گزارش نهایی یونیون ایتوك

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SUMMARY

Qeshm Union Itok International (QUIZ) in conjunction with the Geological Survey of Iran through a Joint Venture, has spent approximately 16 months exploring terrain prospective for porphyry copper mineralisation over five (5) areas in the Kerman and East Azarbaijan Provinces in Iran.

The exploration was undertaken during several field expeditions from June 1999 through to July 2000 using experienced Iranian and Australian geologists provided by QUJI.

Whilst exploration did identify a number of areas at surface exhibiting porphyry copper alteration, it did not verify significant amounts of associated copper mineralisation. In addition, other styles of mineralisation (skarn, granite hosted mesothermal) located were considered too small for the Joint Venture.

The most exciting areas in East Azarbaijan are those already held under tenure by other companies/landholders. Attempts to locate and discuss exploration options on these tenements with the landholders failed and as such, no work could be undertaken in examining these areas for their real potential to host porphyry copper mineralisation.

From the work undertaken to date within both the Kerman and East Azarbaijan Project Areas, it is clear that the potential for locating economic mineralisation at surface or shallow depth is limited. In its search for porphyry copper mineralisation, QUII's exploration criteria has been to locate economic mineralisation at surface without the need for complex and expensive exploration techniques and significant budgets. As such, no further work is recommended within the current GSI Joint Venture areas.

1. BACKGROUND

Qeshm Union Itok International (QUII), a 50 owned subsidiary of Union Capital Limited (previously Union Mining NL), entered into a Memorandum of Understanding (MOU) with the Geological Survey of Iran (GSI) to undertake porphyry copper exploration over five (5) areas in Iran, totaling some 1730 km^2 (Appendix I). Four of the five areas, totaling 1,032 km2-, are located in the Kerman central Iran with the remaining area totaling some 598 km^2 located in East Azarbaijan in NW Iran (Figures 1 and 2).

The MOU (Appendix I) relates to a 12 month period commencing 15 March 1999, whereby QUII will explore the five areas jointly with the GSI with a minimum QUII expenditure commitment of US$45/$km^2$ on direct exploration costs.

Under the terms of the MOU, the GSI will provide QUII with all relevant available data on the areas. In return, QUII will provide the GSI with access to the latest advances in exploration techniques for porphyry copper, gold. base metal and rare element deposits.

Areas found to be of interest durin[g] the 12 month period will be applied for as Exploration Licences of maximum size 40 km^2 as provided for in the Mining Law of the Islamic Republic of Iran.

QUII may at any time, subject to GSI approval, assign part of their responsibilities to a third party, which is anticipated would be via Joint Venture Agreement.

This report summarises the work undertaken and the results obtained from commencement on 15 March 1999 to 31 July 2000, a period of sixteen months.

Figure 1. Location Map

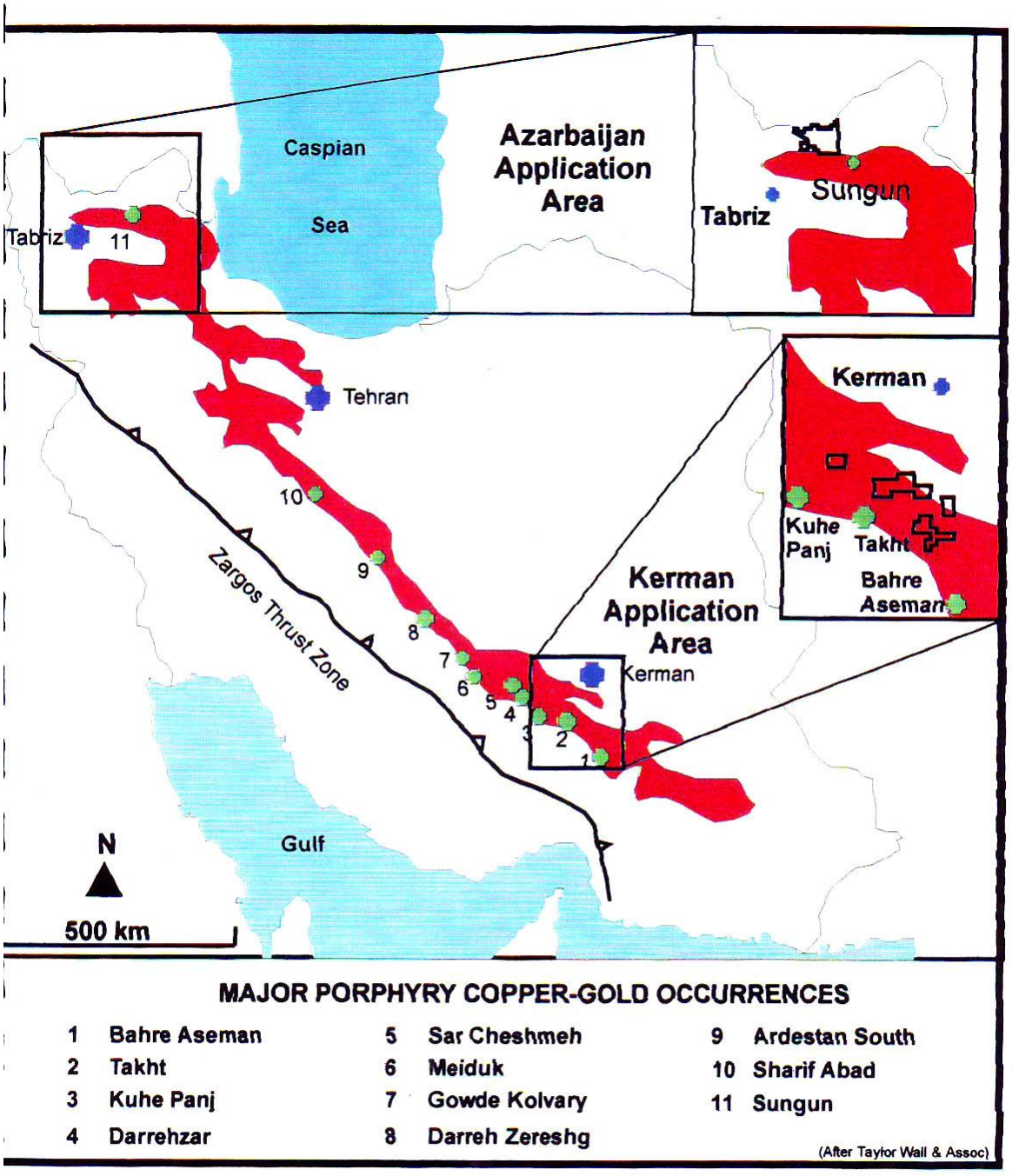


Figure 2. Location of Projects

2. GEOLOGY

The geology of the exploration areas consists of a NW-SE trending belt of Eocene volcaniclastics, sediments and minor limestones that have been intruded by the upper levels of a series of Oligocene granodioritic to dioritic plutons (Figures 3A and 3B). These are commonly cut by younger, mainly acidic dykes. The Oligocene intrusives have produced significant hornfelsing of the host volcanics and sediments in some areas. Porphyry copper-molybdenum style mineralisation and associated zoned hydrothermal alteration has been developed in a number of areas both within the intrusives and the host volcanics (Figure 3C). Most of the mineral occurrences in the region, however, are minor and related to, and controlled by, fault structures.

The best example of the porphyry copper-molybdenum style of mineralisation in the Kerman region is the large world class Sar Cheshmeh Porphyry Cu-Mo-Ag Mine, which is located to the NW of the Kerman Application areas (Figures 2, 4) where there is a resource of 1.2 billion tonnes at 0.67% Cu, 0.03% Mo, 0.27 g/t Au and 3.9 g/t Ag. Another excellent example is the undeveloped Sungun prospect, located some 1,000 kilometres to the NW of Sar Cheshmeh and within the same prospective belt. Union considered that the porphyry copper-gold belt which extends between Sungun and Sar Cheshmeh (and beyond to the SE) holds similar mineral potential to equivalent sized belts in Chile and Peru (Figure 4). Porphyry copper-gold deposits rarely occur in isolation and therefore the potential for locating further occurrences within the exploration areas was considered to be significant.

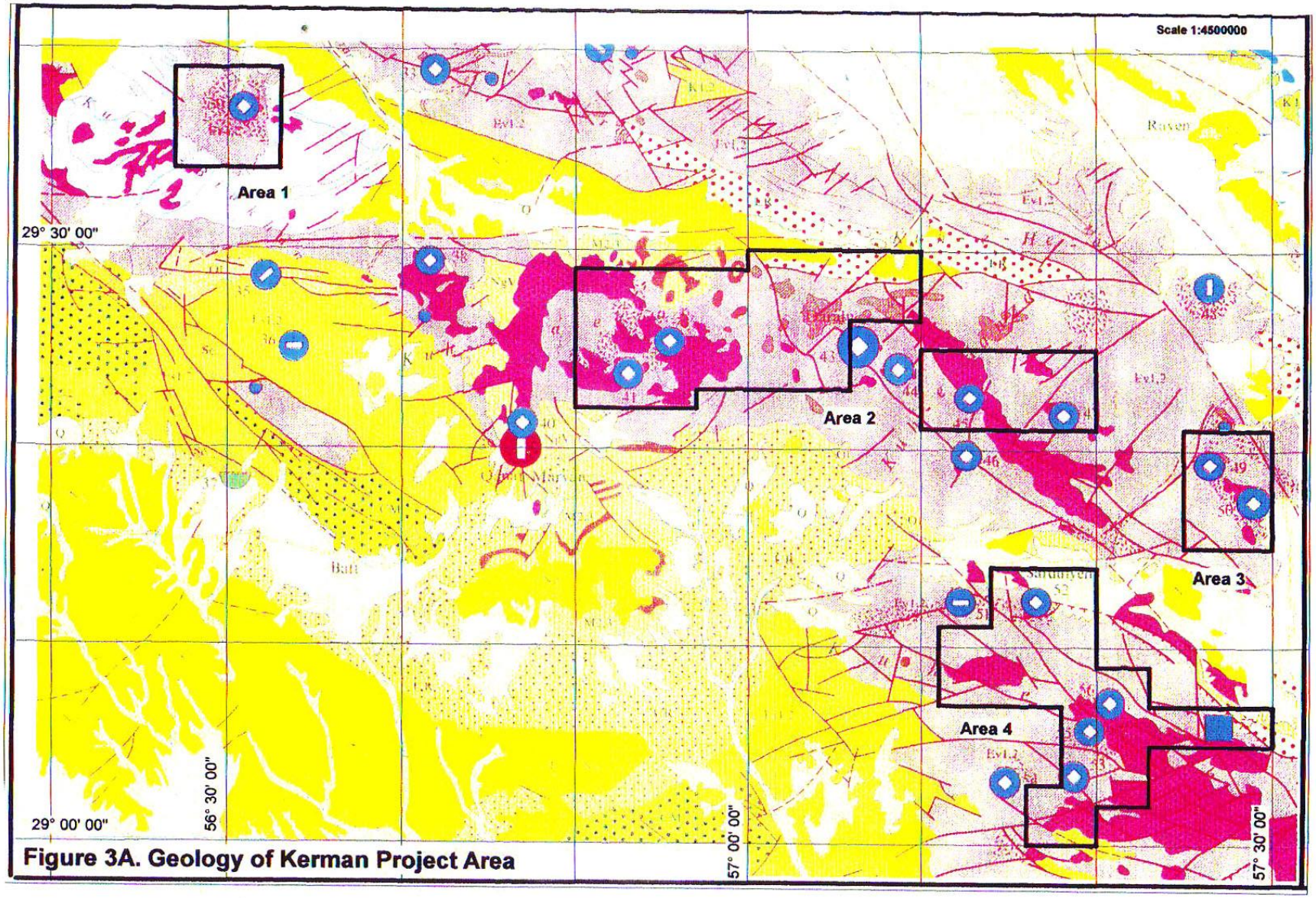
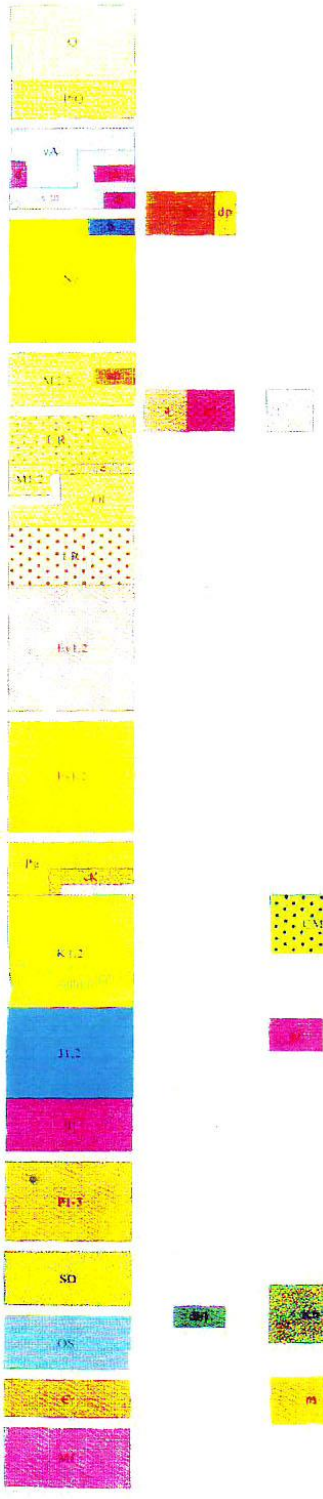


Figure 3A. Geology of Kerman Project Area

Legend



Q Quaternary deposits

PlQ Eolian slit

vA Volcanics of Aj type

d Volcanic plug

vm Volcanic of Mosahim type

ab Andesite- basalt lava flows

dr Fine grained diorite in the volcanic plug

da Dehaj type subvolcanic intrusives

dp Pyroclastics

b Basalt lava flows

Ng Pliocene sediments

M2,3 Middle upper Miocene sediments

an Andesite lava flows

Hydrothermal alterations

a Panj type subvolcanic intrusives

gd Jebal Barez type hyperbyssal intrusives

UR Upper red formation

HgV Neogene volcanic (Lalehzar type)

M1,2 Lower-Middle Miocene sediments

c Conglomerate

Ol Oligocene - Qorn and Chabar Gonbad Formations

LR Lower red Formation

Ev1,2 Eocene volcanites

Es1,2 Lower and Middle Eocene sediments

Pg Paleogene sediments

cK Kerman conglomerate

g2 Acidic intrusives in Coloured Melange

CM Coloured Melange

Se Serpentinite

K1,2 Cretaceous undivided

db2 Diabase

gl Pre-Tertiary granitic rocks

J1,2 Jurassic undivided

T Triassic (confirmed or supposed)

P1-3 Permian

SD Kereshk group (Silirian - Devonian)

Kh Khaju Complex

db1 Metamorphic diabase

OS Buj Formation (Ordovician - Silurian)

Sel Metamorphosed serpentinite

gb Gabbro

C Riza Series (Infracambrian)

m Metamorphics of unknown age

Mf Morad Series (Precambrian?)

Figure 3B. Geoloogy Legend for Kerman Project Area

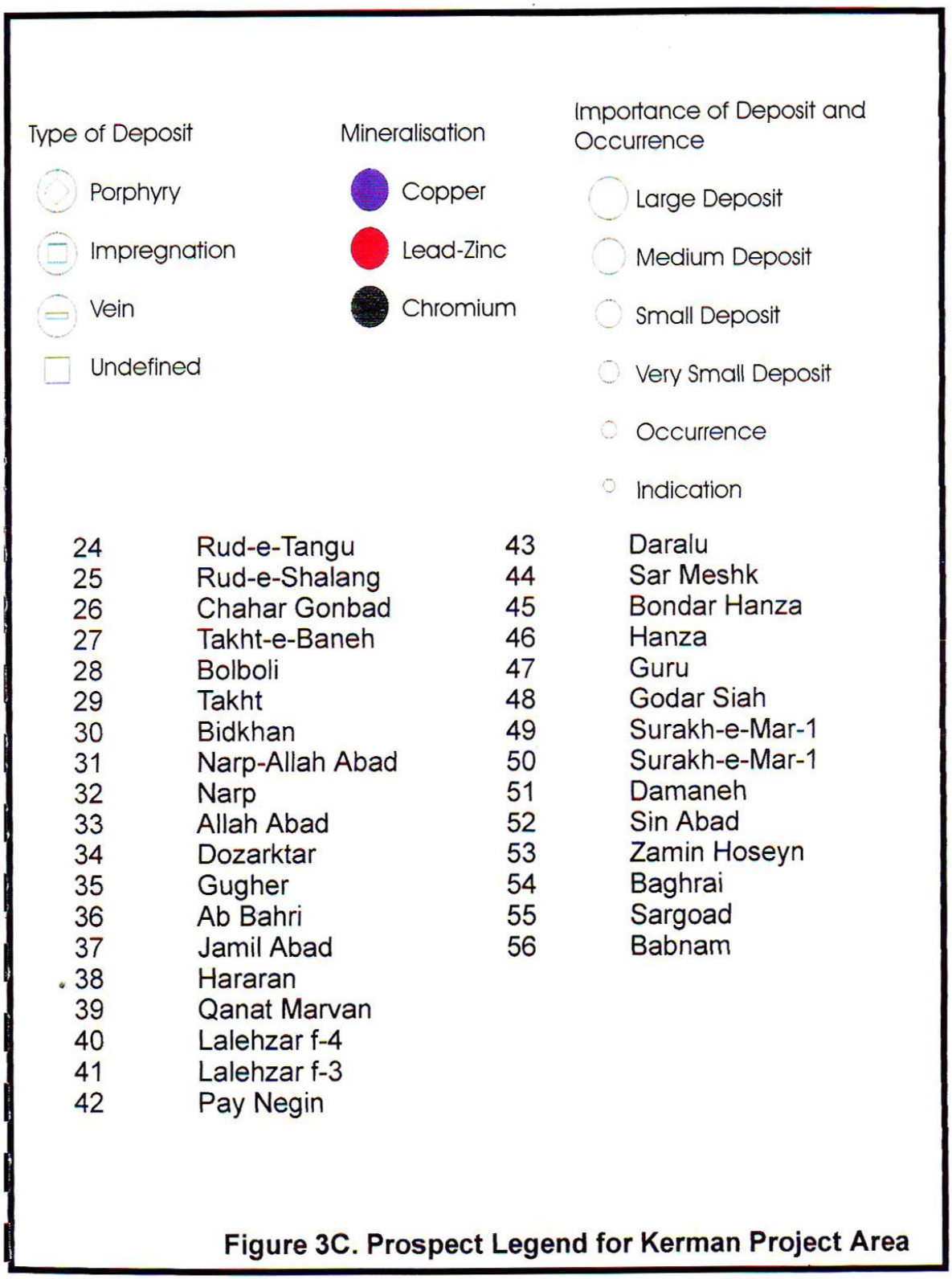


Figure 3C. Prospect Legend for Kerman Project Area

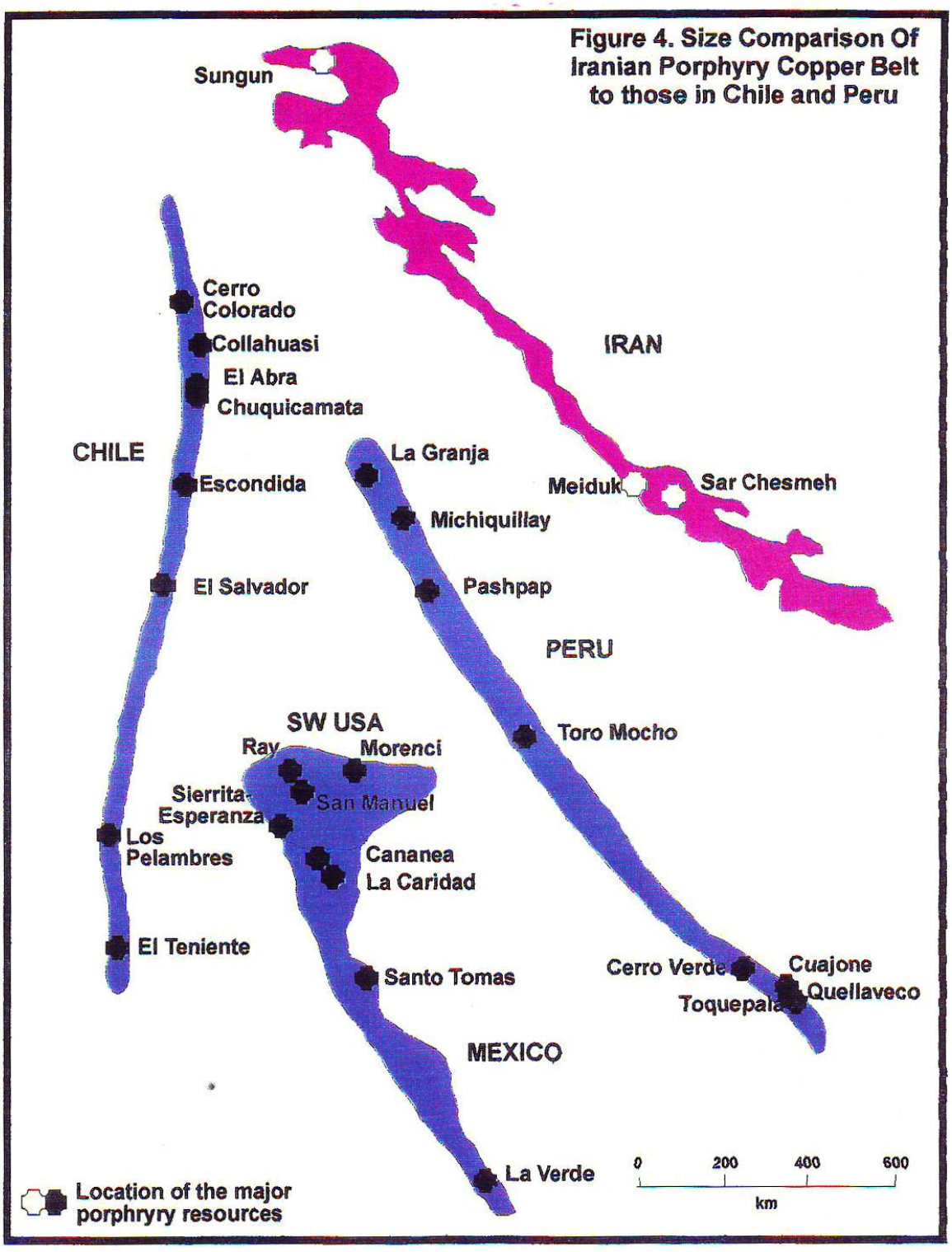


Figure 4. Size Comparison Of Iranian Porphyry Copper Belt to those in Chile and Peru
Sungun
IRAN
Meiduk
Sar Chesmeh
Cerro Colorado
Collahuasi
El Abra
Chuquicamata
CHILE
Escondida
El Salvador
La Granja
Michiquillay
Pashpap
PERU
Toro Mocho
SW USA
Ray
Morenci
Sierrita-Esperanza
San Manuel
Los Pelambres
Cananea
La Caridad
El Teniente
Santo Tomas
MEXICO
La Verde
Cerro Verde
Cuajone
Quellaveco
Toquepala
0
200
400
600
km
Location of the major porphryry resources

3. PREVIOUS EXPLORATION WORK

3.1 Kerman Project Area

Extensive previous work in the four areas that constitute the Kerman Project has been undertaken by, and reported upon, by the Yugoslavian Geological Survey (YGS). A summary of this information is included in Appendix II.

Negative results reported by the YGS in some portions of the areas were not viewed as discouraging as today's field and analytical techniques are now far more advanced than those that were applied at the time their work was undertaken (1968-1972). In particular, this assessment is based on the following;

Much of the current understanding of the alteration patterns associated with porphyry copper deposits has been developed post the YGS work.

Recognition of porphyry copper deposits developed under cover has advanced enormously over the last few years. That is, the recognition of leached caps, supergene enrichment blankets, silicic caps and lithocaps etc.Perhaps the most important factor here is the powerful vein identification criteria described below.

Recognition features of porphyry associated high sulphidation epithermal deposits has also undergone significant advancement in recent times. Little, if anything, of these style of deposits was known at the time of the YGS work and for that matter, generally in Iran up to the present time.

3.2 East Azarbaijan Project Area

No public information appears to be available for the East Azarbaijan Project area. Most of the activity in the area has been undertaken by Government enterprises (e.g. NICICo) and private mining companies and all information obtained is confidential.

4. SUMMARY OF WORK UNDERTAKEN

A summary of the work undertaken in the five Project areas during the life of the project is provided below.

4.1 Kerman Project Area

Review of the YGS information as provided in their summary report. However, acquisition of their more detailed individual prospect reports proved to be somewhat difficult and disappointing as very few of the reports were able to be located by the GSI. Also in the limited number of cases where the texts of the reports were obtained, very few of the numerous detailed maps and figures listed in the indexes could be located.

Acquisition of the Landsat scene for the area and enhancement of it to emphasise the presence of iron and clay (interpreted to highlight clay alteration and sulphide development). This is presented in Plate 1. Figure 5 shows the anomaly exhibited by the Sar Cheshmeh Mine, but it should be noted that this anomaly has been significantly magnified by the Mine disturbance and the removal of overburden (Mine commenced prior to Landsat scene acquisition).

Selection of iron and clay anomalous areas for ground investigation.

Field investigations undertaken over the period May to August 1999. Involved up to three geologists at any one time from Union Capital, Itok and the GSI. A GPS unit was used for ground location control. No field work or interpretation of data was carried out in the project area in 2000.

Collection of 62 rock samples for assay and three rock samples for XRD that were submitted to the GSI in Tehran for analysis.

Assessment of results obtained and selection of areas considered to warrant further work.

Application for three Exploration Licences of approximately 40 km^2 each lodged at the Ministry of Mines and Metals (MMM) in Kerman on Tuesday 30

November 1999.

Compilation and submission of a detailed report on the work conducted, results obtained and assessments made in late December 1999.

4.2 East Azarbaijan Project Area

Search for available exploration data. As discussed above, this proved to be unsuccessful.

Acquisition of the Landsat scene for the area and enhancement of it to emphasise the presence of iron and clay (interpreted to highlight clay alteration and sulphide development). This is presented in Plate 2.

Selection of iron and clay anomalous areas for ground investigation.

Field investigations were undertaken over two periods. The first was in September to early October 1999. The second field trip was undertaken over the period April to July 2000. Both field investigations involved up to two geologists at any one time from Union Capital, ltok and the GSI. A GPS unit was used for ground location control. No rock samples were collected during the first trip. However, rock chip samples were collected and dispatched for assay during the second field trip.

Assessment of results obtained and selection of areas considered to warrant further work.

Unsuccessful attempts to contact lease holders in the area.

Unsuccessful attempts to obtain information on previous exploration undertaken by Government and private companies in the area.

Compilation of a detailed report on the work conducted, results obtained and assessments made in late December 1999. This report was submitted to the GSI in conjunction with the Kerman work mid-January 2000.

It should also be noted that the GSI has been updated with respect to progress of work programs on an approximate monthly basis.

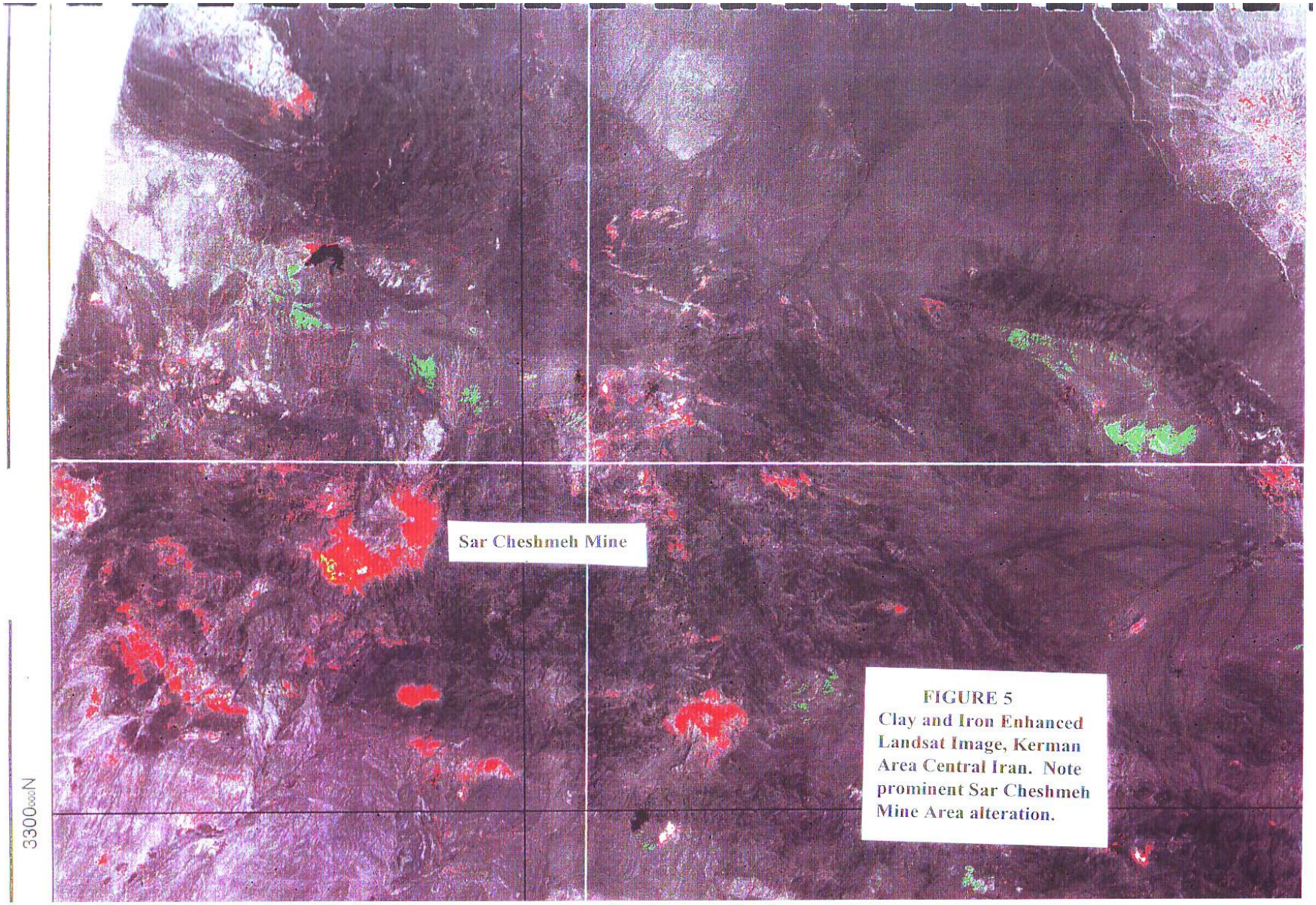


FIGURE 5
Clay and Iron Enhanced Landsat Image, Kerman Area Central Iran. Note prominent Sar Cheshmeh Mine Area alteration.

5. EXPLORATION NIETHODOLOGY

5.1 'A', 'B' and 'D' Veins

Within a porphyry alteration system, 'A' and 'B' veins are developed exclusively within the potassic alteration zones and therefore their presence is diagnostic in identifying the potentially mineralised sections of these systems. 'D' veins are developed within the sericitic or phyllic alteration zones of porphyry copper systems and are therefore also diagnostic in identifying the potentially mineralised sections of these systems. Within a defined porphyry alteration system, these vein types (Figure 6) may be described as follows;

'A' Veins: These are somewhat "wavy" in nature and usually less penetrating than B veins. The veins are usually relatively narrow, mostly less than 10mm in width, and are composed of translucent to milky quartz which often contains disseminated pyrite, chalcopyrite and bornite. Minor translucent to dark K-feldspar is often developed along the vein margins. Alteration along the vein contacts with the host is rare. A veins always predate B veins.

'B' Veins: These are more penetrating and less "wavy" than A veins. They are usually relatively narrow, mostly less than 10mm in width, and are composed of translucent to whitish, sometimes weakly banded, quartz. They commonly exhibit a central suture line which may appear as an open-space or partly filled by narrow vein segments containing pyrite, chalcopyrite or molybdenite. Molybdenite is occasionally present as minor patches developed along the vein margin. Alteration alon[g] the vein contacts with the host is rare. B veins always postdate A veins.

'D' Veins: These veins often attain much larger widths, commonly in excess of 50mm. They are mainly composed of milky, coarse grained, quartz with central development of massive sulphides.

Sericitic haloes are often developed along the vein margins and extend for several mms into the host.

In exposures within porphyry deposit mines it is evident that the A and B veining is persistent and through going - it is not intermittent, and exhibits few terminated veins and clearly gives the impression of belonging to a bigger system (not just local overburden release which produces a restricted fracture pattern). Prominent vein intersections are evident with triple point intersections being a notable feature.

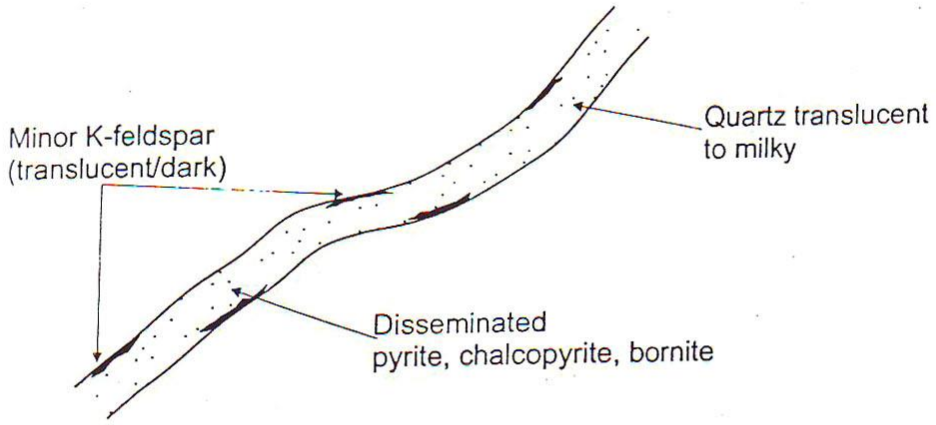
Richard (Dick) Sillitoe, a consulting geologist with an international reputation for his understanding and interpretation of porphyry systems, has been prominent in the utilisation of the veining criteria outlined above in evaluating porphyry systems. His workshop course entitled "Porphyry Related Copper-Gold Systems [y]- Field Recognition and Interpretation" (Perth, Australia, 28-29 November 1998) has been attended by the author and found to be particularly stimulating.

The 'A', 'B' and 'D' vein types and their relationships have been clearly recognised by QUII personnel in Iranian porphyry copper mineralised systems including Sar Cheshmeh, Miduk and Daralu in the Kerman area of Central Iran (Photographs 1, 2 and 3) and Sungun in the East Azarbaijan area of NW Iran. In particular, 'A' and 'B' veins found developed within sericitic alteration (containing prominent 'D' veins) at Miduk provides clear evidence that the current alteration at that location has over-printed earlier potassic alteration. A similar situation to the latter has been noted by other workers at Sungun

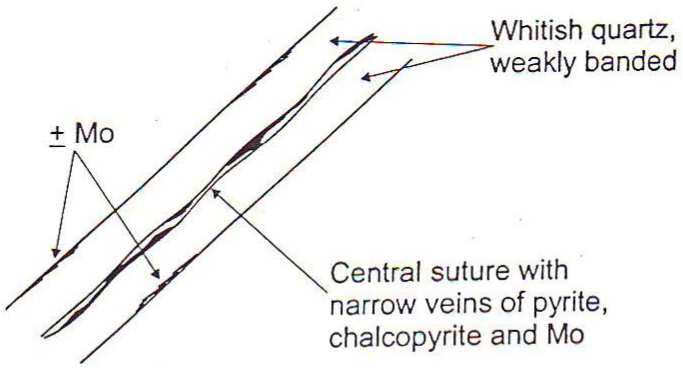
This veining criteria is considered to provide a very powerful exploration tool has been adopted in our evaluation of the porphyry copper systems in the Kerman and East Azarbaijan areas.

A, B and D Veins in Porphyry Copper Systems

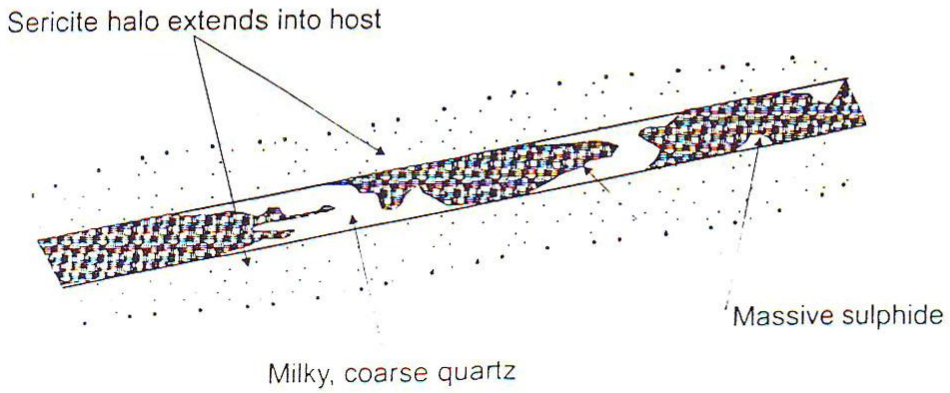
'A' VEINS - Little to no alteration on contacts



'B' VEINS - Little to no alteration on contacts



'D' VEINS - Alteration common on contacts and usually extends into host



5.2 Search Criteria

The search criteria applied in the five areas is outlined below.

- Ground investigation of the area selected from the Landsat interpretation. Specifically the areas selected are from within the prospective NW-SE trending belt of intrusive, volcanic and volcaniclastic rocks as the areas of younger sediments, especially carbonate rocks, generate false anomalies or anomalies of no economic significance.

- Identification of those areas where porphyry copper style alteration is present. That is, areas where the following alteration was identified;
    - Propyllitic alteration (pyrite, chlorite, carbonate).
    - Phyllic or sericitic alteration (pyrite, silica, sericite)
    - Intermediate argillic alteration (pyrite, illite, sericite).
    - Potassic alteration (K-spar, biotite, silica)
    - Advanced argillic alteration (illite, kaolinite, alunite, pyrophyllite, diaspore +1- sulphides)

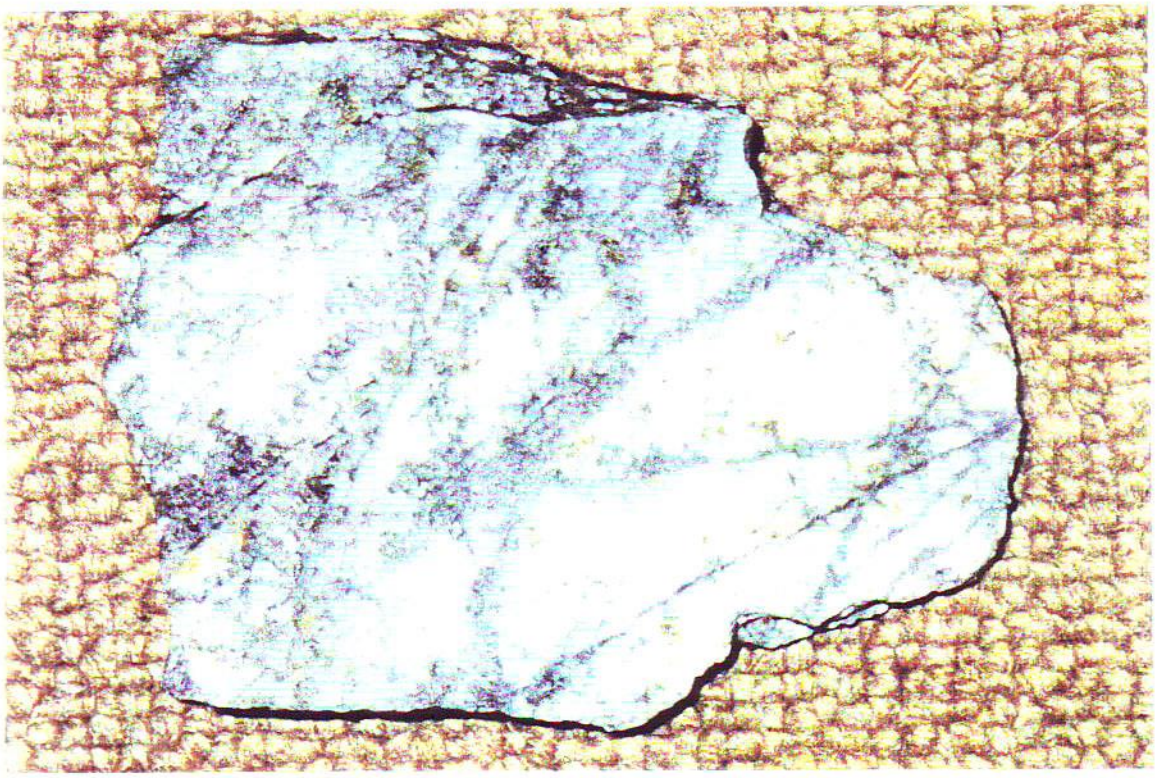
- Areas identified as containing porphyry style alteration have been closely examined for the presence of 'A', 'B' and 'D' veins (see discussion below). While these vein types are *only* developed within the primary potassic and phyllic alteration zones, all porphyry alteration types should be checked as it is not uncommon for the other porphyry alteration types to overprint these.

- A lack of 'A', 'B' and 'D' veining has been interpreted as indicating there is no potential for the presence of near surface

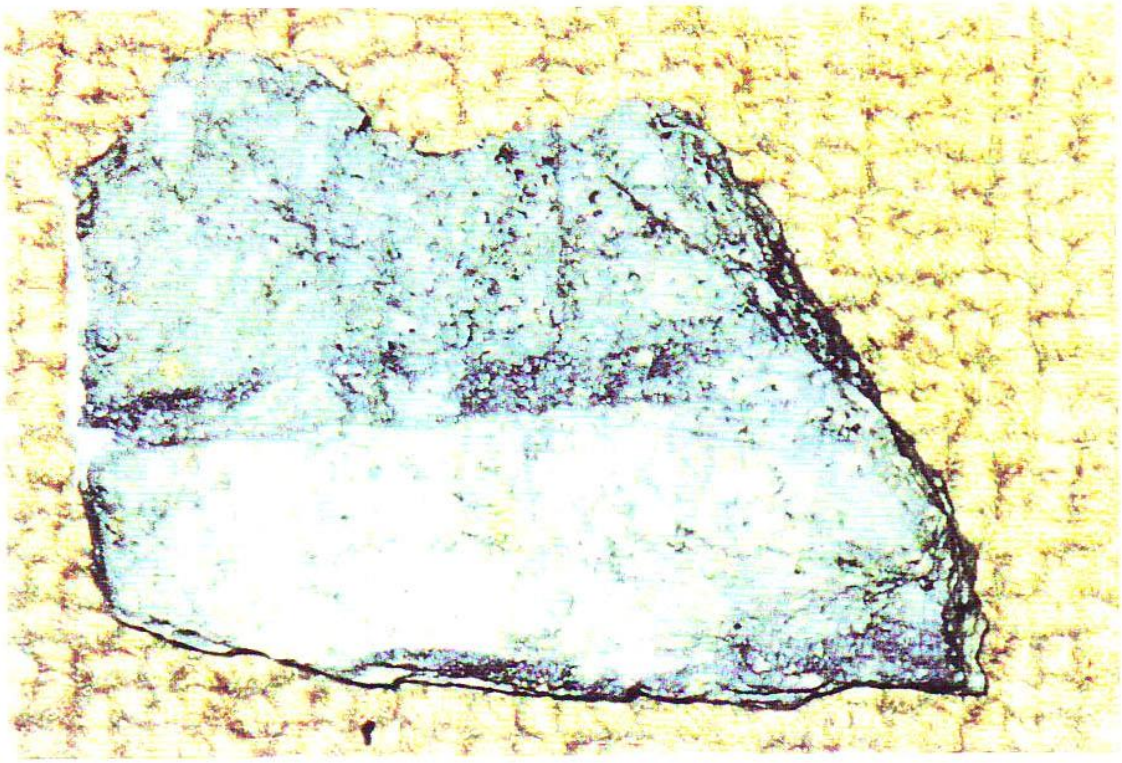
porphyry style Cu mineralisation. However, care was taken in areas of advanced argillic alteration as while 'A', 'B' and 'D' veins will not be present, the alteration may only be a thin capping over a mineralised porphyry system.

- Lithocaps, leached zones and breccias have been closely examined for the presence of altered fragments containing 'A', 'B' or 'D' veins which would indicate the presence of potentially economic porphyry copper systems at shallow to moderate depths.

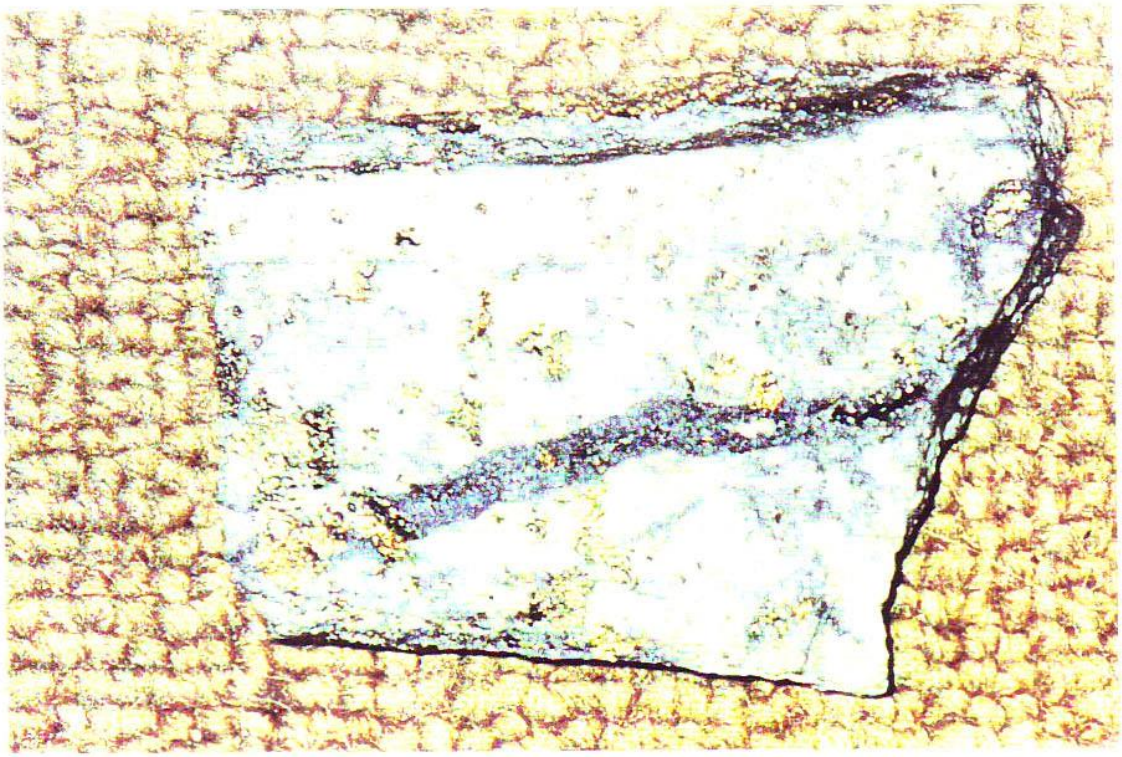
- It was also noted that the 'A' and 'B' veins can manifest themselves as quartz-magnetite veins rather than quartz-pyrite, particularly in gold rich systems. In addition it was recognised that advanced argillic alteration of quartz-magnetite would result in the development of quartz-hematite.



PHOTOGRAPH 1 'A' VEINS - SAR CHESHMEH MINE, CENTRALIRAN



PHOTOGRAPH 2 'A' VEIN - MIDUK MINE, CENTRAL IRAN



PHOTOGRAPH 3 'B' VEIN - MIDUK MINE, CENTRAL IRAN

6. RESULTS OF INVESTIGATIONS - KERMAN PROJECT AREA

6.1 Introduction

The Kerman Project area was examined in detail during the 1999 exploration program. In this program, reconnaissance exploration was undertaken by Union's geologist. Melissa MiI lward, accompanied by Mr Adeli (Itok geologist) and Mr Abedian (driver).

No further exploration was conducted in 2000 in the Kerman area as efforts were focused in the remaining GSI Joint Venture areas in the East Azerbaijan region.

6.2 AREA 1

Copper Exploration Area 1 (Figure 7A) covers an area of 90 km2 in the Sirjan 1:250,000 Scale Sheet area. It is located between Bidkhan and Deli Bala Villages, about 45 km south of Bardsir. The geology consists of Eocene volcanics and sediments intruded by several minor granodioritic bodies (Figures 7A-D).

6.2.1 Bidkhan Prospect

The Bidkhan Prospect consists of an area of dominant intermediate argillic alteration mainly within volcanic and volcaniclastic rocks over an area of at least 2 km^2. Sites visited during the field investigations (GPS located) are indicated on Figure 7A. The general area is shown on Photographs 4 and 5.

No evidence of any 'A', '13' or 'ID' veining was observed and the intrusives seen are essentially unaltered and no occurrences of surface copper mineralisation were noted. Evidence for the presence of leached caps or lithocaps is lacking.. One rock sample(QUII-001) of vein breccia from a argillic altered andesite was collected (Appendix III), but was

found to be only weakly anomalous in Pb (380 ppm).

In view of the above, together with the negative results of the YGS work (Appendix II), it is concluded that the area does not hold any potential for the presence of an outcropping or near surface porphyry copper mineralised system.

6.3 AREA 2

Copper Exploration Area 2 covers a large area of 538 km^2 which straddles the boundary of the Sirjan and Barn 1:250,000 Scale Sheet Areas. The area is some 50 kms long (E-W) by up to 13 kms wide (N-S) and effectively surrounds a central tenement area held by the Toos Copper Company. It was selected to incorporate six (6) Prospect areas previously explored by the YGS and several areas of alteration not previously investigated. Two of the areas, however, Daralu and Sar Meshk are located within the Toos Copper Company tenement.

Sites visited during the field investigations (GPS located) are indicated on Figure 7A. Although located outside of the area, brief field investigations were also undertaken at the Lalehzar F-4, Daralu, Sar Meshk and Qanat Marvan Prospects.

6.3.1 Lalehzar F-3 Prospect

This Prospect area is located about 12 km NNW of Rabor and 6km SW of Pay Negin Village. The general area is shown on Photographs 6 and 7.

The Lalehzar F-3 Prospect consists of an area of dominant intermediate argillic alteration mainly within volcanic and volcaniclastic rocks over an area of at least 2to 3 km^2. As indicated on Photograph 6, iron oxide development is strong in some areas.

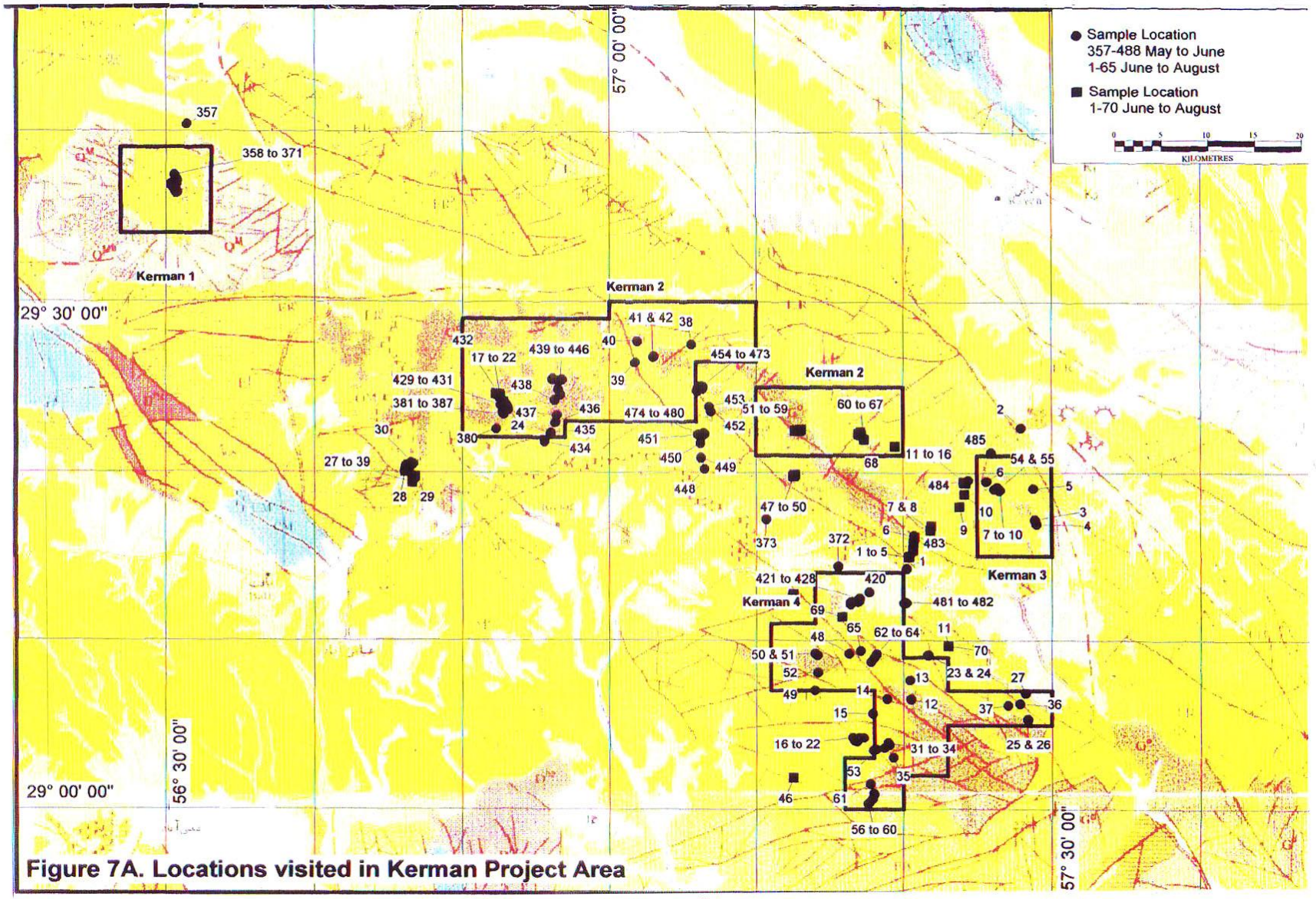


Figure 7A. Locations visited in Kerman Project Area

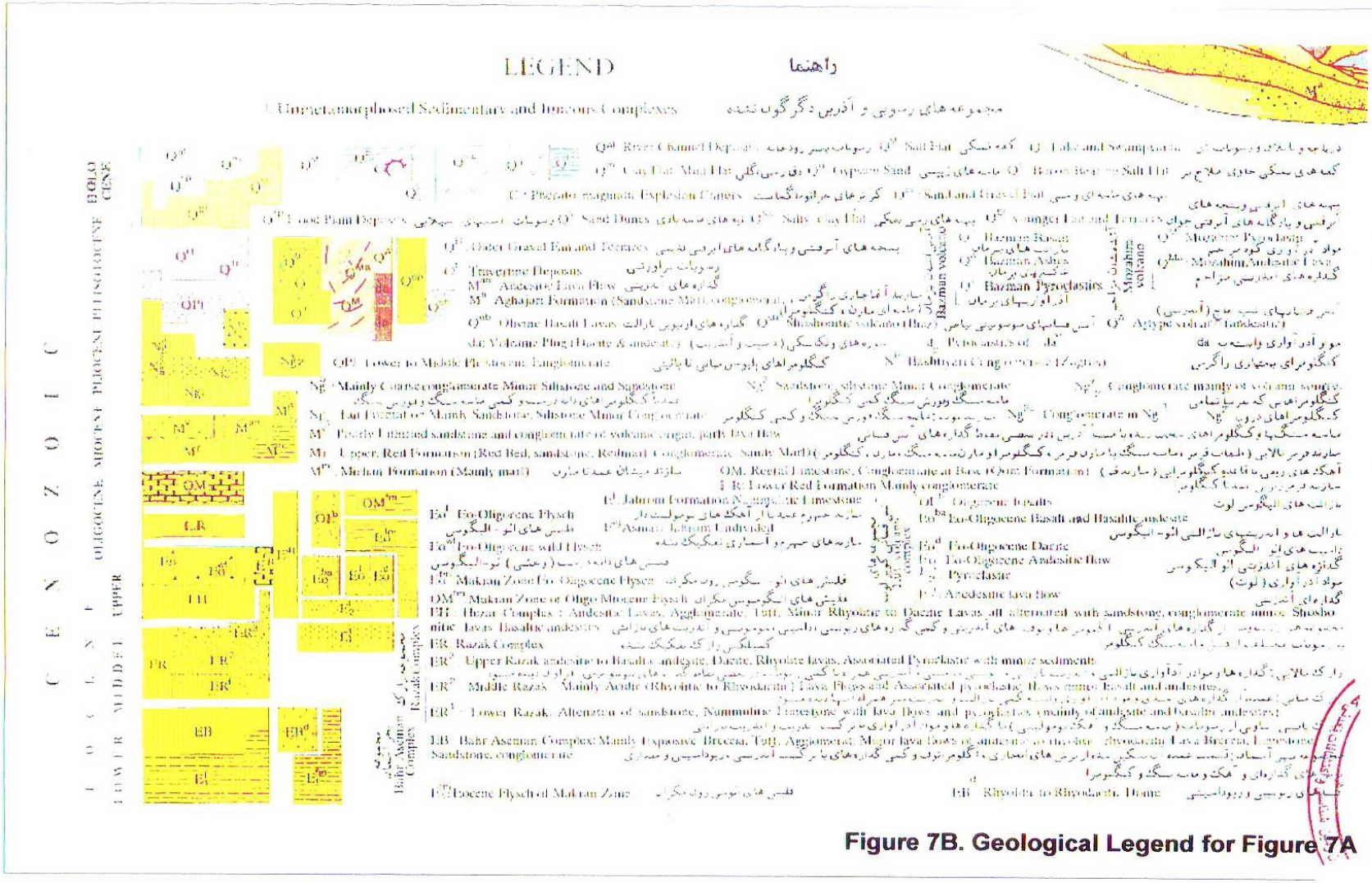
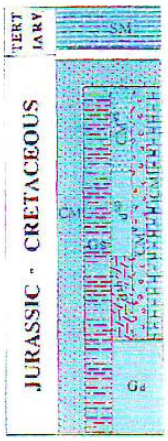


Figure 7B. Geological Legend for Figure 7A

Figure 7C. Geological Legend for Figure 7A

2. Volcanic-Sedimentary part of Ophiolites



SM: Sedimentary melange: Tectonic(Diapiric) Mixture Eo-Oligocene and Eocene Flysch with serpentinite, pillow lava, Radiolarite, Gabbros,pelagic Limestone. آمیزه رسوبی کمپلکس: اختلاط تکتونیکی (دیاپیری) الیگوسن-ائوسن فلیش با سرپانتینیت و گدازه بالشی، رادیولاریت و گابروها و آهک های پلاژیک های پلاژیک در اثر هموژنیزه یا پیریک توده های التزامافیک بوجود آمده اند.

CM: Tectonic Ophiolitic melange: Tectonic (Diapiric) Mixture of serpentinite, pillow lava, Diabase Gabbbro, pelagic Limestone, Metamorphic rocks. آمیزه تکتونیکی افیولیتی: آمیزه تکتونیکی سرپانتینیت، گدازه بالشی، دیاباز، گابرو و آهک پلاژیک و سنگهای دگرگونی بر اثر هموژنیزه یا پیریک توده های التزامافیک

d^{sh}: Sheeted Dyke دایکهای ورقی d^{sp}: Sheeted dyke and pillow lava دایکهای ورقی و گدازه های بالشی

CM^{ks}: Pillow lava, dyke limestone shale, sandstone, conglomerate
گدازه های بالشی، دایک، آهک، شیل، ماسه سنگ، کنگلومرا

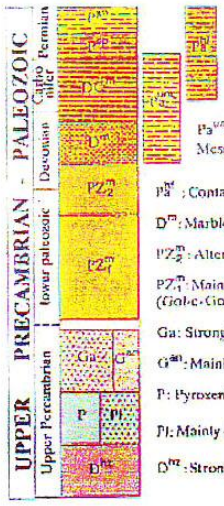
CM^{v}: Mainly pillow lava of basaltic composition Minor Dacite, Keratophyre is present.
عمدتاً از گدازه های بالشی بازالتی بوده ولی مقدار کمی داسیت و کراتوفیر هم دیده میشود.

CM^{l}: Pelagic limestone (Globotruncana limestone) (Campanian-Maestrichtian)
آهک های پلاژیک گلوبوترونکانادار (کامپانین - ماستریختین)

GS: Glaucophane schist complex: High Pressure/low temperature Metamorphosed volcanic and/or sedimentary rocks of Mesozoic age. مجموعه شیست های گلوکوفان دار ناشی از دگرگونی فشار بالای درجه حرارت کم سنگهای آذرین و رسوبی مزوزوئیک

Ga: Complex of Diabasic dyke, Gabbro and plagiogranite in agmatite fashion.
مجموعه درهم دایکهای دیابازی، پلاژیوگرانیت و گابرو بصورت آگماتیت آذرین

3. Metamorphic complexes (Early Kimmerian Orogenic units) مجموعه های دگرگونی فاز کوهزائی کیمرین آغازی



P^{m}: Metamorphosed Fusulinide Bearing limestone آهک فوزولین دار دگرگون شده

P^{cp}: Chat pat complex: Metamorphic sequence of phyllite, Metgreywack, Greenschist marble, metaquartzite کمپلکس چاه پت: مجموعه ای از فیلیت، گری واک های دگرگون شده، گرین شیست مرمر، کوارتزیت های دگرگون شده

DC^{m}: Sargaz complex: Greenschist, Micaschist, Garnet chloritoid schist, black schist minor marble. کمپلکس سرگز: شیست های سبز، میکاشیست، گرین شیست، گارنت کلریتوئید شیست و کمی مرمر

Pa^{un}: Unspecified Paleozoic rocks of Kuh-e-Davarum slightly metamorphosed and deformed some Mesozoic rocks. سنگهای پالئوزوئیک تفکیک نشده در کوه داوران که کمی دگرگون شده و دگرشکلی تحمل نموده اند. مقدار کمی مزوزوئیک نیز در این مجموعه وجود دارد.

Pa^{hf}: Contact metamorphic andalusite cordierite hornfels هورنفلس های کردیریت آندالوزیت دار دگرگونی همبری

D^{m}: Marble Minor micaschist مرمر و کمی میکاشیست

PZ_2^{m}: Alternation of marble, Greenschist, micaschist تناوبی از مرمر، گرین شیست و میکاشیست

PZ_1^{m}: Mainly of amphibolite, Garnet amphibolite, gneiss, minor micaschist, marble, ultramafic lava flows (Gohar-Gohar complex). عمدتاً از آمفیبولیت و گارنت آمفیبولیت، گنایس، کمی میکاشیست و مرمر و گدازه های التزامافیک تشکیل شده است (کمپلکس گل گوهر)

Ga: Strongly foliated, recrystallized layered gabbro. گابروهای لایه ای که فولیاسیون در آنها بوجود آمده و تحدید تبلوریافته اند

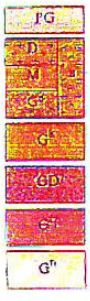
G^{an}: Mainly anorthosite, melagabbros, highly deformed and metamorphosed.
عمدتاً از آنورتوزیت و ملاگابرو که بشدت دگرشکل شده و دگرگون شده اند

P: Pyroxenite, Highly recrystallized and deformed. پیروکسنیت هایی که بشدت دگرگون شده و تحدید تبلوریافته اند.

Pl: Mainly deformed, foliated lherzolite, minor pyroxenite عمدتاً لرزولیت های دگرگون شده و دگرشکل یافته کمی پیروکسنیت

D^{mz}: Strongly metamorphosed sequence of Dunite-Harzburgite with chromite
ردیفی از تناوب دونیت و هارزبورژیت و کرومیت که بشدت دگرگون شده اند.

4. Intrusive rocks توده های نفوذی



PG: Plagiogranite in ophiolite terrains Lower Eocene(Paleocene) پلاژیوگرانیت در سرزمین های افیولیتی (پالئوسن - ائوسن زیرین)

D: Diorite دیوریت M: Monzonite مونزونیت G: Granite-Granodiorite گرانیت و گرانودیوریت

a: Subvolcanic Equivalent of G,M,D(Miocene-Early Pliocene) Host of PorphyryCopper Deposits
معادل نیمه عمیق واحدهای M,D,G میزبان کانسارای مس پرفیری

G^{k}: Upper Cretaceous Granite گرانیت کرتاسه بالایی

GD^{j}:Gabbro-Diorite (Upper Jurassic) گابرو - دیوریت (ژوراسیک بالایی)

G^{tj}: Granite-Granodiorite (Upper Triassic-Lower Jurassic) گرانیت - گرانودیوریت (ژوراسیک پائینی - تریاس بالایی)

G^{tr}: Gabbro Norite (Upper Triassic) گابرو- نوریت (تریاس بالایی)

Figure 7D. Geological Legend for Figure 7A

PHOTOGRAPH 4
Intermediate Argillic Alteration - Bidkhan Prospect, Area 1

PHOTOGRAPH 5
Intermediate Argillic Alteration - Bidkhan Prospect, Area 1

PHOTOGRAPH 6
Intermediate Argillic Alteration - Lalehzar F3 Prospect, Area 2

PHOTOGRAPH 7
Intermediate Argillic Alteration - Lalehzar F3 Prospect, Area 2

Two rock samples (QUII 005-006) for analysis were collected from the prospect area. The results were disappointing with the highest values being 374 ppm Ph, 134 ppm Zn, 132 ppm Cu and 0.037 g/t Au. Three rock samples (QUII 002-004) were also collected for XRD clay determination. This provided some encouragement with one found to contain alunite indicating the presence of advanced argillic alteration. However, an examination of the area has not revealed any evidence for the presence of a lithocap environment.

No evidence of any 'A', 'B' or 'D' veining was observed and the YGS work revealed only low grade Cu values in the two holes drilled. Evidence for the presence of leached caps or lithocaps is lacking and surface copper occurrences are only minor.

On the basis of the above, together with the negative results of the YGS work (Appendix II), it is concluded that the area does not hold any potential for the presence of an outcropping or near surface porphyry copper mineralised system.

6.3.2 Pay Negin Prospect

This prospect is located near Pay Negin Village, about 15 km north of Rabor (3000m) and consists of a minor copper-lead-zinc vein which has been previously worked on a very small scale.

The Prospect is located within a large area of weak to moderate intermediate argillic alteration, but no evidence for 'A', '13' or 'ID' veining was observed. The old working was visited and confirmed to be of little economic significance. Evidence for the presence of leached caps or lithocaps is lacking. Five rock samples (QUII 0011-105) collected from the area returned maximum values of 0.073 g/t Au, 43.80% Pb, 3.30% Cu, 5.36% Zn and 131 g/t Ag. However, the latter high values are related to the samples collected form the narrow veins and not those representing the adjacent host rocks.

On the basis of the observations made it is concluded that the area does not hold any potential for the presence of an outcropping or near surface porphyry copper

mineralised system.

6.3.3 Daralu (No 43)

Although held under tenement by the Toos Copper Company, this prospect was briefly visited while the field team was passing through the area. The prospect is located in a rugged, mountainous, area 15 km south of Chahar Tag Village and 80 km SE of to town of Bardsir. Here volcanic flows, tuffs and cherts have been intruded by three minor quartz diorite bodies. A reasonable amount of exploration activity has been undertaken and a number of holes have been drilled. The general area is shown in Photograph 8.

Extremely well developed 'A' and 'B' veining and to a lesser degree, 'D' veining, was observed in the prospect area (Photographs 9, 10 and 11). These areas of veining indicate the presence of potassic alteration and in the case of the 'D' veins, the presence of phyllic alteration overprinting original potassic alteration is indicated. The area does not exhibit any copper secondaries and is obviously surface leached. It is not known if all of the identified potassic altered areas have been drill tested.

The veining observed in the Daralu prospect area provides encouragement that the search criteria adopted by us is valid.

The Daralu Prospect is considered to be of some interest and offers contains at least a small tonnage of porphyry copper style mineralisation. The potential size of the deposit may be larger if the areas identified as containing potassic alteration have not yet been drill tested.

PHOTOGRAPH 8
Daralu Prospect

PHOTOGRAPH 9
'A' and 'B' Veining in Weathered Outcrop - Daralu Prospect

PHOTOGRAPH 10
'A', 'B' and 'D' Veining in Weathered Outcrop - Daralu Prospect

PHOTOGRAPH 11
'A', 'B' and 'D' Veining in Weathered Outcrop - Daralu Prospect

6.3.4 Bondar Hanza

This prospect is located at the end of a zone that extends from Daralu via Sar Meshk for about 15 km. The entire length of this zone is characterised by faults, patchy alteration and numerous secondary Cu occurrences.

Bondar Hanza lies approximately 8 kilometres from Hanza Village and is also known locally as Malaky. The geology of the area appears to be quite interesting. The rock types present consist of granodiorites, andesites, andesite-basalts and pyroclastics. The two main rock types appear as `red' rock and bleached 'white' rock. The 'white' rock appears to be far more extensive than the `red' rock and is appears to be continuous for at least two kilometres.

At GPS site 51, the red rock consists of sericite + quartz + pyrite + chalcopyrite + manganese disseminated throughout rhyolite. It essentially appears to be phyllic alteration, but there is very minor barren quartz veining (`A' veins possibly). This rock is intensely fractured with iron oxides coating the fracture surfaces and bleached alteration selvedges along the fractures are common. At GPS site 56, the rock type is a sericite, chlorite, silicified altered trachyte containing disseminated pyrite.

At GPS site 57, sericite + siliceous + kaolinite altered andesites have been located, containing significant limonitic alteration particularly on fracture surfaces. The rock is again intensely altered but also contains more frequent, but barren quartz veins. However, some of the quartz veins appear to have boxwork textures from possible earlier pyrite mineralisation and may be weathered 'A' and 'B' veins. Generally these veins range from 5 mm up to 20 mm in thickness, but their continuity is uncertain due to the limited extents of surface exposures. They do cross cut and also run parallel to each other. Large dog tooth quartz crystals

were also identified in rare thicker quartz veins but these are likely to represent supergene involvement.

At GPS site 58, there is a contact between the 'red' rock (highly fractured and mineralised andesite??) and altered rhyolitic porphyry. At this location, in the 'red' rock, the quartz veining contains magnetite but no identifiable sulphides. However, the veins do contain sutures, and there is minor kaolinisation and sericite alteration adjacent to the veins. These veins are considered to be of '13' vein type, consisting of quartz-magnetite rather than quartz-pyrite. The white rhyolite rock also contains significant malachite staining, however, the malachite staining is a pervasive feature of the rock types in this area. An inclined bore hole (43 degrees inclination toward 230 degrees SW) was drilled by the YGS through bleached silica + sericite altered rhyolitic porphyry back into the 'red' rock highly fractured andesite. In this hole, the red rock which appears to be particularly mineralised, was not intersected until 50 metres down hole depth (total hole depth was possibly 150 metres). There are two other vertical holes in the adjacent "bleached" outcrop area (probably --300 metres away to the west) and it is believed that these holes only attained shallow depths according to local knowledge (depths not reported by the YGS).

The results of the YGS drilling are of some interest with one hole intersecting 17m (9-26m) averaging 1.05% cu and 11 ppm Mo. Three rock samples of highly fractured and mineralised andesites to rhyolitic volcanics were collected for analysis. Results were disappointing with maximum values obtained being 903 ppm Cu,577 ppm Pb and 433 ppm Zn.

In view of the above results and observations, particularly the evidence noted for the presence of both 'A' and 'B' veins, further work in the Prospect areas is considered warranted.

6.3.5 Guru Prospect

The Guru Prospect is located on the eastern slopes of the K uh-e-Hanza Range about 8 km east of Gorveh Village. Here a large diorite body approximately 3.0 km^2 in area intrudes Eocene volcanics. Both rock types are extensively veined by micro-dioritic veins.

The area has been drill tested and one hole is located at GPS site 61. This vertical hole attained a depth of 150 metres and according to locals. a significant amount of pyrite was encountered. Sample UII 14 was taken near this drill hole, but no significant anomalism was reported. It is a porphyritic andesite with siliceous + kaolinite + scricite + magnetite alteration. There is considerable quartz veining in these rocks which is not reproduced in other parts of the prospect. These veins generally contain magnetite (sometimes solid magnetite veins, but usually disseminated within the vein), and rare trace pyrite. At GPS site 62, sample LEI 15 was collected from highly altered limonitic volcanic rock (andesite? rhyolite? – too altered to tell original rock type). An anomalous value of 0.11% Cu was reported. The alteration consists of hematite + kaolinite + chlorite. The rock is highly fractured but is not veined. There are significant amounts of disseminated sulphides including pyrite, chalcopyrite and bornite. A similar rock type was located at GPS site 66 with pyrite disseminated finely throughout the groundmass, but no significant anomalism was reported.. Again, veining is limited and the rock is highly fractured but with less magnetite and more manganese staining. At GPS site 64, a trachyandesite was located with minor to moderate amounts of disseminated pyrite and possibly arsenopyrite. Patchy selective epidote alteration is apparent replacing the mafic phenocrysts. Chlorite + magnetite + sericite alteration is pervasive. Magnetite microveining is also pervasive. Often, the magnetite veining occurs as parallel series of veinlets with narrow kaolinite + silica alteration

selvedges.

Overall, the red limonitic and pyritic volcanic rock is extensive in this area, and probably extends over an area greater than 3 kilometres. Although veining has been observed where previous drill holes have been located, the area generally lacks veining and contains a higher degree of fracturing. The overall rock types encountered include andesites – trachytes rhyolites with disseminated pyrite mineralisation in kaolinite + silica + sericite + magnetite + hematite + chlorite + epidote alteration. Other minor rock types include granodiorites (usually greenish in colour as a result of chlorite + epidote alteration). While the area is somewhat interesting, the lack of veining indicates that a porphyry copper system in unlikely to present at surface or at shallow depth in the area.

6.3.6 Hanzar

This prospect was briefly visited even though it lies outside of the boundary of Area 2. It is located some 5 km to the south of the Bondar Hanza prospect.

The rock types at this locality include a very white quartz + pyroxene spotted rock, pyroxenites, rhyolites and diorites. One drill hole at WPT 50 has been drilled on the contact of a diorite and rhyolite. There is no evidence of mineralisation on site. However, some float on the hill showed evidence of quartz veining with deep red iron oxides, possibly after sulphides within the veins. The alteration includes dominant silicification, sericitisation, epidote alteration and sporadic kaolinisation. Overall though, very little veining was observed. The hills in the vicinity are all very pale coloured and are probably highly silicified and part of the alteration system. This alteration system appears to cover an area of 1-2 kilometres in diameter.

The lack of diagnostic quartz veining indicates that a porphyry copper

system in unlikely to present at surface or at shallow depth in the area.

6.3.7 Qanat Marvan Prospect

Qanat Marvan has a detailed history of exploration including 1:5000 scale mapping and geophysics (IP and resistivity) but was not carried through to drillin[g] despite recommendations to do so. There was "possibly" a 400 metre deep geophysical anomaly identified by the YGS IP work but this was also not followed up. Several valleys were traversed in the Qanat Marvan area. The area contains basalts, andesites, diorites, granodiorites and agglomerates. The first valley (GPS sites 27-32) showed only minor mineralisation and hydrothermal alteration including chalcedonic silica ± kaolinite or alunite veining. Malachite stained andesites and kaolinitic alteration were present locally. The second valley contains the worked Qanat Marvan Mine. In this area there are two major normal parallel faults, each orientated N 40 and dipping steeply to the southwest. The fault zone apparently runs for approximately five kilometres, although it was only traversed for approximately one kilometre. The dacites had undergone intense argillic alteration (kaolin and clays).

At GPS site 36, a multiple array of narrow (-10mm wide) veins of galena occur in intensely fractured and kaolin altered (advanced argillic alteration) dacite with dendritic manganese staining. This outcrop is no more than 20 metres south of the fault. Sample UII 5 was collected taken from here and was found to contain 17.80% Pb, 7.27% Zn and 91 g/t Ag. Thick stockwork veins of galena were noted at GPS site 37 and sample UII 6 was collected for analysis. The sample was reported to contain 42.13 % Pb, 0.43% Cu, 6.86% Zn and 1040 g/t Ag. Barite also occurs as veins within the galena mineralisation. At GPS site 39, sample UII 7 was collected taken from a fault zone. The dacite is

intensely fractured with iron oxides filling the larger and wider fractures. The rock is very limonitic and kaolinitic (advanced argillic alteration) Results were disappointing with only anomalous Pb of 0.11%.0verall, the potential of the area is considered to be limited. Lead and zinc sulphide mineralisation is clearly fault and vein controlled and Au values are low. The area has been previously worked, evidenced by tunneling, black sandy tailings in the drainage, metal balls from a ball mill, historical brick workings etc. The roads are dissected and not well maintained. It appears to be abandoned at present.

6.3.8 Lalehzar F-4

Access to this prospect proved to be difficult involving a three hour mountainous walk/climb from Qanat Marvan. Bad weather encountered at the time of the visit resulted in the main part of the area not being visited in the time available.

The geology of the area consists of andesite, trachy andesite, pyroclastics and granitic intrusives. Kaolinitic and siliceous alteration associated with weak malachite, galena, pyrite and iron oxide was noted and one rock sample (UII 32 being collected). The sample returned an anomalous value of 0.30% Cu.

Owing to the incomplete nature of the visit, further work is recommended.

6.4 AREA 3

Copper Exploration Area 3 covers an area of 88 km^2 Bam on the 1:250,000 Scale Sheet Area. The area measures some 8 kms E-W by 11 kms N-S. It was selected to incorporate two(2) prospect areas previously explored by the YGS and areas of alteration identified on the TM Landsat imagery. Work undertaken and results obtained from the known prospect areas are summarised below.

6.4.1 Surakh-e-Mar-1

This prospect is located in the immediate vicinity of Surakh-e-Mar Village and about 15 km south of the larger village of Hoseyn Abad. Here Eocene volcanics and minor sediments are intruded by diorite intrusives and dykes. Situated on the far eastern end of the Kuh-e-Hanza range, the area is very rugged with steep slopes and deep river valleys. Hornfelsing of the volcanics has taken place for up to 200m from the intrusive contacts.

The prospect area consists of an area of about H.5 km^2 that has undergone alteration and intensive shearing and fracturing. Three holes were drilled in the area (Figure 8), with significant amounts of sulphide (to 7%), mainly pyrite, being intersected. The maximum Cu, however, was only0.32%.

Four rock samples (UII 20-23) were collected for analysis. A maximum value of 624 ppm Cu was obtained.

Quartz and quartz-magnetite veining was noted away from where the holes were drilled. These are of some interest as they clearly indicate the presence of 'A' veins and hence the presence of potassic alteration. No Cu secondaries were observed but this is usual for these types of occurrences in the region.

In view of the identification of 'A' veins, further work in the area is considered warranted. While the area of veining is not large (some 100 x 100m), it may well represent the outcropping apex of a larger system.

6.4.2 Surakh-e-Mar-2

This prospect is located some 3 to 7 km east of Surakh-e-Mar Village. Here Eocene volcanics and minor sediments are intruded by diorite intrusives and dykes. In contrast to the Surakh-eMar 1 prospect, the area is characterised by a gently undulating plateau, with several low

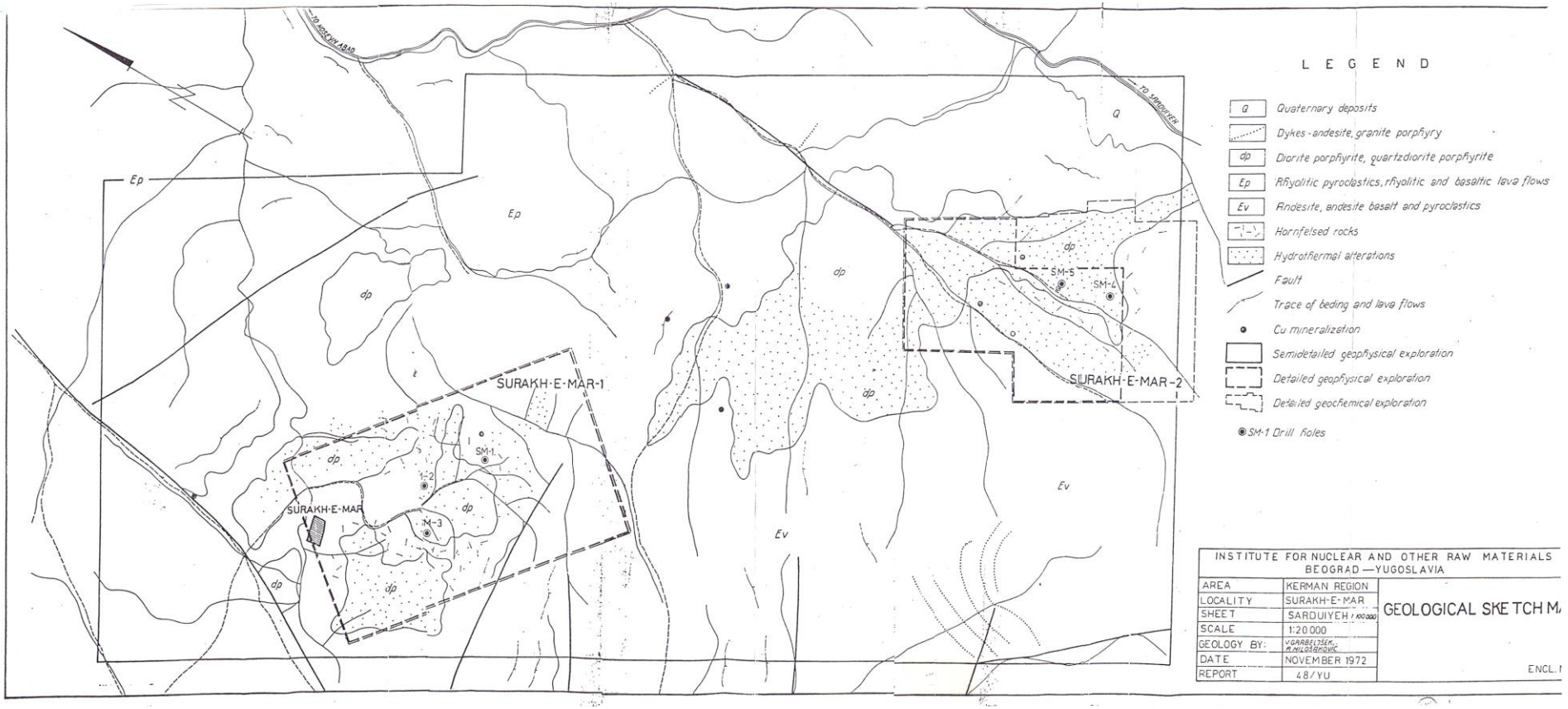
rounded hills. Hornfelsing of the volcanics has taken place for up to 200m from the intrusive contacts.

The prospect area consists of an area of about 2.5 km^2 that has undergone alteration and intensive shearing and fracturing. The alteration includes pyritisation and silicification with lesser sericitisation and argillisation. Secondary Cu mineralisation is scattered throughout the prospect area in both altered and unaltered rocks. The high concentration of pyrite has produced extensive limonite staining.

Three rock samples (UII H7-H9) were collected for analysis. A maximum value of 594 ppm Cu was obtained.

Two holes were drilled in the area by the YGS and these intersected altered rocks containing about 4.5% sulphide, consisting mainly of pyrite with minor chalcopyrite. Average intersections were 0.H % Cu and H9 ppm Mo for one hole and 0.4% Cu and 93 ppm Mo for the other. The mineralogy was determined to consist of pyrite, chalcopyrite, molybdenite, magnetite, ilmenite, sphalerite and hematite, with pyrrhotite being absent.

Although 'A' or 'B' veins have not been identified in the area it is recommended that further work, in conjunction with Surakh-e-Mar-1, be undertaken.



INSTITUTE FOR NUCLEAR AND OTHER RAW MATERIALS BEOGRAD — YUGOSLAVIA		
AREA	KERMAN REGION	GEOLOGICAL SKETCH M
LOCALITY	SURAKH-E-MAR	
SHEET	SARDUIYEH 1/100000	
SCALE	1:20000	
GEOLOGY BY:	V. GARBELTJEK, A. MILOSAVLJEVIC	
DATE	NOVEMBER 1972	
REPORT	48/YU	ENCL. I

6.5 AREA 4

Copper Exploration Area 4 covers a large area of 316 km^2 on the Ban) H:250,000 Scale Sheet Area. The area measures sonic 30 kms E-W by 25 kms N-S. It was selected by TWA to incorporate five (5) prospect areas (No's 52, 53, 55, 56 and 57) previously explored by the YGS plus a large alteration zone not investigated by the YGS.

Work undertaken and results obtained from the known prospect areas is summarised below.

6.5.1 Sin Abad Prospect

This prospect is located in the northern foothills of the Kuh-e-Bahr Aleman Range, about 3 km south of Sin Abad Village and 7 km SW of Sarduiyeh. Here NW striking Eocene volcanics are intruded by a E-W orientated granodiorite body which is approximately 3 km long by 500m wide. Alteration is pervasive throughout the intrusive and consists of silicification, sericitisation and argillisation. The volcanics are only altered near the intrusive contacts. Only limited pyrite and chalcopyrite with rare malachite staining has been noted.

While the alteration is extensive and quite intense in places, no evidence for the presence of 'A', `B' or `D' veining was observed. Evidence for the presence of leached caps or lithocaps is lacking.

On the basis of the observations made it is concluded that the area does not hold any potential for the presence of an outcropping or near surface porphyry copper mineralised system.

6.5.2 Zamin Hoseyn Prospect

This prospect is located about 5 km SW of Zamin Hoseyn Village. Mineralisation is developed within a sheared zone in the volcanics. Approximately 10 major NE trending zones, 500 to 600m long by up to

0.5 to 1.5m wide, occur in an area of some 1.5 km^2. The rocks within the zones are intensively silicified and mineralised by pyrite, chalcopyrite, chalcocite, covellite, hematite and limonite.

Three main zones of mineralisation are present. These are:

- **North Zamin Hoseyn Village :** Some previous mining has taken place here with a short tunnel developed along the mineralisation. The main alteration present is propyllitic, with extensive areas of epidote, quartz and calcite. Malachite staining is common and magnetite, hematite and limonite is common. One sample (1111 33) collected for analysis returned a result of 5.59% Cu.

- **South Zamin Hoseyn Village:** In this area granodiorite intrudes the volcanic rocks with the development of significant silicification and argillic alteration over an area of at least 1km^2.

- **Gerdu Kolu:** This area is located to the SW of Zamin Hoseyn Village. Malachite from both vein and disseminated sources has been noted. One sample collected for analysis returned a result of 1.25% Cu.

The extent of malachite showings is impressive and while the presence of porphyry diagnostic veining has not been observed, further work is considered warranted.

6.5.3 Babnam Prospect

This prospect is located about 5 km SW of Babnam Village and H2 km south of Sarduiyeh. Here a granitic intrusive some 5 km^2 in area has intruded volcanic tuffs and andesites. Minor areas of the intrusive are altered. w ith some secondary Cu development present. Some Cu mineralisation was also noted in the host volcanics.

PHOTOGRAPH 12
Sin Abad Prospect - Area 4

The mineralisation in this prospect area is narrow and strongly controlled by faulting. Two samples (U1128-29) were collected for analysis. These returned maximum values of 3.19% Cu, and 14 g/t Ag.
No evidence for the presence of 'A', `B' or 'ID' veining was observed and evidence for the presence of leached caps or lithocaps is lacking. On the basis of the observations made it is concluded that the area does not hold any potential for the presence of an outcropping or near surface porphyry copper mineralised system.

6.5.4 Sargoad Prospect

This prospect is located about 5 km north of Zamin Hoseyn Village in an area of andesite, basalt dacite and pyroclastics. It consists of a quartz vein up to 20m wide but of unknown length which is mineralised with

specularite, pyrite, chalcopyrite and bornite. A Cu value of 1.4% was obtained by the YGS from a rock sample.

It is evident that the mineralisation is minor and strongly fault controlled. One rock sample collected (UII 25) was found to contain 0.72% Cu.

No evidence for the presence of 'A', 'B' or 'D' veining was observed and evidence for the presence of leached caps or lithocaps is lacking. On the basis of the observations made it is concluded that the area does not hold any potential for the presence of an outcropping or near surface porphyry copper mineralised system.

6.5.5 Baghrai Prospect

Although this prospect lies outside Area 4, it was briefly visited, Access was difficult with an hour of mountain climbing involved. The geology consists of andesitic and dacitic volcanics and pyroclastics.

The area contains evidence of ancient mining with old slag piles noted in the area. Mineralisation is narrow and fault controlled. The prospect does not hold any potential.

6.5.6 Janga Prospect

This prospect is located in the eastern part of the Kuh-e-Bahr Aleman Range about 3 km SW of Janga Village. The geology consists of andesitic lavas, tuffs, agglomerates and intercalated limestones that have been intruded by granodiorite. Some parts of the sequence are mineralised with magnetite, epidote and chalcopyrite, but the most intensive mineralisation is developed within two limestone horizons, each about 600m long by 5- to 90m wide. A Cu value of 0.7% was obtained from a 8.2m thick zone of limestone and 0.38% from another 70m thick limestone zone. Individual Cu values up to 1.75% were also

obtained.

Mineralisation in the area is both vein controlled and disseminated but is not very extensive. Two samples collected (Ull 30-31) were found to be not anomalous in basemetals.

6.5.7 Kotteh Zar Prospect

This Prospect lies in a mountainous area which involves a difficult two hour rock climb. It was not investigated by the YGS. The geology of the area consists of rhyolite, pyroclastics, limestone and granitic intrusives. Mineralisation consists of massive magnetite with minor pyrite, chalcopyrite, limonite and quarts and is hosted within limestone. The mineralisation appears to dip at approximately 35 degrees NE. Minor mining activity is evident with a small working developed in one area.

From a distance the mineralisation can be seen as a prominent black unit which extends for at least H.0 km and is several 100metres in width. One rock sample collected from the occurrence was reported to contain 2.27% Cu and 51.56% Fe.

The Prospect is considered to be of interest in view of its size (lateral extent and thickness) and the high values of Cu and Fe obtained from the collected sample. While obviously not of porphyry style, it is recommended for further work.

7. RESULTS OF INVESTIGATIONS - EAST AZARBAIJAN PROJECT AREA

7.1 Introduction

Field investigations in the East Azarbaijan area were undertaken during September through October 1999 and again from April through July 2000. Due to the difficulties in getting leaseholder information from the Ministry of Metals and Mines in Tabriz and the delays inherent in locating these leaseholders and arranging visits to their tenements, the program was focused on ground investigations and visiting prospects/mineralised areas located from GS! information.. rather than liaising with tenement owners.

The program was undertaken by contract geologist Rohan Wolfe with a base established at the GSI guesthouse in Tabriz. Accompanying Mr Wolfe in the field were Mr Faraday (GSI geologist) and Saeed Nikazm (Union's driver).

In 2000, three days were spent investigating the GSI joint venture area, focusing on investigating the Isavan alteration belt and copper targets in the Austamal region. There is moderate potential in the GSI area for the discovery of a drillable prospect. It is recommended that should work continue in this area, that leaseholders are contacted in the area as a high priority (contact has been impossible to date) with the aim of investigating their prospects.

7.2 Areas Selected for Ground Investigation

The Landsat interpretation from which the areas for ground investigation were selected is presented as Plate 2. The actual areas selected are shown on Figure 9. Unfortunately this reveals that most of the areas selected are within tenement areas currently held by other companies.

Known mineral occurrences in the JV area are shown on Figure H0.

These do not appear to be associated to any great extent with the interpreted altered areas shown on Figure 9. Figure H1 indicates the areas that have been investigated to date.

7.3 Austamal Region

Most of the more favourable areas within the Austamal Region are already incorporated in existing tenements held by non-Union/GSI tenure holders. Outside of these tenements, the copper anomalies in the northern half of the Joint Venture area are related to a large granite batholith. Mineralisation is either associated with:

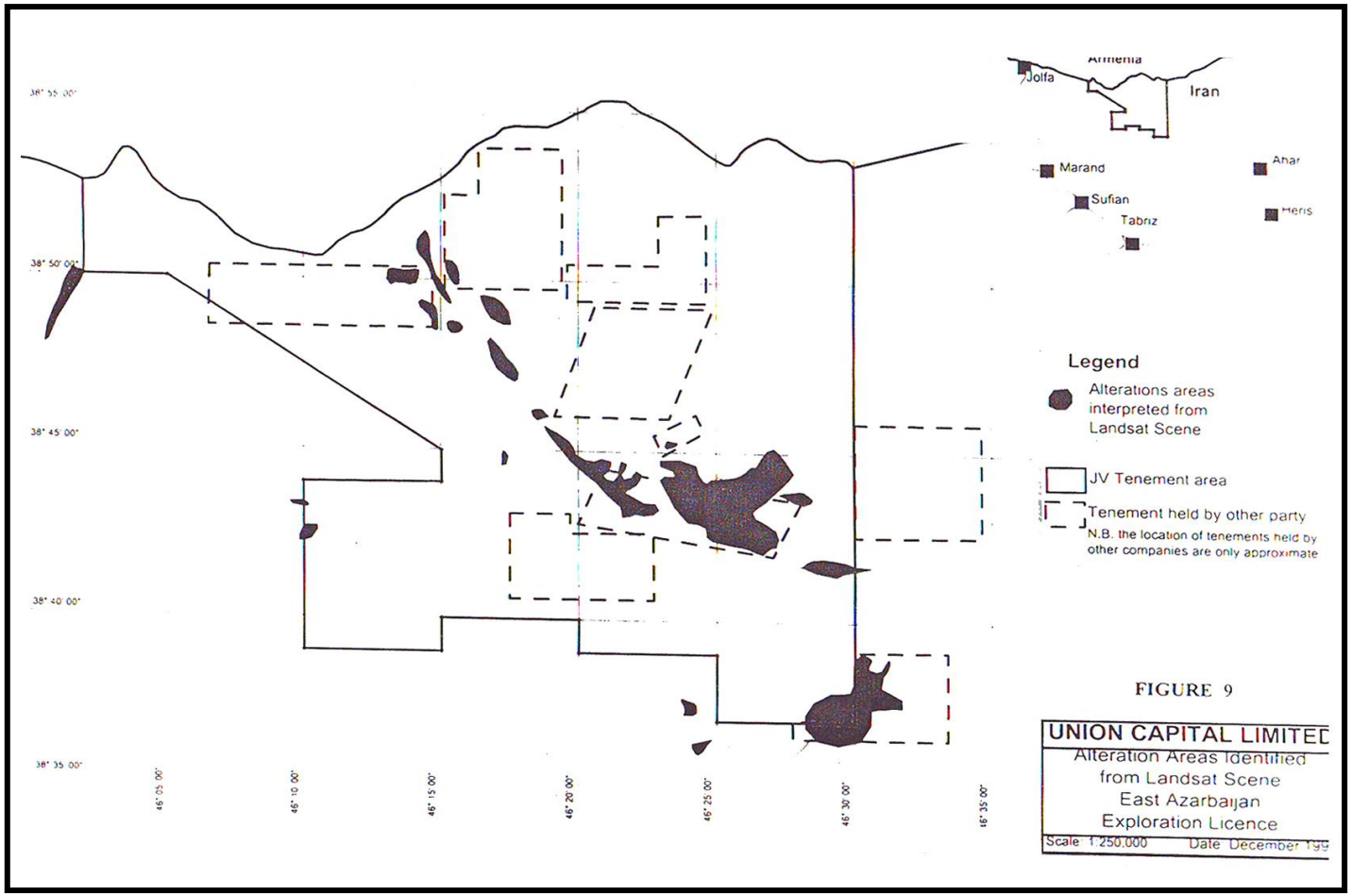
a) very small skams located on the margin of the batholith (Duzal region), or;

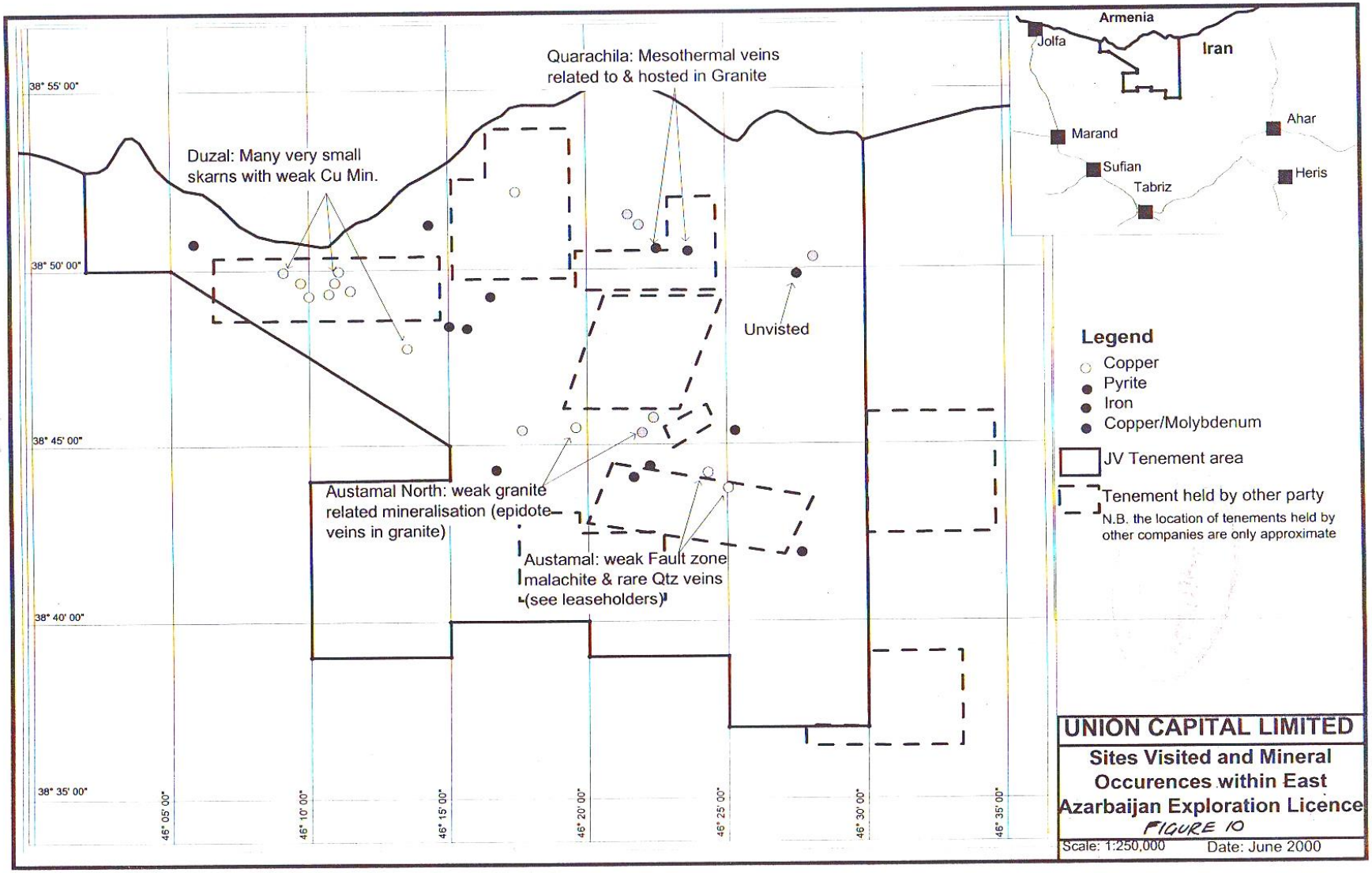
b) small granite-hosted mesothermal quartz veins (Quarachila region), or;

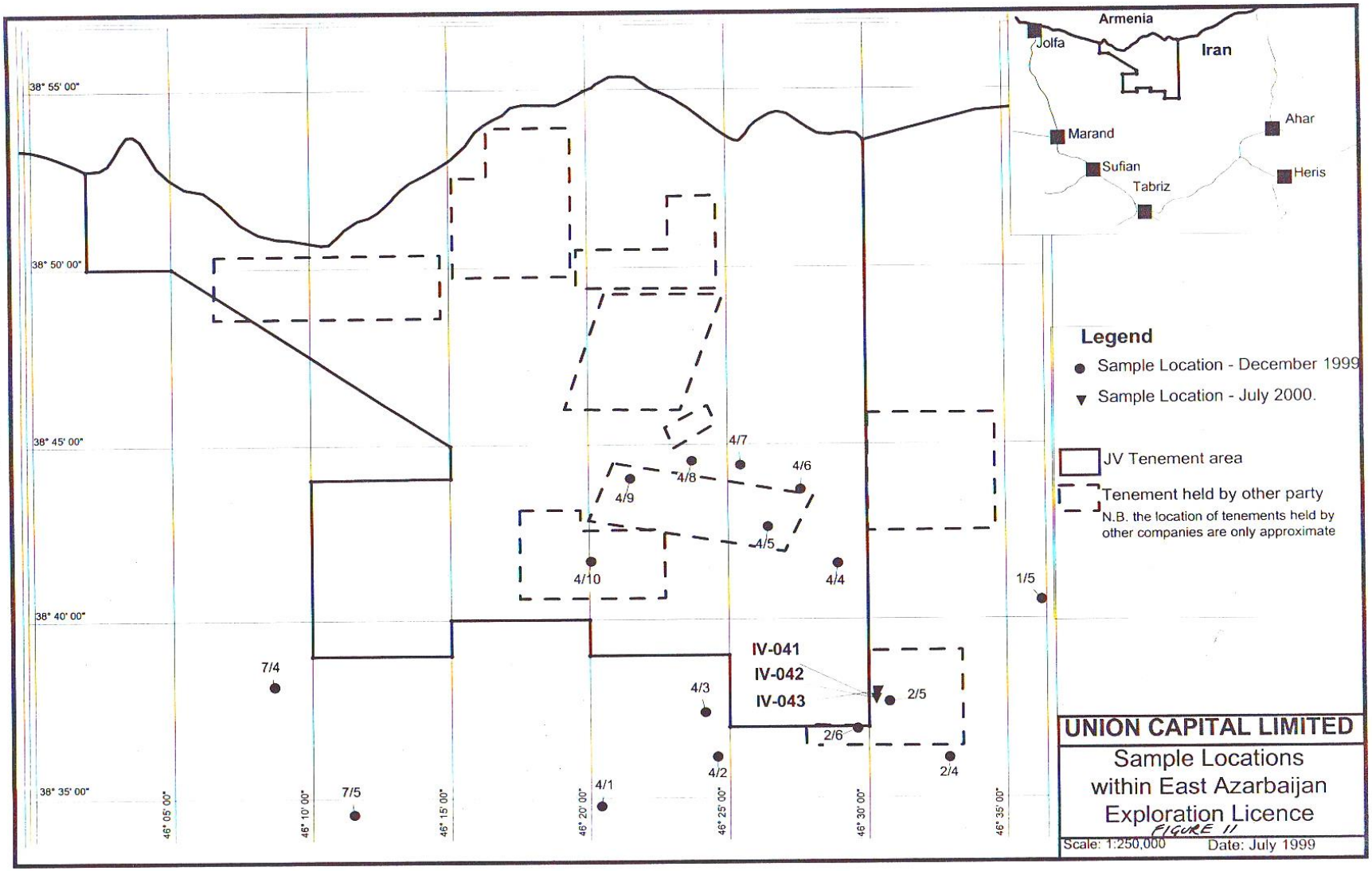
c) sparse granite-hosted epidote veinlets with rare very weak chalcopyrite mineralisation north-west of Austamal (Avan Region).

All forms of mineralisation are considered to be too small to be of interest to the Joint Venture. However, strong silicification, phyllic alteration, diffuse weak malachite stains and rare quartz veins in the Austamal region suggest that this area should be visited with the current tenement owners, who remain unknown, with the aim of investigating any mineralisation that they may be aware of.

All significant satellite anomalies located in the Austamal area have been investigated on the ground (approximately 30 targets). The majority of the targets consisted of small (<10 km2) areas of intermediate argillic to argillic alteration with no known associated mineralisation and strong lithological and structural control.


38° 55' 00"
38° 50' 00"
38° 45' 00"
38° 40' 00"
38° 35' 00"
46° 05' 00"
46° 10' 00"
46° 15' 00"
46° 20' 00"
46° 25' 00"
46° 30' 00"
46° 35' 00"
Armenia
Jolfa
Iran
Marand
Ahar
Sufian
Tabriz
Heris
Legend
Alterations areas interpreted from Landsat Scene
JV Tenement area
Tenement held by other party
N.B. the location of tenements held by other companies are only approximate
FIGURE 9
UNION CAPITAL LIMITED
Alteration Areas Identified from Landsat Scene
East Azarbaijan
Exploration Licence
Scale 1:250,000
Date December 199


Quarachila: Mesothermal veins related to & hosted in Granite
Duzal: Many very small skarns with weak Cu Min.
Unvisted
Austamal North: weak granite related mineralisation (epidote veins in granite)
Austamal: weak Fault zone malachite & rare Qtz veins (see leaseholders)
38° 55' 00"
38° 50' 00"
38° 45' 00"
38° 40' 00"
38° 35' 00"
46° 05' 00"
46° 10' 00"
46° 15' 00"
46° 20' 00"
46° 25' 00"
46° 30' 00"
46° 35' 00"
Armenia
Jolfa
Iran
Ahar
Marand
Sufian
Heris
Tabriz
Legend
Copper
Pyrite
Iron
Copper/Molybdenum
JV Tenement area
Tenement held by other party
N.B. the location of tenements held by other companies are only approximate
UNION CAPITAL LIMITED
Sites Visited and Mineral Occurences within East Azarbaijan Exploration Licence
FIGURE 10
Scale: 1:250,000
Date: June 2000


Armenia
Jolfa
Iran
Ahar
Marand
Sufian
Tabriz
Heris
38° 55' 00"
38° 50' 00"
38° 45' 00"
38° 40' 00"
38° 35' 00"
46° 05' 00"
46° 10' 00"
46° 15' 00"
46° 20' 00"
46° 25' 00"
46° 30' 00"
46° 35' 00"
4/7
4/8
4/6
4/9
4/5
4/10
4/4
1/5
IV-041
IV-042
IV-043
7/4
4/3
2/5
2/6
4/2
2/4
4/1
7/5
Legend
Sample Location - December 1999
Sample Location - July 2000.
JV Tenement area
Tenement held by other party
N.B. the location of tenements held by other companies are only approximate
UNION CAPITAL LIMITED
Sample Locations within East Azarbaijan Exploration Licence
FIGURE 11
Scale: 1:250,000
Date: July 1999

Only two significant alteration districts were observed, the largest one (35 km^2) centered on the village of Austamal in the middle of the exploration area (Targets 4/4, 4/5, 4/6, 4/7, 4/8, 4/9, see Figure H I) and a second area (30 km2) located in the SE corner of the exploration area, adjacent to the villages of Isavan/Sharafabad (Targets 2/6, 2/5). The most strongly altered sections of both districts are already incorporated within existing tenements. Both districts are comprised of strong intermediate argillic to argillic alteration with patchy widespread sericite-pyrite alteration. However, no advanced argillic alteration, quartz alunite or residual quartz has been observed.

Turn of the century Russian workings located 3 km NW of Austamal village follow a H0-H5 wide fault zone cutting limestones and medium grained felsic intrusives. Strong argillic alteration, gypsum veining, uncommon silicification and malachite-stained fracture surfaces/limonite veins in the fault zone suggest weak high sulphidation mineralisation.

Along a ridge-top road immediately west of these Russian workings (road site at 38°44.514'E/46 23.382'N) rubble from holes dug for the power line are comprised of strongly malachite-stained and gypsum veined argillicly altered sediments, with this weak mineralisation spread over a broad area. This highlights the broadly mineralised nature of the system, although no other significant mineralisation was observed during the brief reconnaissance of the area.

In the valley between the two main sets of Russian workings, at 38°43.881'E/ 46° 24.191'N, a broad zone of unmineralised quartz stockwork (planer veins, not structurally controlled), with associated epidote and rare biotite alteration, suggests a possible distal porphyry setting. Two holes drilled in the Austamal region by the copper mining company of Iran 3-4 years ago appear to have targeted a zone of strong

phyllic alteration on the ridge H km south of Austamal, and it is reported that the company conducted a widespread program of geochemical sampling in the region, based from its modern, but now abandoned, guest house in Austamal. This exploration data should be obtained, but to date has not been acquired. The drill holes are on the opposite side of the valley to where all significant veining and alteration was observed.

7.4 Isavan/Sharafabad Region

During the April – July 2000 exploration program, investigation of the Isavan alteration belt revealed no areas of strong mineralisation, despite the presence of strong argillic and phyllic alteration. Three rock chip samples were obtained to test a broad zone of silica-pyrite alteration which is the only apparent target in the region (Samples 1V-041, -042, -043). The following table outlines the geology and locations of the rock chip samples.

Sample No.	Location	Rock Description	Northing	Easting
IV-041	Creek above Isovan Village.	Silicified pyrite rich fault zone hosted in iron-stained argillic and sericite-pyrite altered sediments	38 37.782	46 30.266
IV-042	10m up from IV-041	Sericite-pyrite alteration with thick quartz veins and pyrite boxwork.	38 37.787	46 30.263
IV-043	-	20m wide zone of iron-oxide rich quartz-siderite+chalcedony breccia/veining. Worthy of follow up if assays return >1g/t Au	38 37.931	46 30.330

Assay results are awaited for these samples from the Karaj laboratory in Tehran. Results are expected within 2-3 weeks and will be supplied as an addendum.

Alteration in the Isavan region is similar to that of the Austmal district, with strong intermediate argillic, argillic and phyllic alteration. In the small valley located on the northern flank of Isavan Village a 70-80 metre thick blanket of strong argillic alteration overlies strong phyllic alteration

with very rare associated malachite staining. Both the Isavan/Shrafabad and the Austamal alteration belts are considered to have high potential for 'blind' epithermal and porphyry mineralisation, although both areas have been extensively explored and sampled in the past.

7.5 Other Regions

Other, much smaller satellite targets in the Union exploration area consisted of small zones weak, lithologically controlled intermediate argillic alteration.

Due to extreme topography & distance (the prospects are perched on top of a 1000m sub-vertical cliff face 5 hours drive from Tabriz) the Chemtal copper prospects, located 5 km west of Duzal, could not be accessed. This extremely low tonnage skarn pyrite-magnetite-chalcopyrite-garnet mineralisation is reported to be hosted in small marble lenses (less that 50m long and 4-5 meters wide) and are considered to be too small to be of interest. Similarly, due to access problems and time constraints, the Cu-Mo workings at Quarachilar and Quaradelah could not be accessed. These prospects, located H0 km north of Austamal, are described in detail by Bazin & Hubner (1969, Cu deposits of Iran) and were discussed with GSI personnel who had visited the site.

Qarachilar is reported to be comprised of at least 6 quartz veins (20-100cm thick) with associated pyrite-chalcopyrite-molybdenum-malachite mineralisation and 1-2m wide 'alteration zones', cutting an amphibole granite. These apparently mesothermal veins can be traced for up to 300m along strike. However they are suitable for only the smallest of small scale mining, with several small adits following the quartz veins. The Quaradelah prospect, located 2 km to the west of Quarachilar, consists of granite cut by approximately 10? mesothermal quartz veins, each up to 10cm wide that contain pyrite, chalcopyrite and molybdenite and are

hosted in a 1-20m wide zone of silicification. Whether there are indications of more significant mineralisation in the Quarachilar and Quaradareh area remains to be tested. The lack of any other reported workings in the region suggests that strong mineralisation is not outcropping at the surface in the region.

8.ASSESSMENT

8.1 KERMAN PROJECT AREA

From the work undertaken to date within the Kerman Project Area, it is clear that the potential for locating economic mineralisation at surface or shallow depth is limited. Union's exploration criteria for this area, and other similar terrains within Iran, in it's search for porphyry copper mineralisation, has been to be able to locate economic mineralisation at surface, with minimum expenditure, time and use of complex exploration techniques.

Union has conducted sufficient reconnaissance exploration within the Kerman Project area to have evaluated the potential of this region, in keeping with its selection criteria. As such, no further work is recommended. However, if at some time in the future, this area were to be revisited, further work could be undertaken in the below listed Prospect areas.

- Surakh-e- M ar-1
- Surakh-e-Mar-2
- Zamin Hoseyn
- Kotteh Zar
- Bondar Hanza

These areas arc recommended to be secured under Exploration Licences of maximum 40 km` each should the area be revisited.

8.2 EAST AZARBAIJAN PROJECT AREA

In the East Azarbaijan Project area, large areas of alteration have been identified. However, there are no mineralising indications at surface that will enable the generation of targets for further follow up by drilling. As with the Kerman Project Area, Union's exploration criteria, in it's search for porphyry copper mineralisation, has been to be able to locate economic mineralisation at surface, with minimum expenditure, time and use of complex exploration techniques.

Union has conducted sufficient reconnaissance exploration within the East Azarbaijan area to have evaluated the potential of this region, in keeping with its selection criteria. As such, no further work is recommended. However, if at some time in the future, this area were to be revisited, further investigations of the Austamal and Isavan/Sharafabad prospect areas could be undertaken. This will require an approach to the holders of the tenements covering these prospects, which to date, has been unsuccessful.

9.EXPLORATION LICENCE APPLICATIONS - KERMAN PROJECT AREA

Four Exploration Licence Applications covering the five areas listed above were lodged in Kerman on Tuesday 30 November 1999. It is unknown at this point in time if these applications have been processed or granted. The specification of the areas is provided below.

9.1 Surakh-e-Mar-1 and Surakh-e-Mar-2 (39.0 km2)

A 57° 25' 30"E/ 29° 19' 45" N

B 57° 29' 30"E/ 29° 19' 45" N

C 57° 29' 30"E/ 29° 16' 30" N

D 57° 25' 30"E/ 29° 16' 30" N

9.2 Zamin Hoseyn (36.15 km2)

A 57° 17' 00"E/ 29° 05' 00" N

B 57° 21' 00"E/ 29° 05' 00" N

C 57° 21' 00"E/ 29° 02' 00" N

D 57° 17' 00"E/ 29° 02' 00" N

9.3 Kotteh Zar (40.0 km2)

A 57° 19' 00"E/ 29° 08' 00" N

B 57° 19' 35.5"E/ 29° 08' 57" N

C 57° 30' 19"E/ 29° 03' 36" N

D 57° 29' 43"E/ 29° 02' 37.5" N

9.4 Bondar Hanza (37.0 km2)

A 57° 11' 00"E/ 29° 24' 00" N

B 57° 15' 00"E/ 29° 24' 00" N

C 57° 15' 00"E/ 29° 21' 00" N

D 57° 11' 00"E/ 29° 21' 00" N

Given that the recommendation for the Kerman area is not to proceed with further exploration at this point in time, the above applications should be cancelled.

10. BIBLIOGRAPHY.

Yugoslavia Geol Surv; 1973: Exploration for Ore Deposits in Kerman Region, Rpt NoYu/53

Saric, V.: 1972: Report on Exploration at the Surakh-e-Mar Cu Occurrence, Rpt 48/YU

A P P E N D I X I

Memorandum of Understanding (MOU)

Geological Survey of Iran - Qeshm Union Itok International Joint Venture

"In the name of God"

The Letter of Understanding

Between

Geological Survey of MAN (GSI)

and

The Joint Stock Company Oeshm

Union ltok International AG

Article 1- This Letter of Understanding is between the Joint Stock Company, Qeshm Union Itok International, which has been registered in Qeshm Free Zone under No. 2304//1999 dated 19 th Jan. 1999 on one part, located In No.27 Koohpayeh St_ Hosseini Si, Ejazi St., Zaferanieh Ave, Tehran, Iran, hereinafter referred to as "QUIZ' and the Geological Survey Exploration of Iran, on the other part, hereinafter referred to as the 'Organization", located in Meraj Blvd. Azadi SQ. P.O. Box 13185.1493.

Article 2- This Letter of Understanding relates to the jointly mineral exploration activities by 'QUII' and the 'Organization' in a twelve months period and In geographical areas shown on the attached drawing (hereinafter referred to as the "Areas"). The beginning time of the activities is upon the signing of this Agreement by the Parties.

Article 3- "QUIT" undertakes t*, expend least 45 USD per square kilometer during anticipated tweleve months period for reconnaissance, on the 'Areas' referred to in this Agreement. It is obvious that the charges must be confirmed by the 'Organization' and only include the direct exploration charges and exploring the mineral deposits.

Article 4- GSI' will provide "QUII with the exsisting available Information of geological, mineralization, geochemical, geophysical, petrological, relevant data for determination the age of layers and formation, satellite isotopic data and etc. for the granted "Areas".

Article 5- If the exploration activities are satisfactory and lead to exploitation, "GSP" and will negotiate the value of the previous activitics carried out in the 'Areas' and information which have been forwarded to TIP by "GSI" of other data resources.

Article 6- The "Organization"s experts will cooperate with their colleagues in 'QUIP to jointly explore the 'Areas' of high potential In porphyry copper, rare dements, base metals, and gold. The "Organization' and `QUII experts will jointly work in site and office In Iran and or out of Iran for the whole Project. Specially they will have a close cooperation In processing the collected data such as aerogeophysics data, remote sensing data and etc. in Iran and Australia. It should be noted that the exploration activites and continuing the studies in the selected 'Areas' with at most 40 km 2 surface 'preserving priority for QUIP xill be carried out under the Mining Law of the Islamic Republic of Iran after obtaining the Exploration License.

Article 7 - 'QUIT' will provide the 'Organization" with all the necessary efforts for transferring the new technology and methods of study regarding the reconnaissance porphyry copper deposits, gold, base metals and rare elements.

Article 8- 'QUIT" undertakes to provide the opportunity to five Iranian experts for presence in Australia for mutual cooperation_ The "Organization' will pay the flight costs related to Iranian experts residence and accommodation costs in Australia will be born by 'QUIZ". The duration
of Iranian residence In Australia will be further decided and agreed by the two parties.

Article 9- All the results of this twelve months cooperative studies will remain confidential during the period and three months after that and will not be available for anyone or any company except the agents of 'QUII' and the 'Organizations. After this period, in case of appearing any discrepancy for continuation the work, all the relevant exploration studies information shall be given to the CSI and QUII will not be authorized to publish the results of the

studies without obtaining written permission from the GSI.

Article 10- Regarding applying exploration licenses In the "Areas' for investing in future, the Mining Law of Islamic Republic of Iran should be governed.

Article 11- "MMM" wilt issue no new exploration license for porphyry copper, gold, base metals and rare elements to the others during the twelve months of "QUII and the 'Organization" cooperation in the "Areas" subject to this LOU.

Article 12- 'QUIT' undertakes to carry out all phases of the study with the cooperation of the °Organization" experts and the results of the phases should be submitted regularly to the 'Organization".

Article 13- "QUIl can at any time assign part of this letter of understanding items to a third party which join QUII in the exploration activities with GSI's consent.

Article 14- This Letter of Understanding shall be governed by the Laws of the Islamic Republic of Iran.

بسمه تعالی

یادداشت تفاهم

بین

سازمان زمین شناسی و اکتشافات معدنی ایران

و

شرکت قشم یونیون /ایتوک

(استرالیا - ایران)

ماده ۱ : این یادداشت تفاهم مابین شرکت قشم یونیون/ایتوک که در منطقه آزاد قشم به شماره ۷۷/مس/۲۳۰۴ مورخ ۷۷/۱۰/۲۹ به ثبت رسیده است به نشانی: خیابان زعفرانیه، خیابان شهید اعجازی، خیابان شهید حسینی، کوچه کوهپایه، شماره ۲۷ که ازاین پس با علامت QUII از آن نام برده می‌شود از یک طرف و سازمان زمین شناسی واکتشافات معدنی ایران به نشانی: میدان آزادی، خیابان معراج، صندوق پستی ۱۳۱۸۵-۱۴۹۴ که از این پس سازمان نامیده می‌شود ازطرف دیگر مبادله می‌گردد.

ماده ۲ : این یاداشت تفاهم بمنظور انجام فعالیت‌های مشترک شناسایی واکتشاف ذخایر معدنی مابین QUII و سازمان دریک دورهٔ یکساله و در محدوده‌های جغرافیایی که روی نقشه ضمیمه مشخص شده که ازاین پس محدوده ها نامیده می‌شود مبادله می‌گردد. شروع این فعالیتها از زمان امضاء تفاهم نامه مابین طرفین خواهد بود.

ماده ۳ : شرکت QUII در محدوده‌های موضوع این یاداشت تفاهم حداقل در مرحله شناسایی ناحیه ای به

"In the name of God"

The Letter of Understanding

Between

Geological Survey of IRAN (GSI)

and

The Joint Stock Company Qeshm

Union Itok International AG

Article 1- This Letter of Understanding is between the Joint Stock Company, Qeshm Union Itok International, which has been registered in Qeshm Free Zone under No. 2304/م س/1999 dated 19 th Jan. 1999 on one part, located in No. 27 Koohpayeh St. Hosseini St., Ejazi St., Zaferanieh Ave, Tehran, Iran, hereinafter referred to as "QUII" and the Geological Survey Exploration of Iran, on the other part, hereinafter referred to as the "Organization", located in Meraj Blvd. Azadi SQ. P.O. Box 13185-1494.

Article 2- This Letter of Understanding relates to the jointly mineral exploration activities by "QUII" and the "Organization" in a twelve months period and in geographical areas shown on the attached drawing (hereinafter referred to as the "Areas"). The beginning time of the activities is upon the signing of this Agreement by the Parties.

Article 3- "QUII" undertakes to expend least 45 USD per square kilometer during

anticipated twelcve months period for reconnaissance, on the "Areas" referred to in this Agreement. It is obvious that the charges must be confirmed by the "Organization" and only include the direct exploration charges and exploring the mineral deposits.

Article 4- "GSI" will provide "QUII" with the exsisting available information of geological, mineralization, geochemical, geophysical, petrological, relevant data for determination the age of layers and formation, satellite isotopic data and etc. for the granted "Areas".

Article 5- If the exploration activities are satisfactory and lead to exploitation, "GSI" and "QUII" will negotiate the value of the previous activities carried out in the "Areas" and information which have been forwarded to "UII" by "GSI" of other data resources.

Article 6- The "Organization"s experts will cooperate with their colleagues in "QUII" to jointly explore the "Areas" of high potential in porphyry copper, rare elements, base metals, and gold. The "Organization" and "QUII"s experts will jointly work in site and office in Iran and or out ofIran for the whole Project. Specially they will have a close cooperation in processing the collected data such as aerogeophysics data, remote sensing data and etc. in Iran and Australia. It should be noted that the exploration activites and continuing the studies in the selected "Areas" with at most 40 km ^{2} surface 'preserving priority for QUII' will be carried out under the

ازاء هر کیلومتر مربع در زمان یکسال پیش بینی شده حداقل مبلغ ۲۵ دلار هزینه خواهد نمود. بدیهی است هزینه ها بایستی مورد تأیید سازمان قرار گیرد و فقط شامل هزینه‌های مستقیم شناسایی و اکتشاف ذخایر معدنی خواهد بود.

ماده ۴ : سازمان، اطلاعات زمین شناسی، کانی سازی، ژئوشیمی، ژئوفیزیک، سنگ شناسی، داده های تعیین سن ایزوتوپی و ماهواره‌ای موجود و قابل دسترس را در مورد محدوده ها در اختیار QUII قرار خواهد داد.

ماده ۵ : در رابطه با کارهای انجام شده قبلی در محدوده ها که بعنوان اطلاعات فنی اولیه از سوی سازمان و یا سایر منابع اطلاعاتی کشور در اختیار QUII قرار می‌گیرد در صورت نتیجه بخش بودن اکتشافات و رسیدن به مرحله بهره‌برداری، سازمان با QUII نسبت به ارزش اطلاعات مربوطه مذاکره و توافق خواهد نمود.

ماده ۶ : کارشناسان سازمان، با همکاران خود در QUII همکاری خواهند داشت و مشترکاً محدوده های دارای توان معدنی بهتر از نظر ذخایر مس‌پورفیری، طلا، فلزات پایه و عناصر کمیاب را شناسایی خواهند نمود. همکاران سازمان و QUII در تمام مراحل مطالعات و عملیات دفتری و صحرایی بویژه در مورد پردازش داده‌های جمع آوری شده مانند داده‌های ژئوفیزیک هوایی دورسنجی و غیره در ایران و استرالیا همکاری نزدیک خواهند داشت. بدیهی است ادامه مطالعات و عملیات اکتشافی در محدوده‌های انتخابی به مساحت

Mining Law of the Islamic Republic of Iran after obtaining the Exploration License.

Article 7 - "QUII" will provide the "Organization" with all the necessary efforts for transferring the new technology and methods of study regarding the reconnaissance porphyry copper deposits, gold, base metals and rare elements.

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Article 10- Regarding applying exploration licenses in the "Areas" for investing in future, the Mining Law of Islamic Republic of Iran should be governed.

Article 11- "MMM" will issue no new

حداکثر ۴۰ کیلومتر مربع، با حفظ اولویت برای QUII طبق ضوابط قانون معادن و سایر قوانین و مقررات جاری و حاکم جمهوری اسلامی خواهد بود.

ماده ۷ : QUII امکانات لازم برای انتقال تکنولوژی روز و پرداختن به روشهای جدید مطالعاتی در رابطه با شناسایی و اکتشاف ذخایر مس پورفیری، طلا، فلزات پایه و عناصر کمیاب را به سازمان فراهم خواهد آورد.

ماده ۸ : QUII امکانات لازم جهت حضور ۵ نفر از کارشناسان ایرانی در استرالیا را برای همکاری مشترک فراهم خواهد آورد. هزینه بلیط هواپیما بعهده سازمان خواهد بود و سایر هزینه های مربوط به اقامت کارشناسان ایرانی در استرالیا بعهدهٔ QUII می‌باشد. مدت اقامت کارشناسان ایرانی در استرالیا با توافق طرفین تعیین خواهد شد.

ماده ۹ : تمامی نتایج حاصل ازاین همکاری، در طول یکسال کار مطالعاتی و ۳ ماه بعد از آن به صورت محرمانه باقی خواهد ماند و جز به نمایندگان QUII و سازمان به هیچ شخص و یا شرکتی داده نخواهد شد پس ازاین مدت در صورت عدم توافق در ادامه کار تمام اطلاعات عملیات اکتشافی در اختیار سازمان قرار خواهد گرفت و QUII غیر از استفاده مشترک حق انتشار نتایج مطالعات را بدون کسب مجوز کتبی از سازمان نخواهد داشت.

ماده ۱۰ : در رابطه با درخواست صدور پروانه اکتشاف در محدوده‌های مطالعاتی و سرمایه‌گذاریهای بعدی جهت بهره برداری مطابق قانون معادن و آئین نامه‌های آن و دیگر قوانین دولت جمهوری اسلامی ایران عمل خواهد شد.

ماده ۱۱ : وزارت معادن و فلزات در طول

exploration license for porphyry copper, gold, base metals and rare elements to the others during the twelve months of "QUII" and the "Organization" cooperation in the "Areas" subject to this LOU.

Article 12- "QUII" undertakes to carry out all phases of the study with the cooperation of the "Organization"'s experts and the results of the phases should be submitted regularly to the "Organization".

Article 13- "QUII" can at any time assign part of this letter of understanding items to a third party which join QUII in the exploration activities with GSI's consent.

Article 14- This Letter of Understanding shall be governed by the Laws of the Islamic Republic of Iran.

NATEGH ESMAILI
Representative for Deputy
Minister of MMM and
General Director of GSI

KAMBIZ MOAZAMI
representative for
The Joint Stock Company Qeshm
Union Itok International AG

یکسال همکاری QUII و سازمان در محدوده‌های موضوع این یادداشت تفاهم پروانه اکتشافی جدید برای مس پورفیری، طلا، فلزات پایه و عناصر کمیاب صادر نخواهد کرد.

ماده ۱۲ : QUII کلیه مراحل مطالعاتی و اکتشافی را در محدوده‌های موضوع این یادداشت تفاهم، با همکاری کارشناسان سازمان انجام داده و نتایج آنرا بطور مرتب در اختیار سازمان قرار خواهد داد.

ماده ۱۳ : QUII می تواند در هر زمان از تاریخ مبادله این یادداشت تفاهم نسبت به واگذاری بخشی از مفاد این تفاهم‌نامه به شرکت ثالث با کسب موافقت سازمان اقدام نماید.

ماده ۱۴ : در تعبیر و تفسیر و اجرای مفاد این یادداشت تفاهم قوانین و مقررات جمهوری اسلامی ایران حاکم خواهد بود.

نادعلی اسماعیلی
نماینده معاون اکتشافی و رئیس سازمان زمین شناسی
و
اکتشافات معدنی کشور

کامبیز معظمی
مدیر عامل شرکت قشم یونیون / اینوک

APPENDIX II

Summary of Work Undertaken by the Yugoslavian Geological Survey

MEMORANDUM - Union Mining NL Brisbane

Date : 16 March H999

TO : Rob Murdoch

cc Hossain Torabi, Kambiz Moazami

FROM : Ken Chapple

SUBJECT : **COPPER EXPLORATION AREAS - SUMMARY OF AVAILABLE DATA**

INTRODUCTION

This Memo summarises the currently available information (excluding what the GSI may have) for the five Copper Exploration areas that are the subject of a current MOU with the Geological Survey of Iran (GSI). All were selected by consultants Taylor Wall and Associates (TWA) and cover an area of 1,032 km^2?. The Areas numbered 1 to 4 inclusive are located in the Kerman area in Central-Southern Iran and have been previously explored and reported upon by the Yugoslavian Geological Survey (YGS). No public information is available for the fifth area which is located in East Azarbaijan in NW Iran. The location of the five areas is shown on Figure 2.

The selection criteria used by TWA involved purchase of the TM Landsat data and processing by Geoimage to highlight areas of porphyry copper type alteration using bands that highlight the presence of clay and iron. Broad areas of interest were than selected in Brisbane before going to Iran. In Iran, the information contained in the YGS report was used to define the areas for application. This involved combining as many of the known occurrences with the pre-selected areas of interest, without making the areas too large.

Negative results reported by the YGS in some portions of the areas selected for application were not viewed as discouraging as today's field and analytical techniques are now far more advanced than those that were applied at the time (1968-1972). In particular, this is based on the following;

Much of the current understanding of the alteration patterns associated with porphyry copper deposits has been developed post the YGS work.

Recognition of porphyry copper deposits developed under cover has advanced enormously over the last few years. That is, the recognition of leached caps, supergene enrichment blankets, silicic caps and

lithocaps etc.

Recognition features of porphyry associated high sulphidation epithermal deposits has also undergone significant advancement in recent times. Little, i f anything, of these style of deposits was known at the time of the YGS work and for that matter, generally in Iran up to the present.

A total of 11,735 stream sediment and soil samples collected were "analysed" by the YGS in the field by colori metric procedures following application o ftest chemicals. Such procedures do not provide total analytical results and arc therefore highly suspect. Very few analyses for Au were undertaken.

GEOLOGY AND MINERALIZATION

In summary, the geology of the areas in which the porphyry Cu deposits are developed consists of Eocene age volcanics, volcaniclastics, sediments and minor limestones that have been intruded by the upper levels of a series of Oligocene granodioritic to dioritic plutons. These are commonly cut by younger, mainly acidic, dykes. The Oligocene intrusives have produced significant horn felsing of the host volcanics and sediments in some areas.

Porphyry Cu style mineralization is associated with hydrothermal alteration developed both within the intrusives and the host volcanics. The best example of this style is at the large world class Sar Cheshmeh Porphyry Cu-Mo Mine, located to the NW of the Kerman Application areas, where there is a resource of 1.2 billion tonnes at a grade of 0.67% Cu, 0.03% Mo, 0.27 g/t Au and 3.9 g/t Ag. At the mine three main zones are present, including a oxide/leached zone (average 26m), a supergene enriched zone (average 35m @ 1.5% Cu) and a hypogene zone (in excess of 500m with upper 0.64% Cu, lower 0.60% Cu). The contact between the supergene and hypogene zones is transitional.

DESCRIPTION OF COPPER EXPLORATION AREAS

Work undertaken and results obtained from prospects within the Kerman Exploration areas explored by the YGS are summarised below. Numbers

indicate the assigned number for each prospect on the H:500,000 scale Location/Metallogenic Map of the Kerman area (Figures 3A-3C).

1.COPPER EXPLORATION AREA 1 - BIDKHAN

Copper Exploration Area 1 covers an area of 90 km^2 in the Sirjan 1:250,000 Scale Sheet area.. It is located between Bidkhan and Deh Bala Villages, about 45 km south of Bardsir. The geology consists of Eocene volcanics and sediments intruded by several minor granodioritic bodies. TWA have identified areas of alteration from the TM Landsat data.

Bidkhan Prospect (No 30)

In this area, both volcanics and intrusives are altered (argillitised, silicified and seriticised) over an area of some 2 km^2, but the intensities are very variable. Limonitisation is widespread, but secondary Cu minerals are rare. Stream sediment values for Cu, Mo, Zn and Pb are low.

An IP survey conducted over the area outlined a large anomalous zone 2.5 km^2 long by 100 to 500 metres wide. Oxidation was estimated to be H0 to 60 metres in depth. It was concluded that the anomaly is associated with pyrite and not Cu mineralization of any importance.

Based on this description the Bidkhan occurrence does not raise any interest, but it covers only less than 5% of the area selected by TWA.

2.COPPER EXPLORATION AREA 2 - SIRJAN AND BAM REGION

Copper Exploration Area 2 covers a large area of 538 km^2 which straddles the boundary of the Sirjan and Barn 1:250,000 Scale Sheet Areas. The area is some 50 km^2 long (E-W) by up to 13 kms wide (N-S). It was selected to incorporate six (6) Prospect areas previously explored by the YGS and several areas of alteration not previously investigated.

Work undertaken and results obtained from the known prospect areas is

summarised below.

Lalehzar F-3 Zone (No 41)

This area is located about 12 km NNW of Rabor and 61(m SW of Pay Negin Village. Intensive argillisation and silicification alteration of granodioritic and dioritic intrusives occurs over an area of some 2.5 km2. Limonitisation is also common and intensive. Secondary Cu minerals malachite and azurite have only been observed locally and Cu and Mo values in both stream sediments and soils are only low (maximums of 300 ppm Cu and 90 ppm Mo). Two holes were drilled in intensely pyritised rocks, but Cu values obtained were very low (200-400 ppm).

Pay Negin Prospect (No 42)

This prospect is located near Pay Negin Village, about H5 km north of Rabor (3000m). Here volcanics have been intruded by a large granodioritic body which displays intensive silicification and lesser sericitisation and argillisation in a very small N-S trending area of about 0.1 km^2. The volcanics are extensively hornfelsed and both the volcanics and the intrusive are intruded by later diorite porphyry bodies and dykes. Sheared fault zones 1-2 metres wide occur within the altered area and carry thin discontinuous veinlets of Cu mineralization. Pyrite, chalcopyrite, bomite, galena and sphalerite have been identified. Comment was made that disseminated Cu minerals may be present between the sheared fault zones and that the area has not been adequately investigated.

Daralu (No 43)

This prospect is located in a rugged, mountainous, area 15 km south of

Chahar Tag Village and 80 km SE of to town of Bardsir. Here volcanic flows, tuffs and cherts have been intruded by three minor quartz diorite bodies. WNW striking faults separate the various volcanic units and are associated with zones ofmalachite bearing intensive silicification, which locally are described as developing into "stockworks of fine-grained white quartzite".

Two zones of anomalous Cu and Mo are present. The main zone is up to 1700 metres long by an average of 350 metres wide. In half of the area, the average Cu (soil?) value is 700 ppm, with maximum values of 7500 ppm (and 300 ppm Mo). The other area is much smaller and lower in Cu and Mo values.

The prospect has been drilled, although the number of holes and depths are not specified. This has shown there is a weathered zone present which varies from a few metres up to 30 metres. Within part of this, a supergene zone has been developed which varies in thickness from 8 to 20 metres.

Drill intersections within the supergene zone vary from 0.7% to 2.23% Cu. In an area of some 600 x 200 metres where the supergene zone has been best developed, a resource of about two (2) million tonnes at 1.41% Cu and 0.155% Mo has been estimated. It is stated that the tonnage of the zone is unlikely to be any larger than estimated.

The underlying primary zone contains pyrite and chalcopyrite, with Cu values ranging up to 0.5%. It is estimated that in that part of the zone where Cu values exceed 0.4%, there is a resource of 25 million tonnes at 0.46% Cu and 0.065% Mo. It was concluded that the primary zone may be larger than estimated, perhaps in the order of 50-80 million tonnes in excess of 0.4% Cu.

Sar Meshk (No 44)

This prospect is located near Sar Meshk Village about 5 km SE of the

Daralu Prospect. Here a quartz diorite porphyry intrusive some 2 km^2 in area has produced hydrothermal alteration and extensive hornfelsing of the volcanic host. The alteration consisting of silicification and local argillisation is widespread in the volcanics but less developed within the intrusive. Outcrops of rich secondary Cu mineralization have been observed in the both the homfelsed and altered volcanics.

Exploration undertaken identified two anomalous areas where maximum values of 0.1% Cu and 35 ppm Mo were obtained (this is somewhat surprising given the description of rich secondary Cu!). These zones were tested with eight (8) drill holes up to 200 metres deep. Mineralization consists of pyrite and chalcopyrite with no supergene enrichment observed. Analytical values were highly variable, with Cu ranging from several hundred ppm up to 1.0% and an average for all drill holes of 0.25% Cu and 26 ppm Mo. Cu averaging 0.4% is restricted to a small area. It was concluded that the prospect has no economic potential.

Bondar Hanza (No 45)

This prospect is located at the end of a zone that extends from Daralu via Sar Meshk for about H5 km. The entire length of this zone is characterised by faults, patchy alteration and numerous secondary Cu occurrences.

In the prospect area, a quartz diorite body has intruded the volcanics. Alteration consisting of intense silicification, sericitisation and argillisation has affected both the volcanics and the intrusive. Limonitisation is also well developed.

Sampling delineated an area of some 0.5 km' where maximum values of 0.55% Cu and 140 ppm Mo were obtained. Drilling was undertaken (number or depths not specified) with porphyry style mineralization consisting of chalcopyrite, pyrite and magnetite being intersected. The average Cu grade was 0.1 to 0.4%, with some minor intervals up to 0.6%

and above. One hole intersected 17m (9-26m) averaging 1.05% Cu and 11 ppm Mo. The presence of a supergene enrichment zone could not be confirmed. It was concluded that the prospect is of limited tonnage and of low grade.

Guru (No 47)

This prospect is located on the eastern slopes of the Kuh-e-Hanza Range about 8 km east of Gorveh Village. Here a large diorite body approximately 3.0 km^2 in area intrudes Eocene volcanics. Both area extensively veined by micro-dioritic veins.

A NW trending zone of alteration approximately 2800 metres long by 700 metres wide is developed within the intrusive. Alteration consists of silicification with argillisation more common in the SE of the zone. Epidotisation (propyllitic) alteration is well developed throughout. An intensely silicified and argillised fault zone some 10 km long extends eastwards form the intrusive into the adjacent volcanics and locally exhibits malachite and chalcopyrite.

An anomalous area of 1000 by 300 metres was identified in which Cu values exceed 300 ppm, with maximums of 0.17% Cu and 25 ppm Mo. An IP survey delineated three zones of sulphide concentration, the largest (northern) of which coincides with the main geochemical anomaly. A southern anomaly correlates with the above mentioned fault zone.

Four holes were drilled in the best part of the anomalous areas but only low grades were intersected with Cu values averaging 0.1% and Mo between 2 and 134 ppm.

3. COPPER EXPLORATION AREA 3 - BAM REGION

Copper Exploration Area 3 covers an area of 88 km^2 Barn on the 1:250,000 Scale Sheet Area. The area measures some 8 kms E-W by 11

km^2 N-S. It was selected by TWA to incorporate two prospect areas (Nos 49 and 50) previously explored by the YGS and areas of alteration identified on the TM Landsat imagery. Work undertaken and results obtained from the known prospect areas are summarised below.

Surakh-e-Mar 1 (No 49)

This prospect is located in the immediate vicinity of Surakh-e-Mar Village and about 15 km south of the larger village of Hoseyn Abad. Here Eocene volcanics and minor sediments are intruded by diorite intrusives and dykes. Situated on the far eastern end of the Kuh-e-Hanza range, the area is very rugged with steep slopes and deep river valleys. Hornfelsing of the volcanics has taken place for up to 200m from the intrusive contacts.

The prospect area consists of an area of about 1.5 km^2 that has undergone alteration and intensive shearing and fracturing. The alteration includes pyritisation and silicification with lesser sericitisation and argillisation. Secondary Cu mineralization is scattered throughout the prospect area in both altered and unaltered rocks. The high concentration of pyrite has produced extensive limonite staining.

Soil sampling within the anomalous zone located an area of about 0.5 km^2 where values of 200300 ppm Cu and 4-20 ppm Mo were obtained. An IP survey was conducted and this delineated an anomalous zone over 2 km long by 100 to 500m wide. Three holes were drilled and intersected altered rocks containing about 7% sulphide, consisting mainly of pyrite with minor chalcopyrite. However, the maximum Cu value obtained was 0.32%, with an average of less than 0.1%. The mineralogy was determined to consist ofpyrite, chalcopyrite, molybdenite, magnetite, ilmenite, sphalerite, hematite and pyrrhotite.

Surakh-e-Mar 2 (No 50)

This prospect is located 3-7 km east of Surakh-e-Mar Village. Here Eocene volcanics and minor sediments are intruded by diorite intrusives and dykes. In contrast to the Surakh-e-Mar 1 prospect, the area is characterised by a gently undulating plateau, with several low rounded hills. Horn felsing of the volcanics has taken place for up to 200m from the intrusive contacts.

The prospect area consists of an area of about 2.5 km^2 that has undergone alteration and intensive shearing and fracturing. The alteration includes pyritisation and silicification with lesser sericitisation and argillisation. Secondary Cu mineralization is scattered throughout the prospect area in both altered and unaltered rocks. The high concentration of pyrite has produced extensive limonite staining.

Soil sampling within the anomalous zone located an area of about 0.5 km^2 where values of Cu and Mo were found to be somewhat higher than for the Surakh-e-Mar 1 prospect area. An IP survey was conducted and this delineated three anomalous zones ranging in area from 0.1 to 0.5 km^2. Two holes were drilled and intersected altered rocks containing about 4.5% sulphide, consisting mainly of pyrite with minor chalcopyrite. Average intersections were 0.1% Cu and 19 ppm Mo for one hole and 0.4% Cu and 93 ppm Mo for the other. The mineralogy was determined to consist of pyrite, chalcopyrite, molybdenite, magnetite, ilmenite, sphalerite and hematite, with pyrrhotite being absent.

4. COPPER EXPLORATION AREA 4 - BAM REGION

Copper Exploration Area 4 covers a large area of 3H6 Km2 on the Bam 1:250,000 Scale Sheet Area. The area measures some 30 kms E-W by 25 kms N-S. It was selected by TWA to incorporate five (5) prospect areas (Nos 52, 53, 55, 56 and 57) previously explored by the YGS plus a large alteration zone not investigated by them.

Work undertaken and results obtained from the known prospect areas is summarised below.

Sin Abad (No 52)

This prospect is located in the northem foothills of the Kuh-e-Bahr Alernan Range, about 3 km south of Sin Abad Village and 7 km SW of Sarduiyeh. Here NW striking Eocene volcanics are intruded by a E-W orientated granodiorite body which is approximately 3 km long by 500m wide. Alteration is pervasive throughout the intrusive and consists of silicification, sericitisation and argillisation. The volcanics are only altered near the intrusive contacts. Only limited pyrite and chalcopyrite with rare malachite staining has been noted.

An IP survey was conducted and delineated a E-W trending zone of sulphide concentration some 2 km long by 100 to 300m wide. This zone is coincident with the most intensive alteration. Surface samples collected from this area were found to contain maximums of 280 ppm Cu and 15 pm Mo.

Zamin Hoseyn - Gerdu Kolu (No 53)

This prospect is located about 5 km SW of Zamin Hoseyn Village. Mineralization is developed within a sheared zone in the volcanics. Approximately 10 major NE trending zones, 500 to 600in long by up to 0.5 to 1.5m wide, occur in an area of sonic 1.5 km^2.

The rocks within the zones are intensively silicified and mineralized by pyrite, chalcopyrite, chalcocite, covellite, hematite and limonite.

Apparently in another part of the prospect area is an altered area of about H0.0 km' developed in granodiorite intrusive. Within this is a 2600 by 600m zone of silicic and argillic alteration with later limonitic development. Cu mineralization is present in thin quartz veins outside of the altered zone. Copper values obtained

in soil sampling averaged 70 to 170 ppm, with some up to 570 ppm, but Mo values were low in the range 1-6 ppm.

Sargoad (No 55)

This prospect is located about 5 km north of Zamin Hoseyn Village. It consists of a quartz vein up to 20m wide but of unknown length which is mineralized with specularite, pyrite, chalcopyrite and bornite. A Cu value of 1.4% was obtained from one sample.

Babnam (No 56)

This prospect is located about 5 km SW of Babnam Village and 12 km south of Sarduiyeh. Here a granitic intrusive some 5 km^2 in area has intruded volcanic tuffs and andesites. Minor areas of the intrusive are altered, with some secondary Cu development present. Some Cu mineralization was also noted in the host volcanics.

Stream sediment and soil sampling has located Cu (200 to 850 ppm) and Mo (1-5 ppm) anomalies in small zones both within the intnisives and the volcanics.

Janga (No 57)

This prospect is located in the eastern part of the Kuh-e-Bahr Aleman Range about 3 km SW of Janga Village. The geology consists of andesitic lavas, tuffs, agglomerates and intercalated limestones that have been intruded by granodiorite. Some parts of the sequence are mineralized with magnetite, epidote and chalcopyrite, but the most intensive mineralization is developed within two limestone horizons, each about 600m long by 5- to 90m wide. A Cu value of 0.7% was obtained from a 8.2m thick zone of limestone and 0.38% from another 70m thick limestone zone. Individual Cu values up to 1.75% were also obtained.

It was concluded that these vein type occurrences have not been adequately

investigated and while the surface outcrops of mineralization are of limited size, their abundance might suggest the presence of important Cu ore resources.

Ken Chapple

A P P E N D I X I I I

Analytical Results

COPPER-GOLD EXPLORATION AREAS - QUII-GSI JV

Sample No.	Location	Description	Au	Cu	Pb	Zn	Ag	Mo
QUII-001	Area 1	Vn breccia in Alt andesite	BLD	46	380	36	3	ND
QUII-005	Area 2	Near Adv Arg Alt/Drill Site	0.020	52	56	20	<1	ND
QUII-006	Area 2	Top Hill - Au Area?	0.037	132	374	134	<1	ND
QUII-008	Sinabad	Unroofing fragmatite?	BLD	135	23	53	1	ND
QUII-009	Sinabad	Fe rich material under capping	BLD	171	0.25%	284	1.4	ND
QUII-010	Sinabad	Alt andesite, some py	0.111	18	58	17	<1	ND
QUII-011	Pay Negin	Massive Sulph Vn in Andesite	0.036	3.30%	43.80%	5.36%	131	ND
QUII-012	Pay Negin	LG ore tunnel entrance	0.073	0.19%	0.72%	0.18%	5.8	ND
QUII-013	Pay Negin	Sideritic? Vnd alt andesite	0.034.	17	31	67	1.4	ND
QUII-014	Pay Negin	Sil vnd with flecks magnetite?	0.037	25	15	17	1	ND
QUII-015	Pay Negin	White alt andesite with magnetite?	0.040	6	39	26	<1	ND
QUII-016	Hot Spring Area	Alt andesite and cemented conglom	0.060	18	34	22	2.8	ND
QUII-017	Hot Spring Area	Colloform banded carbonate	0.037	12	40	7	4.2	ND
QUII-018	Hot Spring Area	Andesite Dyke - Epithermal Vn	BLD	23	10	64	<1	ND
QUII-019	Hot Spring Area	Cemented CO3 material above H spring	BLD	18	20	61	<1	ND

XRD DETERMINATIONS

QUII-002	Area 2	Altered Andesite	Quartz, chlorite, illite	Intermediate Argillic Alteration
QUII-003	Area 2	Altered Andesite	Quartz, illite	Intermediate Argillic Alteration
QUII-004	Area 2	Altered Porphyry	Quartz, alunite	Advanced Argillic Alteration

Sample ID		Au	Cu	Pb	Zn (ppm)	Ag (ppm)	Mn (ppm)	Mo (ppm)	Fe (%)	Description
1	Travertine	-	62	43	9	4	122	-	-	Volcanic conglomerate with travertine veins
2	Travertine	-	28	34	36	3	410	-	-	Volcanic conglomerate with travertine veins
3	Travertine	-	34	45	40	3	181	-	-	Volcanic conglomerate with travertine veins
4	Travertine	-	8	41	15	3	0.12%	-	-	Volcanic conglomerate with travertine veins
5	Qanat Marvan	-	267	17.80%	7.27%	91	-	-	-	Intensely fractured and kaolin altered (adv. argilic) dacite with dendritic manganese staining
6	Qanat Marvan	-	0.43%	42.13%	6.86%	1040	-	-	-	Thick stockpile veins of galena. Barite noted
7	Qanat Marvan	-	52	0.14%	189	3	-	-	-	Dacite intensely fractured with iron oxide fillings larger and wider fractures. Very limonitic and kaolinitic (adv Argillic)
8	Near Sargaz	-	2.72%	0.11%	2.80%	20	-	-	-	Composite of malachite stained conglomerate and slag
9	Damaneh	-	1.57	19	80	5	-	-	-	Rhyolitic volcanics intruded be dacitic intrusives and dykes (east-west trending).
10	Damaneh	-	32.00%	32	29	2	-	-	-	Float with malachite staining and abundance of coase diorite prophyry float with large feldspar phenocrysts replaced by kaolinte, calcite and malachite.
11	Bondar Hanza	-	7	577	433	<1	-	-	-	Rhyolite with disseminated sercite, quartz, pyrite, chalcopyrite.Intensely fractured with iron oxide of fracture surfaces Red Rock
12	Bondar Hanza	-	413	13	44	1	-	-	-	A sericite, chlorite, silicified altered trachyte with disseminated pyrite.
13	Bondar Hanza	-	903	75	25	4	-	-		Contact between the Red Rock, mineralies andesite??? and rhyolitic porphyry. RR quartz veins with sutures and magnetite, no sulphides. Rhyolite has significant alachite
14	Guru		312	23	30	4	-	-	-	porphyritic andesite with siliceous + kaolinte+sericite + magnetite alteration. Considerable quartz veining with magnetite and rare pyrite.

15	Guru	-	0.11%	138	58	2	-	-	-	Highly altered limonitic volcanic rock (andesite? Rhyolite?)haematite + kaolinite + chlorite alteation. Fractured no viens
16	Guru	-	18	18	122	<1	-		–	Trachy-andesite with minor to moderate disseminated pyrite and Arsenopyrite. Patchy epidote alteration chlorite

17	Surakh-Mar-2	2	471	14	21	1	-	-	-	Limonite Volcanic (dacite, andesite, rhyolite pyroclastics) intruded by younger intrusives and dykes (diorite-andesite). Quartz veinlets, pyrite, chalcopyrite, bornite? Magnetite. Haematite and epidote observed.
18	Surakh-Mar-2	3	69	<9	21	<1	-	4	-	As above
19	Surakh-Mar-2	<1	594	10	34	<1	-	-	-	As above
20	Surakhe-mar-1	1	292	13	26	1.4	-	-	-	As above
21	Surakhe-mar-1	<1	624	15	85	1.2	-	4	-	As above
22	Surakhe-mar-1	4	115	<9	12	<1	-	-		As above
23	Surakhe-mar-1	3	129	<9	13	<1	-	4	-	As above
24	Kotteh Zar	5	2.27%	-	-	-	-	-	51.56	Rhyolite with pyroclasitcs and detrital limestone and dioritic intrusions. Massive magnetie with chalcopyrite, pyrite, limestone and quartz associations. Ore body surrounded by carbonate rocks.
25	Sargoad	15	0.72%	<9	36	5	-	-	-	Andesite-basalt, andecite, dacite and pyroclasts. Epidote and silic alteration observed. Mineralisation malachite, magnetite. pyrite and bornite.
26	Baghrai	4	2.68%	34	200	68	-	-	-	Volcanities (andesites-basalts, andesite-dacites and pyroclasts).Ore in fault zone with diorite/andersite porphyry Malachite, galena, magnetite, haemtite, pyrite and chalcopyrite observed. Silica and epidote alteration
27	Baghrai	>2000	8.16%	<9	67	49	-	-	-	As above
28	Babnam	3	0.81 %	310	861	1.4		-	-	Andesite,tuftitsanadpyroacglansettsite, granite intrusions and trachy andesite dykes. Fissure controlled mineralisation of malachite. pyrite, heamitite and magnetite.
29	Babnam	140	3.19%	153	429	14	-	-	-	As above
30	Janga	2	147	12	118	1.2	-	-	-	As above
31	Janga	1	17	14	67	1.4	-		-	As above
32	Lalezar-F-4	22	0.30%	11	78	4		2		Andesite, trachy-andesite-rhyolite, Pyreclastics and granodioritic intrusions. Kaolinite and silica alteration with weak mineralisaion of malachite. galena, pyrite and hematite

Sample ID	Location	Au (ppb)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Ag (ppm)	Mn (ppm)	Mo (ppm)	Fe (%)	Description
33	Zamin Hoseyn	1	5.59%	9	76	2	-	8		Sandstone Conglomerate, Eocene volcanics (dacite, pyroclastics and trachy andesite dykes) Silica Epidote alteration calcite mineralisation along with malachite. magnetite and haematite.
34	Zamin Hoseyn	27	1.25%	13	91	1	-	-	-	As above
35	SW Janga Posht-Godar	-	-	-	-	-	-	-		Limestone sandstone conglomerate and volcanites (rhyolite, pryoclastics and tuffs) Quartz and kaolinte alteration. No mineralisation
36		*	*	*	*	*	*	*	*	
37		*	*	*	*		*	*	*	
38		*	*	*	*	*	*	*	*	
39		*	*	*	*	*	*	*	*	
40		*	*	*	*	*	*	*	*	
41		*	*	*	*		*	*	*	
42		*	•	*	*	*	*	*	*	
43		*	*	*	*	*	*	*	*	
44		*	*	*	*	*	*	*	*	
45		*	*	*	*	*	*	*	*	
46		*	*	*	*	*	*	*	*	
47		*	*	*	*	*	*	*	*	

* results not yet aveilable

PHONE NO. :

Jul. 04 1999 03:02PM P2

Ministry of Mine & Metal

GEOLOGICAL SURVEY OF IRAN

P.O.Box: 13185 -1494 Tehran-Iran
Tel.: 9171 Tlx. 215106 GSOI-IR Fax: 6009338
Cable: Zaminshenasi
Add.: Azadi Sq. Meraj Blvd.

Date : .....
No : .....
Ref : .....

In the name of God

Laboratory Research Dept.

Geochemical Laboratory

Requested by :

Date of Request :

Report No. :

Cost of analysis:

Sample No.	Lab No.	ppm Cu	ppm Zn	ppm Pb	ppm Ag
UII-315	G78/382	19	49	33	2.2
316	383	15	9	47	4.2
317	384	19	32	52	3.6
318	385	16	34	42	2.6
319	386	26	61	16	1.4
320	387	69	59	16	1
321	388	23	63	13	1
322	389	20	41	9	<1
QUII-001	390	46	36	380	3
005	391	52	20	56	<1

Analyzed by : Moghimi-Emami-Golbabapour

Approved by :M. Ermagan
Head of Geochemical Lab.

PHONE NO. :

Jul. 04 1999 03:03PM P9

Ministry of
Mine & Metal

GEOLOGICAL SURVEY OF IRAN
P.O.Box: 13185 -1494 Tehran-Iran
Tel.: 9171 Tlx.: 215106 GSOI-IR Fax. 6009338
Cable: Zaminshenasi
Add.: Azadi Sq. Meraj Blvd.

Date :
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In the name of God

Laboratory Research Dept.

Geochemical Laboratory

Requested by :

Date of Request :

Report No. :

Cost of analysis:

Sample No.	Lab No.	ppm Cu	ppm Zn	ppm Pb	ppm Ag
QUII-006	G78/392	132	134	374	<1
008	393	135	53	23	1
009	394	171	284	0.25%	1.4
011	395	3.30%	5.36%	43.8%	131
012	396	0.19%	0.18%	0.72%	5.8
013	397	17	67	31	1.4
014	398	25	17	15	1
015	399	6	26	39	<1
016	400	18	22	34	2.8
017	401	12	7	40	4.2

Analyzed by : Moghimi-Emami-Golbabapour

Approved by :M. Ermagan
Head of Geochemical Lab.

Ministry of Mine & Metal

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Date :
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Laboratory Research Dept.

Geochemical Laboratory

Requested by :

Date of Request :

Report No. :

Cost of analysis:

page 6

Sample No.	Lab No.	ppm Cu	ppm Zn	ppm Pb	ppm Ag
QUII-018	G78/402	10	64	10	<1
019	403	23	61	20	<1
010	404	18	17	58	<1

Analyzed by : Moghimi-Emami-Golbabapour

Approved by :M. Ermagan
Head of Geochemical Lab.

مدیر امور آزمایشگاهها
محمودرضا ارمگان

Ministry of Mine & Metal
GEOLOGICAL SURVEY OF IRAN
P.O.Box: 13185 -1494 Tehran-Iran
Tel.: 9171 Tlx.: 215106 GSOI-IR Fax: 6009336
Add.: Azadi Sq. Meraj Blvd.

Date 10. July. 99
No : 78-295
Ref :

In the name of God

Laboratory Research Dept.

Geochemical Laboratory

Requested by : Queshm Union Itok International Co.

Date of Request : 29.Jun.99

Report No. : 78-56 Keman Area

Cost of analysis: 2040000 Rls.

Sample No.	Lab No.	ppm Mn	ppm Pb	ppm Cu	ppm Zn	ppm Ag
UII-1	G78/441	122	43	62	9	4
2	442	410	34	28	36	3
3	443	181	45	34	40	3
4	444	0.12%	41	8	15	3
5	445	-	17.80%	267	7.27%	91
6	446	-	42.13%	0.43%	6.86%	1040
7	447	-	0.14%	52	189	3
8	448	-	0.11%	2.72%	2.80%	20
9	449	-	19	1.57%	80	5
10	450	-	32	32	29	2

Analyzed by : Bakhshaie-Emami

Approved by :M. Ermagan
Head of Geochemical Lab.

Ministry of Mine & Metal
GEOLOGICAL SURVEY OF IRAN
P.O.Box: 13185 -1494 Tehran-Iran
Tel.: 9171 Tlx.: 215106 GSOI-IR Fax: 6009338
Cable: Zaminshenasi
Add.: Azadi Sq. Meraj Blvd.

Date : 20 July 99
No : 78-295
Ref : .....

In the name of God

Laboratory Research Dept.

Geochemical Laboratory

Requested by :

Date of Request :

Report No. :

Cost of analysis:

Sample No.	Lab No.	ppm Mn	ppm Pb	ppm Cu	ppm Zn	ppm Ag
UII-11	G78/451	-	577	7	433	<1
12	452	-	13	413	44	1
13	453	-	75	903	25	4
14	454	-	23	312	30	4
15	455	-	138	0.11%	58	2
16	456	-	18	163	122	<1

Analyzed by : Bakhshaie-Emami

Approved by :M. Ermagan
Head of Geochemical Lab.

مدیر امور آزمایشگاهها
محمود رضا ارمگان

CAPITAL

PHONE NO. : 9821 2413841 Oct. 04 1999 09:15AM P4

Ministry of Mine & Metal

GEOLOGICAL SURVEY OF IRAN

P.O.Box: 13185 -1494 Tehran-Iran
Tel.: 9171 Tlx.: 215106 GSOI-IR Fax: 6009338
Cable. Zaminshenasi
Add.: Azadi Sq. Meraj Blvd.

Date : 9. Aug. 1999
No : 78-389
Ref :

In the name of God

Laboratory Research Dept.

Geochemical Laboratory

Requested by : Queshm Union Itok International Co.

Date of Request : 25.July.99 1459 -Iceme-

Report No. : 78-76

Cost of analysis: 2250000 Rls. + 90000 Rls.

page 1

Sample No.	Lab No.	ppm Cu	ppm Pb	ppm Zn	ppm Ag	ppm MO	% Fe
UII-17	G78/588	471	14	21	1	-	-
18	589	69	<9	21	<1	4	-
19	590	594	10	34	<1	-	-
20	591	292	13	26	1.4	-	-
21	592	624	15	85	1.2	4	-
22	593	115	<9	12	<1	-	-
23	594	129	<9	13	<1	4	-
24	595	2.27%	-	-	-	-	51.56
25	596	0.72%	<9	36	5	-	-
26	597	2.68%	34	200	68	-	-

Analyzed by : Emami-Golbabapour

Approved by :M. Ermagan
Head of Geochemical Lab.

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Ministry of
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GEOLOGICAL SURVEY OF IRAN
P.O.Box. 13185 -1494 Tehran-Iran
Tel.: 9171 Tlx.: 215106 GSOI-IR Fax: 6009338
Cable: Zaminshenasi
Add.: Azadi Sq. Meraj Blvd

Date 21.Sep.99
No 78 - 514
Ref :

In the name of God

Laboratory Research Dept.

Geochemical Laboratory

Requested by : Queshm Union Itok International Co.

Date of Request : 29.Aug.99

Report No. : 78-102

Cost of analysis: 1440000 Rls. (Considering 10% discount)

Sample No.	Lab No.	ppm Cu	ppm Zn	ppm Pb	ppm Ag	ppm Mo
UII-36	G78/795	0.25%	147	13	3	-
" 37	796	171	169	23	<1	2
" 38	797	1.54%	69	52	1.8	4
" 39	798	118	226	556	5	12
" 40	799	0.36%	169	23	-	-
" 41	800	288	68	286	2	-
" 42	801	0.92%	41	<9	1.8	-
" 43	802	356	-	-	-	-
" 44	803	355	-	-	-	-
" 45	804	26	12	18	<1	-

Analyzed by : Emami

Approved by :M. Ermagan
Head of Geochemical Lab.

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Ministry of
Mine & Metal

GEOLOGICAL SURVEY OF IRAN
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Tel : 9171 Tlx: 215106 GSOI-IR Fax 6009338
Cable Zaminshenasi
Add.: Azadi Sq. Meraj Blvd

Date : 21. Sep 99
No : 78-514
Ref :

In the name of God

Laboratory Research Dept.

Geochemical Laboratory

Requested by :

Date of Request :

Report No. :

Cost of analysis:

Sample No.	Lab No.	ppm Cu	ppm Zn	ppm Pb	ppm Ag	ppm Mo
UII-46	G78/805	82	15	10	<1	-
" 47	806	41	20	20	-	-
" 38-A	807	50	177	49	1	16

Analyzed by : Emami

Approved by :M. Ermagan
Head of Geochemical Lab.

مدیر امور آزمایشگاهها
محمود رضا ارمگان

سازمان زمین شناسی و اکتشافات معدنی کشور
تهران - میدان آرادی - خیابان معراج - صندوق پستی ۱۴۹۴ - ۱۳۱۸۵ تلفن ۹۱۷۱
تلفن ۶۰۰۹۳۳۸ پست الکترونیکی : Campu Cent @ www.dci.co.ir

شماره
تاریخ
پیوست

بسمه تعالی

معاونت تحقیقات آزمایشگاهی
مدیریت امور آزمایشگاهها
گروه اسپکترومتری جرمی

درخواست کننده : شرکت بین المللی یونیون ایتوک قشم
کد امور : ۲۹۵ - ۷۸
شماره گزارش : ۴۷-۷۸ س
تاریخ گزارش : ۱۳۷۸/۵/۶
هزینه آزمایش : ۵۶۰.۰۰۰/- ریال

شماره نمونه	شماره آزمایشگاه	فراوانی طلا (PPb)
۱	۷۸-۸۷۱ س	<۷
۲	۷۸-۸۷۲ س	۳
۳-	۷۸-۸۷۳ س	۵
۴-	۸۷-۸۷۴ س	۲۱
۵-	۸۷-۸۷۵ س	۱۵
۶-	۸۷-۸۷۶ س	۱۲۱
۷-	۸۷-۸۷۷ س	<۵
۸-	۸۷۰ ۸۷۸ س	۱۱۸
۹-	۷۸-۸۷۹ س	۸

وزارت صنایع و معادن
سازمان زمین شناسی و اکتشافات معدنی کشور
تهران - میدان آرادی - خیابان معراج - صندوق پستی ۱۴۹۴ - ۱۳۱۸۵ تلفن ۹۱۷۱
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۱۰-	۷۸-۸۸۰ س	۶
۱۱-	۷۸-۸۸۱ س	< ۵
۱۲-	۷۸-۸۸۲ س	۵
۱۳-	۷۸-۸۸۳ س	۳۱
۱۴-	۷۸-۸۸۴ س	۳
۱۵-	۷۸-۸۸۵ س	۵
۱۶-	۷۸-۸۸۶ س	۳۱

تجزیه کننده : گروه اسپکترومتری جرمی

تأئید سرپرست گروه : مینو کریمی

مدیر امور آزمایشگاهها
محمودرضا ارمگان

Ministry of Mine & Metal

GEOLOGICAL SURVEY OF IRAN
P.O.Box: 13185 -1494 Tehran-Iran
Tel.: 9171 Tlx.: 215106 GSOI-IR Fax: 6009338
Cable Zaminshenasi
Add.: Azadi Sq. Meraj Blvd.

Date : .....
No : .....
Ref : .....

In the name of God

Laboratory Research Dept.
Mass Spectrimetry Lab

Requested by : Queshm Union Itok International Co.
Date of Request : 25.July.99
Report No. :78-53
Cost of analysis : 630000 Rls.

Sample No.	Lab No.	ppb (Au)
UII - 17	78-901	2
" - 18	78-902	3
" - 19	78-903	<1
" - 20	78-904	1
" - 21	78-905	<1
" - 22	78-906	4
" - 23	78-907	3
" - 24	78-908	5
" - 25	78-909	15
" - 26	78-910	4
" - 27	78-911	>2000
" - 28	78-912	3
" - 29	78-913	140
" - 30	78-914	2
" - 31	78-915	1
" - 32	78-916	22
" - 33	78-917	1
" - 34	78-918	27

Approved by : M.Karimi
Head Of Mass Spectrometery Lab.

مدیر امور آزمایشگاهی
محمود رضا ارمغان

Ministry of
Mine & Metal

GEOLOGICAL SURVEY OF IRAN
P.O.Box: 13185 -1494 Tehran-Iran
Tel.: 9171 Tlx.: 215106 GSOI-IR Fax 6009338
Cable Zaminshenasi
Add: Azadi Sq. Meraj Blvd.

Date :
No : 78 - 514
Ref :

In the name of God

Laboratory Research Dept.
Mass Spectrimetry Lab

Requested by : UNION MINING NL.

Report No. : 78-62

Date of report : 11 Oct.1999

Cost of analysis : 975000 Rls. (Considering 1% discount)

Sample No.	Lab No.	ppb (Au)
UII - 36	993	20
UII - 37	994	<5
UII - 38	995	6
UII - 39	996	170
UII - 40	997	<5
UII - 41	998	<5
UII - 42	999	15
UII - 43	1000	<5
UII - 44	1001	<5
UII - 45	1002	<5
UII - 46	1003	5
UII - 47	1004	<5
UII - 38.A	1005	<5

Approved by : M.Karimi

Head Of Mass Spectrometery Lab

مدیر امور آزمایشگاهها
محمود رضا ارمغان