Limonite, hematite, pyrite andquartz veins with malacite are present in the alteration zone. Alteration minarals such as quartz, pyrophyllite and small amount of interstratified minerals are detected by x-ray diffraction examinmation.

Samples of the quartz veins and silicified-argillized rocks were taken in this survey and chemical analysis of 6 of these were carried out. The analysis results show a maximum gold value of 0.025g/t, silbver value of 0.8g/t, among the other elements mercury indicated maximum value of 1,024ppb. However, alteration mineral assemblage of this area indicate high temperature condition, gold mineralization and alteration ofhost rocks in this area are weak, the potentiality for gold occurrences in this area is believed to be low.

(13) IA-65 (refer to Fig. 37)

The central part of this area is located in 80km west to Gurban Tes Sum, Umunugobi Aimag, or 90km east to Ekhiin Gol, Bayanhongor Aimagand it's geographycal coordinates is Lat. 43° 05′ 10″ N and Long. 100° 04′ 30″ E. Topographycally this area situated on gentle slope with elevations of 1,500m where small hills are developed in sandy plane.

According to existing data, this area might be belonged in the Ongon Uul mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The local geology is composed of Crboniferous rhyolite~dacite dikes or stocks.

Alteration zones are distributed in a 1.5km ENE-WNW trending area, and there are amall hills of rhyolite~dacite dikes or stocks. Individual alteration zone are usually elongate in NNE-SSW. Intensely silicified or argillized rock which original texture are unclear, but it seems to be rhyolite~dacite. Porous andesite of deep greenish in color crops out or scattered among these alteration zones. There are massive jasperoidal silicified rocks, silicified rocks with quartz vein network and white argillized rocks accompaning quartz and kaolinite in artelation zone. Among them, in the central part of area, there is silicified rocks with quartz vein networks which is elongated 150m long in N15° E. Fracture filling Fe-oxides are developed in this rocks occasionaly accompanying pyrite.

Samples of the quartz vein and silicified-argillized rocks were taken in this survey and chemical analysis of 13 of these were carried out. The analysis results from silicified rocks with quartz vein network show a maximum gold value of 1.07g/t. Gold value over 0.1g/t are obtained from 3 silicified bodies. Among the other elements, Arsenic, Tellurium, mercury indicated relativery high values.

It is remarkable, same as IA-51, IA-52, that a part of gold mineralization has been recognized within a wide spread alteration zone of acidic volcanic rocks. Based on analysis rsults of gold, arsenic, tellurium and mercury, quartz vein network is expected to change a wide quartzvein or network zone to the depth. Therefor, the potentiality for goldoccurrences in this area is believed to be high, and more detail follow up survey must be recomended.

(14) IA-66

The center of this area is located in Umunugovi Aimag, at Lat. 43° 10'30"N and Long.

99° 32'00"E, about 120km west of Gurban Tes Sum, Umunugovi and 45km east of Ekhiin Gol Sum, Bayanhongor Aimag, at elevations of 1,000m～1,100m along a wadi which flows in NW direction from an area of red–brown hills.

According to existing data, this area might be belonged in the Ongon Uul mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The surrounding geology consists of Cretaceous basaltic lava and its pyroclastics.

Based on image analysis, a 1.3km x 0.3km alteration zone was detected in this area, but as a result of fiel checking, it was found that only the surface of the basaltic lava and its pyroclastics are brown ducto oxidation, and other than the formation of calcite veins, the area was not seen to be covered by hydrothermal alteration such as argillization.

Since alteration was not seen in this survey, only collection of representative samples of basalt was carried out.

(15) IA–96 (refer to Fig. 38)

The center of this area is located in Govialtai Aimag at Lat. 43° 14'10"N and Long. 97° 18'45"E, about 150km southwest of Bayanondor Sum, Bayanhongor Aimag, in hills with elevations of 1,600m～1,700m.

According to available existing data, this area might be belonged in the Taliin Meltes–Hatan Suudal mineralized district of Tomortiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The local geology consists of Ordovician volcanics and the Carboniferous granite that intrudes them. A satellite image anomaly zone wasdetected near the boundary between the volcanics and the granite, where a clear NE–SW structural line is seen.

Alteration zones are distributed in a 1km zone oriented of NNE–SSW direction in the granite body. There are stocks and dikes consisting of rhyolite and quartz porphyry that contain fine–grained quartz and sericite and have been silicified and argillized. The granite and basalt bodies are intruded to a greater extent by these stocks and dikes. In addition, there are many quartz veins several tens of centimeters wide which are accompanied by chalcopyrite.

Samples of the quartz veins and silicified and argillized rocks were taken in this survey and chemical analysis of five of these were carried out. Because the analysis results indicate low values for each element in this area, the potentiality for gold occurrences is believed tobe low.

(16) IA–92 (refer to Fig. 39)

The center of this area is located in Govialtai Aimag at Lat. 54° 00'00"N and Long. 97° 40'20"E, 70km southwest of Bayanondor, Bayanhongor Aimag, and 12～15km east–southeast of Zangat Uul (elevation, 1,262m), in an area of low (relative elevation, 20m) flat hills at elevations of 1,100m～1,200m.

According to existing data, this area is belonged in the Edrengiin mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The local geology consists of early to middle Carboniferous acidic volcanic stocks and dikes, and the andesite that intrudes these.

The alteration zone is spread over a 2.5km x 1.5km area oriented of NW--SE direction, in a flat land with small hills centered on acidic volcanic stocks and dikes. In addition to NW--SE, a NNE--SSW orientation can be seen in the acidic volcanic bodies. Weakly argillized trachyitic andesite andporous andesite are distributed in the alteration zones that accompany the acidic volcanic rock bodies.

The alteration zones are, in the main white argillization, mainly quartz and kaolinite, but in the central parts of the hills, marked silicification of the rocks is prevalent. The marked veined silicification continues to near sample locality No. 10, but mineralization is not recognized clearly.

In this survey, samples of ore minerals accompanying the silicified and argillized rocks were taken and 6 of these were submitted to chemical analysis. A maximum gold grade of 0.092g/t was obtained in the analysis results, but values of other elements were low. Based on the expanse of the area and the analysis results, it is believed the potentiality for gold occurrences in this area is low.

(17) IA--93 (refer to Fig. 40)

The center of this area is in Govialtai Aimag at Lat. 43° 53'45"N and Long. 97° 42'20"E, 65km southwest of Bayanondor, Bayanhongor Aimag, and 120km northwest of Ekhiin Gol Sum, Bayanhongor Aimag, in an area of low (relative elevation, 20m), relatively flat hills at elevations of 1,100m~1,200m.

According to existing data, this area is belonged in the Edrengiin mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

Geology of this area consists of lower to middle Carboniferous greenschist and the Carboniferous granite, and Permian rhyolite and porphyrite that intrude this.

The alteration zones located south of the annular Carboniferous granite bodies have yellow--brown silicification and argillization, and the rhyolite bodies are mainly silicified and argillized.

In this survey, the ore minerals accompanying the quartz veins and argillized rocks were sampled and 8 of these were submitted to chemical analysis. The analysis results show maximum grades of 0.006g/t on gold and 48.1g/t on silver respectively, with silver being higher when compared to gold. In addition, values for arsenic and lead were somewhat high, with maximum values of 192ppm and 93ppm respectively. Almost no alteration minerals other than quartz were recognized in x--ray diffractionexamination.

Because of the expanse of alteration zone and the analysis results, the potentiality for gold occurrences in this district is consideredto be low.

(18) IA--74 (refer to Fig. 41)

The center of this area is located in Bayanhongor Aimag at Lat. 44° 16'50"N and Long. 98° 35'50"E, in an area of rolling hills at elevations of 1,500m~1,700m about 60km south of Bayanondor, Bayanhongor Aimag, and 65km in W~SW direction of Shinjinst, Bayanhongor Aimag.

According to existing data, this area is belonged in the Edrengiin mineralized district of

Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The local geology consists of Carboniferous volcanics.

The alteration zone continues on and off for 2.5km in an area of small hills (relative elevation, several tens of meters) in a hilly region formed of rhyolite–dacite, dacite, and dacitic–andesitic tuff. The northern area is massive silicified rhyolite–dacite and flow–banded rhyolite. The tuff has undergone white argillization, but plagioclase is recognizable. The southern area is weakly altered andesite, fresh dacite dikes, and silicified rhyolite–dacite accompanied by limonite.

Iron oxides are recognized in the silicified rocks, and pyrite is seen rarely, but as a whole, iron alteration is weak. Kaolinite and alunite were found in the argillized zone surrounding the silicified zone.

In this survey, samples of the ore minerals accompanying the quartz veins and silicified and argillized rocks were taken and 6 of these were chemically analyzed. Low values were indicated for all elements inthe analysis results, so the potentiality for gold occurrences in this district is considered to be low.

(19) IA–75 (refer to Fig. 42)

The center of this area is located in Bayanhongor Aimag at Lat. 44° 12'50"N and Long. 98° 23'55"E, 70km south of Bayanondor, Bayanhongor Aimag, and 70km in W~SW direction of Shinjinst, in a hilly area with elevations of 1,500m~1,700m.

According to existing data, this area is belonged in the Edrengiin mineralized district of Edrengiin Nuruu metallogenic zone of south Mongolian metallogenic province in the late Caledonian to variscan fold belt of thesouthern megablock that is the main geotectonic unit of Mongolia.

The local geology consists of Carboniferous granite, and rhyolite and andesite which intrude it.

An alteration zone 1km in diameter which is assumed to be silicified and argillized was located through satellite image analysis, but mountains in this area are red–brown in color. There is marked silicification and argillization of the rhyolite and andesite and quartz veins aredeveloped. Limonite, hematite, malachite and pyrite were recognized in the quartz veins.

In this survey, the ore minerals which accompany the quartz veins were sampled and 4 of these were subjected to chemical analysis. The results of this analysis show a maximum silver grade of 55.2g/t, but values for other elements including gold were low. Alunite was found in x–ray diffraction examonation of samples from the center of the alteration zone.

Because of the expanse of the alteration zone and the results of analysis, the potentiality for gold occurrences in this district is believed to be low.

(20) IA–70 (refer to Fig. 43)

The center of this area is located in Bayanhongor Aimag at Lat. 45° 23'55"N and Long. 99° 39'25"E, 25km southeast of Baatsagaan (Bayansair), Bayanhongor Aimag in the Bayan Tsagaan Nuruu of 1,600m~1,800m high.

According to existing data, this area is located on the northernside neighborhood of the Ih–Bogd deep fracture, the main tectonic line. The area is between the Bayanlig–Bayangovi metallogenic zone of south Mongolian metallogenic province in the late Caledonian to Variscan fold belt of thesouthern megablock, and the Khungui−baidrag metallogenic zone of north Mongolian metallogenic province in the Baikalian to early Caledonian fold belt of the northern megablock. Both megablocks are the main geotectonic unit of Mongolia. Judging from neighboring geological conditions, this area is regarded as a part of the northern rim of the southern megablock mentioned above.

The local geology consists of Carboniferous andesite and porphyry and the Permian andesite and rhyolite dikes that intrude these.

Alteration zones are reddish brown in color, with the rhyolites being markedly silicified and argillized. Pyrite and limonite were recognized.

In this survey, samples of the ore minerals accompanying the silicification were taken and 1 of these was subjected to chemical analysis. Analysis results show that gold and silver were within analytical limits, and values for other elements were low. Therefore, it is believed that the potentiality for gold occurrences in this district is low.

(21) IA−71 (refer to Fig. 44)

The center of this area is located in Bayanhongor Aimag at Lat. 45° 25'40"N and Long. 99° 00'25"E, about 37km west−southwest of Baatsagaan on the edge of Boon Tsagaan Lake in Bayanhongor Aimag, in a mountainous area with elevations of 1,600m~1,800m.

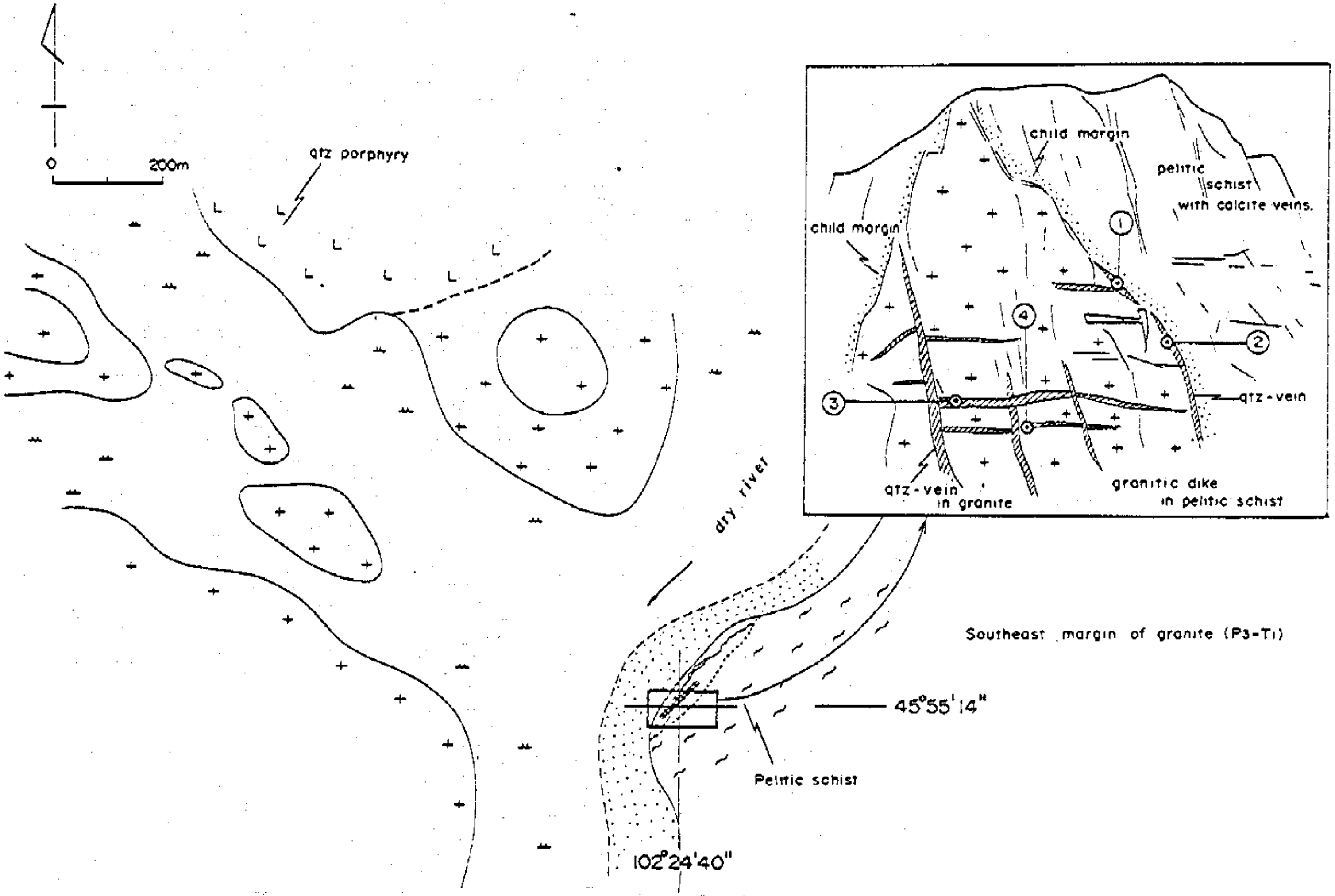
According to existing data, this area is located on the northernside neighborhood of the Ih−Bogd deep fracture, the main tectonic line. The area is between the Bayanlig−Bayangovi metallogenic zone of south Mongolian metallogenic province in the late Caledonian to Variscan fold belt of thesouthern megablock, and the Khungui−baidrag metallogenic zone of north Mongolian metallogenic province in the Baikalian to early Caledonian fold belt of the northern megablock. Judging from neighboring geological conditions, this area is regarded as a part of the northern rim of the southern megablock mentioned above.

Local geology consists of Permian granite and volcanics.

A 2km x 1km alteration zone oriented in E−W direction is located on the west side of mountains oriented in E−W direction on the south side of Boon Tsagaan Lake. Alteration is strong, with unclear texture, but it is assumed these are acidic volcanics. Andesite is seen between other alteration zones.

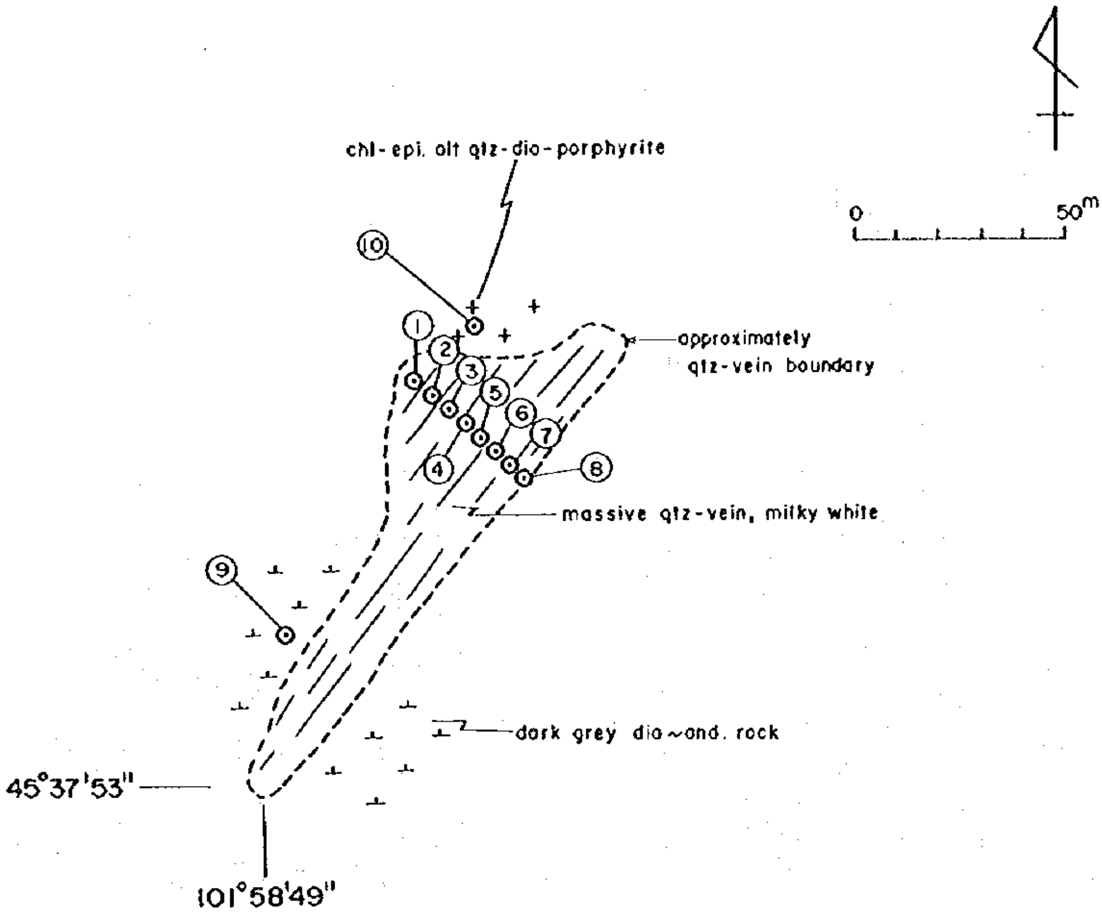
The alteration is mainly quartz and sericite, with small amountsof kaolinite found by x−ray diffraction examination. There is no markedmineralization, but very small amounts of blue copper minerals (secondary minerals), and pyrite and sphalerite were recognized over a wide area. The blue copper minerals were interpreted as digenite through microscopic observation of polished sections.

In this survey, ore minerals accompanying the altered rocks were sampled and 6 of these were submitted to chemical analysis. The analysis results indicate low values for all elements, so the potentiality for gold occurrences of this district is considered to be low.



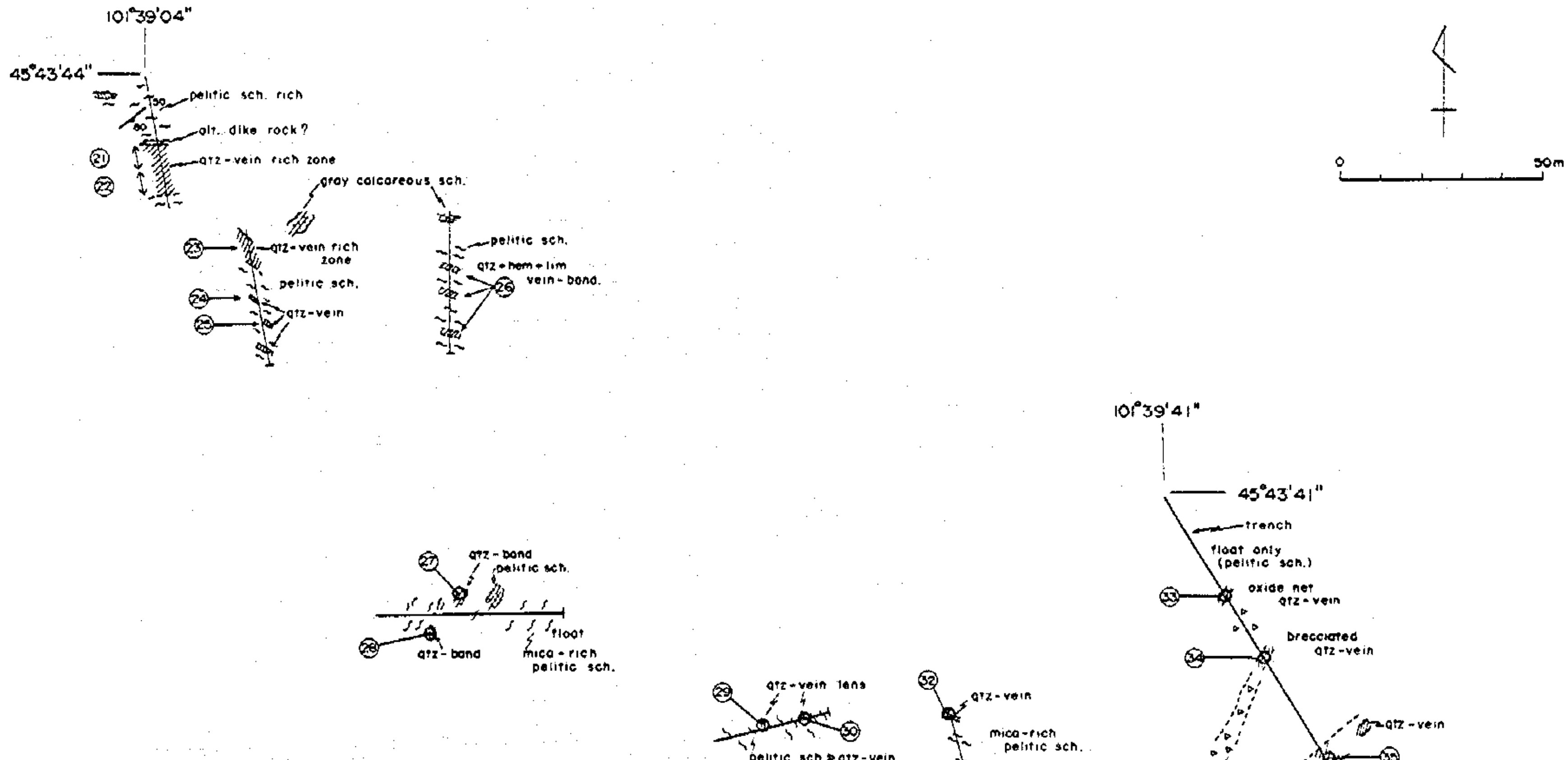
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-21-01	1	< 0.1	5	< 1	< 10	6	3	8	< 1
2	MS-21-02	< 1	< 0.1	3	< 1	< 10	8	3	6	< 1

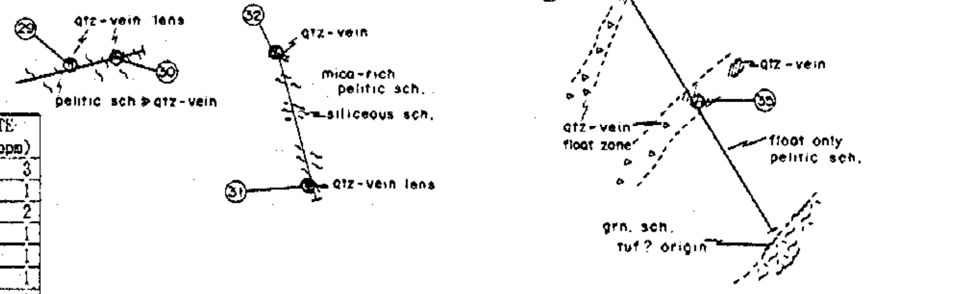
Fig. 11 Sketch Map of MS-21



NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-49-01	10	0.8	9	< 1	20	4	3	70	5
2	MS-49-02	733	0.1	33	3	10	39	4	72	5
3	MS-49-04	13	< 0.1	8	< 1	10	2	< 1	64	< 1
4	MS-49-06	< 1	< 0.1	2	< 1	< 10	1	2	56	18
5	MS-49-08	120	< 0.1	20	< 1	10	4	4	67	7
6	MS-49-11	< 1	0.5	11	< 1	10	< 1	2	4	5

Fig. 12 Sketch Map of MS-49

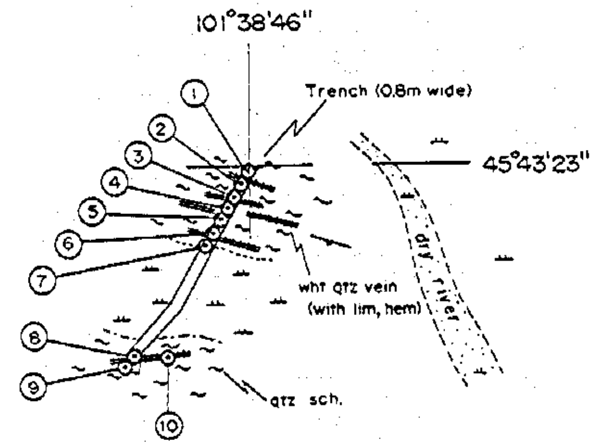




NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
15	MS-39-21	< 1	0.3	23	2	30	14	31	66	3
16	MS-39-22	8	0.1	35	5	30	27	7	92	< 1
17	MS-39-23	< 1	< 0.1	15	< 1	20	20	6	95	2
18	MS-39-24	3	< 0.1	47	9	30	38	9	104	< 1
19	MS-39-25	< 1	< 0.1	9	< 1	30	23	6	71	< 1
20	MS-39-26	< 1	< 0.1	5	< 1	30	137	24	101	< 1
21	MS-39-32	10	< 0.1	50	9	40	45	12	93	< 1
22	MS-39-33	16	< 0.1	53	2	20	43	15	86	< 1
23	MS-39-34	28	< 0.1	26	2	30	8	5	76	4
24	MS-39-35	< 1	0.6	7	< 1	20	7	24	73	< 1

Fig. 13-(1) Sketch Map of Northern MS-39 (144, Khan Uul)

NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-39-01	< 1	< 0.1	4	< 1	< 10	37	5	9	< 1
2	MS-39-02	< 1	< 0.1	7	< 1	< 10	18	5	5	< 1
3	MS-39-03	< 1	0.3	12	< 1	< 10	21	9	13	< 1
4	MS-39-04	< 1	< 0.1	4	< 1	< 10	9	2	9	14
5	MS-39-05	74	0.3	60	3	20	29	16	44	< 1
6	MS-39-06	5	< 0.1	28	< 1	30	8	4	5	10
7	MS-39-07	< 1	< 0.1	2	< 1	< 10	2	1	3	< 1
8	MS-39-08	< 1	< 0.1	2	< 1	< 10	5	4	11	< 1
9	MS-39-09	< 1	0.2	4	< 1	< 10	4	2	5	< 1
10	MS-39-10	< 1	< 0.1	10	2	10	5	2	4	3
11	MS-39-11	9	< 0.1	24	< 1	60	15	6	21	1
12	MS-39-12	3	< 0.1	22	< 1	20	13	14	8	6
13	MS-39-13	3	< 0.1	11	1	< 10	18	8	10	3
14	MS-39-14	9	0.1	84	7	10	13	9	22	< 1



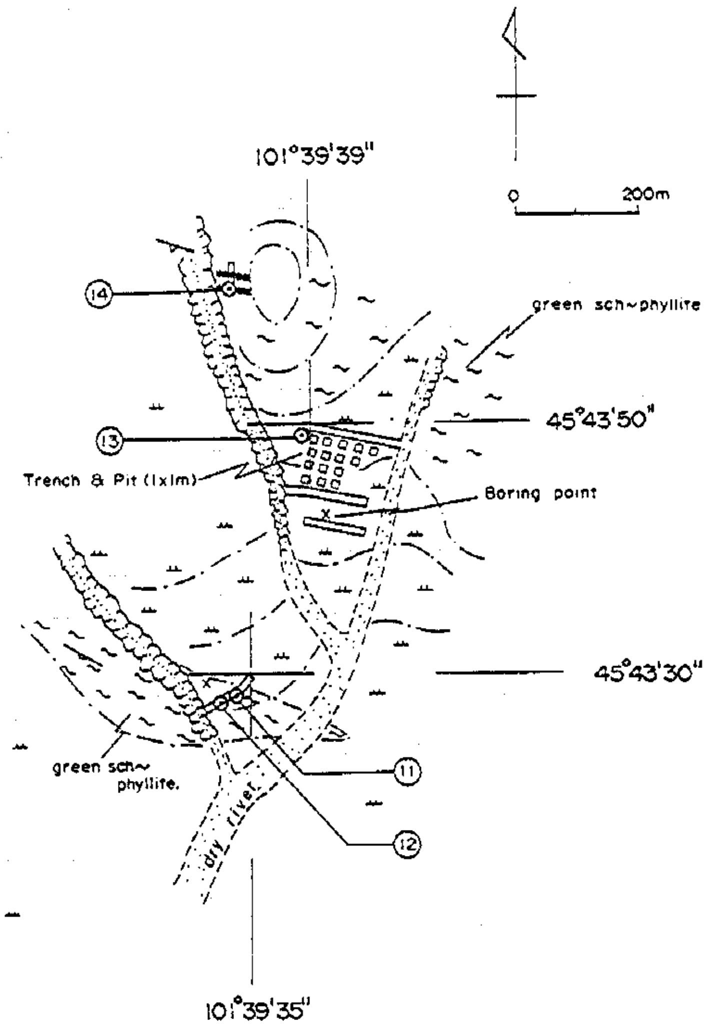
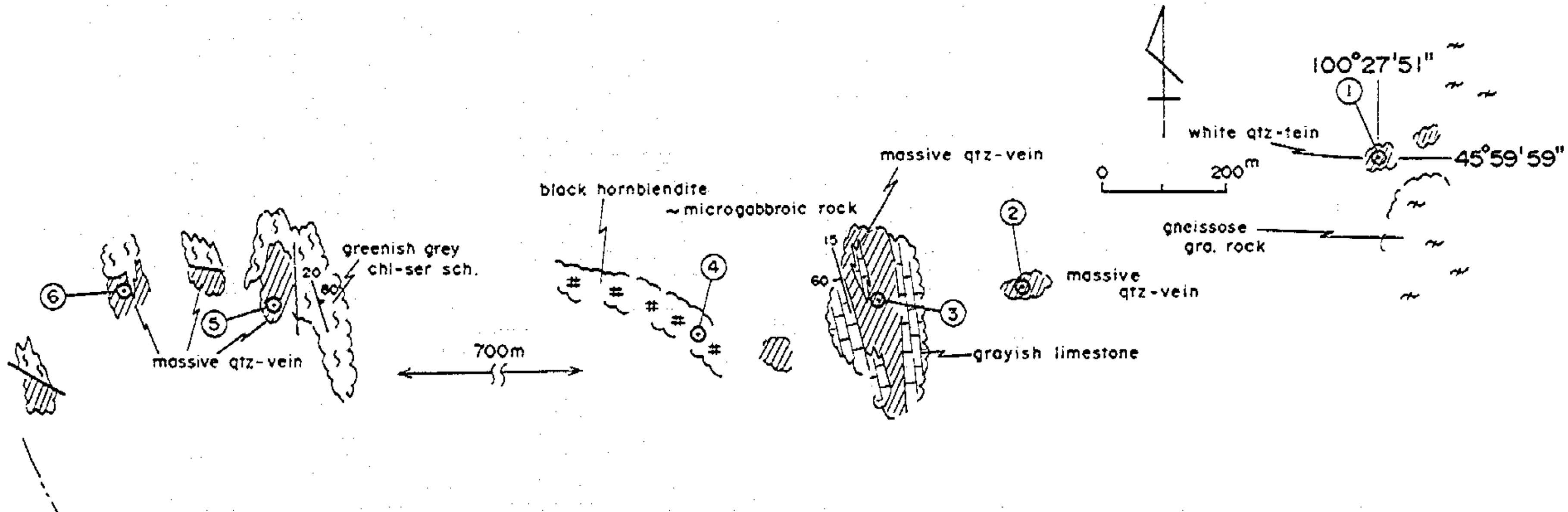
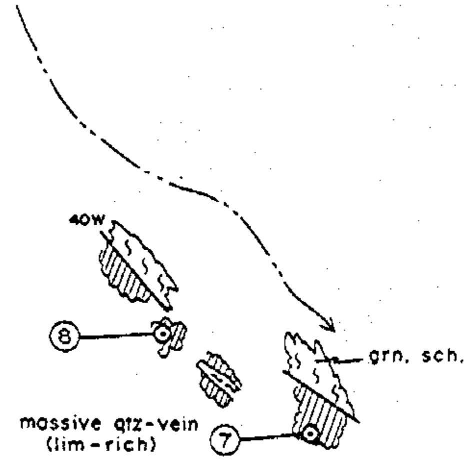


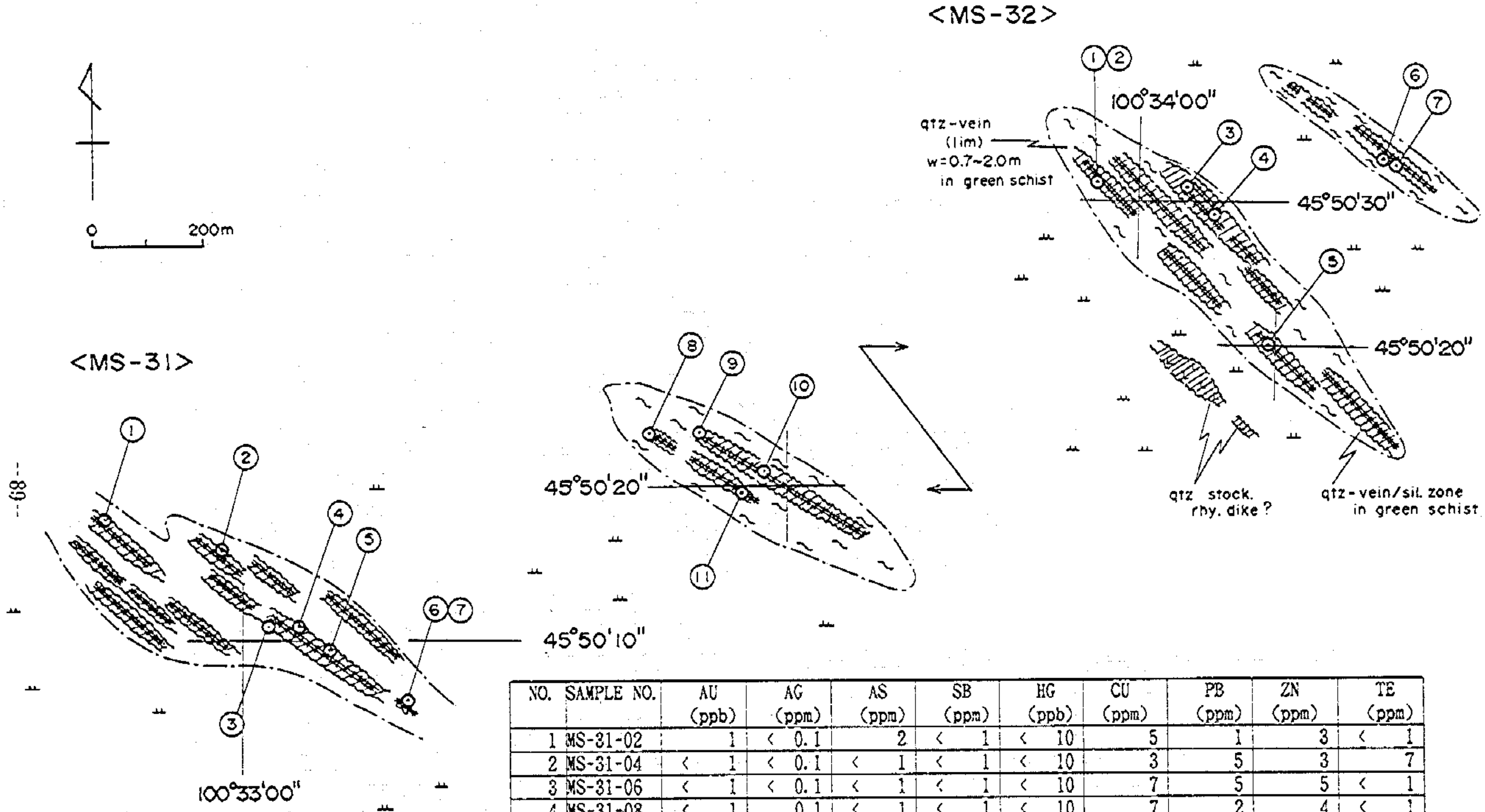
Fig. 13−(2) Sketch Map of Southern MS−39 (144, Khan Uul)





NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-4-01	< 1	0.4	< 1	< 1	< 10	3	5	6	5
2	MS-4-02	< 1	0.2	< 1	< 1	10	2	3	74	2
3	MS-4-03	< 1	0.5	< 1	< 1	10	6	4	79	21
4	MS-04-06	< 1	0.5	< 1	< 1	< 10	3	2	99	1
5	MS-4-07	4	0.5	< 1	< 1	60	24	2	66	< 1
6	MS-4-08	< 1	0.9	< 1	< 1	10	4	4	59	14

Fig. 14 Sketch Map of MS-4



NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-31-02	1	< 0.1	2	< 1	< 10	5	1	3	< 1
2	MS-31-04	< 1	< 0.1	< 1	< 1	< 10	3	5	3	7
3	MS-31-06	< 1	< 0.1	< 1	< 1	< 10	7	5	5	< 1
4	MS-31-08	< 1	0.1	< 1	< 1	< 10	7	2	4	< 1
5	MS-31-10	< 1	< 0.1	< 1	< 1	< 10	5	< 1	11	9
6	MS-32-03	< 1	< 0.1	< 1	< 1	< 10	12	6	6	29
7	MS-32-05	1	0.1	8	< 1	< 10	59	11	11	8
8	MS-32-07	2	< 0.1	< 1	< 1	< 10	6	4	4	< 1

Fig. 15 Sketch Map of MS−31 and MS−32

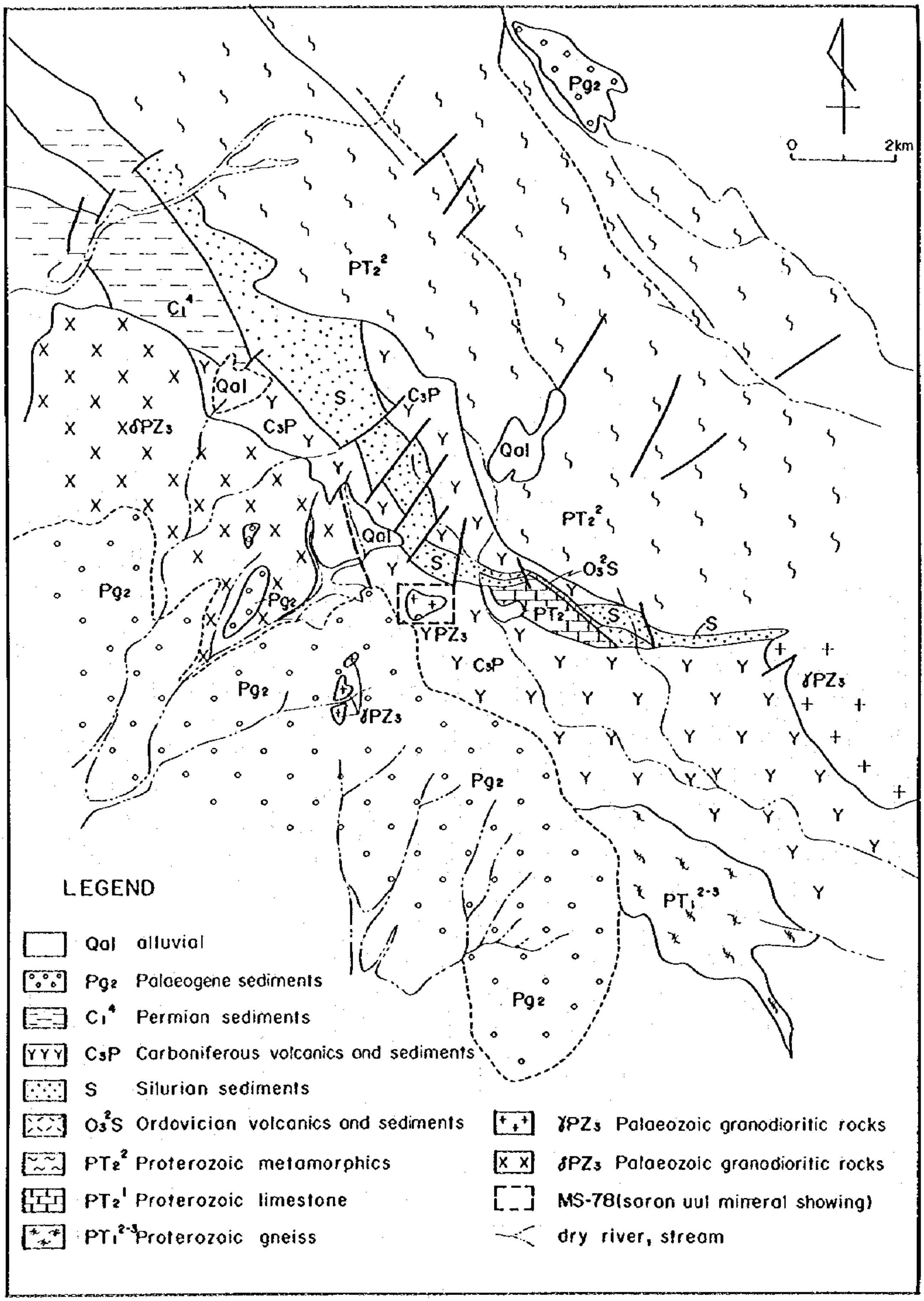
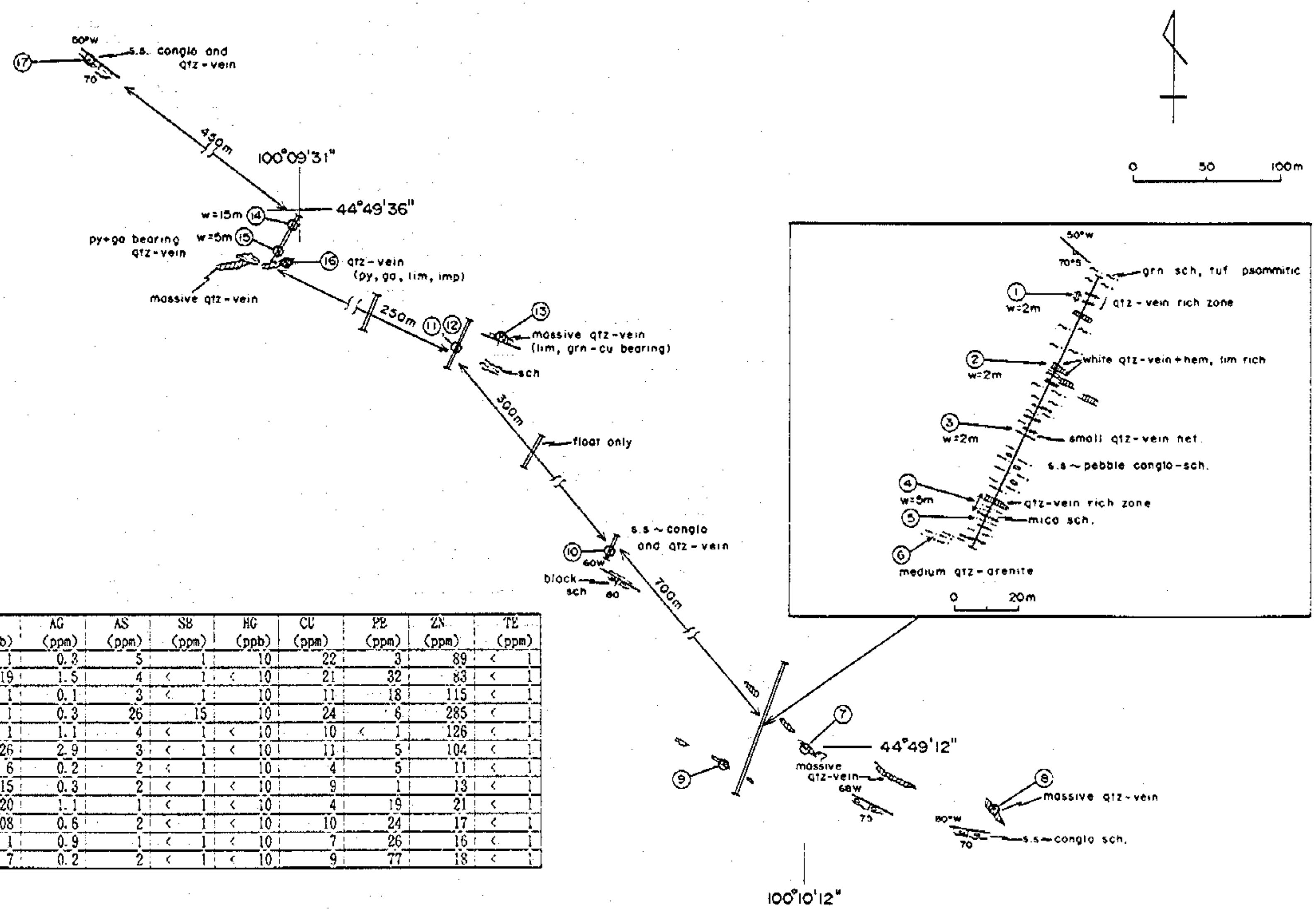
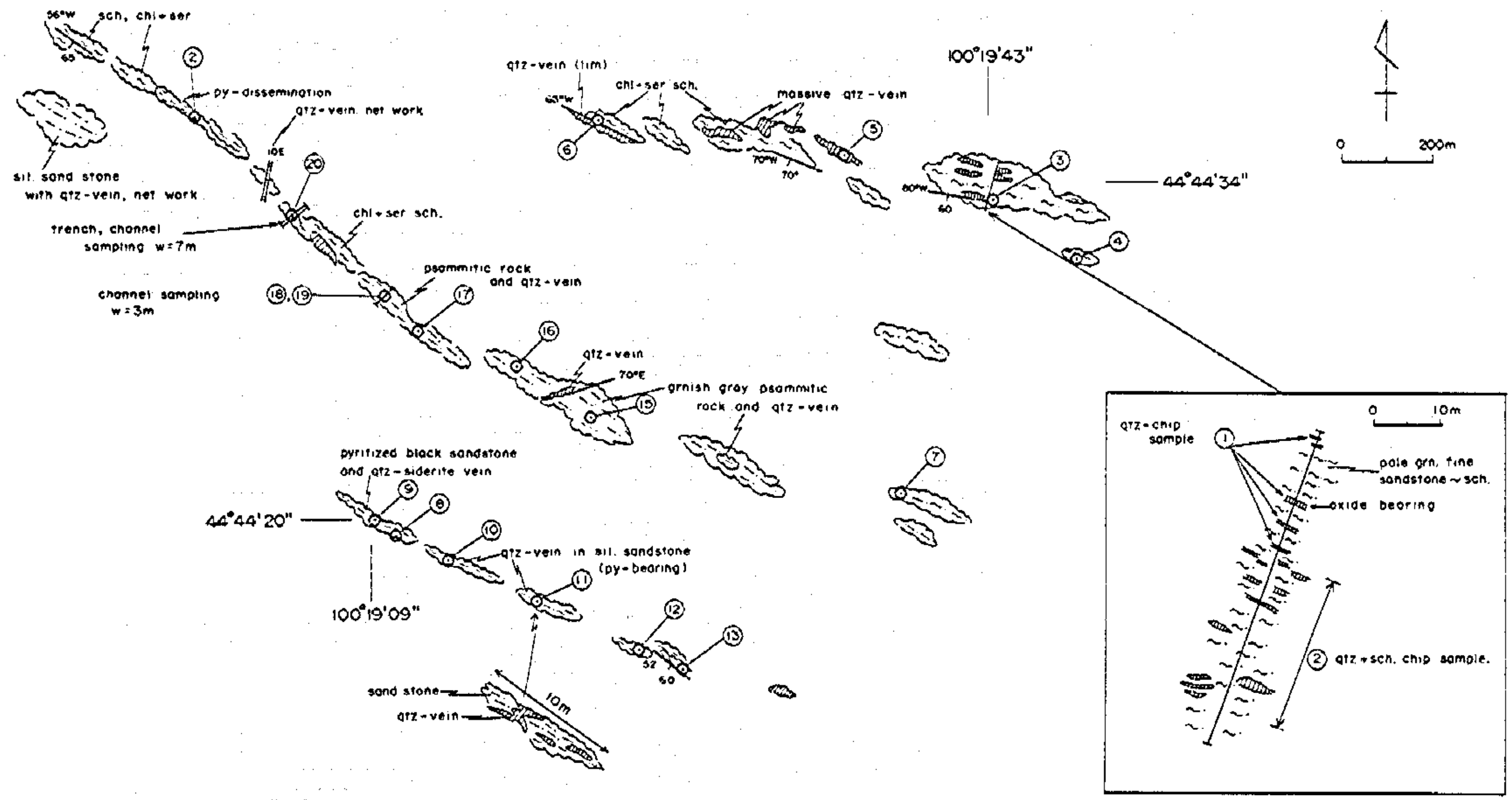


Fig. 16 Sketch Map of MS−78 (nearby 42, Saran Uul)



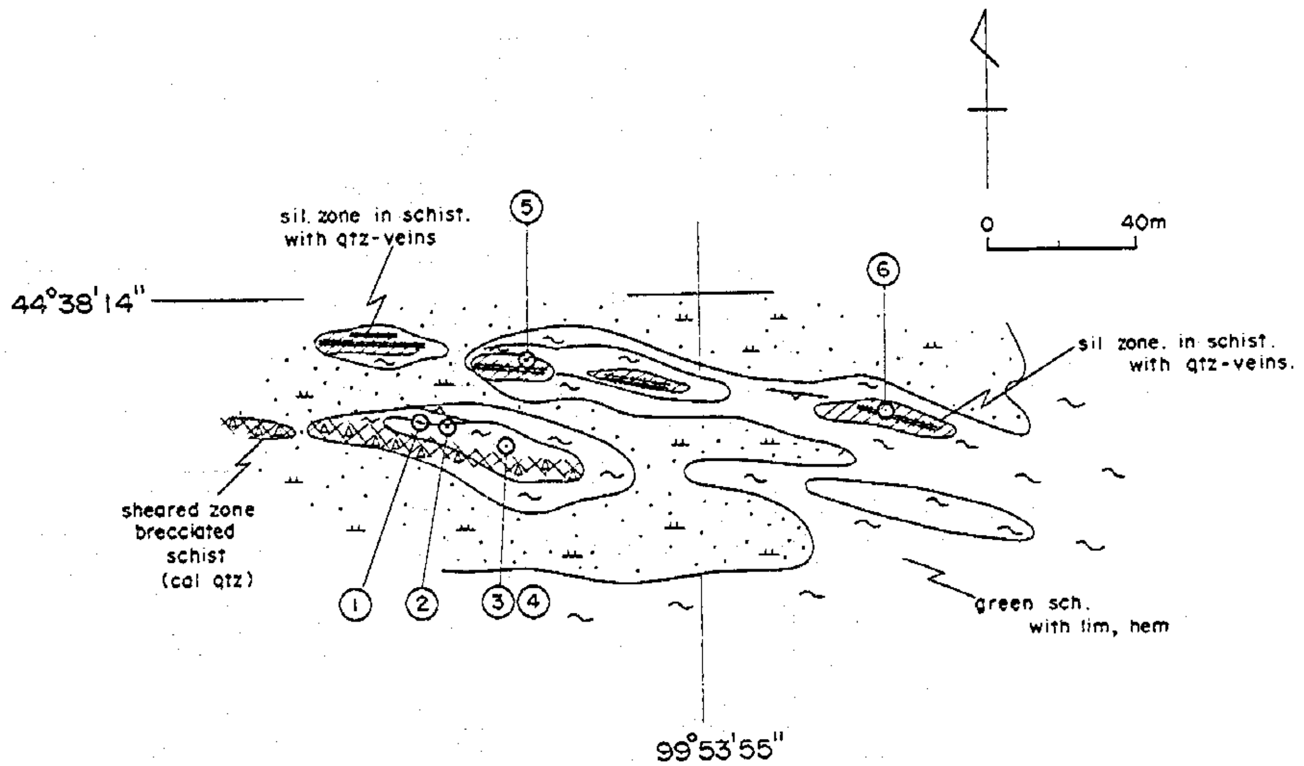
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-160-01	< 1	0.3	5	1	10	22	3	89	< 1
2	MS-160-02	19	1.5	4	< 1	< 10	21	32	83	< 1
3	MS-160-03	< 1	0.1	3	< 1	10	11	18	115	< 1
4	MS-160-04	< 1	0.3	26	15	10	24	6	285	< 1
5	MS-160-07	< 1	1.1	4	< 1	< 10	10	< 1	126	< 1
6	MS-160-09	226	2.9	3	< 1	< 10	11	5	104	< 1
7	MS-160-11	6	0.2	2	< 1	10	4	5	11	< 1
8	MS-160-12	15	0.3	2	< 1	< 10	9	1	13	< 1
9	MS-160-13	20	1.1	1	< 1	< 10	4	19	21	< 1
10	MS-160-14	208	0.6	2	< 1	< 10	10	24	17	< 1
11	MS-160-15	< 1	0.9	1	< 1	< 10	7	26	16	< 1
12	MS-160-17	7	0.2	2	< 1	< 10	9	77	18	< 1

Fig. 17 Sketch Map of MS-160 (593, Oortsog)



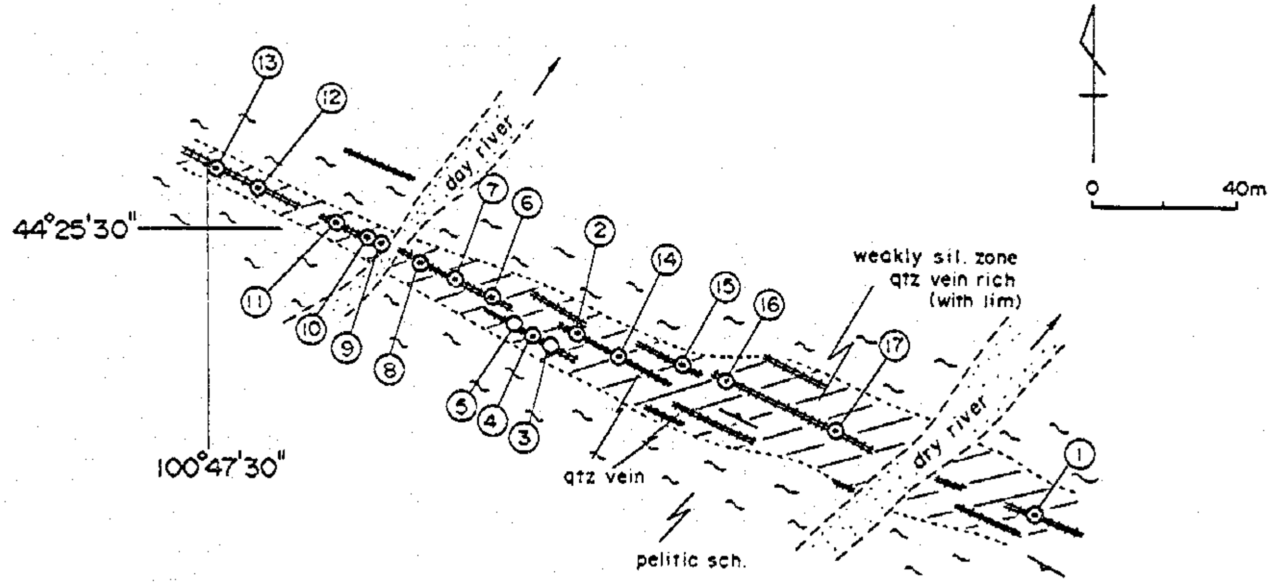
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-592-01	< 1	0.1	< 1	<	< 10	7	12	16	< 1
2	MS-592-02	< 1	< 0.1	< 1	< 1	< 10	10	7	15	2
3	MS-592-03	3	< 0.1	< 1	< 1	< 10	25	5	26	1
4	MS-592-05	< 1	< 0.1	2	< 1	< 10	3	4	63	< 1
5	MS-592-07	< 1	0.1	< 1	< 1	< 10	4	7	11	10
6	MS-592-09	1410	0.5	13	< 1	30	12	20	69	< 1
7	MS-592-10	103	< 0.1	3	< 1	< 10	6	17	41	< 1
8	MS-592-11	2	< 0.1	1	< 1	< 10	16	5	24	18
9	MS-592-14	< 1	0.2	< 1	< 1	< 10	34	5	25	< 1
10	MS-592-15	7	0.1	3	3	50	110	1	52	3
11	MS-592-17	21	0.8	3	< 1	< 10	64	6	96	6
12	MS-592-18	81	0.1	470	2	< 10	68	7	78	10
13	MS-592-19	1	< 0.1	6	< 1	< 10	7	3	14	< 1
14	MS-592-20	70	< 0.1	7	< 1	10	35	2	50	13

Fig. 18 Sketch Map of MS−592 (170, Bayangovi−1)



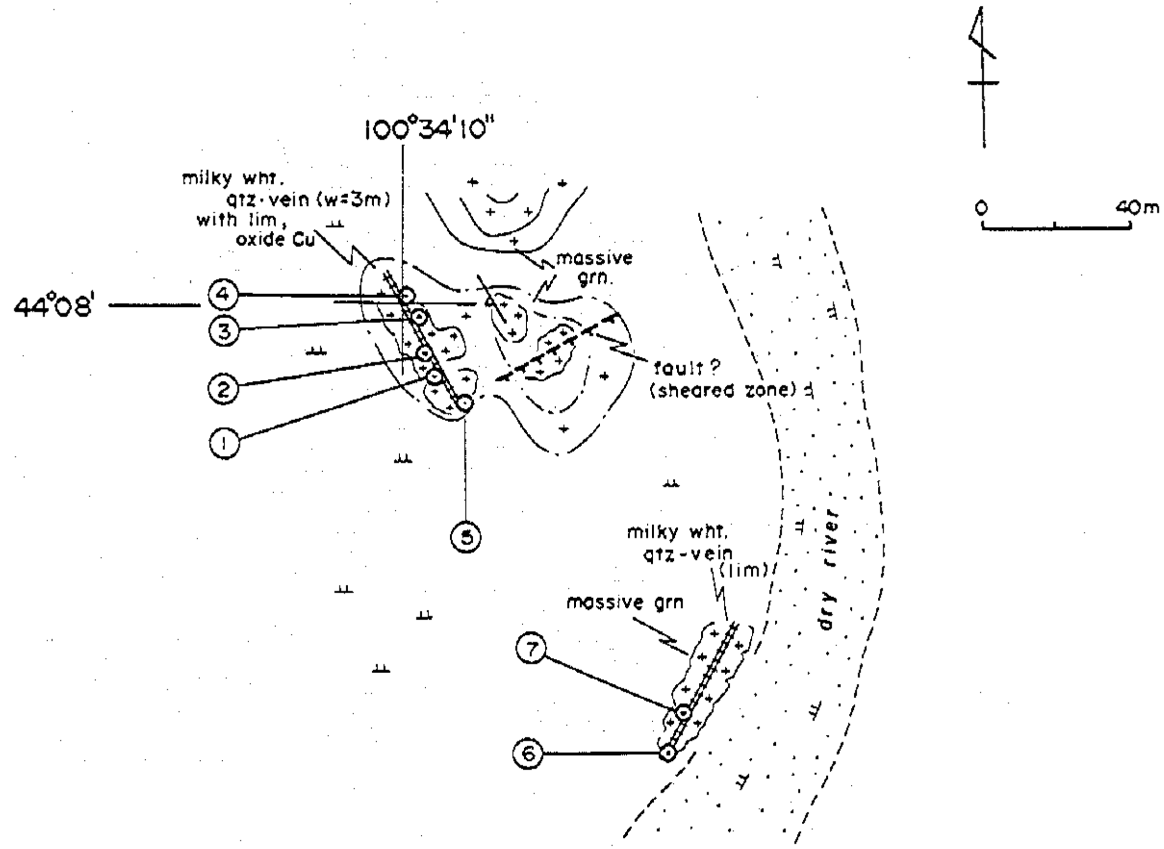
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-185-01	18	< 0.1	75	10	< 10	112	2	11	12
2	MS-185-03	< 1	< 0.1	3	< 1	< 10	6	3	4	< 1
3	MS-185-04	< 1	0.4	20	< 1	< 10	14	10	19	< 1
4	MS-185-05	< 1	< 0.1	1	< 1	< 10	4	2	4	< 1
5	MS-185-06	< 1	< 0.1	32	< 1	< 10	25	5	23	< 1

Fig. 19 Sketch Map of MS−185 (590)



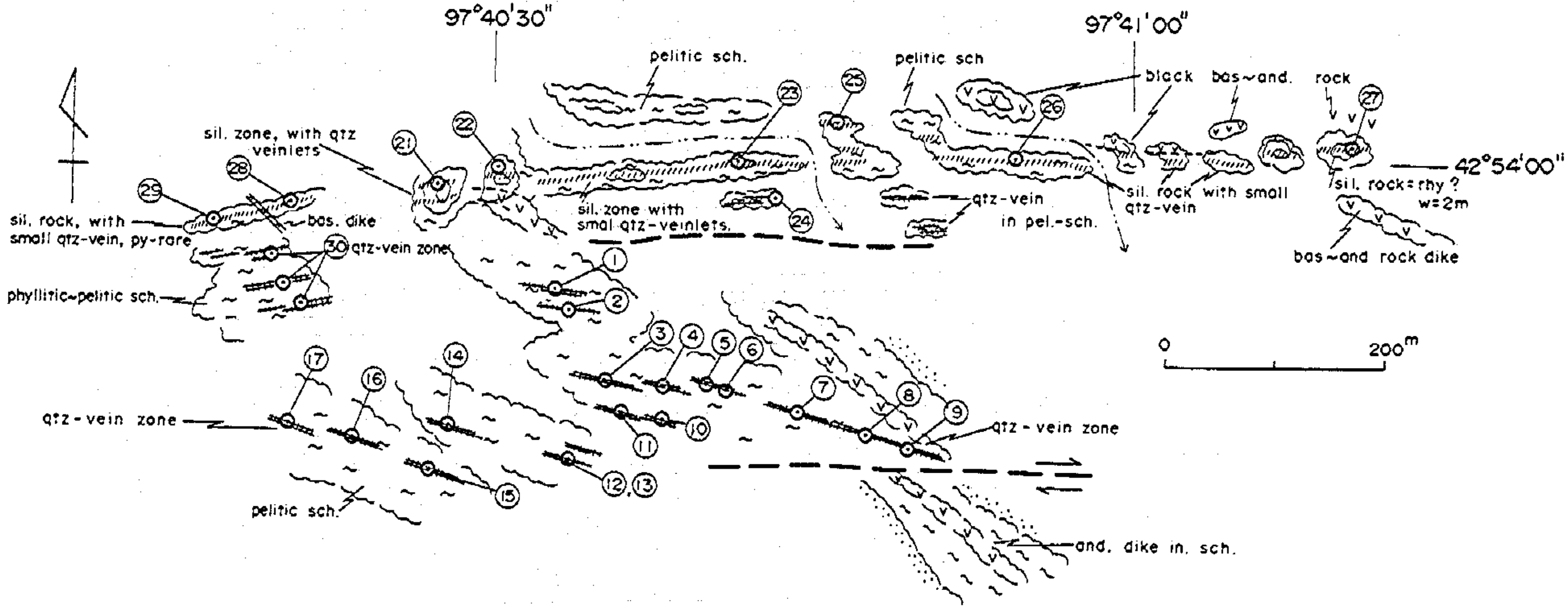
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-51-03	< 1	0.5	17	2	< 10	5	3	13	< 1
2	IA-51-05	< 1	0.7	31	< 1	10	9	14	10	8
3	IA-51-07	< 1	< 0.1	24	2	< 10	8	9	10	< 1
4	IA-51-09	4	0.1	76	2	40	61	61	26	11
5	IA-51-12	3	< 0.1	5	< 1	< 10	12	27	15	3
6	IA-51-13	102	< 0.1	4	< 1	< 10	5	2	12	< 1
7	IA-51-14	< 1	< 0.1	35	< 1	< 10	55	25	24	14
8	IA-51-15	32	< 0.1	6	< 1	< 10	10	22	13	17
9	IA-51-17	< 1	< 0.1	11	< 1	< 10	15	10	14	< 1

Fig. 20 Sketch Map of MS-591 (209, Hoh Tolgoi)



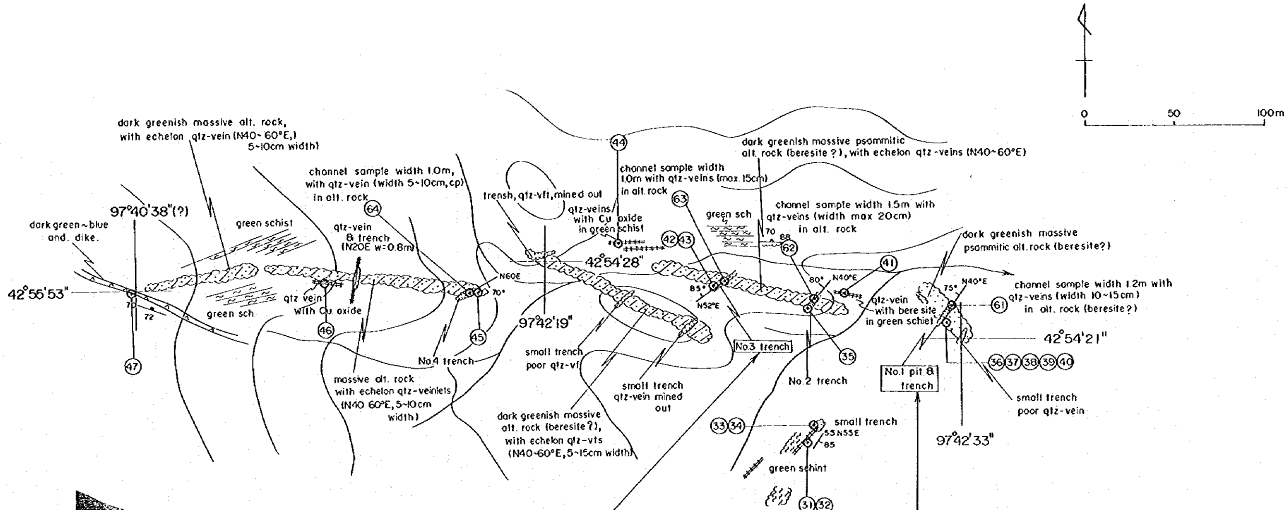
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-226-03	2	0.2	15	< 1	< 10	294	122	13	< 1
2	MS-226-04	4	1.2	4	< 1	< 10	5810	24	12	< 1
3	MS-226-07	5	0.7	9	< 1	< 10	3770	18	53	< 1

Fig. 21 Sketch Map of MS-226

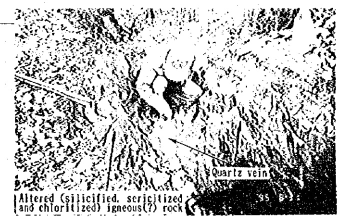


NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-572-01	< 1	0.3	12	3	30	13	14	31	3
2	MS-572-03	< 1	0.6	2	< 1	30	4	8	29	12
3	MS-572-05	< 1	< 0.1	2	< 1	10	7	6	20	< 1
4	MS-572-07	81	0.7	688	4	10	9	5	18	4
5	MS-572-09	< 1	< 0.1	7	< 1	140	6	3	5	17
6	MS-572-11	2	< 0.1	4	< 1	10	8	4	6	18
7	MS-572-13	7	0.2	18	< 1	20	19	3	45	12
8	MS-572-15	3	< 0.1	3	< 1	10	15	6	26	7
9	MS-572-17	2	0.1	3	< 1	30	46	5	57	< 1
10	MS-572-21	< 1	< 0.1	128	2	< 10	13	9	59	16
11	MS-572-23	< 1	0.2	45	< 1	10	15	10	38	4
12	MS-572-25	< 1	0.2	19	< 1	< 10	24	7	35	22
13	MS-572-29	< 1	0.6	66	1	20	33	10	41	29
14	MS-572-30	< 1	0.4	7	< 1	10	16	12	39	16

Fig. 22–(1) Sketch Map of Western MS–Hatan Suudal (572)



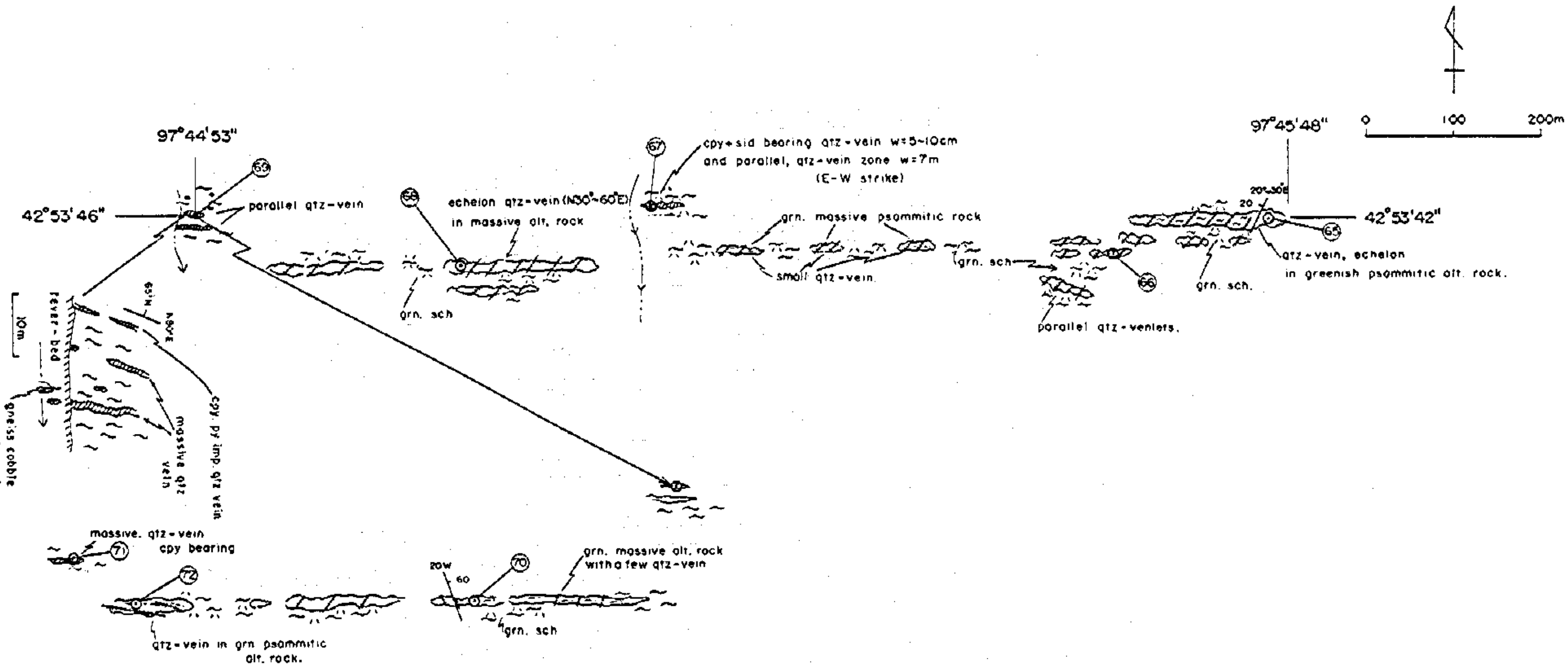
(looking SE to NE, No.3 Trench)



(looking NE to SW, No.1 Pit and Trench)

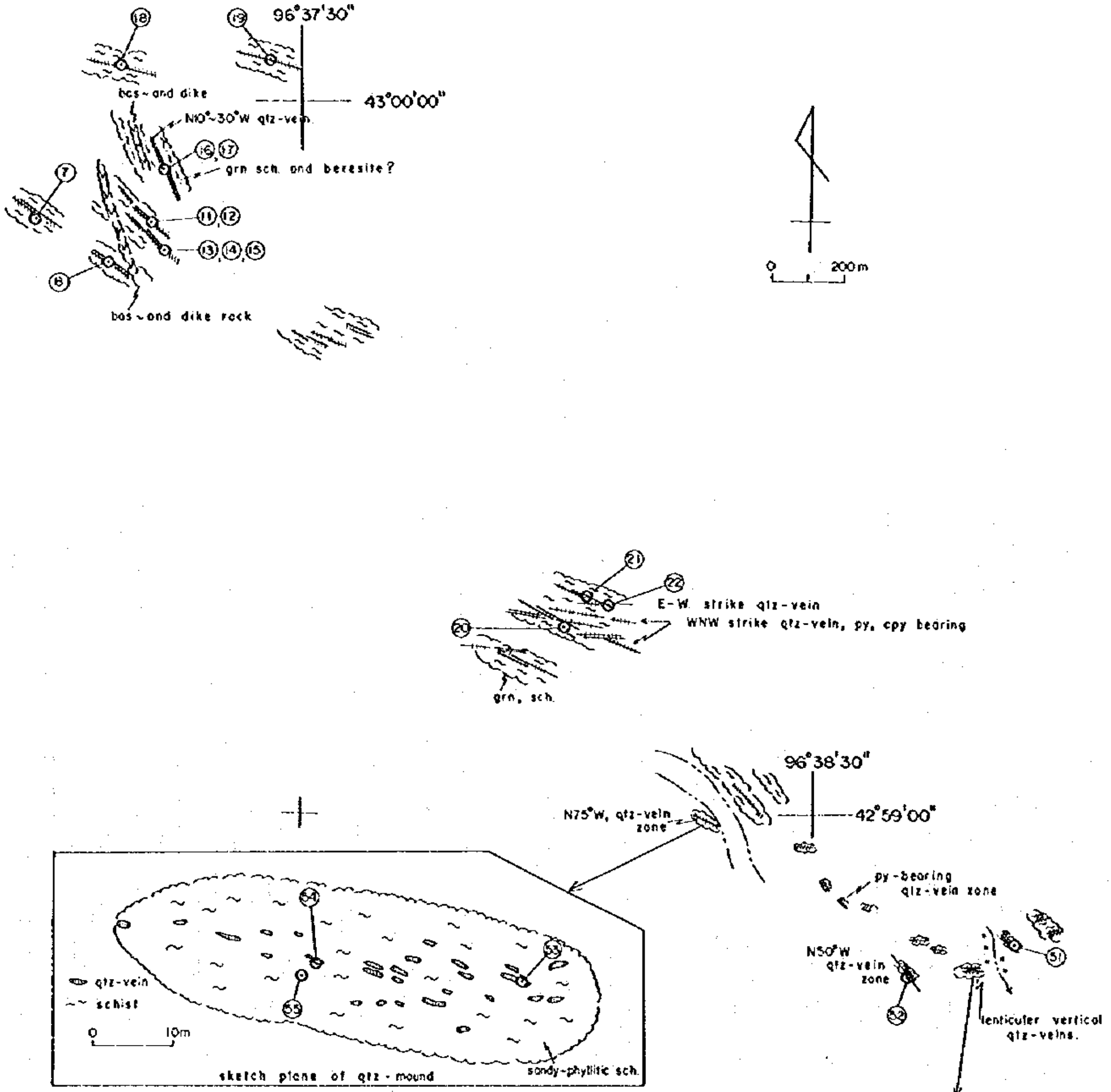
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
15	MS-572-31	3	0.1	2	< 1	< 10	55	< 1	4	4
16	MS-572-32	< 1	< 0.1	< 1	< 1	< 10	21	4	3	13
17	MS-572-33	2	0.2	1	4	70	18	4	8	< 1
18	MS-572-34	2	< 0.1	1	< 1	< 10	21	4	3	3
19	MS-572-35	79	< 0.1	16	< 1	30	24	6	94	4
20	MS-572-36	7970	10.8	2	< 1	400	10	8	32	8
21	MS-572-37	97	0.2	1	< 1	10	8	2	45	22
22	MS-572-38	135	0.5	2	< 1	30	10	3	27	32
23	MS-572-39	1830	1.6	1	< 1	70	9	2	8	23
24	MS-572-40	41300	19.0	< 1	< 1	160	7	6	11	26
25	MS-572-41	511	0.5	42	2	10	155	3	4	7
26	MS-572-42	100	0.2	1	< 1	10	11	3	5	12
27	MS-572-43	3	< 0.1	2	< 1	10	25	< 1	74	12
28	MS-572-44	7380	8.4	1	< 1	70	24800	1	3	22
29	MS-572-45	43500	1.1	< 1	< 1	10	1700	14	54	< 1
30	MS-572-46	16	1.7	< 1	< 1	80	858	5	4	11
31	MS-572-47	4	0.1	3	< 1	< 10	158	1	42	< 1
32	MS-572-61	1590	1.0	1	< 1	100	9	< 1	14	3
33	MS-572-62	314	0.2	1	< 1	10	4	4	33	4
34	MS-572-63	35	0.2	46	17	< 10	12	1	252	23
35	MS-572-64	1470	0.7	1	< 1	30	12	< 1	257	27

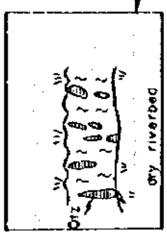
Fig. 22-(2) Sketch Map of Central MS--Hatan Suudal (572)



NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
36	MS-572-65	< 1	0.2	< 1	< 1	< 10	40	< 1	23	17
37	MS-572-67	< 1	< 0.1	1	< 1	< 10	21	1	8	8
38	MS-572-69	39	< 0.1	< 1	< 1	10	484	2	11	< 1
39	MS-572-71	25	< 0.1	2	< 1	< 10	326	1	12	21
40	MS-572-72	< 1	< 0.1	< 1	< 1	10	13	< 1	13	< 1

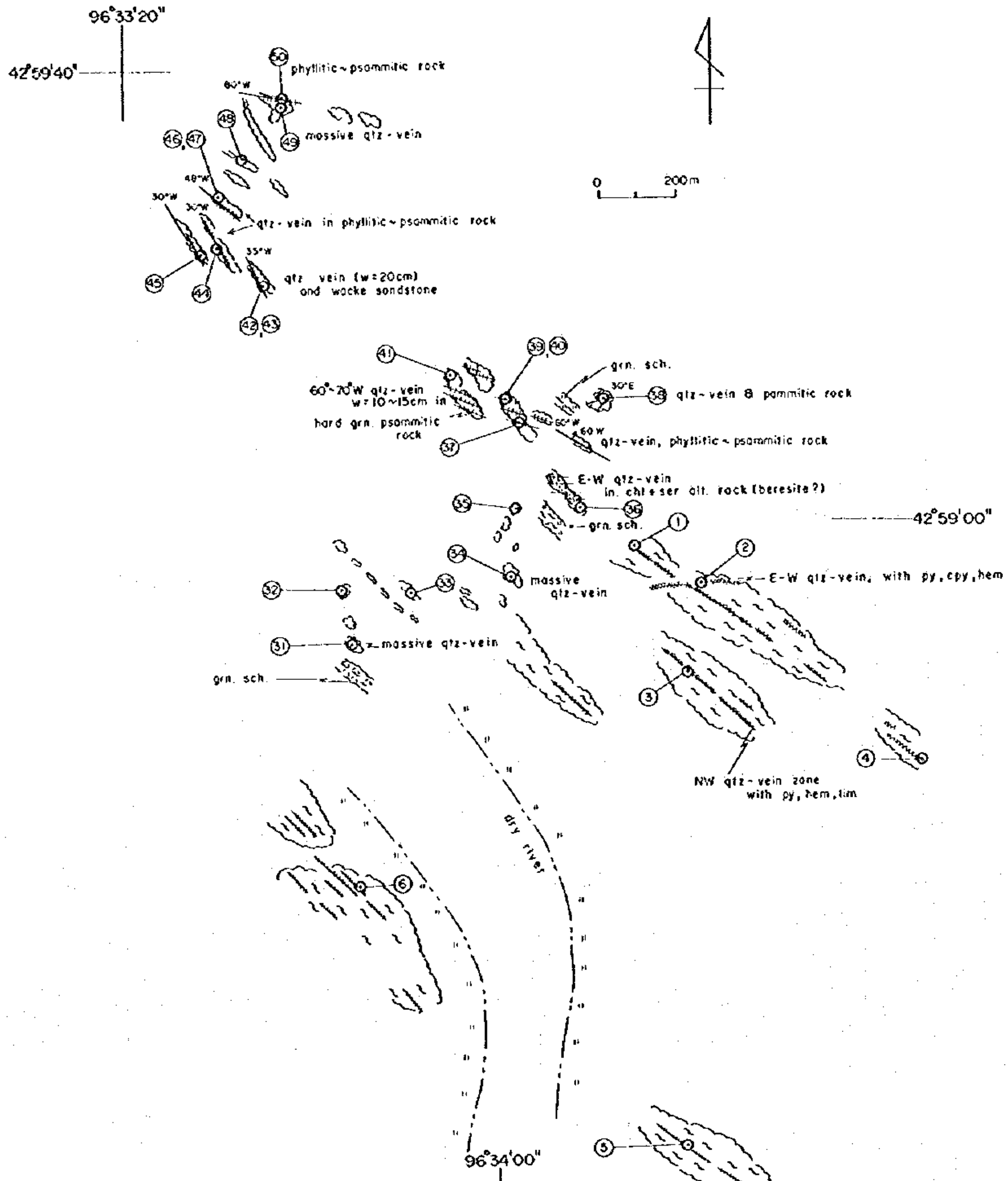
Fig. 22-(3)　Sketch Map of Eastern MS-Hatan Suudal (572)





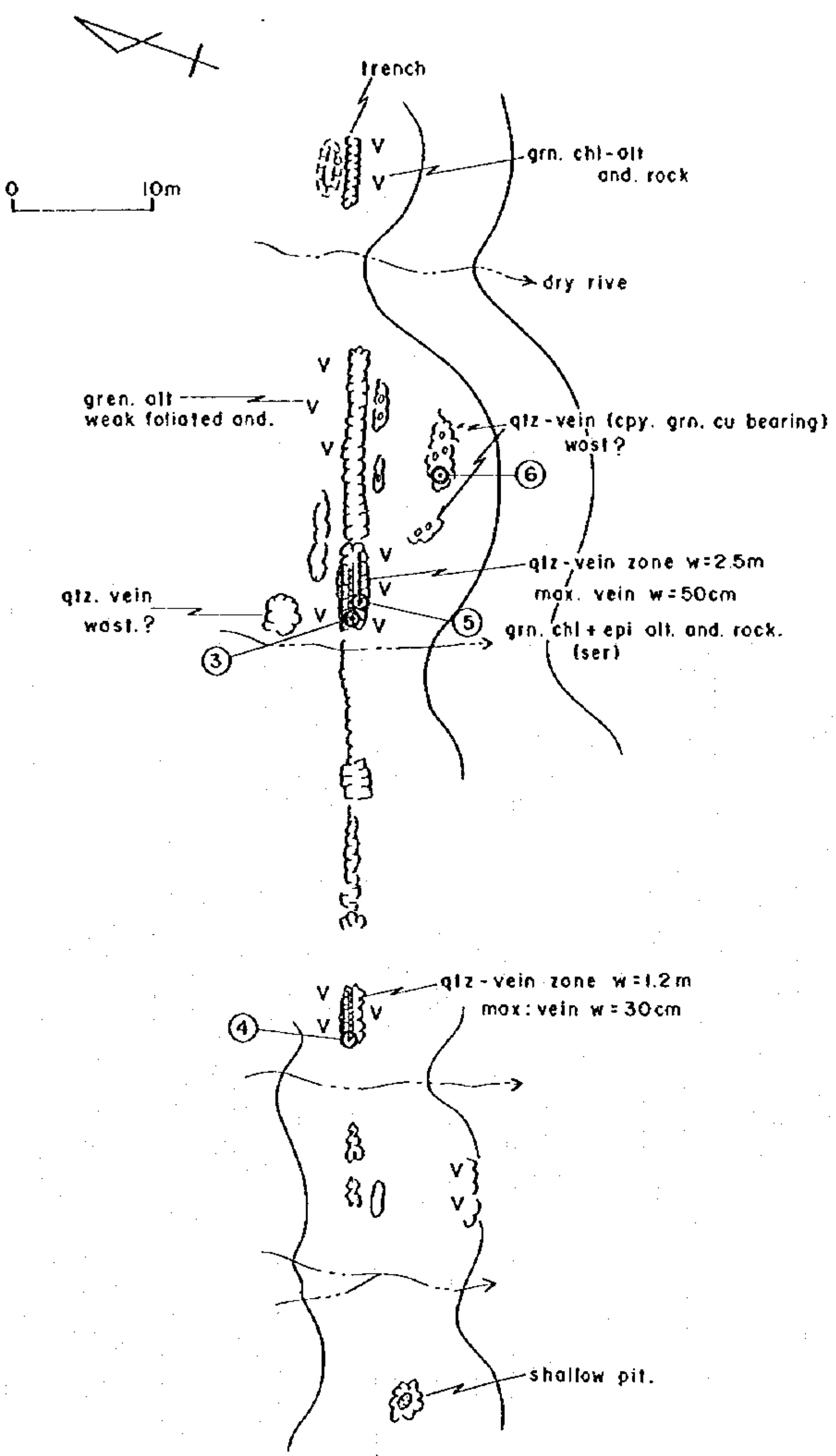
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
19	MS 571-07	1	0.1	2	< 1	150	8	< 1	8	< 1
20	MS 571-10	< 1	0.1	4	< 1	130	14	10	54	< 1
21	MS 571-14	< 1	0.1	3	< 1	10	5	19	20	< 1
22	MS 571-18	2	< 0.1	< 1	< 1	780	10	4	6	11
23	MS 571-20	1	1.7	3	6	20	578	< 1	6	< 1
24	MS 571-21	1	< 0.1	12	< 1	20	8	2	5	< 1
25	MS 571-22	155	0.5	< 1	< 1	10	91	7	13	9
26	MS 571-23	7	< 0.1	4	< 1	< 10	24	< 1	9	< 1
27	MS 571-51	< 1	< 0.1	< 1	< 1	< 10	6	3	9	< 1
28	MS 571-52	14	0.4	4	< 1	< 10	7	3	9	7
29	MS 571-53	< 1	0.5	< 1	< 1	< 10	6	< 1	7	< 1
30	MS 571-54	< 1	< 0.1	1	< 1	< 10	5	< 1	31	< 1
31	MS 571-55	< 1	< 0.1	12	< 1	10	33	9	92	< 1

Fig. 23-(1) Sketch Map of Western MS-Taliin Meltes (571)



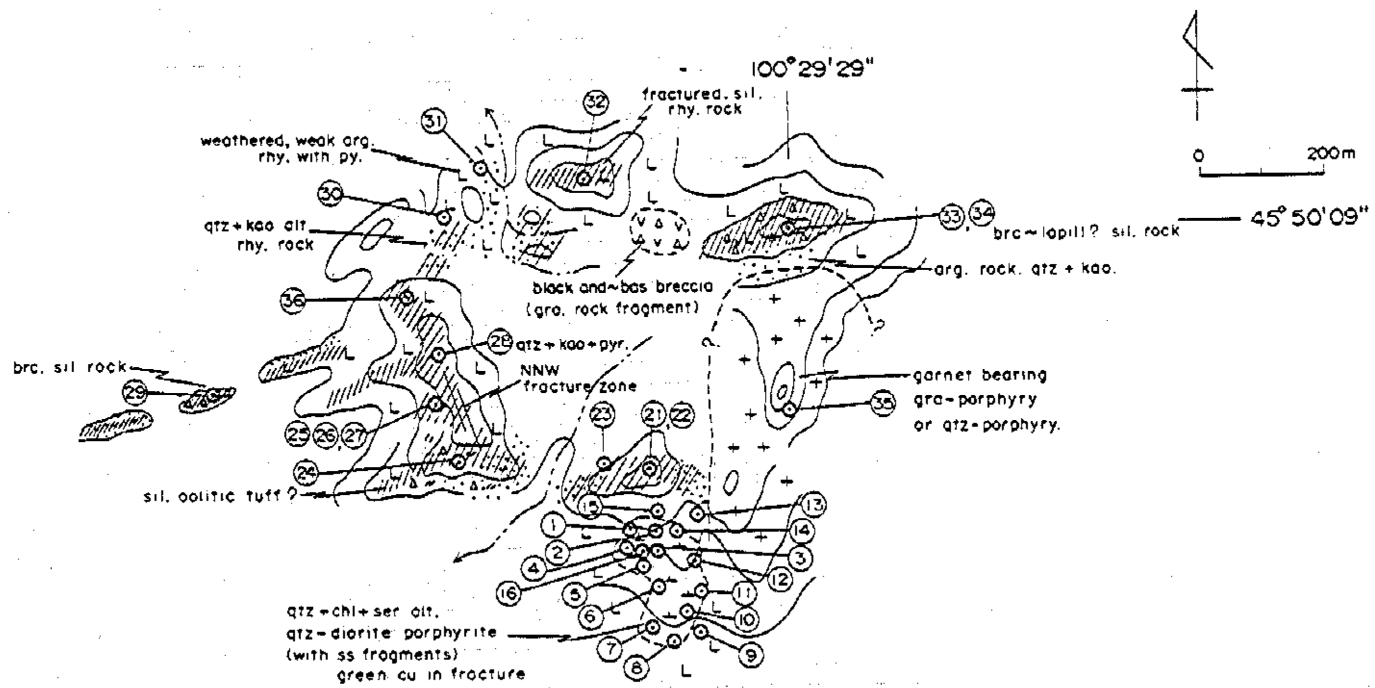
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS 571-02	3	0.1	31	1	< 10	34	6	5	36
2	MS 571-03	2	< 0.1	9	< 1	20	8	< 1	5	< 1
3	MS 571-04	2	< 0.1	< 1	< 1	10	20	< 1	14	< 1
4	MS 571-31	< 1	< 0.1	< 1	< 1	< 10	9	1	8	2
5	MS 571-33	< 1	< 0.1	< 1	< 1	< 10	7	1	4	< 1
6	MS 571-35	< 1	< 0.1	2	< 1	< 10	11	5	5	4
7	MS 571-36	< 1	< 0.1	10	< 1	< 10	11	3	41	< 1
8	MS 571-37	< 1	< 0.1	3	< 1	< 10	7	4	12	3
9	MS 571-38	< 1	< 0.1	4	< 1	< 10	8	2	32	< 1
10	MS 571-39	< 1	< 0.1	2	< 1	< 10	5	2	11	< 1
11	MS 571-40	< 1	< 0.1	16	< 1	10	17	7	61	< 1
12	MS 571-42	< 1	< 0.1	1	< 1	< 10	7	32	8	< 1
13	MS 571-43	< 1	< 0.1	9	< 1	10	22	6	116	13
14	MS 571-45	< 1	< 0.1	< 1	< 1	< 10	7	3	7	1
15	MS 571-46	< 1	< 0.1	< 1	< 1	< 10	7	< 1	5	< 1
16	MS 571-47	< 1	< 0.1	7	< 1	< 10	15	14	67	< 1
17	MS 571-49	13	< 0.1	< 1	< 1	< 10	6	2	5	6
18	MS 571-50	< 1	0.1	3	< 1	10	18	6	66	23

Fig. 23-(2) Sketch Map of Eastern MS-Taliin Meltes (571)



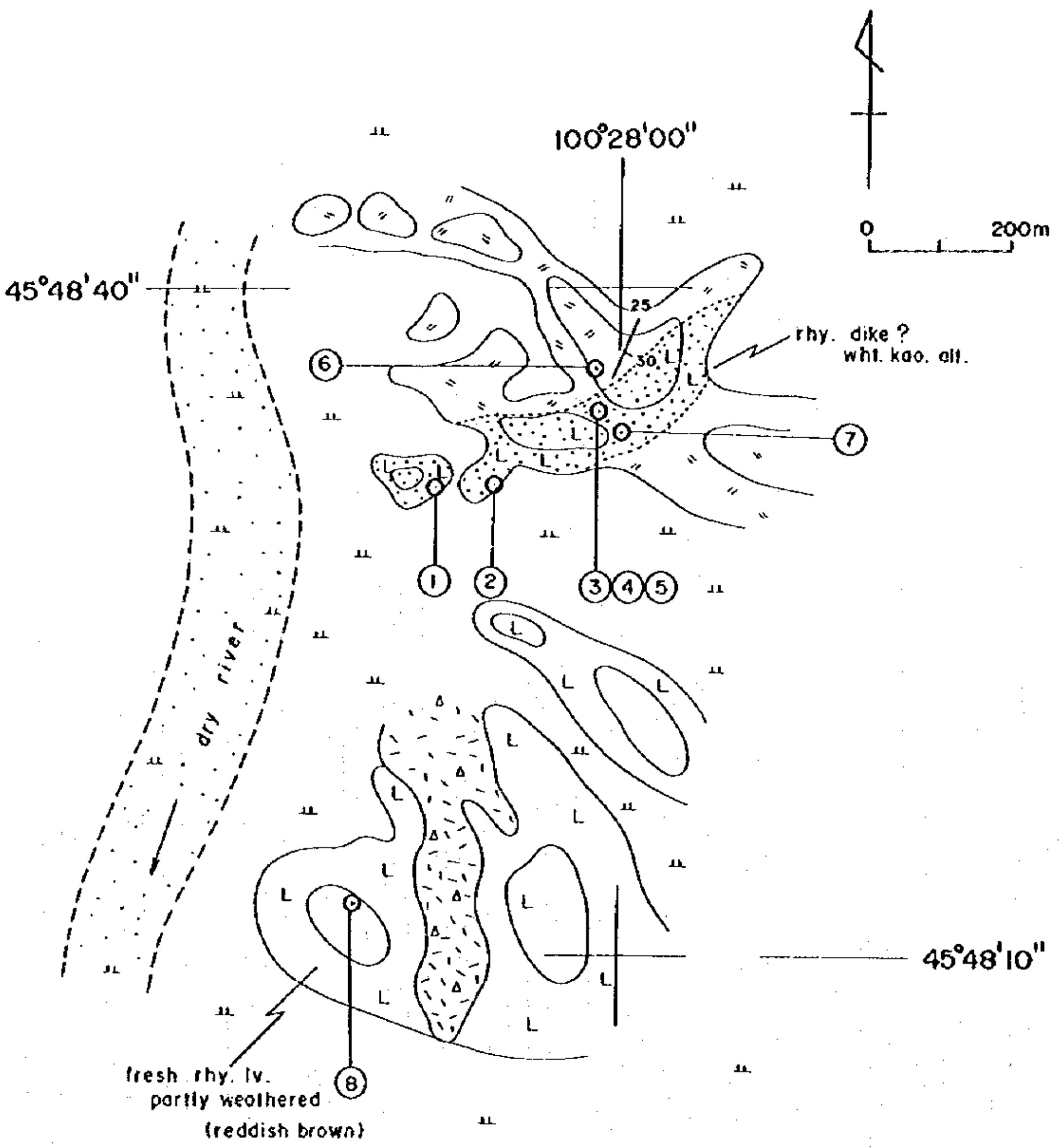
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	MS-575-01	5	0.2	4	4	40	2590	42	6	< 1
2	MS-575-03	4	< 0.1	26	< 1	< 10	172	3	6	5
3	MS-575-04	5	0.2	22	< 1	10	2540	2	12	< 1
4	MS-575-06	14	0.1	16	< 1	10	236	28	31	20

Fig. 24 Sketch Map of MS--575 (Hadad Gun Hudag)



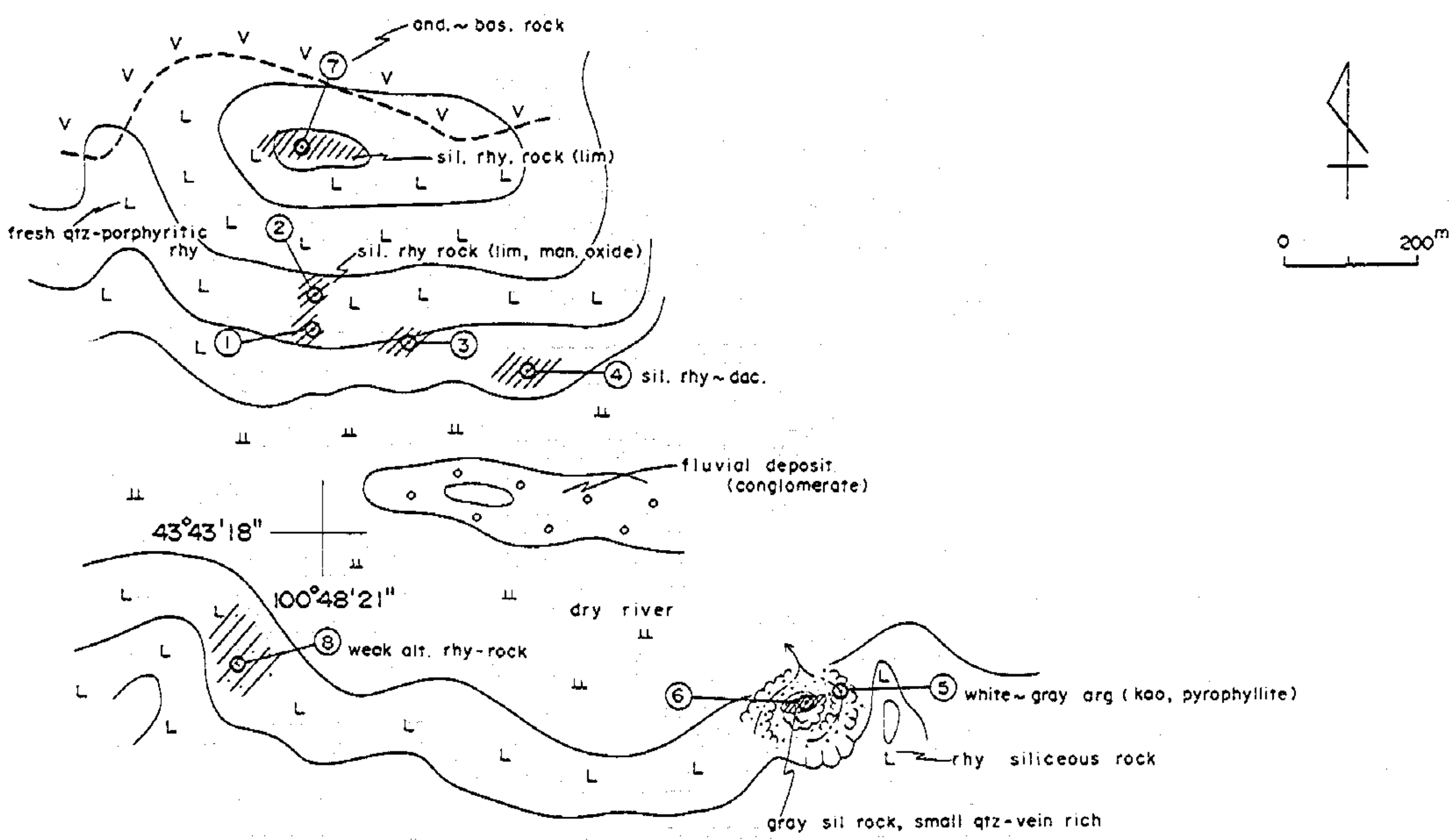
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-68-01	193	0.9	16	< 1	20	105	12	88	< 1
2	IA-68-02	113	0.7	7	< 1	< 10	303	20	28	< 1
3	IA-68-04	250	0.8	10	< 1	20	833	3	151	< 1
4	IA-68-06	329	0.9	43	< 1	20	429	23	537	6
5	IA-68-08	99	1.0	2	< 1	10	352	5	149	< 1
6	IA-68-10	380	1.5	8	< 1	< 10	1120	4	192	13
7	IA-68-12	104	0.6	4	< 1	60	45	6	232	< 1
8	IA-68-14	38	0.9	91	39	30	464	6	172	< 1
9	IA-68-15	80	0.5	28	< 1	< 10	20	17	61	< 1
10	IA-68-16	170	0.5	28	1	230	290	2	188	< 1
11	IA-68-21	127	< 0.1	4	< 1	10	23	7	52	< 1
12	IA-68-23	301	0.1	3	< 1	10	33	7	85	< 1
13	IA-68-25	43	0.5	1	< 1	< 10	5	2	72	< 1
14	IA-68-29	33	0.2	3	< 1	10	7	5	95	< 1
15	IA-68-31	< 1	0.7	54	< 1	190	7	34	297	< 1
16	IA-68-33	79	< 0.1	3	< 1	10	6	5	25	5
17	IA-68-36	22	0.3	< 1	< 1	< 10	5	8	16	< 1

Fig. 25 Sketch Map of IA-68



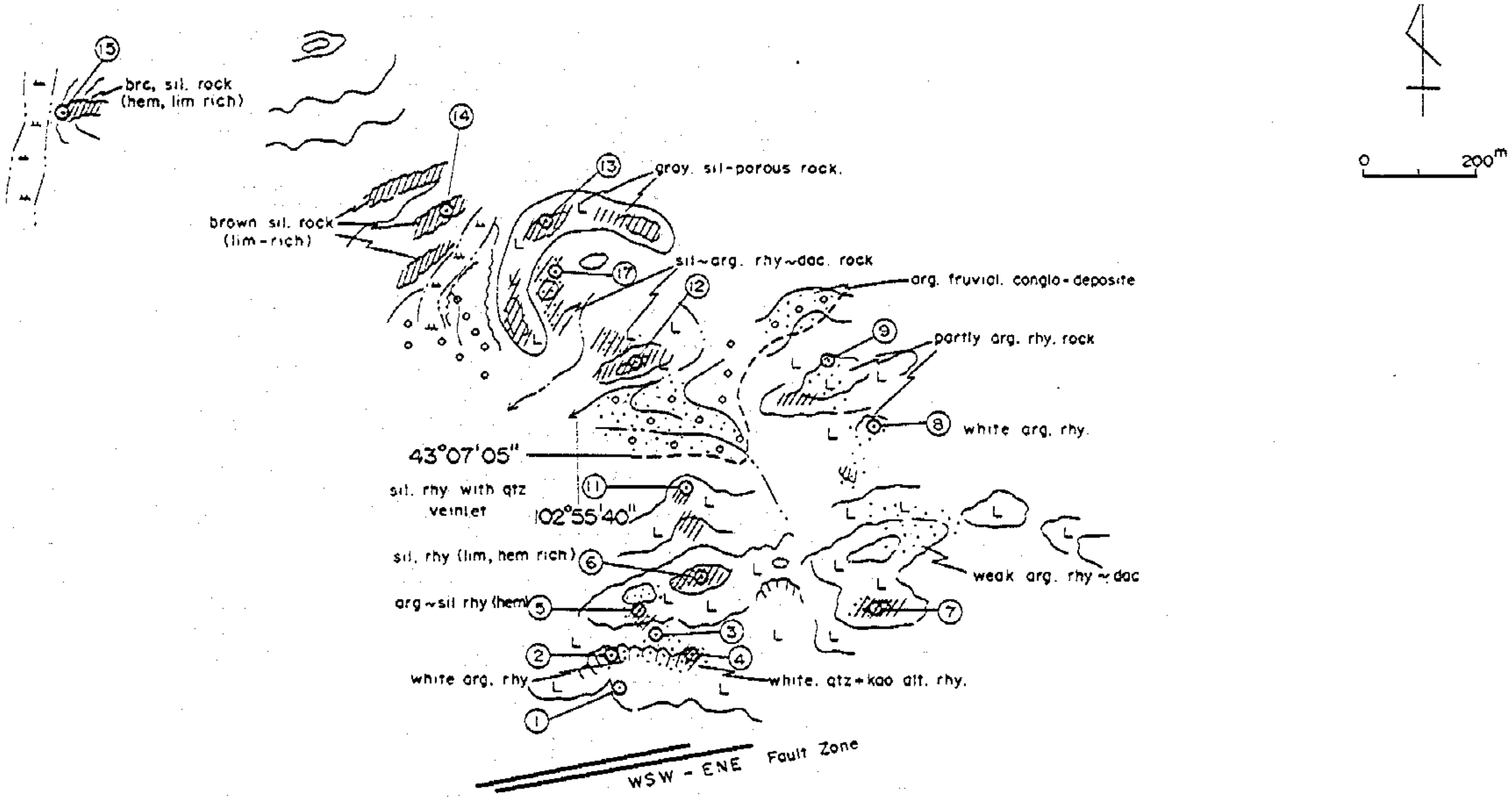
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-69-01	< 1	< 0.1	41	< 1	60	31	4	41	14
2	IA-69-02	< 1	< 0.1	49	< 1	60	32	16	41	< 1
3	IA-69-03	< 1	0.2	165	8	20	14	33	39	< 1
4	IA-69-04	< 1	0.3	171	27	20	14	14	60	14
5	IA-69-05	< 1	0.4	260	67	70	15	16	528	14

Fig. 26 Sketch Map of IA–69



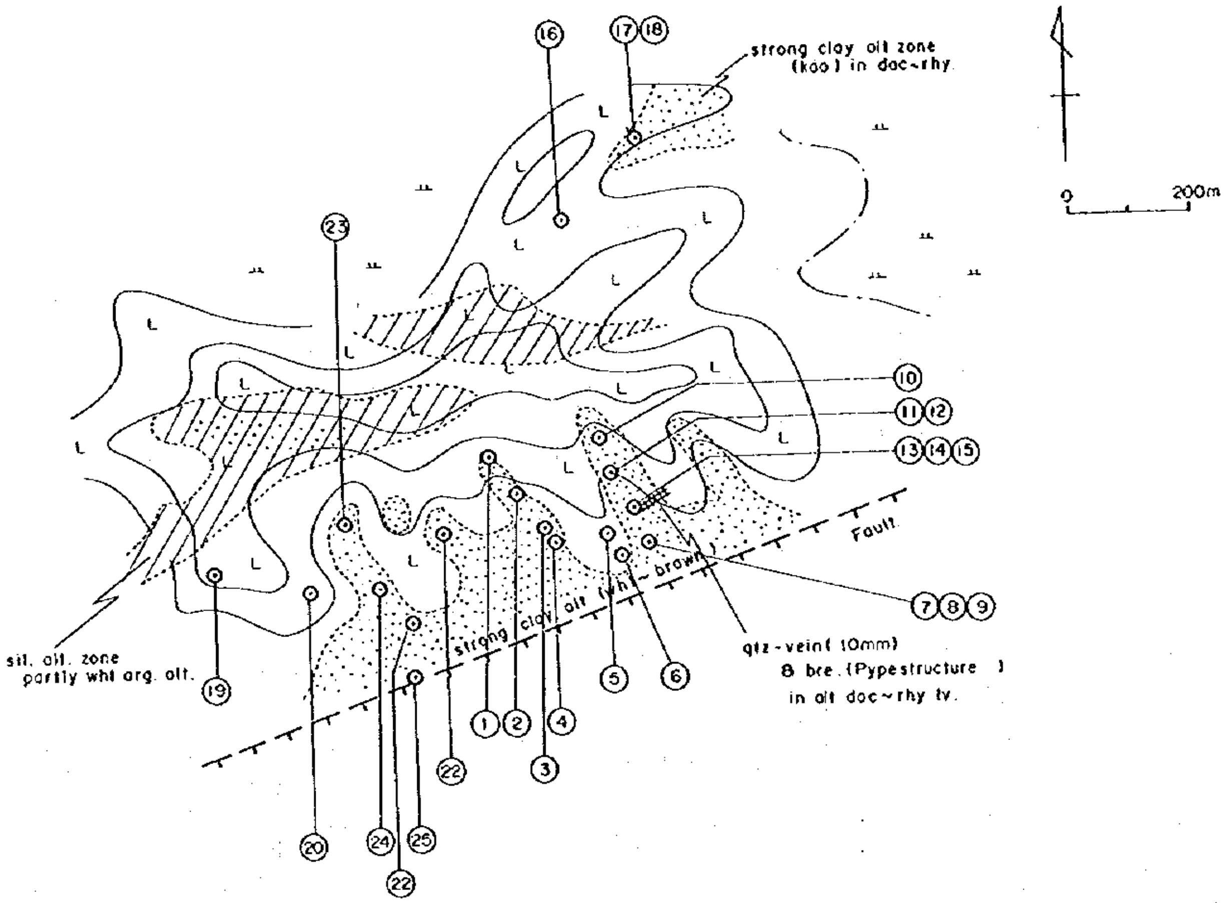
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-60-03	< 1	0.7	26	< 1	< 10	5	9	35	13
2	IA-60-04	< 1	0.2	42	< 1	50	4	19	32	< 1
3	IA-60-05	< 1	0.7	7	5	10	40	7	13	< 1
4	IA-60-06	< 1	0.3	4	1	< 10	9	3	11	< 1
5	IA-60-07	< 1	0.5	2	< 1	10	4	5	36	3
6	IA-60-10	< 1	0.7	21	< 1	10	163	5	21	< 1

Fig. 27 Sketch Map of IA–60



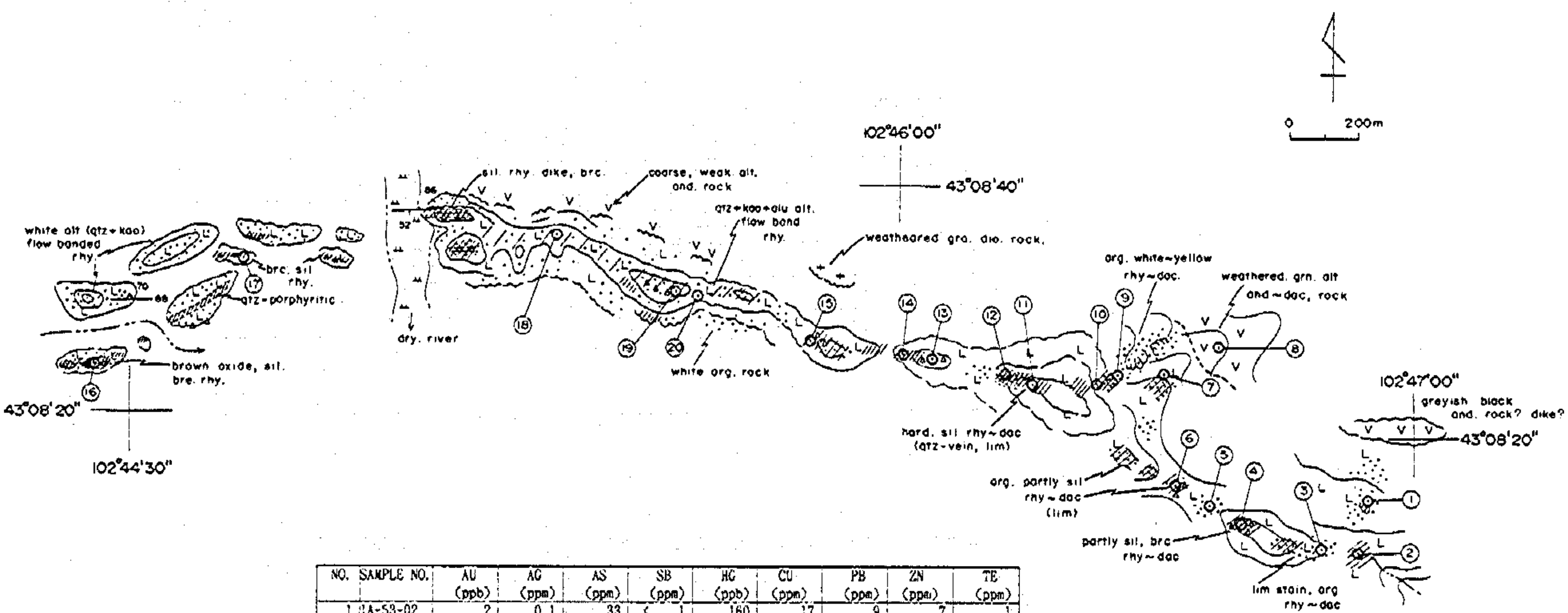
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-51-03	< 1	0.5	17	2	< 10	5	3	13	< 1
2	IA-51-05	< 1	0.7	31	< 1	10	9	14	10	8
3	IA-51-07	< 1	< 0.1	24	2	< 10	8	9	10	< 1
4	IA-51-09	4	0.1	76	2	40	61	61	26	11
5	IA-51-12	3	< 0.1	5	< 1	< 10	12	27	15	3
6	IA-51-13	102	< 0.1	4	< 1	< 10	5	2	12	< 1
7	IA-51-14	< 1	< 0.1	35	< 1	< 10	55	25	24	14
8	IA-51-15	32	< 0.1	6	< 1	< 10	10	22	13	17
9	IA-51-17	< 1	< 0.1	11	< 1	< 10	15	10	14	< 1

Fig. 28 Sketch Map of IA–51



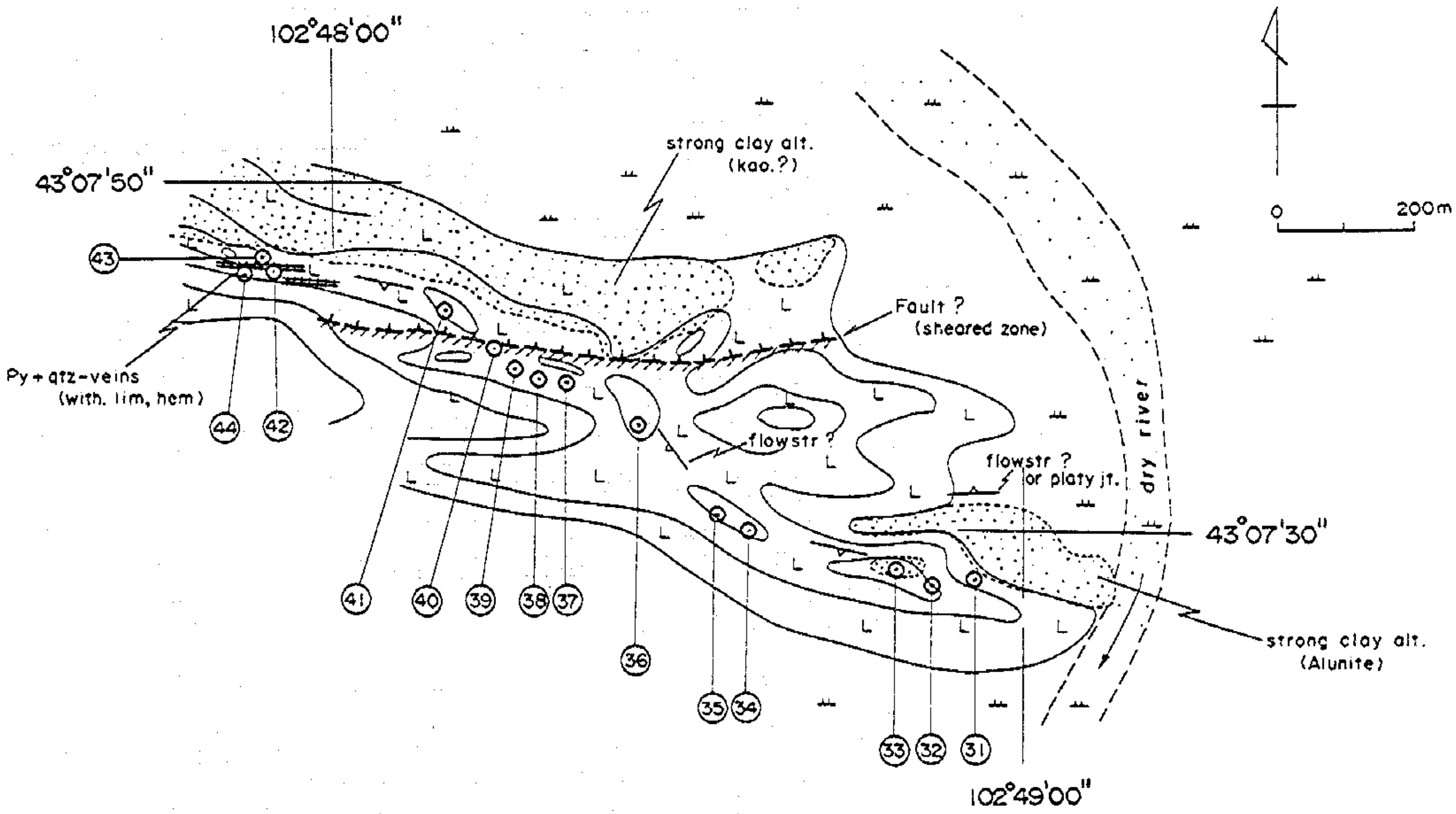
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-52-01	2	0.4	15	< 1	30	11	14	3	24
2	IA-52-02	< 1	< 0.1	35	< 1	< 10	7	6	7	10
3	IA-52-03	1	0.3	12	< 1	10	7	18	1	2
4	IA-52-04	4	0.2	29	< 1	< 10	4	25	6	< 1
5	IA-52-05	3	0.4	13	< 1	< 10	8	15	6	52
6	IA-52-06	1	< 0.1	202	< 1	< 10	22	67	5	< 1
7	IA-52-07	12	< 0.1	24	< 1	< 10	6	100	119	17
8	IA-52-08	< 1	0.1	45	4	< 10	23	123	4	40
9	IA-52-09	< 1	0.1	28	25	10	34	42	7	38
10	IA-52-10	< 1	0.6	6	4	< 10	15	146	3	21
11	IA-52-11	< 1	< 0.1	6	< 1	< 10	13	16	4	2
12	IA-52-12	< 1	0.5	7	2	< 10	17	25	5	16
13	IA-52-13	2	< 0.1	110	1	< 10	18	64	4	< 1
14	IA-52-14	10	0.2	17	< 1	20	2	12	3	< 1
15	IA-52-15	1440	8.8	17	2	10	6	23	3	3
16	IA-52-16	3	0.2	2	< 1	< 10	6	1	4	< 1
17	IA-52-18	231	2.0	16	< 1	< 10	8	23	9	< 1
18	IA-52-19	< 1	< 0.1	7	< 1	< 10	3	2	3	< 1
19	IA-52-20	< 1	0.1	11	3	< 10	10	51	3	22
20	IA-52-21	< 1	< 0.1	8	< 1	< 10	5	9	4	20
21	IA-52-22	< 1	0.8	9	< 1	< 10	11	23	5	8
22	IA-52-23	93	0.7	181	< 1	< 10	7	18	3	< 1
23	IA-52-24	< 1	0.3	33	< 1	< 10	4	44	5	12
24	IA-52-25	< 1	0.6	13	< 1	10	31	37	10	15

Fig. 29 Sketch Map of IA–52



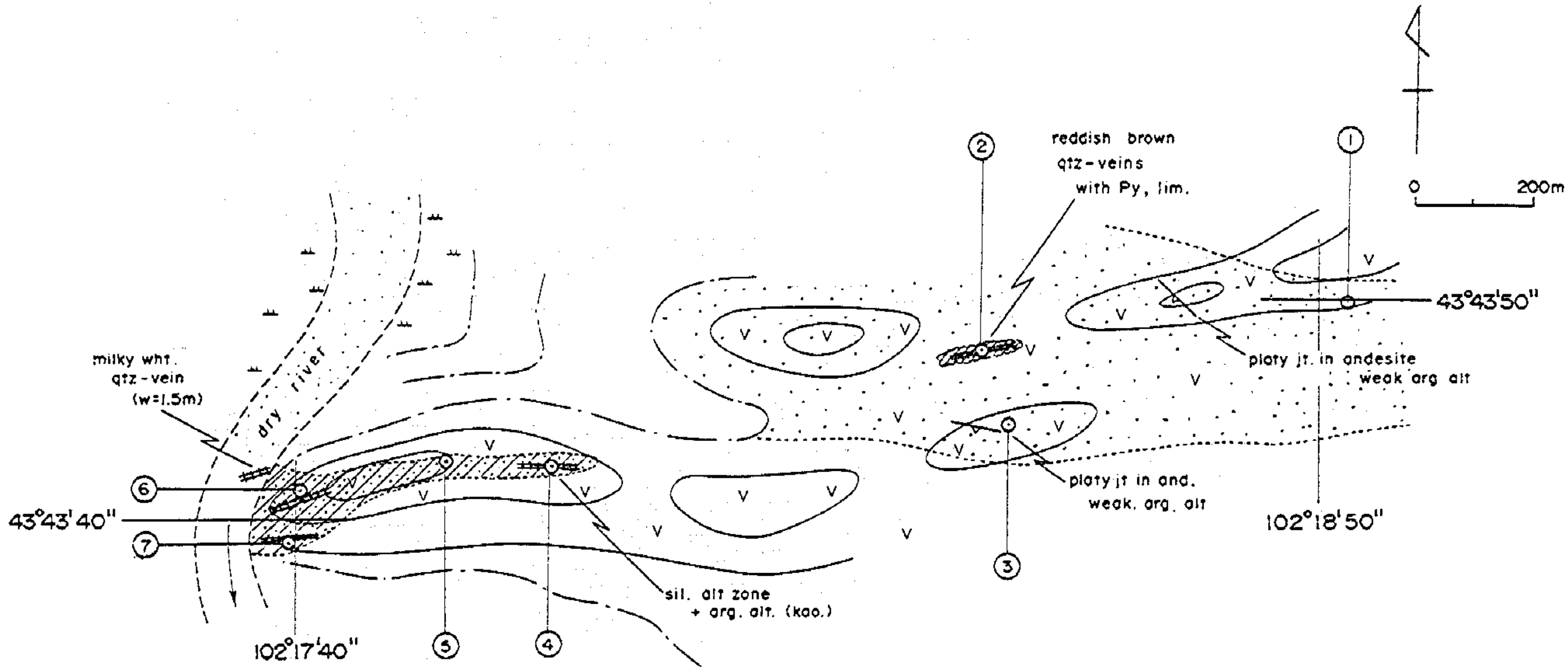
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-53-02	2	0.1	33	< 1	160	17	9	7	1
2	IA-53-04	< 1	< 0.1	24	3	10	26	14	10	23
3	IA-53-07	< 1	< 0.1	208	1	210	8	9	7	1
4	IA-53-11	< 1	0.1	48	1	30	6	11	35	< 1
5	IA-53-13	< 1	< 0.1	202	24	10	8	14	1500	18
6	IA-53-14	< 1	< 0.1	445	4	10	19	11	8	< 1
7	IA-53-18	2	0.6	59	< 1	< 10	24	39	27	< 1
8	IA-53-19	< 1	< 0.1	27	3	570	15	3	7	13

Fig. 30-(1) Sketch Map of Western IA-53



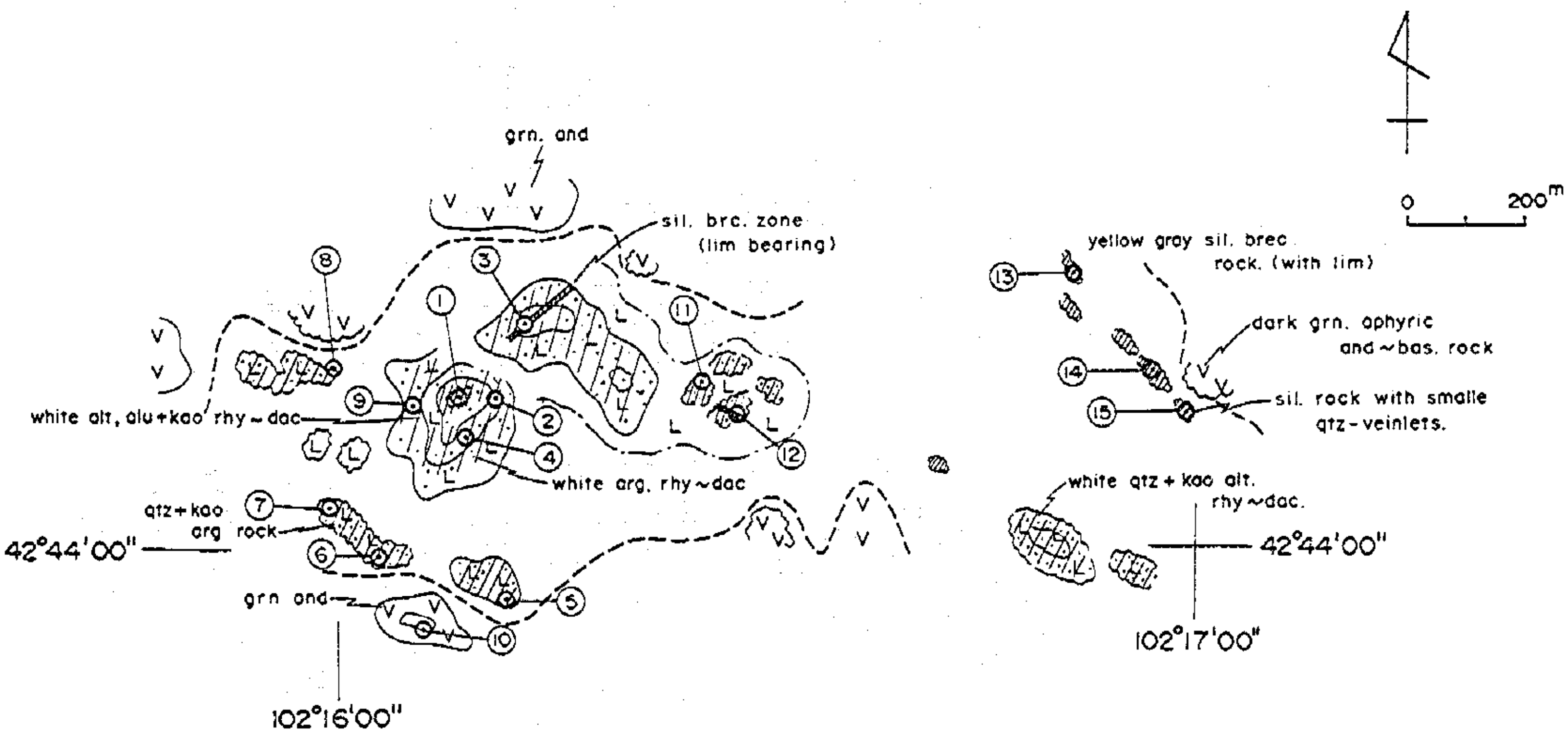
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
9	IA-53-34	< 1	0.5	31	17	10	3	6	1	< 1
10	IA-53-36	23	0.1	12	2	< 10	8	10	2	10
11	IA-53-38	< 1	0.5	8	< 1	< 10	5	5	1	< 1
12	IA-53-42	34	0.2	168	4	< 10	4	2	3	9
13	IA-53-43	50	0.3	7	1	20	12	26	10	6
14	IA-53-44	< 1	0.2	19	2	< 10	5	4	9	7

Fig. 30-(2) Sketch Map of Eastern IA-53



NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-54-03	10	0.3	7	< 1	160	6	2	5	< 1
2	IA-54-05	< 1	0.5	10	< 1	40	9	4	8	< 1
3	IA-54-07	12	0.1	9	< 1	10	6	4	4	2

Fig. 31 Sketch Map of IA–54



NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-55-01	< 1	< 0.1	18	< 1	10	7	8	7	9
2	IA-55-03	< 1	< 0.1	3	< 1	< 10	5	2	6	5
3	IA-55-04	< 1	< 0.1	14	< 1	< 10	16	9	2	4
4	IA-55-07	< 1	0.4	19	< 1	30	44	8	71	11
5	IA-55-13	< 1	0.6	54	< 1	< 10	33	1	4	3
6	IA-55-15	< 1	0.4	7	< 1	< 10	6	2	6	32
7	IA-55-16	< 1	< 0.1	2	< 1	< 10	11	5	8	< 1

Fig. 32 Sketch Map of IA-55

NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-61-04	< 1	< 0.1	4	1	130	10	2	7	22
2	IA-61-07	2	0.3	11	2	1120	17	2	7	14
3	IA-61-10	< 1	< 0.1	16	< 1	80	35	11	6	10
4	IA-61-13	< 1	< 0.1	63	7	30	23	3	7	8
5	IA-61-14	4	0.5	55	< 1	30	34	19	25	34
6	IA-61-15	< 1	< 0.1	8	1	10	8	2	6	15
7	IA-61-18	3	0.1	37	2	10	11	2	2	24

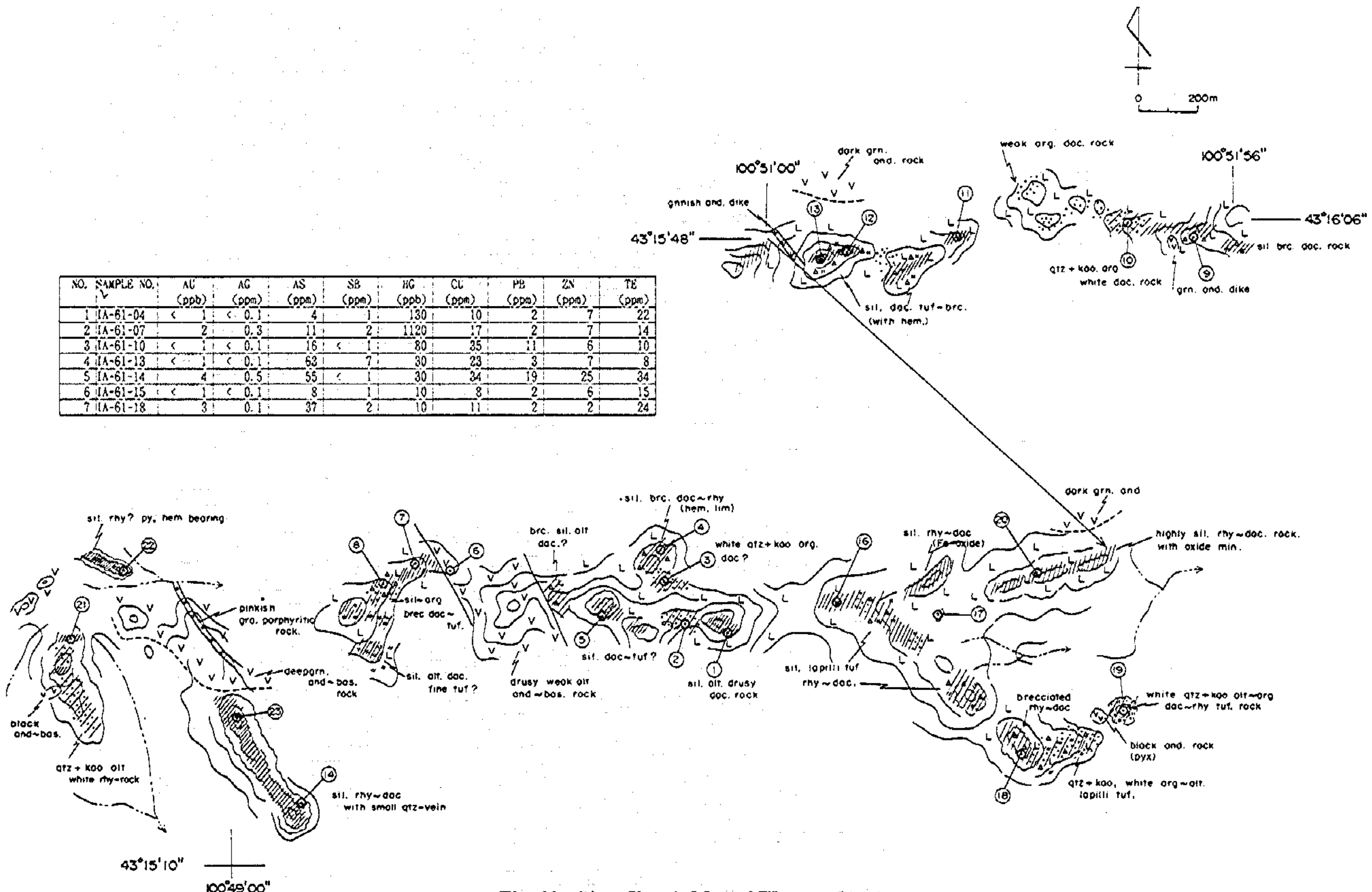
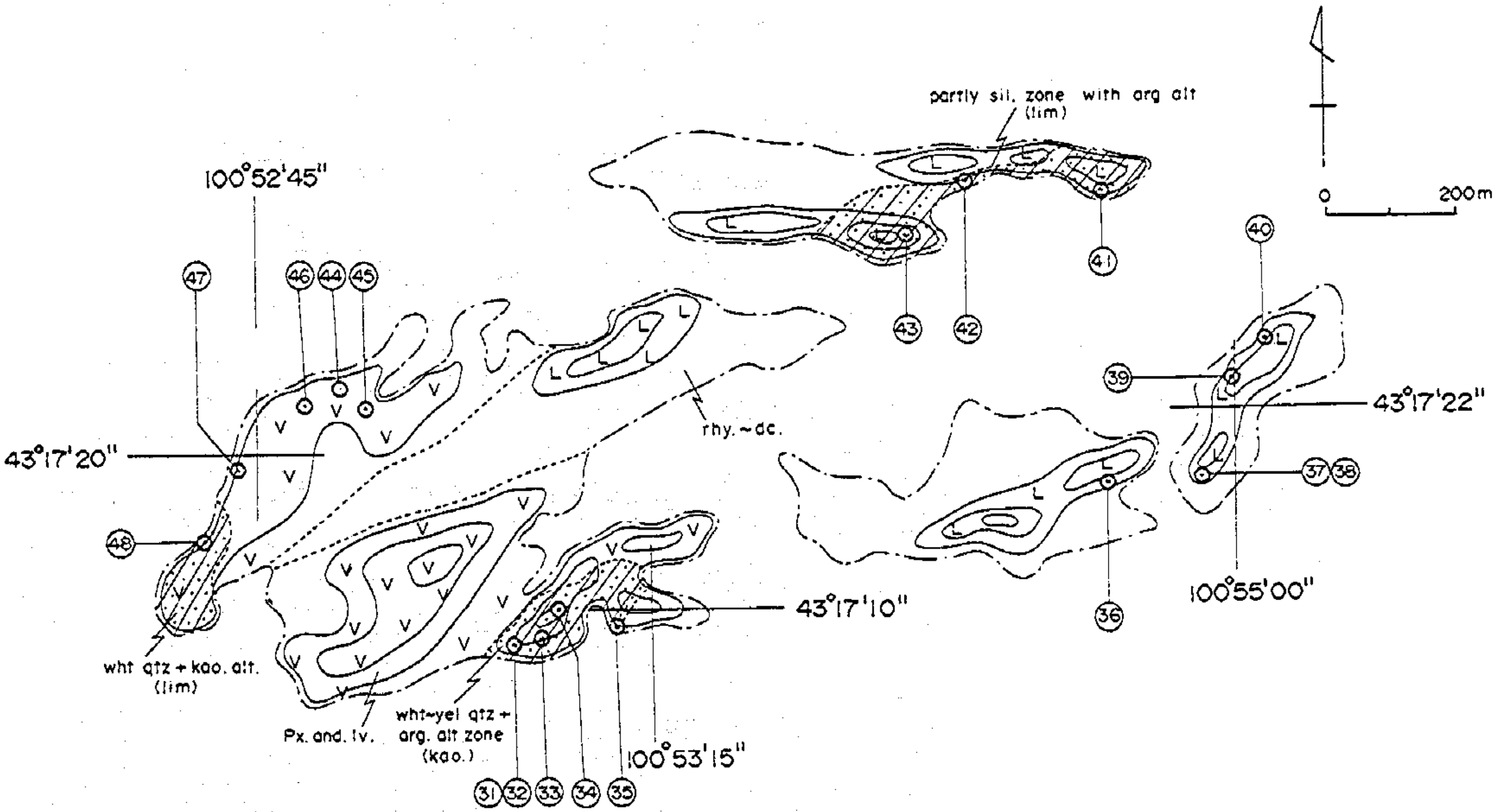
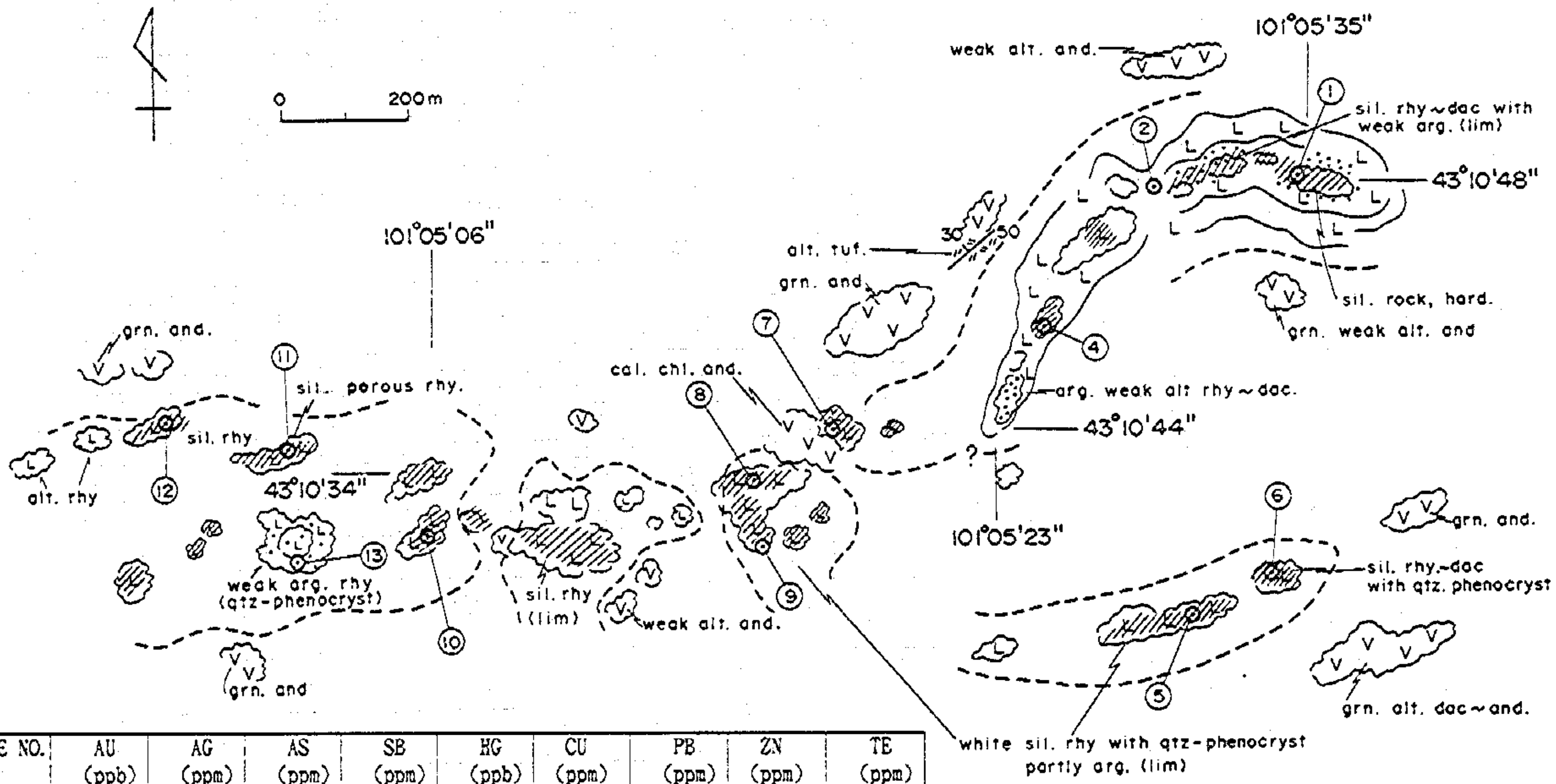


Fig. 33-(1) Sketch Map of Western IA-61



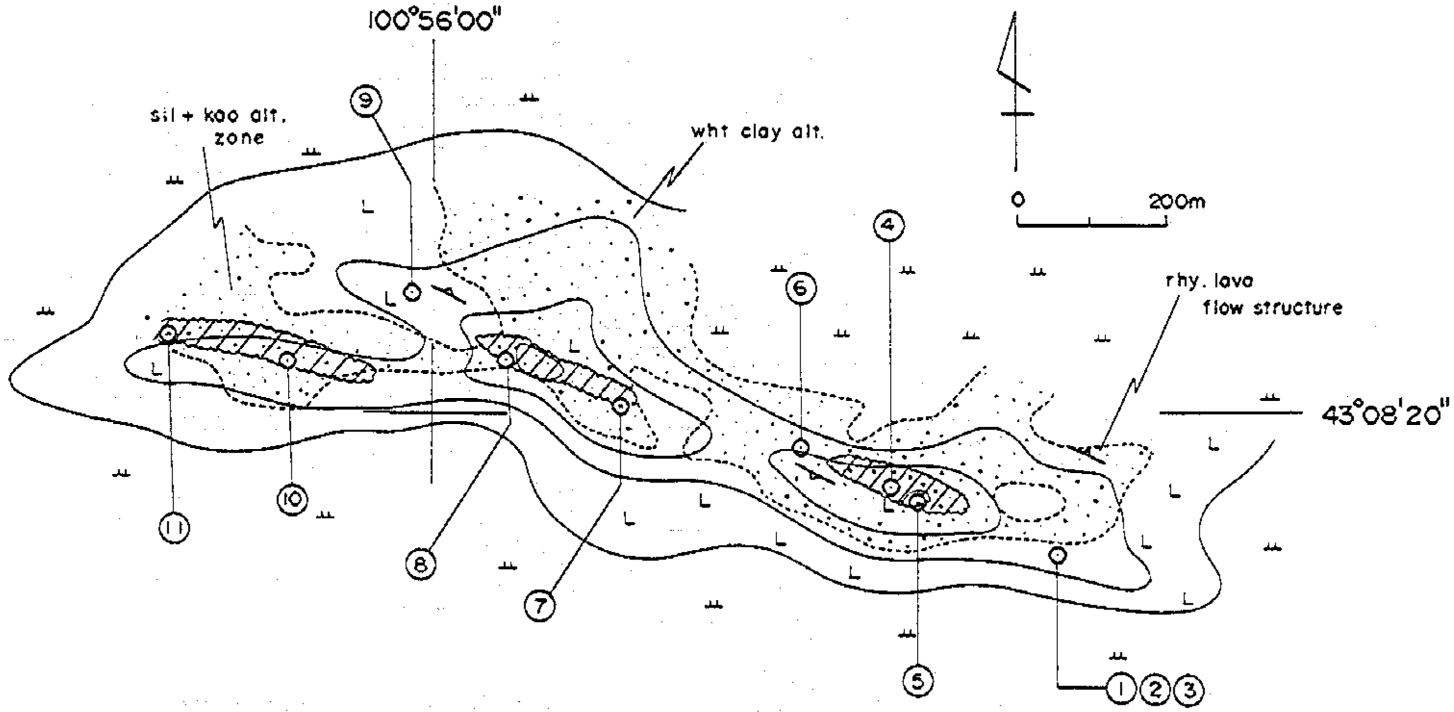
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
8	IA-61-23	< 1	0.2	14	< 1	< 10	9	2	4	19
9	IA-61-32	13	0.3	26	1	20	107	2	5	< 1
10	IA-61-37	< 1	0.5	38	< 1	10	14	15	24	5
11	IA-61-39	< 1	0.1	4	< 1	10	6	< 1	4	< 1
12	IA-61-40	< 1	0.1	38	5	380	14	6	2	3
13	IA-61-43	6	< 0.1	4	2	140	2	76	1	2
14	IA-61-47	4	0.4	40	5	20	31	2	3	< 1

Fig. 33-(2) Sketch Map of Eastern IA-61



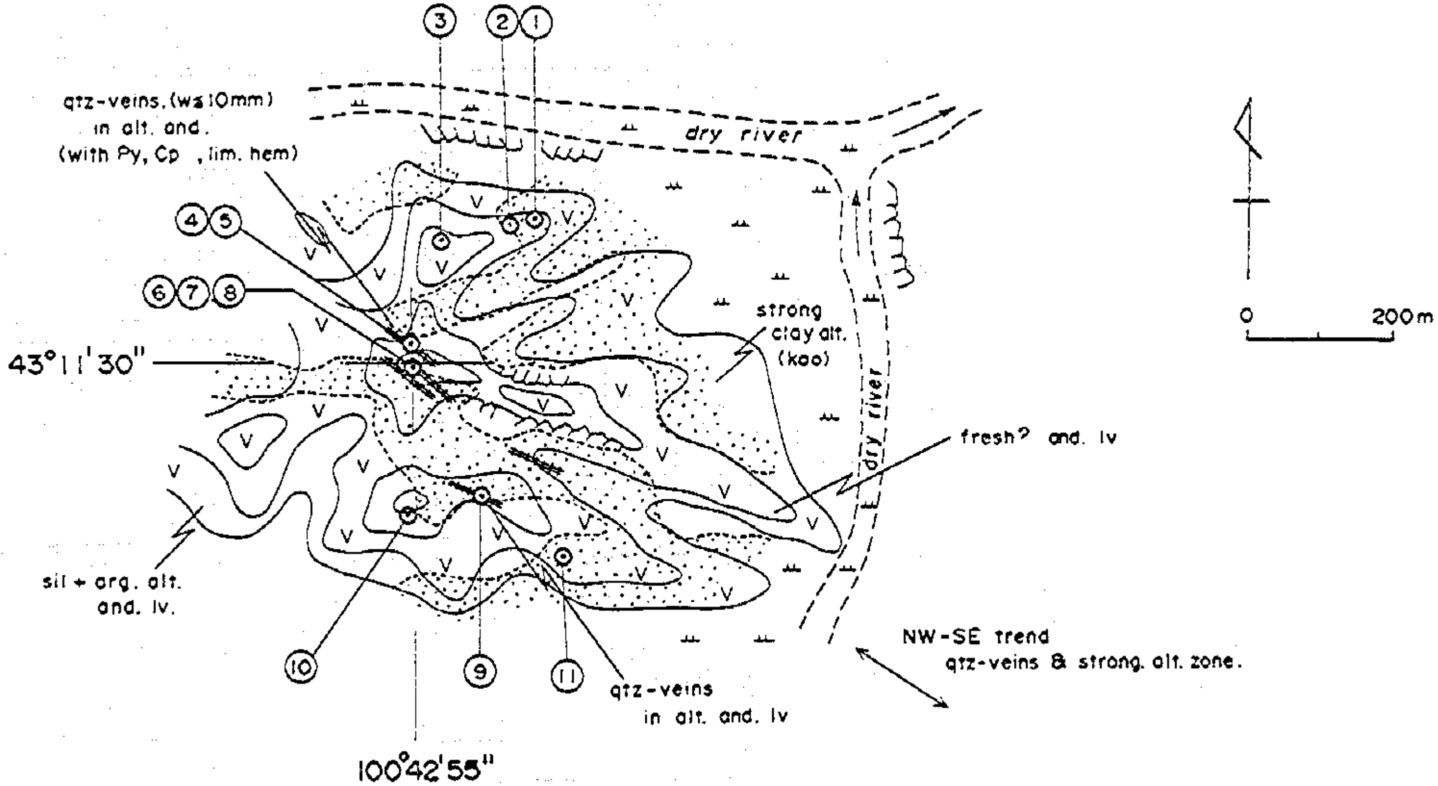
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-62-01	15	< 0.1	64	27	70	3	20	8	< 1
2	IA-62-03	< 1	< 0.1	4	< 1	20	9	13	10	8
3	IA-62-06	1	< 0.1	8	< 1	120	9	14	8	13
4	IA-62-09	< 1	0.3	3	2	10	4	7	6	< 1
5	IA-62-12	< 1	< 0.1	4	< 1	< 10	8	10	6	1

Fig. 34 Sketch Map of IA－62



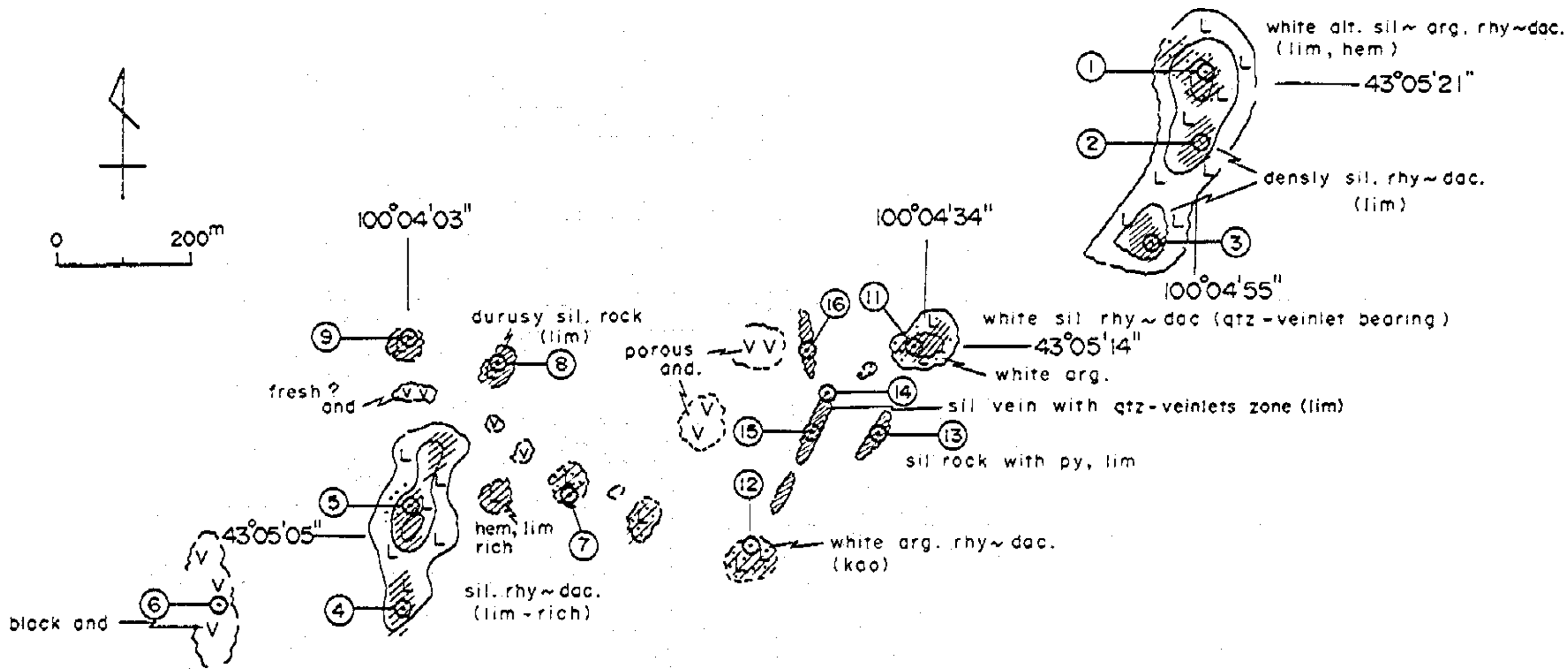
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-63-02	< 1	< 0.1	40	26	470	1	11	1	1
2	IA-63-03	< 1	0.2	28	19	1690	6	9	3	< 1
3	IA-63-05	< 1	0.4	12	12	1780	26	9	1	11
4	IA-63-06	4	0.3	72	180	740	14	1	6	13
5	IA-63-07	6	0.1	32	122	370	8	4	18	< 1
6	IA-63-08	13	0.2	34	69	910	5	6	3	3
7	IA-63-09	4	0.4	45	125	3300	8	10	2	10
8	IA-63-10	3	0.6	26	95	19080	5	25	11	< 1
9	IA-63-11	< 1	1.3	33	71	2080	5	6	2	< 1

Fig. 35 Sketch Map of IA–63



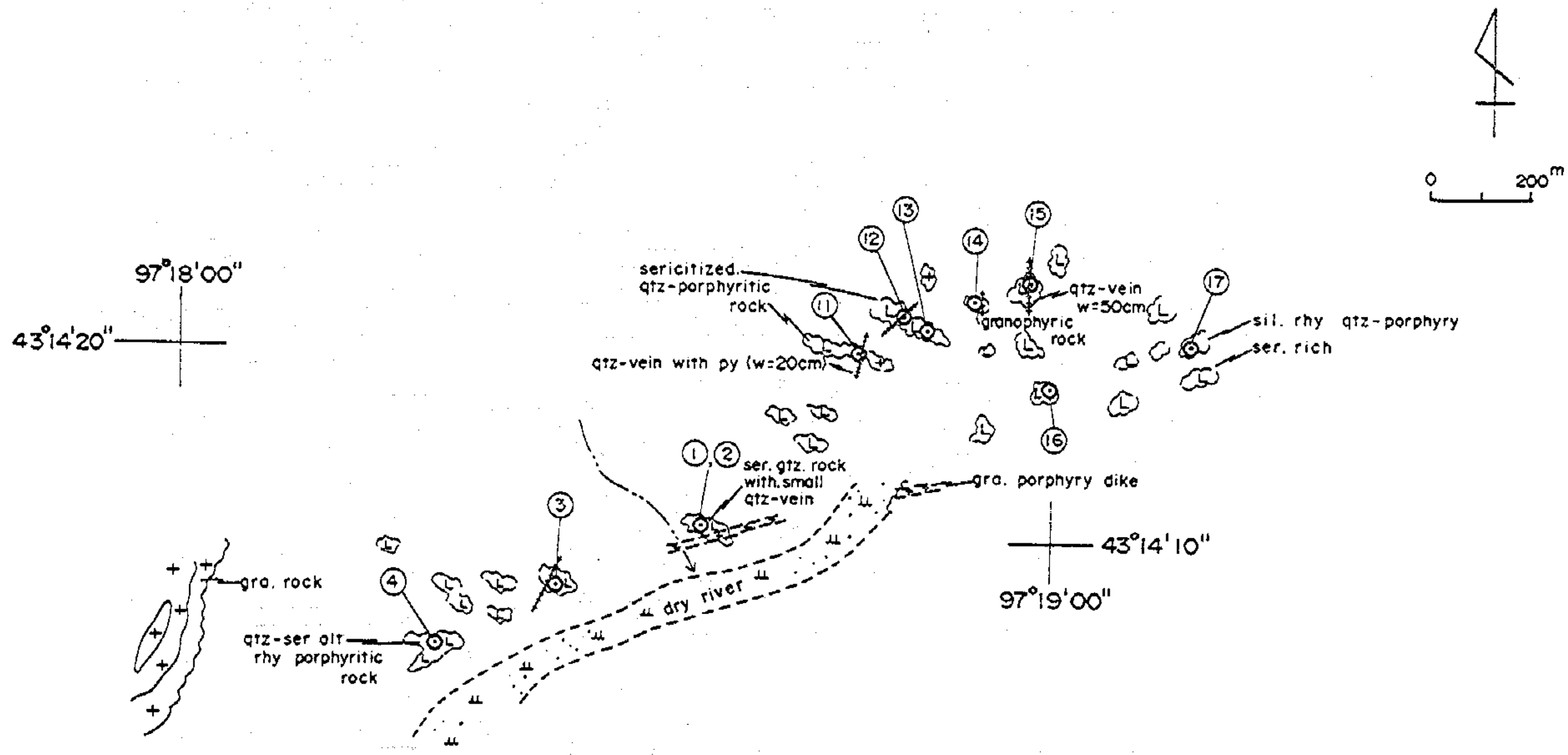
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-64-04	1	0.1	8	7	80	11	12	6	15
2	IA-64-05	< 1	< 0.1	8	6	30	8	5	3	< 1
3	IA-64-07	25	0.8	19	40	220	16	1	5	< 1
4	IA-64-08	< 1	0.8	8	25	100	7	1	3	< 1
5	IA-64-09	8	< 0.1	30	6	1240	7	20	3	< 1
6	IA-64-10	< 1	< 0.1	17	7	150	7	14	1	25

Fig. 36 Sketch Map of IA-64



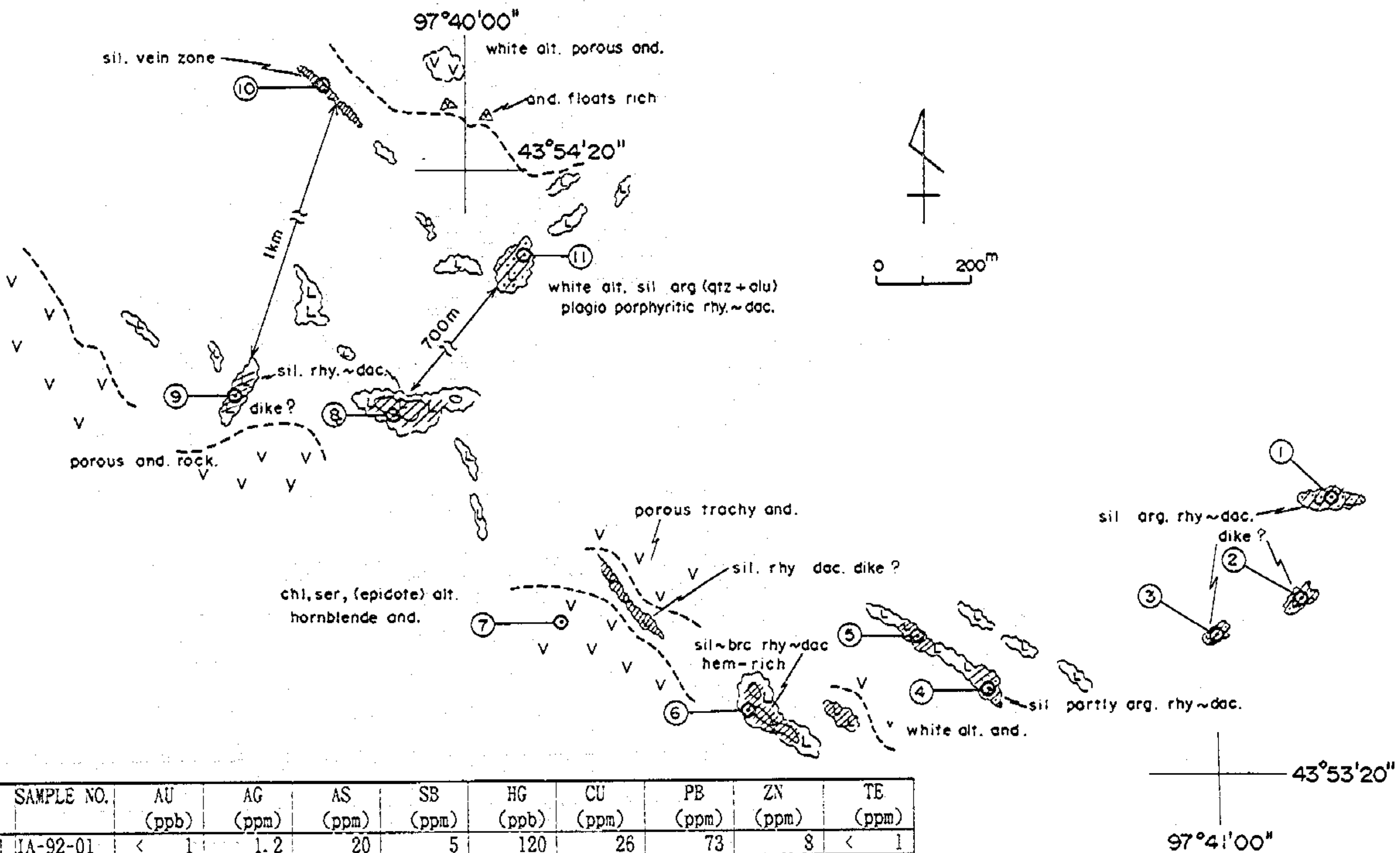
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-65-01	23	0.4	63	2	30	4	19	1	45
2	IA-65-02	73	< 0.1	18	10	20	13	7	3	3
3	IA-65-03	2	< 0.1	110	3	< 10	6	52	3	< 1
4	IA-65-04	30	< 0.1	11	3	90	5	9	5	14
5	IA-65-05	8	< 0.1	50	22	30	3	17	4	25
6	IA-65-07	< 1	< 0.1	2	1	30	5	9	4	1
7	IA-65-08	131	0.7	11	8	240	44	7	37	9
8	IA-65-09	146	0.2	32	5	20	11	4	13	41
9	IA-65-11	100	< 0.1	123	15	170	9	44	1	19
10	IA-65-13	30	0.3	28	5	160	50	3	38	33
11	IA-65-14	1070	2.5	104	21	< 10	38	15	6	19
12	IA-65-15	61	< 0.1	18	8	40	30	7	17	8
13	IA-65-16	4	< 0.1	18	4	10	14	2	11	3

Fig. 37 Sketch Map of IA-65



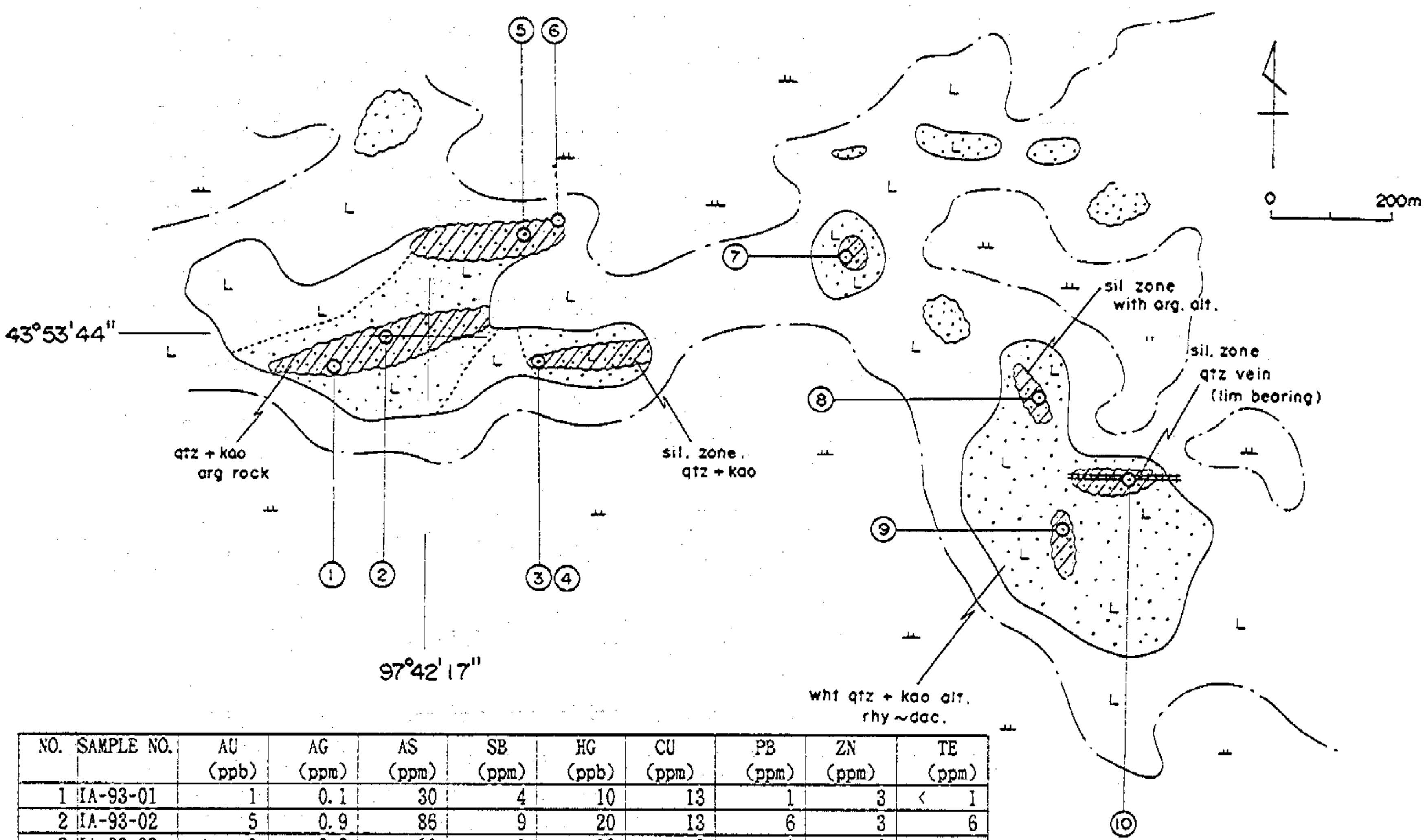
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-96-01	< 1	< 0.1	1	< 1	< 10	13	4	5	< 1
2	IA-96-03	< 1	0.1	4	< 1	< 10	11	3	5	< 1
3	IA-96-11	< 1	0.2	6	< 1	< 10	58	13	16	< 1
4	IA-96-12	< 1	0.6	< 1	< 1	< 10	11	1	7	< 1
5	IA-96-18	< 1	0.3	< 1	< 1	< 10	13	14	8	20

Fig. 38 Sketch Map of IA-96



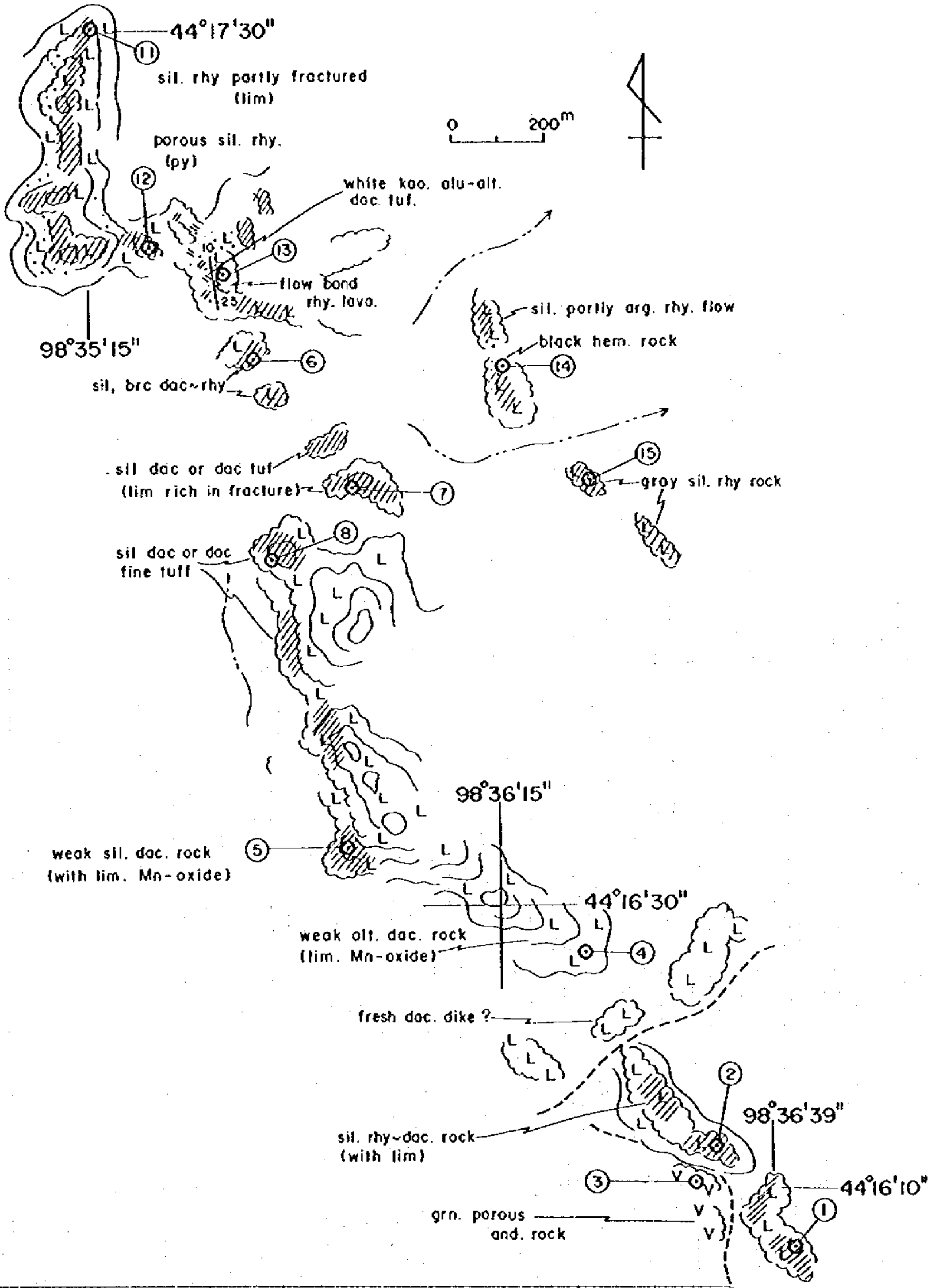
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-92-01	< 1	1.2	20	5	120	26	73	8	< 1
2	IA-92-02	92	0.5	21	< 1	10	13	26	11	2
3	IA-92-06	< 1	0.1	17	< 1	30	34	27	12	20
4	IA-92-08	< 1	0.8	3	< 1	< 10	20	66	5	12
5	IA-92-09	< 1	0.2	14	2	< 10	18	32	10	< 1
6	IA-92-10	2	0.3	2	< 1	< 10	47	2	4	5

Fig. 39 Sketch Map of IA-92



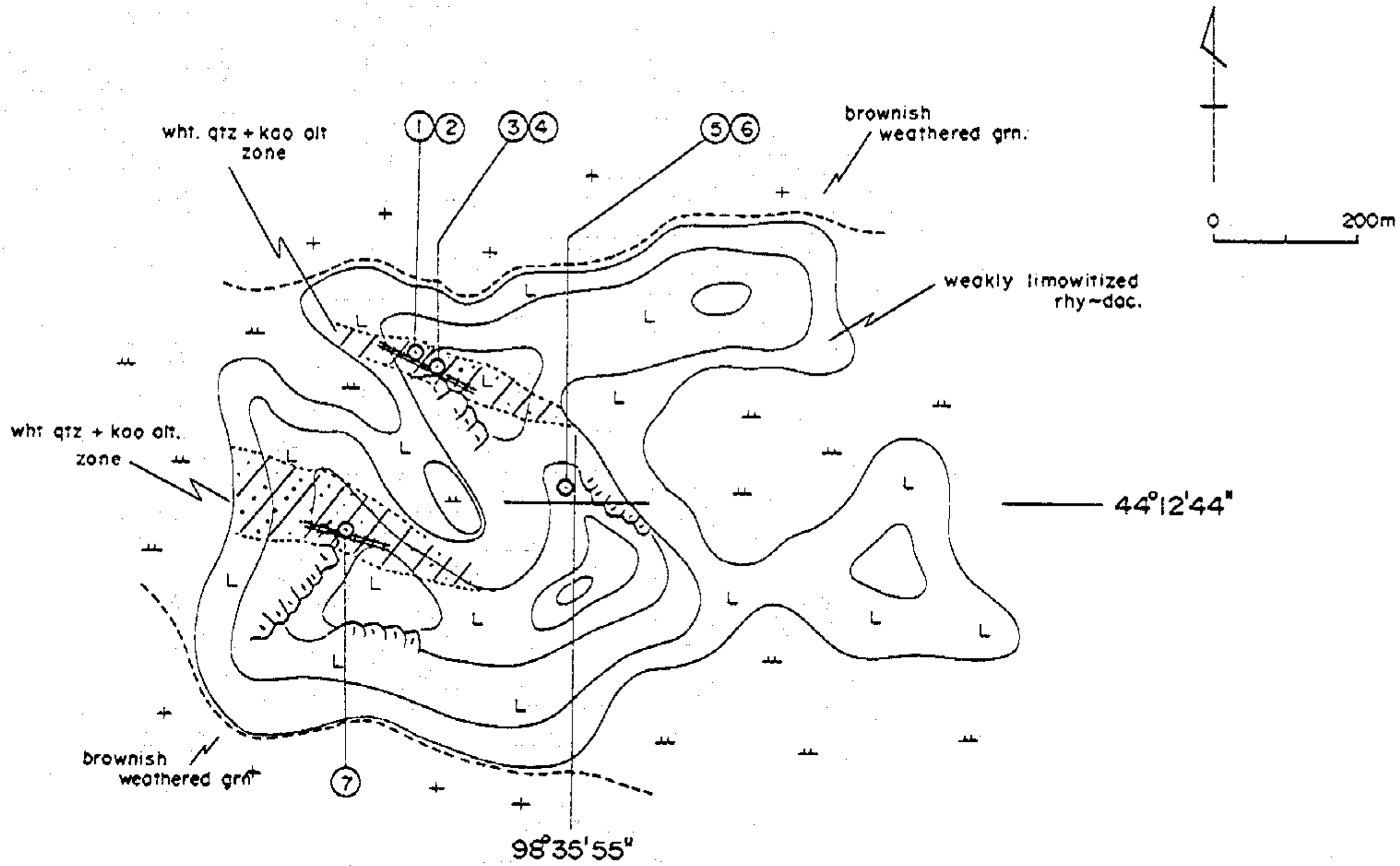
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-93-01	1	0.1	30	4	10	13	1	3	< 1
2	IA-93-02	5	0.9	86	9	20	13	6	3	6
3	IA-93-03	< 1	0.2	11	1	< 10	8	1	3	< 1
4	IA-93-04	6	0.1	21	5	10	21	1	4	1
5	IA-93-06	4	1.4	30	1	10	25	11	4	< 1
6	IA-93-07	5	48.1	192	16	20	18	87	16	< 1
7	IA-93-09	< 1	27.6	172	14	10	21	93	17	< 1
8	IA-93-10	2	0.3	17	3	10	12	< 1	4	< 1

Fig. 40 Sketch Map of IA—93



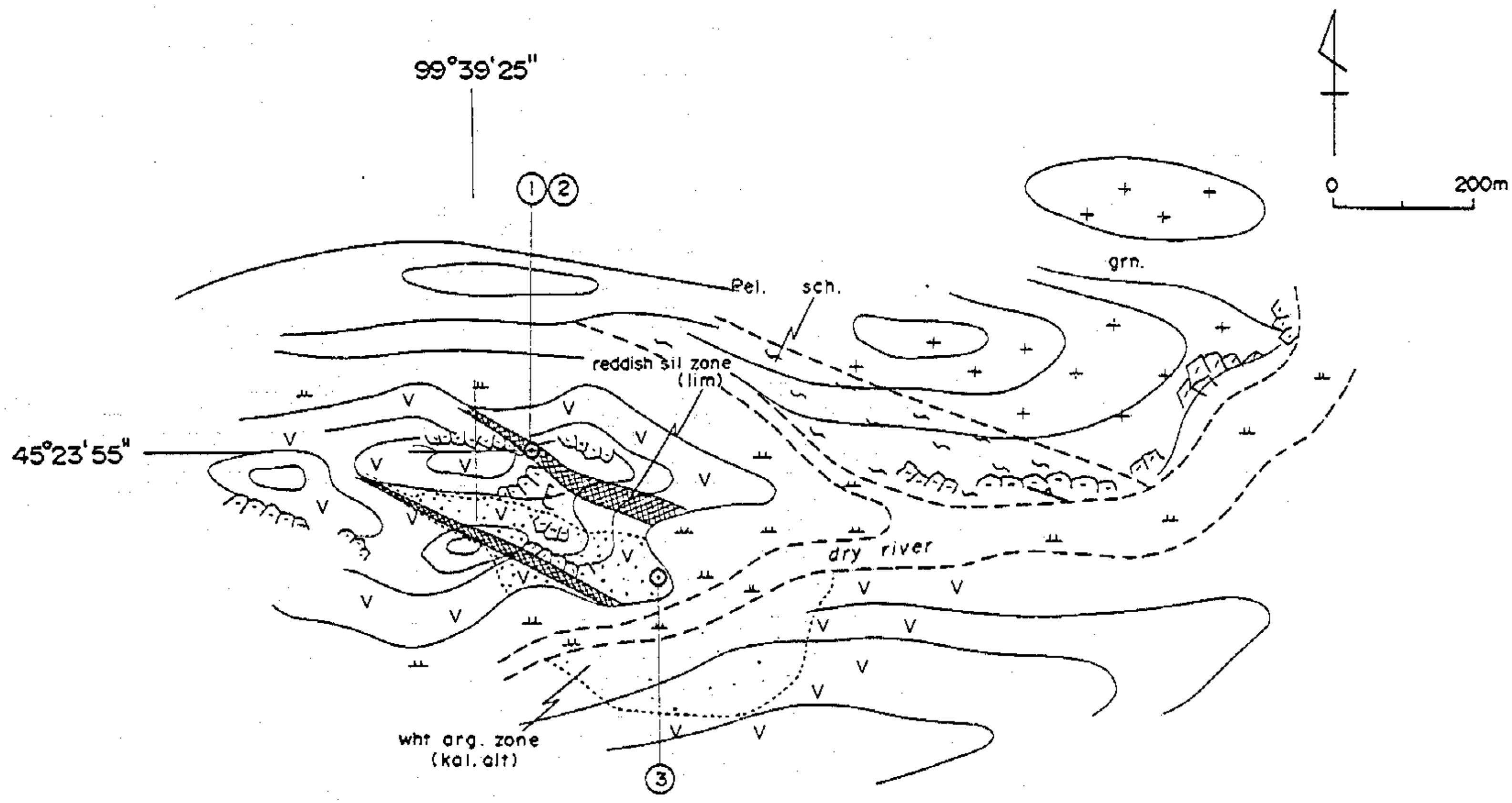
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-74-01	< 1	< 0.1	23	2	< 10	16	10	2	< 1
2	IA-74-02	2	0.2	31	7	< 10	9	4	4	< 1
3	IA-74-05	< 1	< 0.1	8	2	20	27	6	6	8
4	IA-74-13	2	0.1	30	< 1	< 10	12	2	1	< 1
5	IA-74-14	< 1	0.1	61	< 1	< 10	69	13	102	< 1
6	IA-74-15	9	0.5	3	< 1	< 10	7	16	4	11

Fig. 41 Sketch Map of IA-74



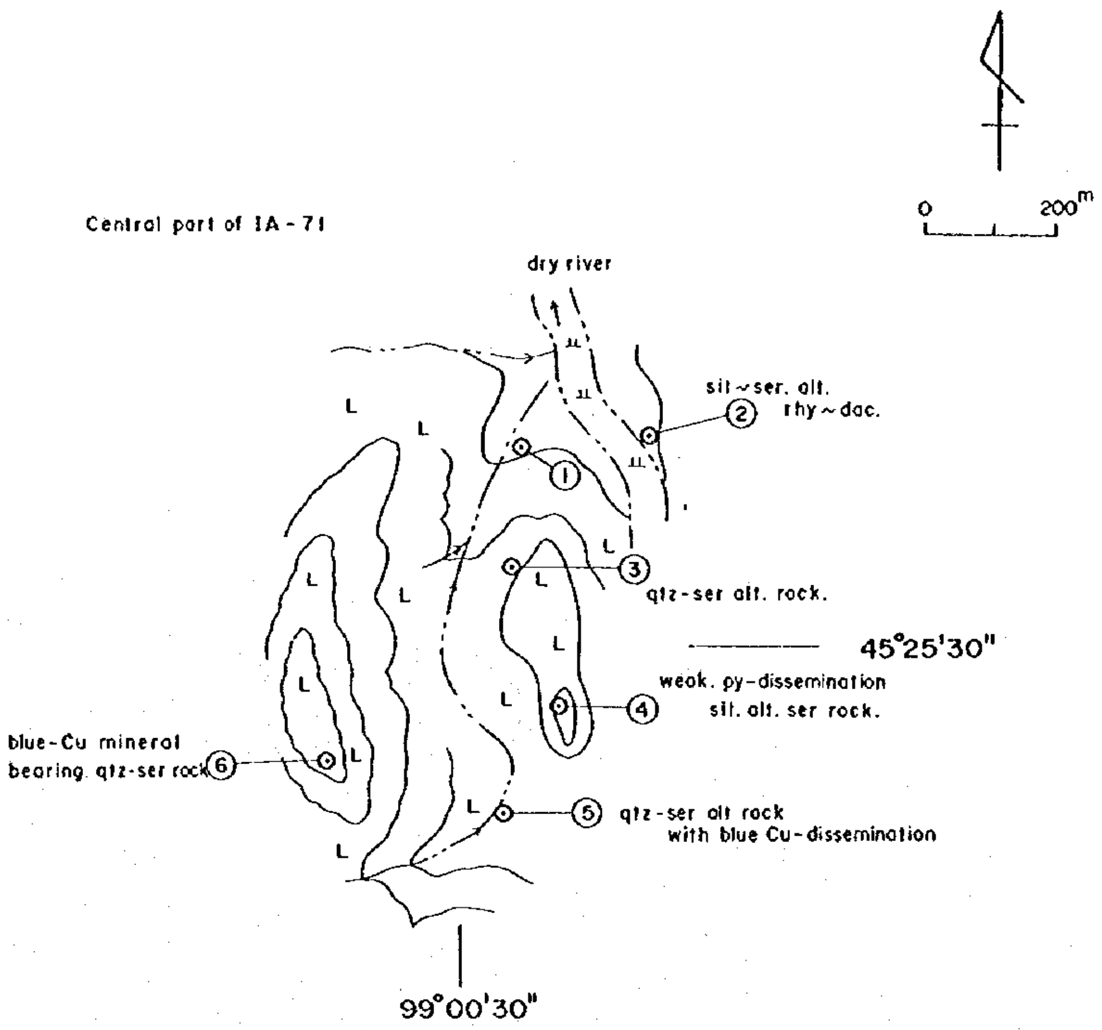
NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-75-01	1	0.4	7	1	< 10	13	12	4	< 1
2	IA-75-02	2	55.2	5	1	< 10	12	4	3	3
3	IA-75-03	1	0.4	6	< 1	< 10	14	7	3	1
4	IA-75-07	1	< 0.1	20	< 1	< 10	7	1	12	< 1

Fig. 42 Sketch Map of IA-75



NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-70-01	2	0.2	22	< 1	< 10	14	7	21	15

Fig. 43 Sketch Map of IA−70



NO.	SAMPLE NO.	AU (ppb)	AG (ppm)	AS (ppm)	SB (ppm)	HG (ppb)	CU (ppm)	PB (ppm)	ZN (ppm)	TE (ppm)
1	IA-71-01	< 1	0.2	2	< 1	< 10	15	5	3	9
2	IA-71-02	< 1	< 0.1	2	< 1	< 10	4	4	15	< 1
3	IA-71-03	< 1	< 0.1	1	< 1	< 10	5	14	4	3
4	IA-71-04	< 1	< 0.1	3	< 1	10	7	7	3	< 1
5	IA-71-05	< 1	< 0.1	1	< 1	< 10	4	5	4	< 1
6	IA-71-06	< 1	< 0.1	4	< 1	10	4	82	10	< 1

Fig. 44 Sketch Map of IA-71

L L Dacite(dac)~Rhyolite(rhy)

V V Andesite(and)~Basalt(bas)

// // Tuff(tuf)

+ + Granitic rock(gra)

⊥ ⊥ Porphyrite(por)

~~ Pelitic schist(pel. sch.)

Green schist(grn. sch.)

Gneiss

- · - Sand stone(s. s)

//// Silicification(sil)

Argillization(arg)

Quartz vein (qtz)

Δ Δ Breccia(brc)

Bedding or geological contact

Flow structur or schistosity

Fault

Sampling point and number

Fig. 45 Legend for Sketch Map

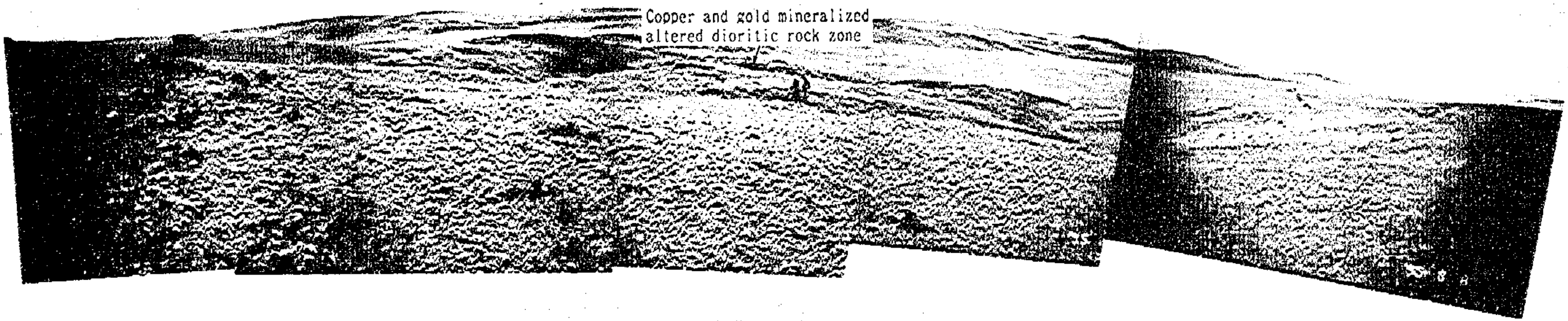


Fig. 46 Panoramic View of IA−68 (looking south to north)

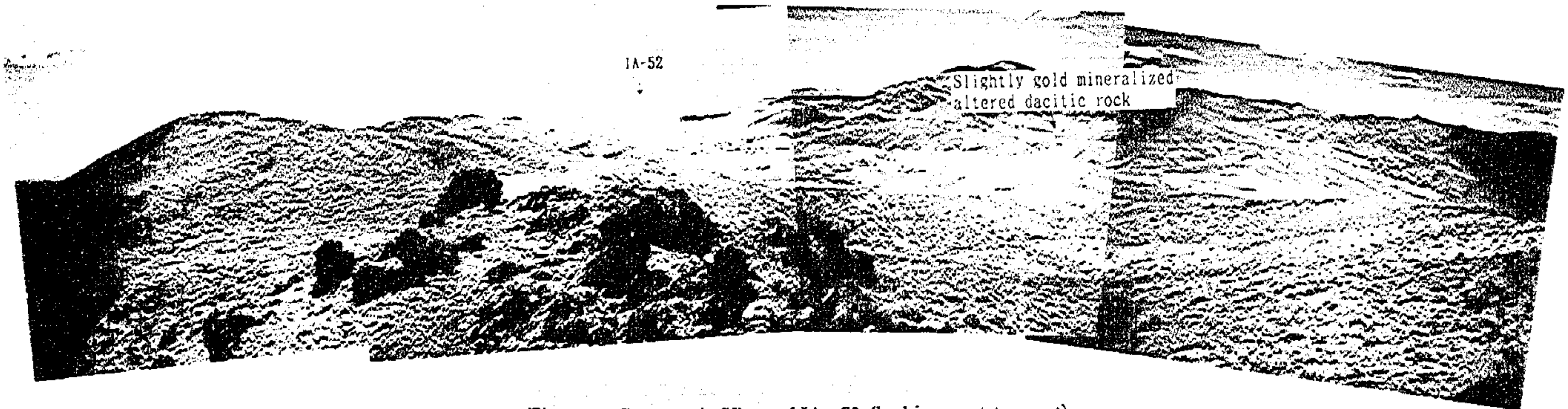


Fig. 47 Panoramic View of IA−51 (looking east to west)

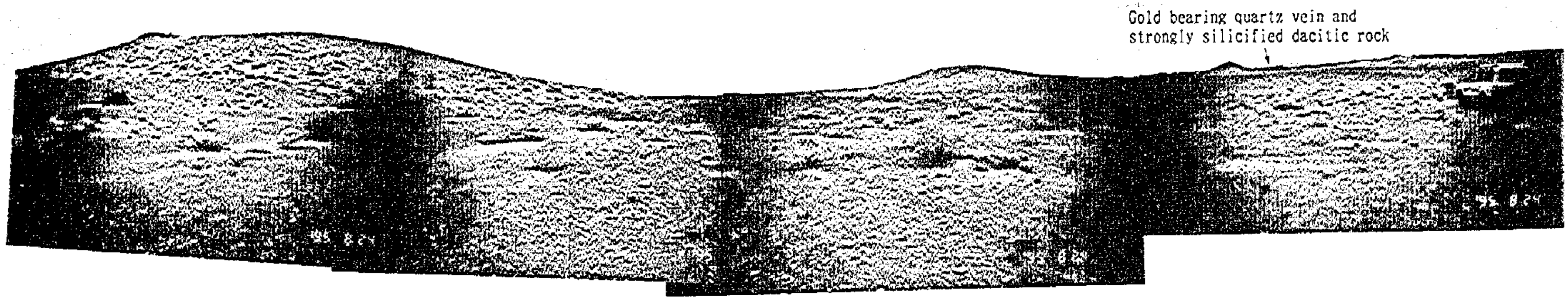


Fig. 48 Panoramic View of IA-65 (looking east to west)

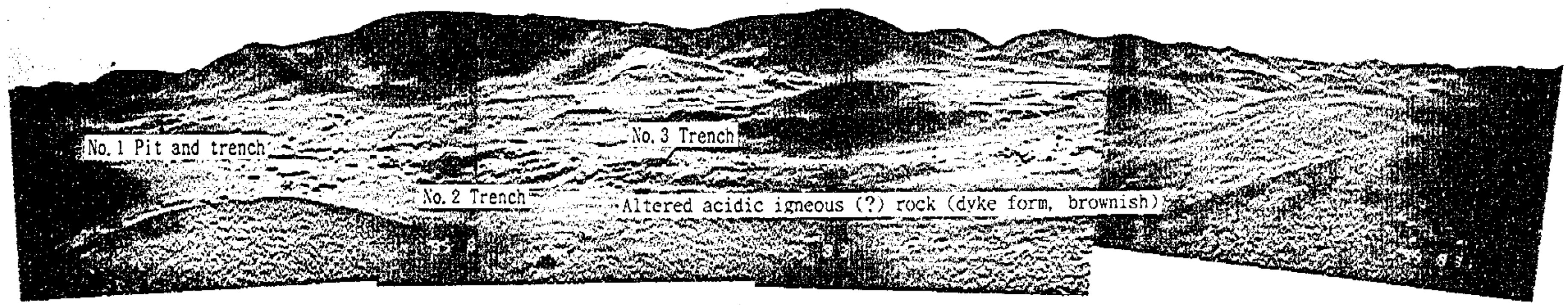


Fig. 49 Panoramic View of Central MS-Hatan Suudal (572) (looking north to south)

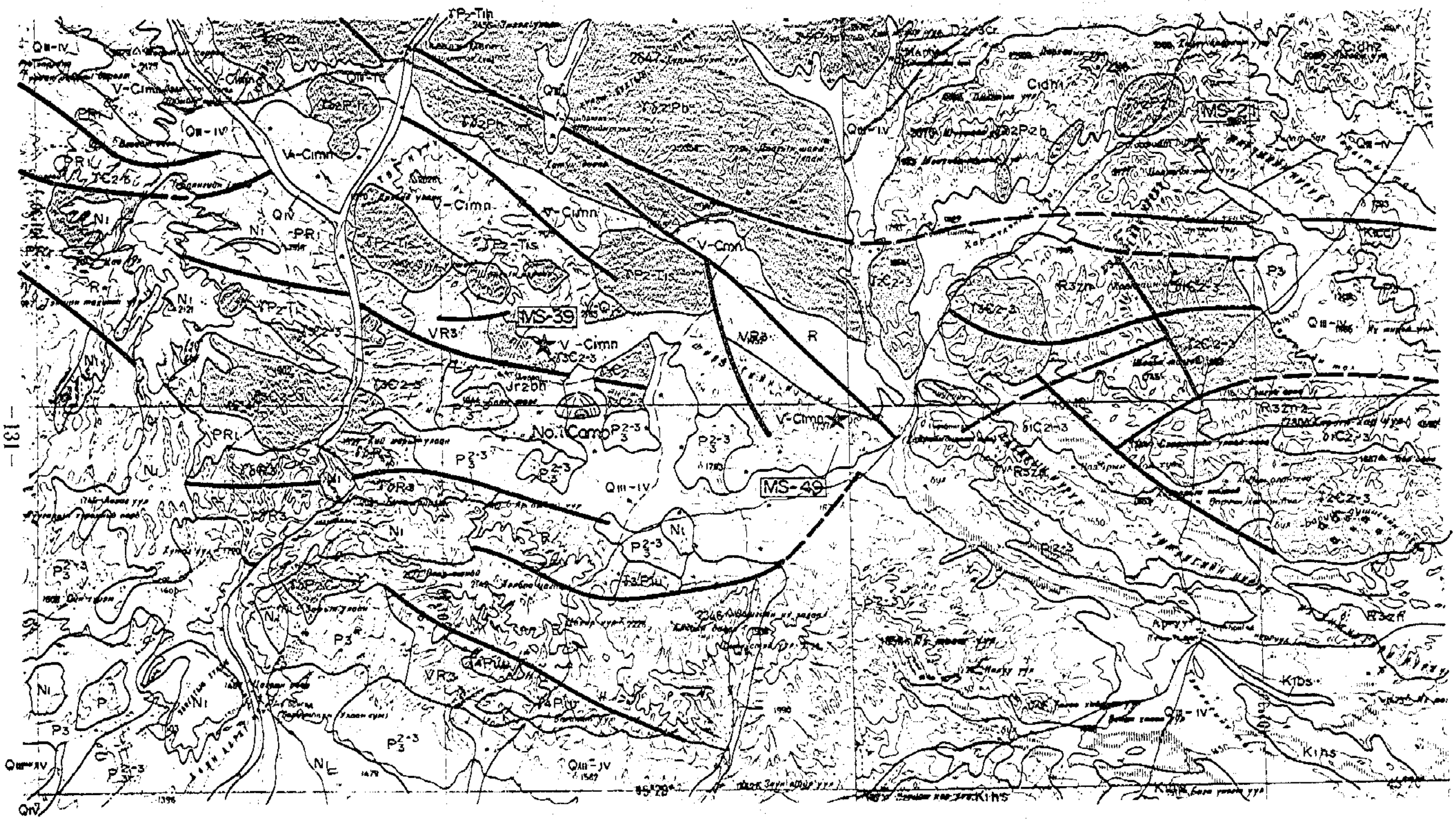


Fig. 50 Geological Map of Southeast Bayanhongor Area (No.1 camp)

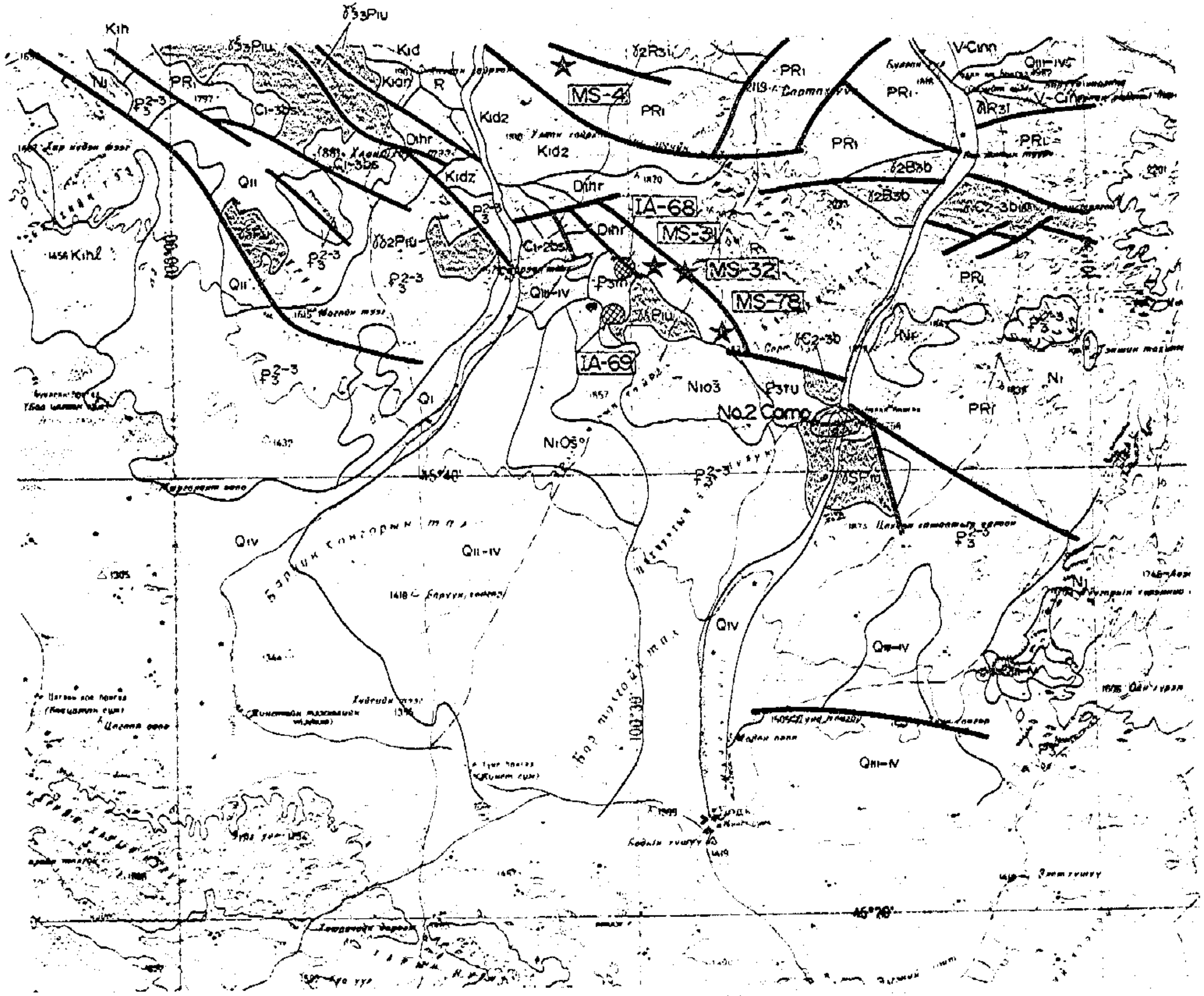


Fig. 51　Geological Map of South Bayanhongor Area (No.2 camp)
S = 1 / 500.000

0　10.000　20.000　30.000　40.000　50.000m

Fig. 52 Geological Map of Bayan Govi Area (No.3 camp)

S = 1/500.000

0 10.000 20.000 30.000 40.000 50.000m

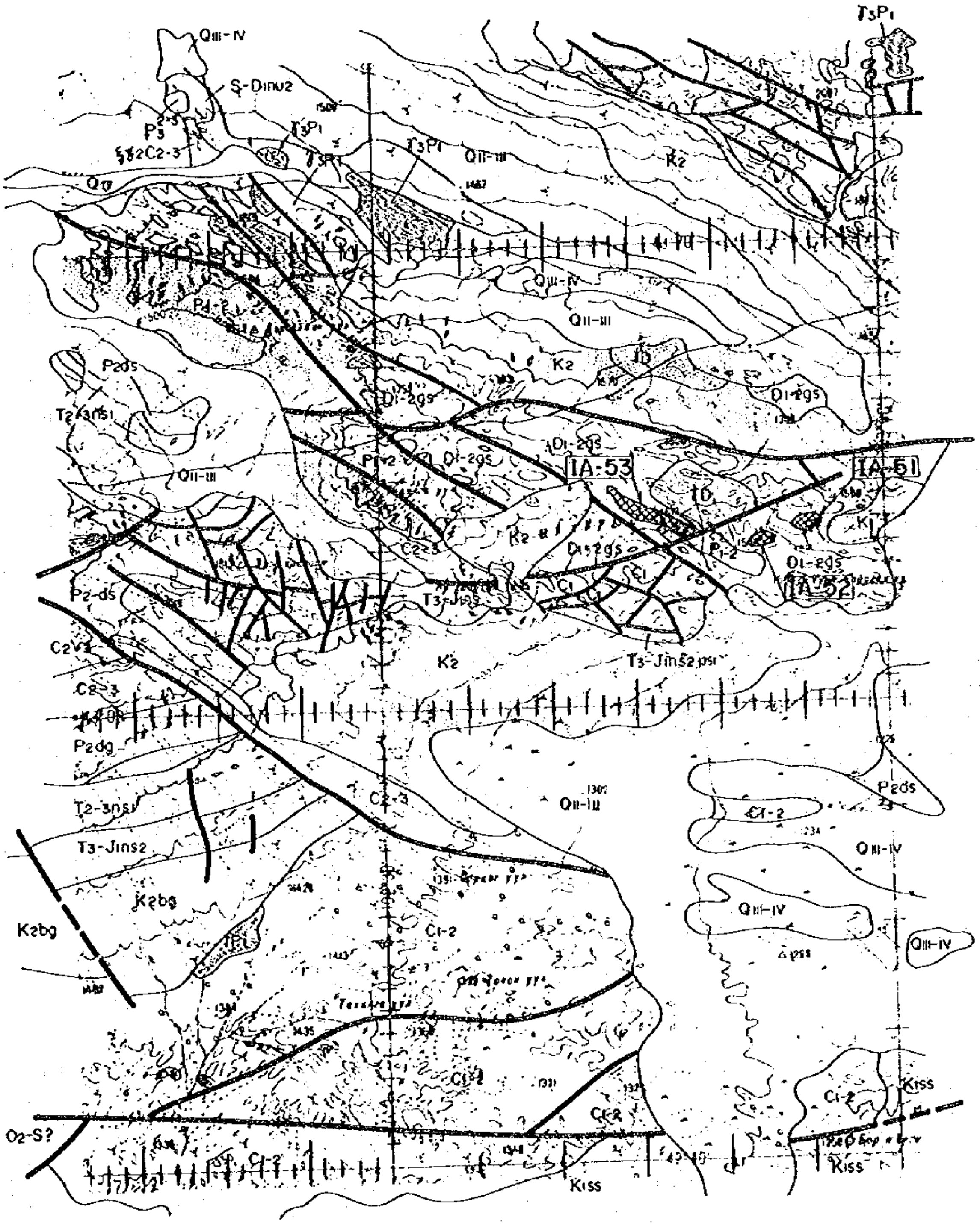


Fig. 53　Geological Map of Southeast Noyon Area (No.5 camp)

S = 1 / 500.000

0　10.000　20.000　30.000　40.000　50.000m

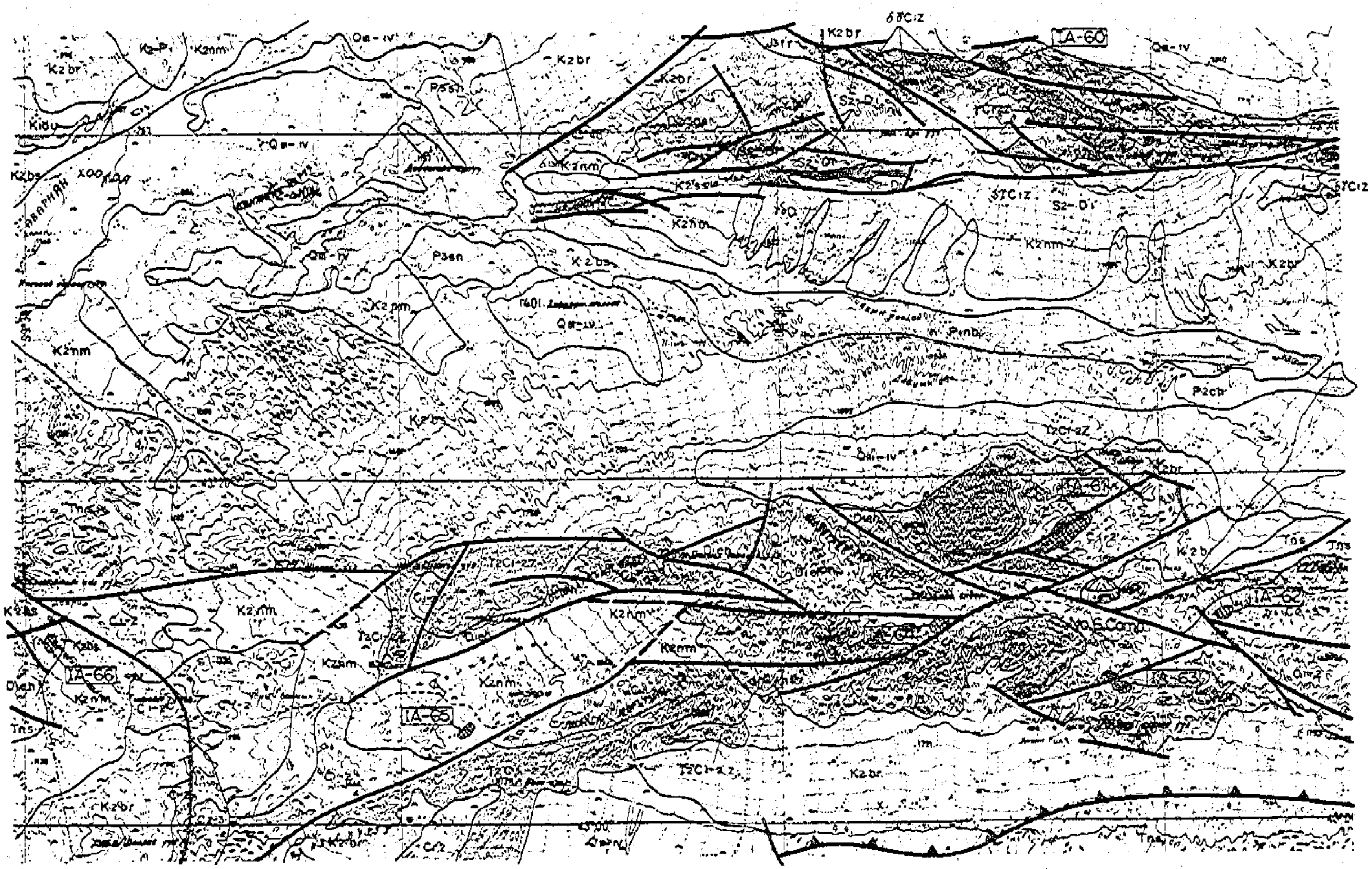


Fig. 54 Geological Map of Gurban Tes Area (No.6 camp)

S = 1 / 500.000

0 10.000 20.000 30.000 40.000 50.000m

Fig. 55 Geological Map of Hatan Suudal Area (No.8 camp)

S = 1/500.000

0 10.000 20.000 30.000 40.000 50.000m

Fig. 56 Geological Map of North Hatan Suudal Area (No.9 camp)

S = 1/500.000

0 10.000 20.000 30.000 40.000 50.000m

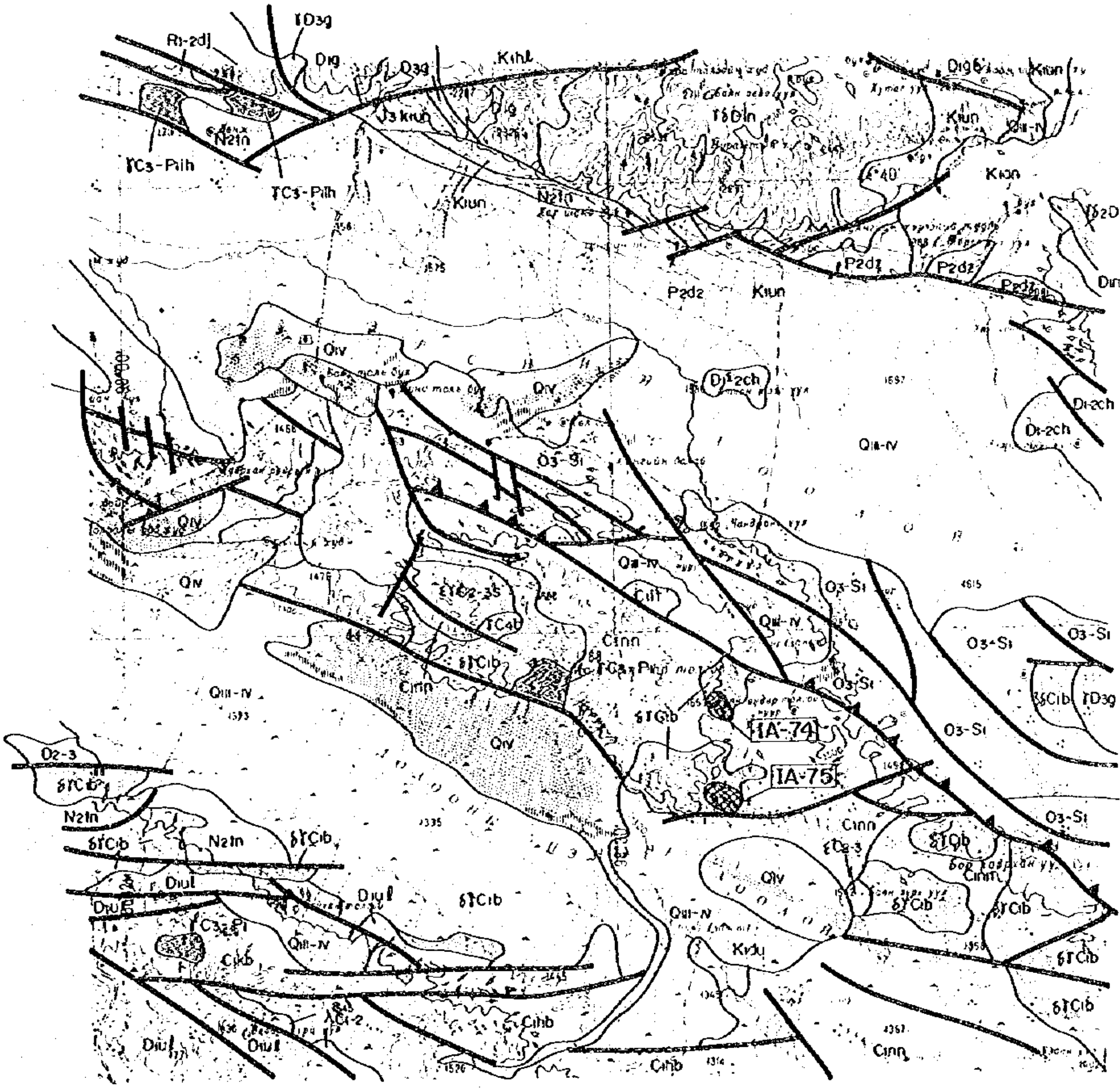


Fig. 57 Geological Map of South Bayan Ondor Area (No.10 camp)

S = 1 / 500.000

0 10,000 20,000 30,000 40,000 50,000m

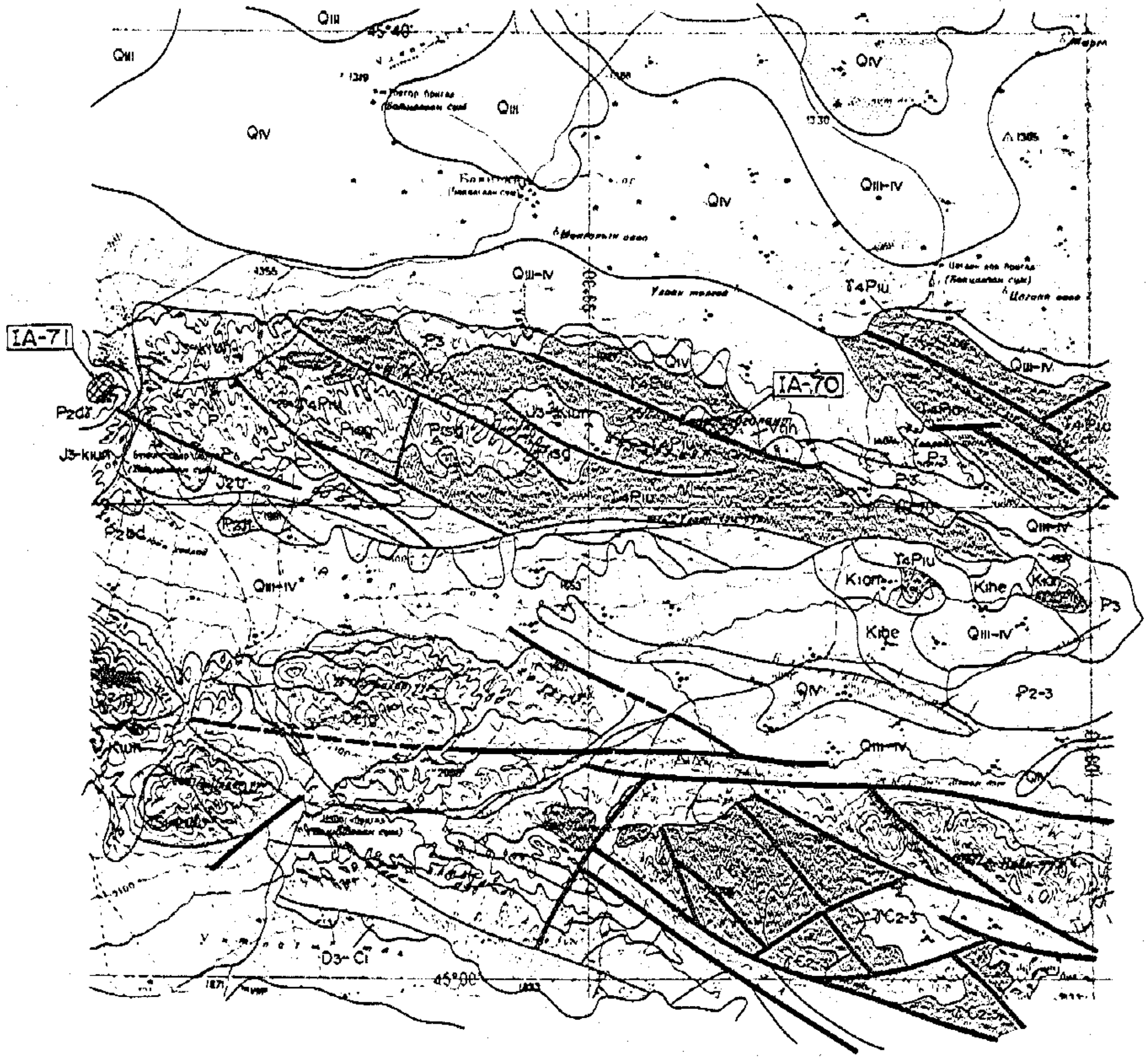


Fig. 58 Geological Map of South Bayan Sair Area

S = 1 / 500.000

0 10,000 20,000 30,000 40,000 50,000m

GEOLOGY AND STRATIGRAPY

Era	Period	Symbol	Lithology
Cenozoic	Q.	Q_{IV}	dune sand, aluvial deposits, talus deposits.
		Q_{III-IV}	terrace deposits, talus deposits.
		Q_{I-II}	talus deposits, terrace deposits.
	Tertiary	N_{1-2}	gravel, sand, clay, breccia, gravelstone, conglomerate, sandstone, mudstone.
		P_3^{2-3}	gritstone, gravelstone, tuff, basalt.
		P_3^{1}	gravelstone, conglomerate, sandstone.
		P_2	gravelstone, conglomerate.
Mesozoic	Cretaceous	K_2-P_1	conglomerate, sandstone, breccia, tuff.
		K_2br	gravelstone, sandstone, limestone.
		K_2ss	breccia, conglomerate, sandstone, basalt.
		K_1hh	conglomerate, sandstone, tuff.
		K_1sn	sandstone, basalt, dolerite.
	J.	J_3-K_1cc	basalt, tuff, breccia.
		J_3sh	conglomerate, sandstone, basalt, breccia.
		$J_{1-2}bh$	sandstone, conglomerate, graelstone, gritstone, basalt, dolerite.
Paleozoic	Permian	P_2th	conglomerate, sandstone, gritstone, rhyolite, andesite, basalt, and their tuffs.
		P_2dl	basalt, rhyorite, tuff, conglomerate, sandstone.
		P_2sn	conglomerate, sandstone, claystone, tuff.
		P_1sg	ignimbrite, rhyolite, andesite, basalt, and their tuffs, conglomerate.
		P_1bg	conglomerate, tuffaceous sand, sandstone, gritstone, claystone, rhyolite.
		P_1hr	basalt, andesite, rhyolite, tuff, sandstone, claystone.
		P_1ar	rhyolite, dacite, igninbrite, tuff, conglomerate, sandstone.
	Carboniferous	$C_{2-3}ds$	rhyolite, dacite, andesite, basalt, and their tuffs, conglomerate, sandstone.
		C_2ar	conglomerate, sandstone, claystone, basalt, andesite, rhyolite, and their tuffs.
		C_2bg	conglomerate, gritstone, sandstone.
		$C_{1-2}bb$	basalt, andesite, rhyolite, and their tuffs, conglomerate, sandstone, schist.
		$C_{1-2}tg$	rhyolite, and their tuffs, siliceous rocks, conglomerate, sandstone, limestone.
		$C_{1-2}ht$	rhyolite, dacite, basalt, andesite, and their tuffs.
		C_1is	conglomerate, gravelstone, gritstone, sandstone, limestone.
		C_1bs	conglomerate, sandstone, claystone, limestone, olistostrom.
		C_1hb	basalt, andesite, rhyolite, and their tuffs, conglomerate, sandstone
Paleozoic	Devonian	D_3-C_1ch	conglomerate, sandstone, basalt, andesite, siliceous rocks, tuff, limestone.
		D_3-C_1nn	conglomerate, sandstone, andesite, rhyolite, limestone.
		D_3hl	conglomerate, sandstone, siltstone, limestone, siliceous rocks, basalt.
		D_3jg	conglomerate, sandstone, gravelstone, gritstone, limestone.
		D_2md	rhyolite, dacite, basalt, andesite, and their tuffs, siliceous rocks, limestone.
		$D_{1-2}nr$	conglomerate, gritstone, sandstone, rhyolite, andesite.
		$D_{1-2}hu$	basalt, andesite, sandstone, limestone, siliceous rocks.
		$D_{1-2}ur$	andesite, rhyolite, schist, phyillite, porphyrite, conglomerate, sandstone.
		$D_{1-2}ch$	rhyolite, tuff, ignimbrite, sandstone, limestone.
		D_1gr	basalt, andesite, rhyolite, tuff, schist, phyillite, sandstone, limestone.
		D_1gc	basalt, andesite, porphyrite, tuff, schist, phyillite, conglomerate, sandstone.
		D_1am	conglomerate, sandstone, limestone.
		D_1gs_3	sandstone, claystone, siliceous rocks, limestone.
		D_1gs_2	sandstone, claystone, siliceous rocks, schist.
		D_1gs_1	basalt, andesite, tuff, siliceous rocks, schist, limestone.
		D_1ul	basalt, andesite, tuff, phyllite, conglomerate, sandstone, siliceous rocks, schist.
		D_1mh	basalt, andesite, tuff, phyllite, conglomerate, sandstone, siliceous rocks, schist.
		D_1as	conglomerate, sandstone, limestone.
	S.	S_2	limestone.
		S_2ht	sandstone, tuff, gravelstone.
		S_1sr	sandstone, siliceous rocks.
	O.	O_3-S_1	conglomerate, gritstone, sandstone, limestone, schist, phyllite.
		O_3-S_1	tuff, conglomerate, phyllite.
		O_3	tuff, conglomerate, sandstone.
Proterozoic	Vendian -Camb.	V-C_1ul_2	schist, carbonate rocks, quartzite.
		V-C_1ul_1	schist, phyllite, metasandstone.
		Vnn	basalt, diabase, schist, conglomerate, siliceous rocks.
	Riphean	R_3	metasandstone, quartzite, amphyborite, gneiss.
		R_{1-2}	metaconglomerate, metasandstone, phyllite, gneiss.
		$R_{1-2}br$	amphyborite, gneiss.
		PR_1	gneiss, amphyborite.

INTRUSIVE ROCKS

λ : rhyolite	δ : diorite	σ : ultra
γ : granite	ν : gabbro	ζ : dacite

P C O C R

Fig. 59 Legend of Geological Map

CAPTER 3 CONSIDERATION

3.1 Collection and Analysis of the Existing Data

3.1.1 Shuten mineralized area

General mineral survey, especially 1982, in the Shuten area aimed to prospect gold, silver, and other precious metals and copper, molybdenum and other polymetals as well.

The Shuten area is located in the Govi Khin Gai tectonic zoneand consists of the Shuten volcano–intrusive acidic complex of the early Carboniferous to early Permian period in a circular structure with a diameter of 6 to 7 km.

The Shuten volcano–intrusive complex was affected mainly with hydrothermal and metasomatic alterations caused by fluids and volcanic gases of postorogenic activities. and wide range of alterations such assilicification, argillization, propylitization and feldspatization and quartztourmaline metasomatic alteration are recognized.

In this area, gold mineralization concerning metasomatic altered rock and quartz veins and having a posibility of relation with alunitized rock and copper mineralization relating to the intrusion of porphyritic rocks are recognized. besides the elements of zinc, lead, nickel, cobalt, silver and other atomic elements are found. However, the mineralization of such elements is not so strong.

The results of general mineral survey in the Shuten mineralized area mentioned above can be summarized as follows:

① Synthetical works such as geological survey, geochemical survey, geophysical prospecting and other works including trenching and drilling, had already been conducted.

② The geological survey covered geological mapping, a study on genesis of porphyry copper type mineralization and alteration phase etc. and reached to in–depth content.

③ The geochemical survey by rocks and heavy minerals were conducted restrictively at most promising areas, namely at alteration zones of potassic feldspar and sericite.

④ Slightly mineralized zones of gold and copper were observed in this area, but it is believed to not expansive and small scale.

⑤ The above mentioned surveys and explorations led to selecting the most promising 15 areas, where check drilling were conducted. The results of spectrophotometric analysis of 13 drilling core samples picked up from these areas indicated the gold content was in below the detection limit of value wholly, and no presence of gold occurrences in the underground were confirmed by drilling.

From these survey conclusions, we may say that the survey of potential evaluation phase, which is usually carried out before detailed deposit exploration, has already completed.

At the present stage, survey has drawn no promising result for the potentials of copper, molybdenum, and other nonmetals, and gold, sliver, and other precious metals as well. What is worse, a negative conclusion is already made on the potentials for copper and molybdenum deposits.

As for gold deposit, judging comprehensively from the strength, scale, and characteristics of the Shuten mineralization area, the area has shown no better indications compared with other potential areas for gold exploration. What is noteworthy is that granular gold was found at several spots when heavy mineral geochemical exploration was applied, and that good gold content were detected at some quartz veins exposed on the ground surface. Considering these findings, how to interpret gold mineralization will be a major concern.

Considering the soil texture on the ground surface, especially, distribution of alteration zones, and combinations of alteration minerals, the Shuten mineralization zones can be regarded as copper mineralization zones of goldcontained porphyry type extending into broader areas. Accordingly, it can be viewed that the lower part of the Shuten mineralization zones is exposed on the ground surface after its upper part has been eroded out. Thus, it is logical to draw an estimated conclusion that the main mineralized part containing gold has already been eroded out (even if once existed).

3.1.2 Gold Deposits and Gold Showings in the west Altan Tal area

In the west Altan Tal area, the two main geotectonic units are found. They are (a) the Baikalian to early Caledonian fold belt in the northern megablock of Mongolia, accompanied by the north Mongolian metallogenic province, and (b) the late Caledonian to Variscan fold belt inthe southern megablock of Mongolia, accompanied by the south Mongolian metallogenic province. These two megablock are devided into north and south of Mongolia by Ih-Bogd deep fracture that is the main geotectonic line in Mongolia.

The north Mongolian metallogenic province consists of two metallogenic zones such as the Bayanhongor and the Khungui-Baidrag, while the south Mongolian metallogenic province consists of three metallogenic zones, namely, the Bayanlig-Bayangovi, the Edrengiin Nuruu and the Tomortiin Nuruu.

At this time, 24 main gold deposits and gold showings are known in west Altan Tal area.

In breakdown by ore types, overwhelming 13 alluvial placer goldtype are found, and followed by 7 quartz vein type, 2 quartz vein network type, 1 gold bearing porphyry copper type, and 1 conglomerate type.

In breakdown by metallogenic zone, 3 in the Bayanhongor metallogenic zone and 3 in Khungui-Baidrag metallogenic zone, 6 in total are found in the north Mongolian metallogenic province. On the other hand, 12 in Edrengiin Nuruu metallogenic zone, 4 in Bayanglig-Bayangovi metallogenic zone, and 2 Tomortiin Nuruu metallogenic zone, 18 in total arefound in the south Mongolia metallogenic province.

In these 24 main gold deposits and gold showings, the following 5 ones except alluvial placer gold and conglomerate types are important,such as: the Saran Uul porphyry copper type mineralized area belonging to the Khungui-Baidrag metallogenic zone, the Xhan Uul quartz vein network type belonging to the Bayanhongor metallogenic zone, the Bayangovi-1 quartz vein network type mineralized area belonging to the Bayanglig-Bayangovi metallogenic zone, both of the Hatan Suudal and Tallin Meltes quartz vein type mineralized area belonging to the Tomortiin Nuruu meta-llogenic zone.

However, no reports has been made so far on finding a large ore depositwith high grades which will lead to a substantial mining development project upto date.

3.2 Groundtruth

3.2.1 Existing Gold deposits and Gold Showings

Among 15 ore showings surveyed in 2nd year, 14 are quartz vein type and the other one seems to be porphyry copper ore type (MS-78).

Hereby, alteration, ore grade, genetical condition and general interpretation regarding these 2 types are discussed.

(1) Quartz vein type

① Alteration

In this type of ore showings, weak sericitization or weak beresitization are shown commonly within several meters from quartz vein.

This type can be subdivided into 2 subtypes as follows, (a) Each quartz veins show small scale and small sequence, but such kind of quartz veins are scattered in rather big area on the whole: zoned quartz vein subtype. (b) Ore showings are composed of one quartz vein or an aggregate of small quartz veins, therefore parts rich in quartz are concentrated in a restricted small area: single quartz vein subtype.

Though the difference between these 2 subtypes, geostatiscally single quartz vein subtype are usually hosted granitic rocks and green volcanic rocks, and zoned quartz vein subtype are usually hosted in sedimentary rocks and metamorphic rocks. It seems that physical condition of host rocks affected the formation of quartz veins.

② Ore Grade

Ore showings such as MS-49 and MS-575 which are single quartz vein subtype seem not to have much ore reserves, then it is necessary for development to have high ore grade. But their ore grade like as 0.7g/t in maximum gold and 0.25% in maximum copper are too low in their potentiality to develop, even if there are any exploration space below the existing ore showings.

Ore showings in MS-Hatan Suudal (MS-572) which is subdivided into zoned quartz vein subtype shows exceptionally high gold grade 43.5g/t only in one sample and another one sample from MS-592 contains 1.41g/t in gold, but generally this subtype shows low grade in gold. The above mentioned golden sample from MS-572 is a small tip sample dominated in quartz that shows a visible golden grain, and thenthis sample is not a typical sample in MS-572 ore showings. In MS-572, general samples taken like channels from 4 mineralized zones where mineralized zones are composed of several small quartz veins width of 5~20cm to be totally 1~1.5m wide with host rock show 1.59g/t gold at maximum.

From the view of other elements and other minerals, it is usually characteristic that quartz veins bearing highly gold include malachite and chalcopyrite. The single quartz vein (4~9g/t) observed at Shuten last year in eastern half of projected area also contains these copper minerals. But all sample that show high grade in gold are not high grade in copper and it does not seem that nativegold is directly accompanied by chalcopyrite.

Generally speaking, silver grade is low and high golden samples show less silver ratio to gold than 1 as usual. Therefore, it can be said that they are not relatively rich in gold and are poor in silver.

Regarding other elements, it is clarified that generally antimony is poor in the whole area and relatively high amount of tellurium is found in MS-572.

③ Genetical Temperature, Fluid Inclusion and Mineral Paragenesis.

It is often observed that quartz veins bearing native gold appear to include abundantly milky and fine inclusions. Regarding mineral paragenesis under microscope, exsolution minerals such as sphalerite and cubanite can not be observed in chalcopyrite, and pyrrhotite can not be recognized, therefore quartz veins can not be considered to have been formed in high temperature. As paragenesis of pyrite and marcasite can not be seen, they are not thought to have been formed in so low temperature. And then most of quartz veins can be considered to have been formed in middle~low temperature. According to unpublished document of Geological Survey in Mongolia, filling temperatures of fluid inclusion in quartz vein samples bearing gold taken at Hatan Suudal show mainly 150~200°C. But filling temperature of fluid inclusions are not always coincident with gold's genetical temperature.

(2) Porphyry Copper Ore Type

Only one ore showings (MS-78) in this year's surveyed area is recognized as this type of ore showings. Impregnated copper mineralization is seen along the fractures in chloritized and sericitized granitic rock, and it seems to be same type as Tsagaan Suvraga and Narin Hudug surveyed last year. This ore showings can not be detected from satellite image analysis, because it does not have white altered zone composed of quartz and kaolinite. In MS-78 area, scale of mineralized zone can not been estimated, as it exists on the geographical plain and exposures of mineralized zone is very restricted in a small area.

Chemical analysis from several ore samples here revealed 1.56% as maximum copper contents and less gold contents than 0.14g/t. The quartz vein that cut through granitic rock shows 0.55g/t as muximum gold contents. Regarding other elements, arsenic is contained relatively in high amount and tellurium is contained less than detecting limit. In comparison with these chemical values and those of Tsagaan Suvraga ore showings in Uudam Tal project area, this area seems to have higher potentiality in copper contents and no higher potentiality in gold contents than Oudamtal area.

3.2.2 Satellite Image Anomaly

(1) Tone of Colour (refer to Appendix 1~10)

Twenty-one places picked up from satellite image analysis were surveyed in this year as groundtruth, and these places mainly show cyan-blue colour on satellite image. Having first year's experience that cyan-blue colour on satellite images was usually thought to be due to white and acidic altered minerals such as kaolinite and allunite, cyan-blue places on satellite images were selected to be surveyed in this year. Among these 21 places selected to be surveyed,no distinct altered zones can not be found in light greenish blue places such asIA-66 and IA-69, but in other places altered zones can be confirmed where argillization and silicification took place more or less.

IA-61 and 75 which were spotted yellow on satellite image were selected to be surveyed this year, because Shuten mineralized zone was a typical example of yellowish places on satellite images analized last year. Thgough the existence of mineralized zones were expected in these 2 places, concentration of oxidized iron can not be found and distribution of black manganese oxidized minerals wererecognized widely.

Generally white reflected tone in colour on satellite image is appeared in a place where eminent silicification or much quartz veins exist. The existing ore showings such as Hatansudaar, Tarinmertis area and Bayandovi area can not be distinguished from others, because the ratio of host rocks to siliceous rocks may be so high.

(2) Distribution (refer to Fig. 62)

After groundtruth were performed for selected places from satellite image analysis for 2 years, that is, last year and this year, most of white and acidic alteration zones were revealed to distribute eminently along the parallel of Lat. 43°N where it is a southern part of projected area in this year and a few of them were done to distribute along the parallel of Lat. 45°N.

On the parallel of Lat. 43°N, ore showings such as Shuten (IA−5), Ih−Shanhai (IA−20 and 21), IA−24 and IA−25 surveyed last year, and IA−51~IA−53, IA−61~IA−65, IA−74 and IA−75, IA−92 and IA−93 are arranged from east to west in order. Among these ore showings, golden mineralization were recognized at Shuten (IA−5) in eastern area and at IA−53, IA−65 and IA−51 in western area, by surface survey.

On the parallel of Lat. 45°N, ore showings such as IA−31 which is at the west of Mandalu Govi and IA−43~IA−45 in eastern area surveyed last year,and IA−68, IA−69, IA−70 and IA−71 in western area surveyed this year are arranged from east to west in order. Among these ore showings, only IA−68 ore showings showed golden minerals accompanied with porphyry copper type mineralization. And in IA−71 ore showings, a small amount of copper impregnation was confirmed, its grade is very low as mentioned above.

(3) Distribution of Alteration Minerals

Most of eminently altered zones are mainly composed of silicification and white argillization, but a few of them are not quite same as others. Usually silicified altered parts exist in their center and argillized parts distribute around silicified parts.

Acidic altered minerals such as quartz, kaolinite (including dickite), allunite, pyrophyllite and diaspore are seen. Most of anomalous areas in satellite imageare thought to have been strongky resistant against erosion and to have been remnant outcrops, because of much chalcednic quartz in silicified zones and argillized zones. Altered zones composed of montmorillonite and mixed layered minerals might exist above or around the acidic alteration zones, but they are possibly considered to have been eroded out because of their weakness against physical erosion.

Acidic alteration zones just above mentioned were usually formed at relativelyshallow depth from surface, due to degaseous of hydrothermal solution coming up from the deeper places. Generally, alteration zones which consist of chlorite and sericite lie below the acidic alteration zones, and predominamnt golden mineralization are highly expected to exist below these acidic alteration zones.

IA−68 was supposed to consist of kaolinite and diaspore by satellite image analysis, but porphyry copper type alteration composed of quartz, chlorite and sericite and golden mineralization were confirmed to exist after groundtruth. Itis easily supposed that upper portion of porphyry copper type alteration zone are exposed, and also expected that more predominant copper and gold mineralization exist at deeper places.

Besides these acidic alteration zones, IA−71 and IA−96 were selected by satelliteimage as anomalous zones, and quartz and sericite were found in these zones. Quartz veins and weak copper mineralization were recognized, but central part ofmineralized zone is supposed to be exposured. Therefore, it is difficult to expect strong copper mineralization in deeper levels.

(4) Chemical Analysis and Ore Grade

Strongly silicified parts in altered zones were taken samples for chemical analysis last year and consequently golden grade from these samples were no morethan 1g/t. Regarding gold grade, this year's survey also shows same tendency as last year.

Only 2 selected areas (IA−52 and IA−65) from satellite image in this year showed gold grade higher than 1g/t. In IA−52 area, gold was included at just lower partfrom ridge where quartz and kaolinite existed predominantly. In IA−65 area, goldwas contained in veinlet silicified rock accompanying small quartz veins. In these 2 areas, rather high contents of arsenic amnd tellurium can be detected, but any other special characters can not be discovered.

In IA−68 area, gold−rich parts show 0.2~0.3 g/t in gold, and are mainly seen in dioritic porphyrite and others where they are usually chloritized and sericitized. Tellurium is poor in IA−68 and MS−78, therefore southern parts in Bayanhongor area is thought to have the characteristic of porphyry copper type ore showings.

All areas in the projected area show very low contents of silver and it may beone of characteristics in Govi region. But high silver grade were confirmed in afew ares to be mentioned below. Quartz vein in Shuten area shows 9g/t of gold and 40g/t of silver in its highly concentrated part. Gold bearing quartz vein inHatasudaar area shows 40g/t of gold and 19g/t of silver in their concentrated part. On the other hand, gold contents in IA−75 and IA−94 are around several ppb, but silver contents are exceptionally high values such as 55.2g/t and 48.1g/t respectively.

Regarding other elements, rather high amount of mercury were recognized in IA−61~IA−64 areas. IA−64 is a little rich in antimony. Because IA−61~IA−64 areas have highest elevation among surveyed areas, difference in erosion levels may affect the distribution pattern of elements.

3.3 Geological structure and gold mineralization in the west Altan Tal area

3.3.1 Geological structure and metallogenic province

In the Altan Tal area, the two main geotectonic units are found. They are (a) the Baikalian to early Caledonian fold belt in the northern megablock of Mongolia, accompanied by the north Mongolian metallogenic province, and (b) the late Caledonian to Variscan fold belt inthe southern megablock of Mongolia, accompanied by the south Mongolian metallogenic province. These two megablock are devided into north and south of Mongolia by Ih−Bogd deep fracture that is the main geotectonic line in Mongolia and running with a direction of apporoximately E−W in the northern part of the area.

The north Mongolian metallogenic province consists of two metallogenic zones such as the Bayanhongor and the Khungui−Baidrag, while the south Mongolian metallogenic province consists of three metallogenic zones, namely, the Bayanlig−Bayangovi, the Edrengiin Nuruu and the Tomortiin Nuruu.

3.3.2 Characteristics of mineralization

In Mongolia, the disturbances of the Caledoinian Orogeny and the Variscan Orogeny contributed mainly to the formation of economical worthy gold ore drposits. And most of these gold deposits belong to gold bearing quartz vein type, and some belong to the gold bearing ore deposits of Skarn type and polymetallic type.

More specifically, such gold bearing ore deposits are classified into the following three main categories:

① Gold bearing Skarn ore deposit

② Gold bearing ore vein, lode, sheeted vein, saddle reef vein formed in the fault, fissure, discontinued bedding plane, sheared bedding, drag fold, fracture zone, anticlinal crestfault zone in the sedi-mentary rock, and the platlike and irregular metasomatic alteration zone developed in the neighborhood of fault and fissure formed in the bed.

③ Placer gold deposits such as Eluvial, Deluvial, Proluvial and Alluvial placer.

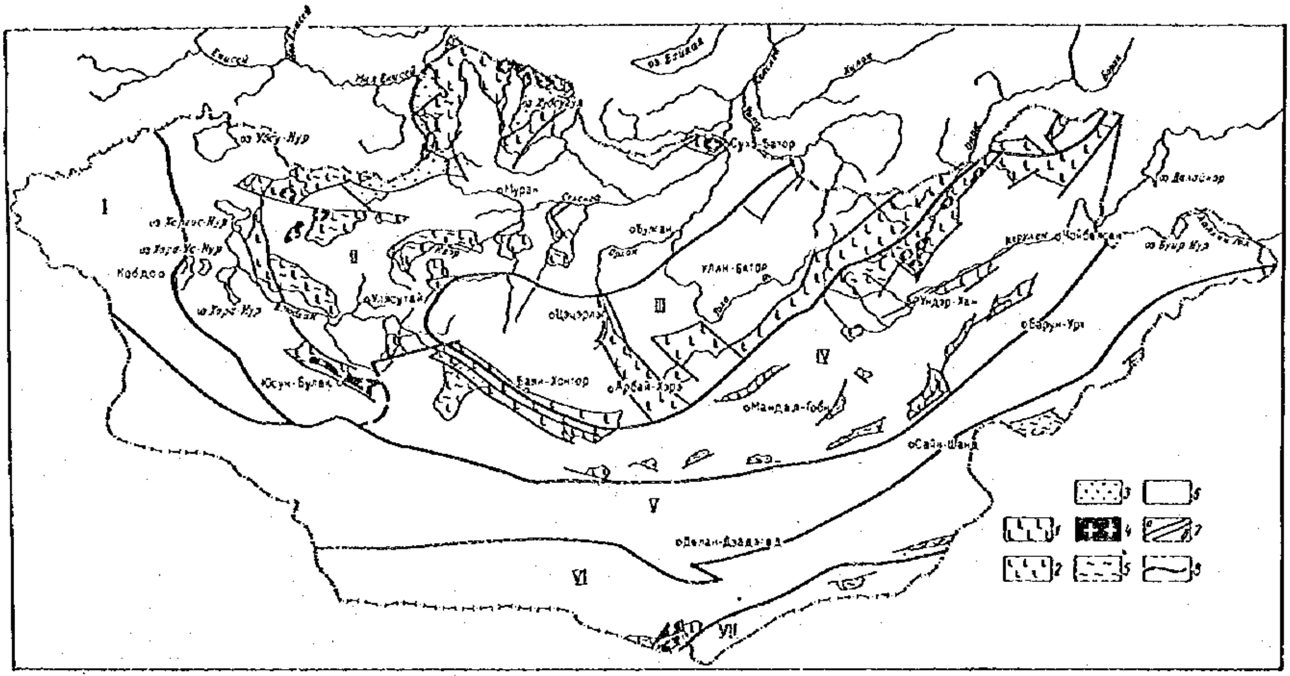
3.4 The gold potential in the west Altan Tal area

In the case of discussion the potentialy on gold deposit in Mongol, especially, that of hygogene gold deposits, it should consider the following 3 basic viewpoints: (1) source of gold of the deposit, (2) Passage of the ore sollution (containing conductive structure and permeable rock through which the gold reached to the precipitating place), and (3) location of original place occurred the deposit or existence of trap (containing structure and country rock which are appropriate to metasomation or/and dissemination).

Concerning the latter two factors, both of the northern Mongolian metallogenic province and the southern Mongolian metallogenic province have the structure formed in the orogenic movements in the early Caledonian age and late Caledonian to Variscan age. These factors normally have a scale enough to trap the vast volume of constituents provided to the ore deposit. Most of the metallogenic zones in Mongol have suitable rocks enough to cause constitutive traps and metasomation in mineralization of gold deposits. Thus, it is logical to say that the potentiality of the gold occurrences is attributable to the source of gold and accompany-ing elements.

It may be said that most of the main gold deposits throughout Mongol are formed closely related to Proterozoic igneous activities. In particular, superior metallogenic zones such as the Bayanhongor, Hangai, Central Mongolia, North Henti, South Henti, and many others are located in the greenstone belts to be generated by Proterozonic altered basic volcanic basic rocks. The greenstone zone is distributed in the northern Mongolian metallogenic province, north of the Ih-Bogd deep fracture crossing over almost east to west at northern rim of the Altan Tal area (refer to Fig. 60 and Fig. 61).

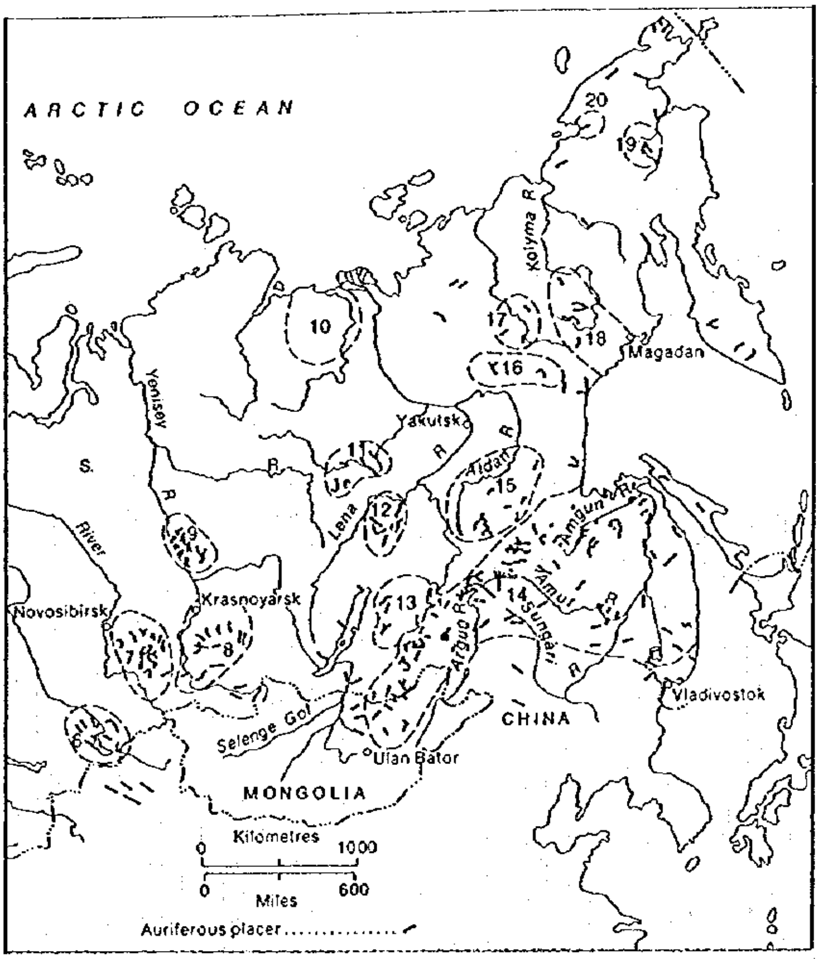
The northern Mongolian metallogenic province, especially, South Henti metallogenic zone has many placer gold deposits succeeded form gold deposits in the Precambrian era. Some of these are being operated. Meanwhile, in the southern Mongolian metallogenic province, occupying for most of the west Altan Tal area, the igneous activities in the Palaeozonic age are predominant. Therefore, the gold mineralization related to the igneous activity in the southern Mongolian metallogenic province seems to be relatively weak compared with gold mineralization developed in the Proterozoic era in the northern Mongolian metallogenic province.



EXPLANATION

1, 2 - Basic, intermediate and acidic volcanic rocks (1 - intensive; 2 - weak and local);
3 - Amagmatic formations; 4 - Migmatite, granite and granite-granodiorite formation;
5 - Migmatization zones; 6 - Post upper Proterozoic formations; 7 - Boundaries of late Proterozoic formations (a - tectonic, b - others) 8 - Boundaries of fold system: I - Mongol-Altai, II - North Mongolian, III - Mongol-Baikalian, IV - Central-Mongolian, V - South-Mongolian, VI - South Gobi, VII - Inner-Mongolian.

Fig. 60 Distribution of the Late Proterozoic Magmatic Formation



INDEX TO PLACER DISTRICTS

6.	Lake Zaysan	7.	Kuznetsk - Alatau
8.	Krasnoyarsk (Sayan)	9.	Yenisey Range
10.	Anabar - Olenek (placers reported)		
11.	Vilyuy	12.	Vitim - Patomsk Highlnd
13.	Vitim River	14.	Amur - Argan - Amgun rivers
15.	Aldn River	16.	Verkhoyansk Mountains
17.	Elgi River	18.	Upper Kolyma
19.	Belaya Gora	20.	Chaun River

Fig. 61 Placer Districts in Mongolia and Northeastern Russia

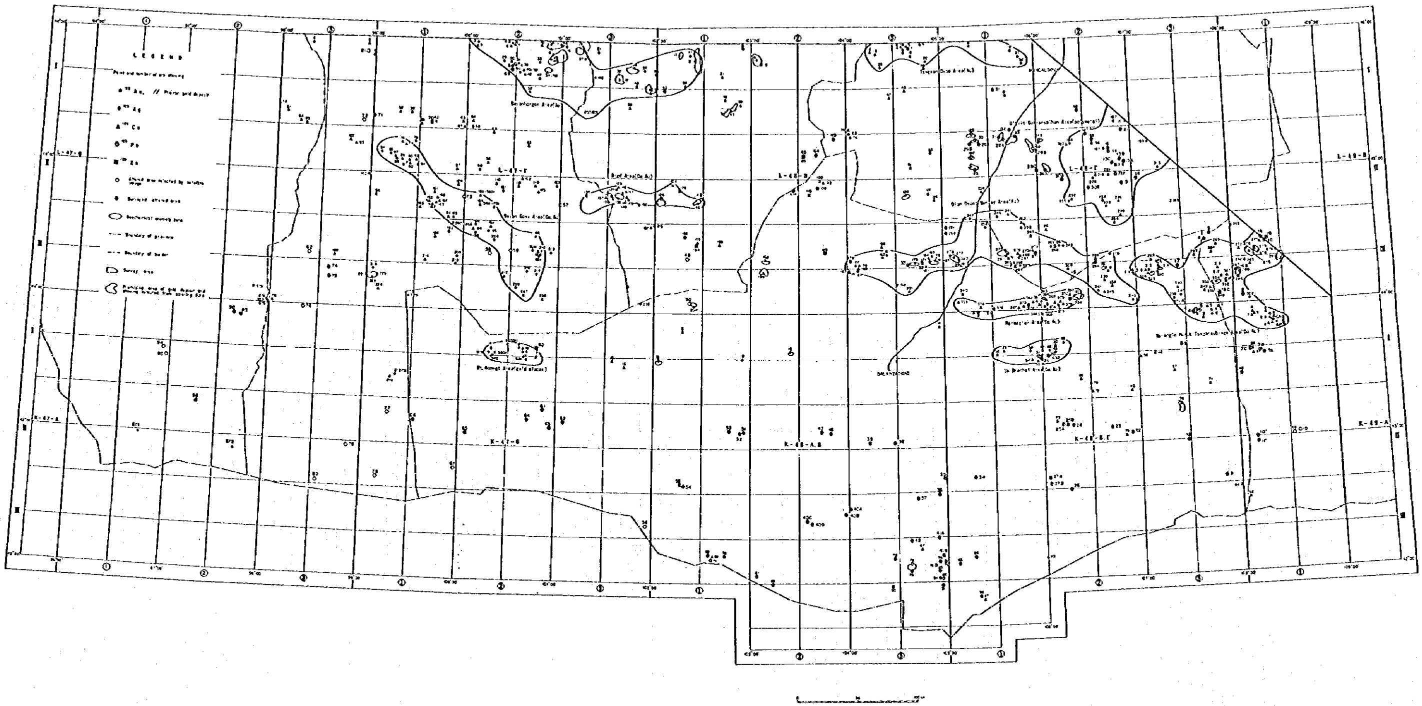


Fig. 62 Compiled Map of Survey Area