U.S. GEOLOGICAL SURVEY

SAUDI ARABIAN MISSION

TECHNICAL RECORD 17

(INTERAGENCY REPORT 372)

IRON SULFIDE DEPOSITS AT WADI WASSAT, KINGDOM OF SAUDI ARABIA

by

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U.S. Geological Survey
Jiddah, Saudi Arabia

1981

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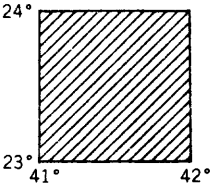

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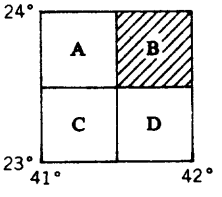

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IRON SULFIDE DEPOSITS AT WADI WASSAT, KINGDOM OF SAUDI ARABIA

by

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ABSTRACT

Massive and disseminated iron sulfide deposits in Wadi Wassat form lenticular, stratabound deposits in cherty Precambrian sedimentary rocks interlayered with Precambrian calcareous sedimentary rocks, pyroclastic rocks, and andesitic flow rocks. These rocks have been cut by a wide variety of plutonic and dike rocks including gabbro, diorite, granodiorite, diabase, rhyolite, and granite.

The zone containing the sulfide lenses is nearly 16 km long and is cut off by granitic rocks at both the northern and southern ends. The lenses are as much as 200 m thick; one can be traced along strike for more than 4 km. The lenses consist mostly of iron sulfides. Pyrite is the principal sulfide mineral; near intrusive bodies, the pyrite has been partially converted to pyrrhotite and locally mobilized into fractures. The sulfides have been oxidized to a depth of about 25 m.

Preliminary calculations indicate that about 107,500,000 tons of sulfides, averaging 40 percent iron and 35 percent sulfur, are available to a depth of 100 m. Small amounts of nickel, cobalt, zinc, and copper are also present, but at metal prices prevailing in early 1981, these do not constitute significant resources.

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INTRODUCTION

Location

The Wadi Wassat iron sulfide deposits are located in the southwestern part of the Kingdom of Saudi Arabia, in the Wadi Wassat quadrangle (sheet 18/44 C), which is between lat 18°00' and 18°30'N., long 44°00' and 44°30'E., (fig. 1). The deposits crop out in Wadi Wassat, which drains northeast into the Rub al Khali; ridge-top altitudes are about 1,400 m above sea level.

The area can be reached by an unimproved road that extends from Bishah via Tathlith about 460 km southwestward to Najran. The area is 330 km southeast of Bishah and 130 km north of Najran; B'ir Idimah, the only permanent settlement in the area, is located about 30 km north of the deposit.

Previous work

The Wadi Wassat quadrangle was first mapped as part of the 1:500,000-scale Asir quadrangle by Brown and Jackson (1959). The first mineral exploration in the Wadi Wassat area was carried out by Hatem El-Khalidi of the Arabian Shield Development Company, a division of Dallas Resources Incorporated, who discovered the gossan at Wadi Wassat in October 1964. In the subsequent 3 years, W.C. Overstreet and others conducted studies of the economic geology along a series of traverses through the region (Overstreet 1968a, 1968b, c, d; Overstreet and others, 1967a, Overstreet and others, 1969a; Overstreet and others, 1967b; and Overstreet and others, 1969b).

Overstreet and Rossman (1970) carried on reconnaissance geologic mapping (scale 1:100,000) in the greater Wadi Wassat region, and Rossman mapped the gossan area in Wadi Wassat at a scale of 1:10,000 (written commun., 1967) This work was followed by electromagnetic ground geophysical studies (Allen and Davis, 1969a, b; Akhrass, 1966). In 1967-1969 a diamond drilling program was carried out under the supervision of Overstreet, Rossman, and Martin; nine holes totaling 1,100 m in length were completed. Martin (1973) also continued detailed mapping in the area during 1968-1969.

During the late stages of the exploratory work, A.E. Weissenborn and R.L. Earhart visited the Wadi Wassat area and prepared a summary appraisal and an estimate of the resources in the deposits (Weissenborn and Earhart, 1969).

In 1968-1969 Barry Jackaman carried on detailed geologic studies in Wadi Wassat (1972). Greenwood (1980) mapped the Wadi Wassat quadrangle at a scale of 1:100,000.

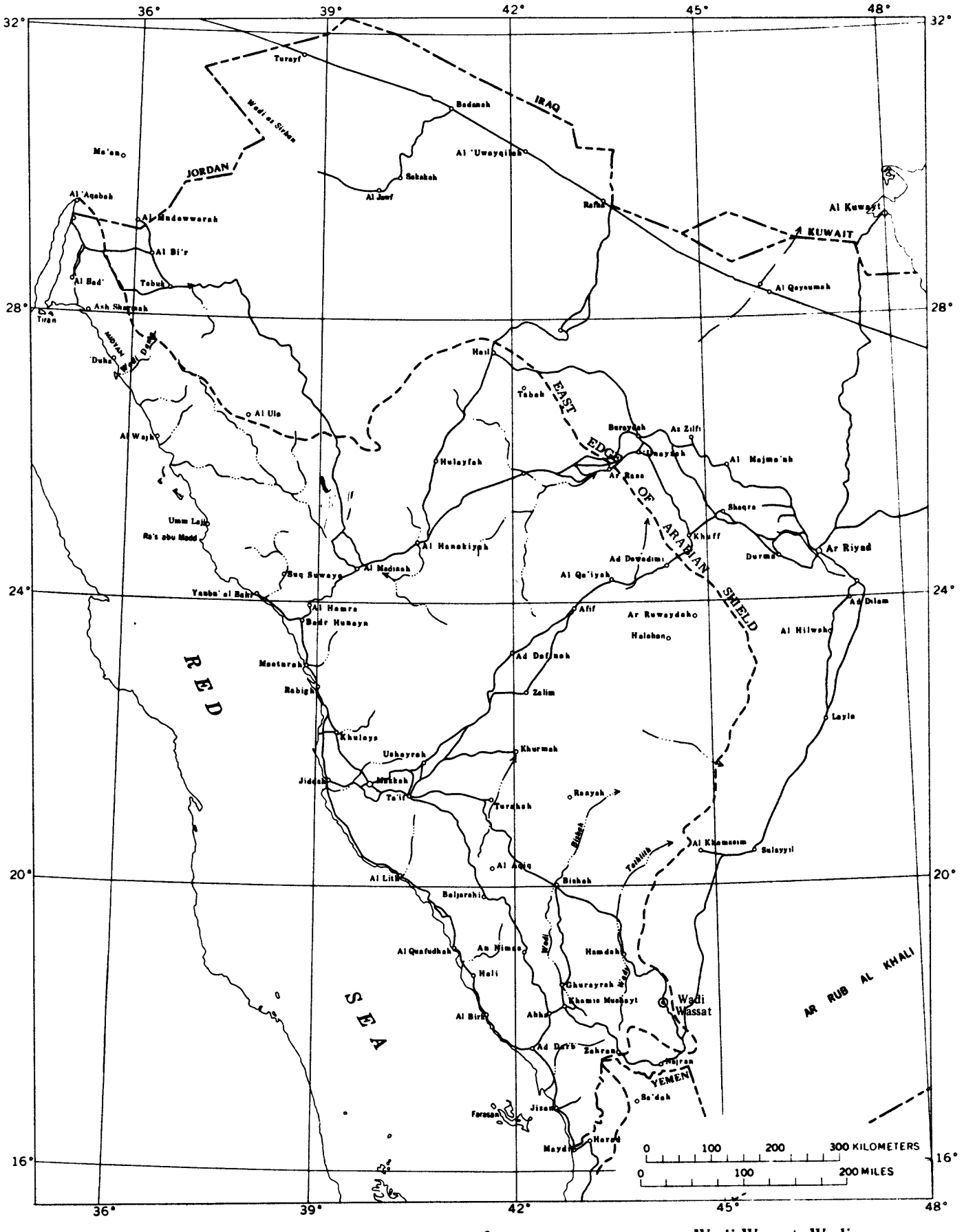


Figure 1.– Index map showing location of Wadi Wassat, Wadi Wassat quadrangle, Kingdom of Saudi Arabia.

Present investigation

This study is part of a broad program of mineral exploration conducted by the U.S. Geological Survey (USGS) in accordance with a work agreement with the Ministry of Petroleum and Mineral Resources, Kingdom of Saudi Arabia.

The objectives of the present study were to remap the gossans and adjacent host rocks in Wadi Wassat, resample mineralized zones, and evaluate the potential of the area for base metal and nickel deposits. Roberts and Bagdady were in the field from 13 March to 9 April 1975, revising the geologic map near the gossans and resampling some gossans. Helaby relogged the drill cores and supervised resampling of the cores. Conway spent a week with Roberts in 1977 assisting in evaluation of stratigraphic and structural features.

This report incorporates material from a draft initially prepared by Rossman that was revised and modified by W.C. Overstreet in 1972. Summary logs of drill holes and analytical data initially compiled by Rossman are included in this report.

The writers gratefully acknowledge support and helpful cooperation received from H.E. Ghazi H. Sultan, Deputy Minister for Mineral Resources, and other officials of the Directorate General of Mineral Resources (DGMR). Appreciation is also extended to K.J. Curry and chemists of the USGS-DGMR Chemical Laboratory for detailed analyses of samples and to Mohammed Naqvi for spectrographic studies of mineralized rock. Ghanim Jeri al Harbi, Merdhi al Mutairi Almotteir, Saud Mulish Alshabani, and Mugeeth Abdullah Algahtani assisted in the field studies. J. Matzko and M. Mawad supervised preparation of polished specimens and photographed the sulfides and rocks. T. Hopwood, consultant for Riofinex Limited, contributed useful structural and stratigraphic information. D.L. Schmidt assisted Roberts and Conway in evaluating stratigraphic and structural features.

R.M. Nixon conducted surveys that tied the area into the Saudi Arabian national geodetic net; F.J. Fuller and D.J. Faulkender calculated the latitude and longitude of a station within the mapped area; Faulkender also calculated the area of the gossan for resource computations.

GEOLOGY OF THE WADI WASSAT AREA

Introduction

The geology of the Wadi Wassat quadrangle was first described by Overstreet and Rossman (1970); they assigned the

rocks in the area to an unnamed Precambrian sequence of unmetamorphosed to metamorphosed interlayered volcanic and sedimentary rocks. Jackaman (1972) later divided these rocks into three units, the Duwayr group, the Wassat group, and the Mahal group. He placed the contact between the Duwayr and Wassat groups 50-200 m east of the principal iron sulfide-bearing unit. This contact is a distinctive lithologic break, and we have followed Jackaman's usage.

Greenwood (1980) combined Jackaman's (1972) Duwayr group, Wassat group, and the eastern part of the Mahal group into a redefined Wassat formation and renamed the western part of Jackaman's Mahal group as the Qatan formation. He placed these two formations in the Jiddah group. We prefer to follow the nomenclature of Jackaman, which is based on detailed studies and has priority. However, in keeping with Article 9 of the Code of Stratigraphic Nomenclature (Cohee, 1974), which requires that a group contain two or more formations, we recommend that Jackaman's units be reduced to formational status: that is, Wassat, Duwayr, and Mahal formations.

While resampling was being done in the Wadi Wassat district during early 1975, the gossans and immediately adjacent wall rocks were remapped in places. During the course of this work, several observations of graded bedding and truncated beds in the upper part of the Wassat formation (near point *a* on fig. 2, approximate lat 18°22'N., long 44°13'E.) indicated that the stratigraphic tops of beds are to the east. These observations were confirmed by T. Hopwood (oral commun., 1978), who measured cleavage intersections with bedding in the Wassat and adjacent Duwayr formations in the same area. Therefore, the Duwayr formation is apparently the youngest rather than the oldest of the three formations in the area. In addition, bedding and foliation attitudes and truncated beds near point *b* on figure 2 suggest that the iron sulfide unit is folded into an anticline-syncline pair that plunges steeply south. The positions of the syncline on the west and the anticline on the east also indicate that the stratigraphic tops are to the east. So, although we accept Jackaman's (1972) formations, their order in the following account will be reversed to reflect our understanding of their relative ages.

Sedimentary, pyroclastic, and volcanic rocks

The sedimentary, pyroclastic, and volcanic rocks that contain the iron sulfide-bearing beds in the Wadi Wassat area were divided by Jackaman (1972) into three units: a unit of sedimentary and pyroclastic rocks (Mahal formation); a unit of sedimentary, pyroclastic, and volcanic rocks containing iron sulfide-bearing layers (Wassat formation); and a unit of pyroclastic and volcanic rocks (Duwayr formation).

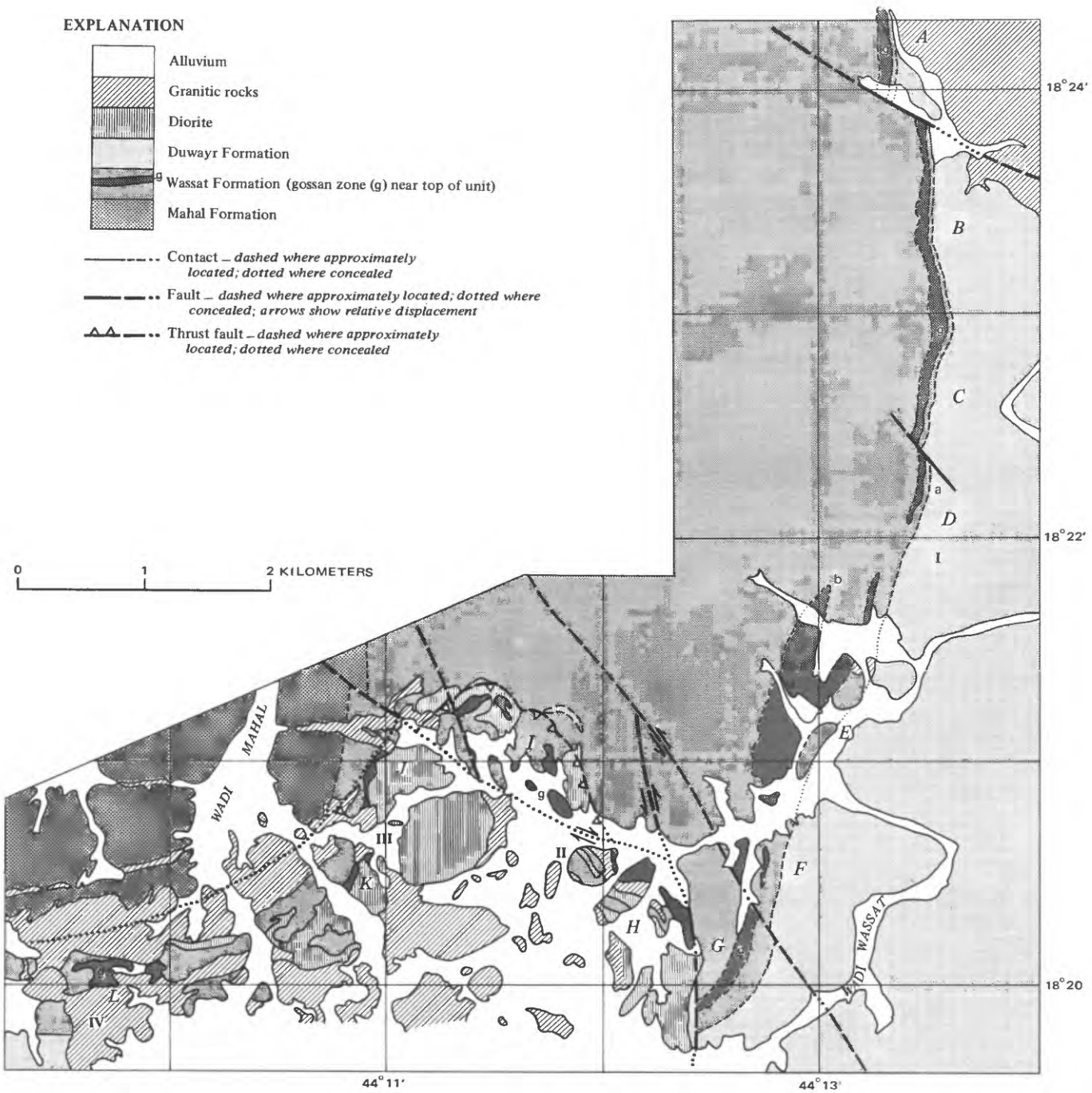


Figure 2.– Generalized geologic map showing trace of the mineralized zone. Capital letters refer to gossan areas as described in text; roman numerals indicate ore zone segments. *a.* Area of east-facing beds in upper part of Wassat formation and lower part of Duwayr formation. *b.* Syncline in Wassat formation.

The sedimentary and volcanic rocks in Wadi Wassat were regionally metamorphosed to greenschist facies and are now characterized by sericite, chlorite, epidote, and locally graphite. In places, biotite schist and hornblende schist have formed in areas adjacent to or near plutonic rocks.

Mahal formation

The Mahal formation consists of andesitic pyroclastic rocks, rhyodacitic tuff, wacke, and minor amounts of marble (Jackaman, 1972). This unit ranges from 500 to 2,000 m thick and underlies the western part of the area shown on the plate. It is well exposed on the margins of Wadi Mahal, where it crops out in subparallel north-trending strike ridges. The upper beds of the Mahal formation grade into the overlying Wassat formation.

Locally, the Mahal formation contains lenses of iron sulfide minerals that are now oxidized to gossans at the surface. These lenses are thin, ranging from less than a meter to as much as 5 m thick. Overstreet and Rossman (1970, pl. 1) noted the presence of similar sulfide-bearing beds west of the mapped area and in other parts of the Wadi Wassat quadrangle.

Wassat formation

The Wassat formation comprises interlayered sedimentary, pyroclastic, and volcanic rocks, and iron sulfide-bearing units, which were estimated by Jackaman (1972) to aggregate as much as 5,000 m in thickness in the mapped area (plate). The thick volcanic and pyroclastic units of the lower and middle parts of the formation form bold outcrops in the rugged upland between Wadi Mahal and Wadi Wassat. The iron sulfide-bearing units in the upper part generally weather readily to iron oxide gossans, forming valleys in most places; some siliceous gossans crop out as prominent ridges.

The lower beds of the Wassat formation include interbedded wacke, sandstone, siltstone, impure limestone, and tuffaceous rocks. The middle part includes pyroclastic rocks, volcanic flows, and some coarse clastic units; the pyroclastic rocks include interlayered tuff, breccia, and locally thick agglomerate. The upper part contains some thin andesitic flows, pyroclastic rocks, and calcareous tuff, which are capped by laminated pyritic chert and tuff and intercalated iron sulfide lenses, now altered to gossan. The gossans crop out in a zone that is as much as 560 m wide. The gossans consist of iron oxides and secondary silica interlayered with laminated tuff, cherty tuff, and volcanic wacke; intertonguing calcareous tuff and impure marble are present locally.

The middle unit of the Wassat formation contains coarse-grained clastic beds that suggest a high-energy environment. However, the middle unit also contains intercalated marble and tuff units that indicate accumulation in a lower energy subaqueous environment. In the higher beds of the middle unit and in the upper unit, more abundant, thinly laminated beds, as well as some pyritic beds, suggest deposition under progressively lower energy conditions, possibly in a deepening basin. These transitions form a logical sequence in sedimentation and reinforce the conclusion that the uppermost beds in the Wassat formation are in the eastern part of the outcrop zone.

The final sedimentation phase of the Wassat formation was deposition of the principal sulfide-bearing beds and associated thinly laminated tuffaceous and calcareous rocks. During this phase, little clastic material was furnished to the basin of accumulation, and iron sulfides were deposited from solutions of volcanogenic origin. The sulfur in these sulfides is characterized by large negative $\delta\,^{34}S$ values, indicating deposition in a euxinic environment (R.O. Rye, written commun., 1978).

Duwayr formation

The Duwayr formation (Jackaman, 1972) comprises flows of andesite, basaltic andesite, basalt, and rhyodacite, interlayered with minor andesitic pyroclastic rocks and wacke.

Jackaman reported that the volcanic flows are mostly basaltic andesite in composition, which he plotted in the alkali olivine basalt field of Kuno (1966); these flows range from one meter to as much as 300 m in thickness and commonly show well-developed flow structures. Jackaman suggested that these flows accumulated partly in a subaerial environment; however, the widespread distribution of associated well-bedded sedimentary wacke indicates that much of the deposition took place subaqueously.

Intrusive rocks

The sedimentary and volcanic rocks in the Wadi Wassat area are truncated both on the north and south by plutonic rocks that range in composition from gabbro to granite. In addition, numerous dikes obliquely transect the rocks of the district (Overstreet and Rossman, 1970; Jackaman, 1972). The oldest intrusive rock is diorite, which is associated with gabbro and granodiorite, followed by biotite granite and a variety of dikes.

The diorite is a fine- to medium-grained, dark-gray rock

that locally grades into gabbro and granodiorite. It contains biotite and locally contains hornblende; in places it is distinctly foliated. Along contacts with metavolcanic and metasedimentary rocks, a hornfels or tactite zone, 10-50 m wide, has developed; pyrite along the contact is locally converted to pyrrhotite. The diorite weathers to smooth slopes with poorly exposed outcrops.

The biotite granite is medium to coarse grained, massive, and equigranular. Near the granite, the calcareous beds were metamorphosed to garnet-diopside rock, and the andesite to biotite schist and hornfels. The granite weathers to prominent spheroidal boulders characterized by caves, spires, and bridges.

Dike rocks

Many kinds of dike rocks have been mapped in the Wadi Wassat area. Only the more abundant types will be mentioned here.

Diorite dikes occur along the margins of diorite plutons in the northwestern part of the district. These dikes are cut by granodiorite and granite dikes that strike northwest, north-northwest, and northeast, and by felsite (rhyolite?) dikes that mostly strike north.

The rhyolite dikes and the older dikes are cut by younger diabase dikes that mostly trend northwest, but also trend north and northeast. Northwest-trending syenite porphyry dikes were reported by Overstreet (1966d) in the northern part of the area. Diabase dikes are abundant throughout the area mapped on the plate.

Alluvium

Deposits of Quaternary alluvium in the area include eolian silt, sand, and gravel on pediments and wadi floors. The gravel and sand are mostly unconsolidated, but in places they are cemented by secondary iron oxides and caliche and form a crust that is mapped separately. Talus deposits mantle some slopes, especially those below prominent exposures of dikes and silicified rock associated with gossans.

STRUCTURE

The Wadi Wassat iron sulfide deposits are in a north-trending belt of rocks that has been intruded by granitic rocks and complexly folded and faulted. Two kinds of folds have been mapped, major folds and minor folds superimposed on

the major folds. The major folds are best delineated by iron sulfide lenses that outline the folds and can be easily traced. Those mapped in the Wadi Wassat area average about 300 m in amplitude.

For convenient description, the sulfide bodies in the map area were divided into four segments (fig. 2). At the northern end of the mapped area, the iron sulfide deposit is truncated by granite. The deposit then extends southward for 8 km (segment I), and turns abruptly in a northwest direction for about 3 km (segment II); thereafter, it turns sharply to the south again for 2.5 km; then it continues to the west for 2 km (segment IV) and butts into granite. These segments were further subdivided into areas (A through K) for purposes of discussion and resource calculations (appendix 1).

Segment I strikes north and generally dips east, 60°-85°, though local overturns were noted. The gossan is nearly continuous over this entire segment except for a 1-km gap between Areas D and E. At Area E the gossan is exceptionally wide (560 m). This great width is apparently caused by tight parallel folds (fig. 3). Continuing south, past drill hole WS-6, the iron sulfide unit crops out in two parallel belts that may represent two layers or a single folded layer. At the southern end of the segment, the strata turn to strike east-west, then are offset by a north-trending, right-lateral fault. The east-west turn may be a result of drag on the fault or possibly part of an anticlinal fold (fig. 3). In order to clarify these structural features, segment I should be mapped in greater detail.

Segment II strikes northwest and dips mostly to the southwest, though interruptions in the iron sulfide bed suggest local complications due to folding and faulting. Much of the ore zone in this area is covered by alluvium and iron oxide crust, and the details of folding and faulting were not worked out. East of drill hole WS-9, cherty and tuffaceous beds strike northeast, and their dip is steep to vertical; this structure implies a local cross fold. South of drill hole WS-9, calcareous beds overlying the iron sulfide unit form a broad synclinal fold on which are superposed minor folds and lineations that plunge 20°-45°. Though the gossan unit at drill hole WS-9 is interrupted by diorite, it appears to lie in a parallel synclinal fold.

Segment III continues south as a series of lenses, interrupted locally by granitic bodies and alluvial cover. The lenticularity may be partly a result of folding and partly due to original deposition in lens-shaped bodies. In the wide gap betweeen segments III and IV, the sulfide-bearing zone appears to grade into a cherty tuff unit containing disseminated pyrite. This unit has an iron-stained surface

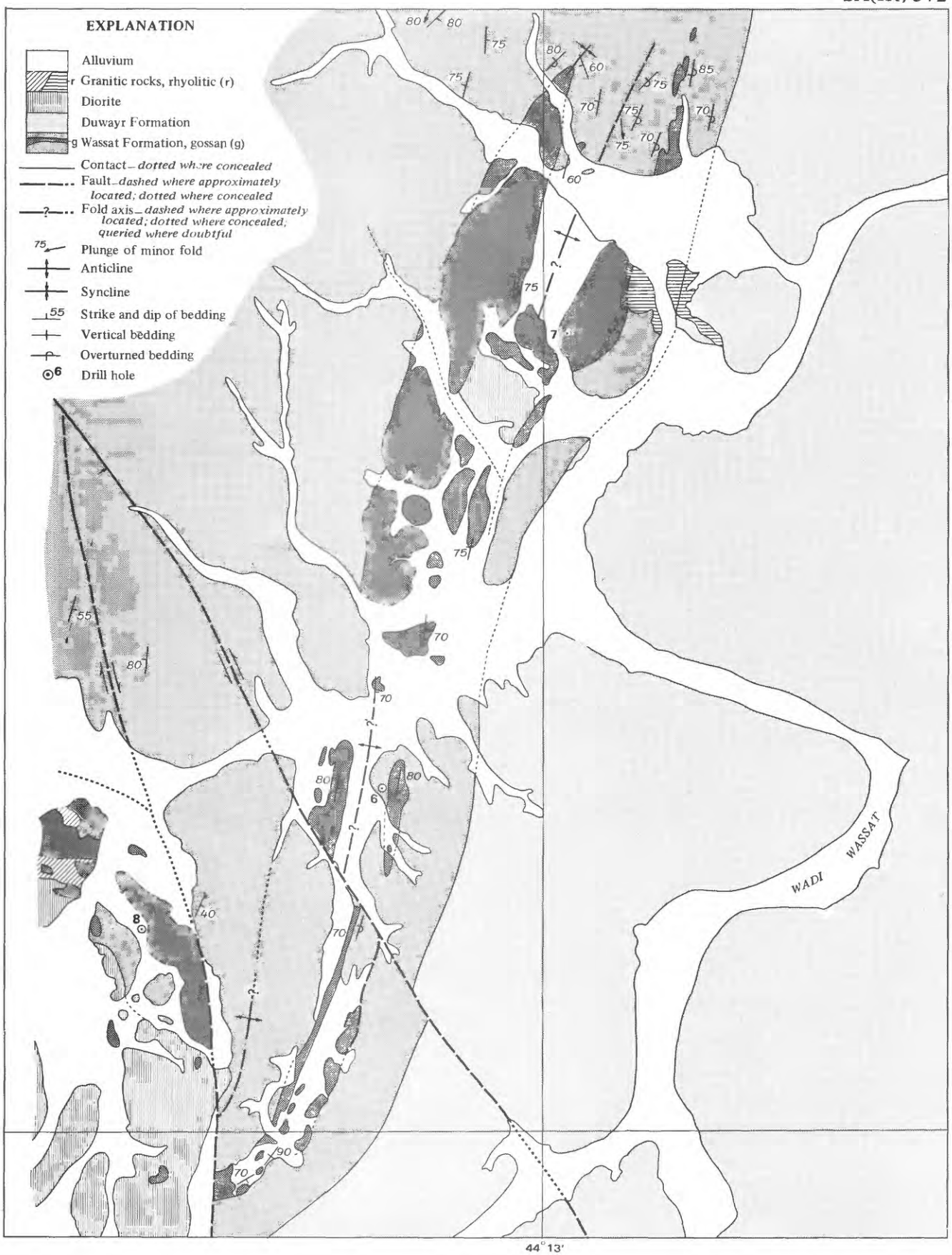


Figure 3.– Detailed map showing structure in the vicinity of drill holes WS-6, -7, and -8.

exposure that gives way at a depth of a few centimeters to pyrite disseminations in the cherty host rock.

The iron sulfide unit in Segment IV is intricately broken by intrusive bodies and furnishes little structural information. In several places, however, upright dips to the south were recorded; these are consistent with observations of stratigraphic tops elsewhere in the mapped area.

The folds in the Wadi Wassat area show two major patterns. The right-lateral sense of the large folds in segment I near drill hole WS-7 is consistent with right-lateral movement on north-trending faults of regional extent (Overstreet, 1968d; Greenwood, 1980). The fold(?)-fault intersection at the southern termination of Area G may have been caused by similar forces.

The broad synclinal fold near drill hole WS-9 lies in a distinctly different setting. The core of the fold contains diorite and granite, and the gossan zone is separated from beds to the north by a postulated fault zone. Some faults in this area were thought by Overstreet (1968d) to be thrusts formed during the emplacement of intrusive rocks; however, he did not show any thrusts on his geologic map. Jackaman (1972) and Greenwood (1980) advanced similar suggestions. Roberts mapped the area in some detail; his map shows a clear-cut arcuate break between two blocks of contrasting structure (fig. 4). A reasonable structural interpretation of this complex knot is that the two blocks are separated by a thrust fault that dips south at a low angle. Much of the thrust zone is now occupied by dioritic and granitic rocks. These rocks occupy the greater part of the syncline and their emplacement is considered to be the principal force in development of the syncline and associated thrust fault.

In order to completely understand the structure of this block, it should be mapped at a much larger scale so that all significant structural features can be plotted and evaluated.

IRON SULFIDE DEPOSITS

Introduction

Iron sulfide deposits in Wadi Wassat occur in a sedimentary sequence in the upper part of the Wassat formation. This sedimentary sequence includes laminated volcanic ash, cherty tuff, and calcareous slate and tuff. This sequence is as much as 300 m thick but locally pinches out completely along strike. The iron sulfides, mainly pyrite, pyrrhotite, and marcasite, are disseminated throughout the beds and locally form massive lenses along bedding. In places, chalcopyrite and sphalerite grains are scattered sparsely throughout the iron sulfides.

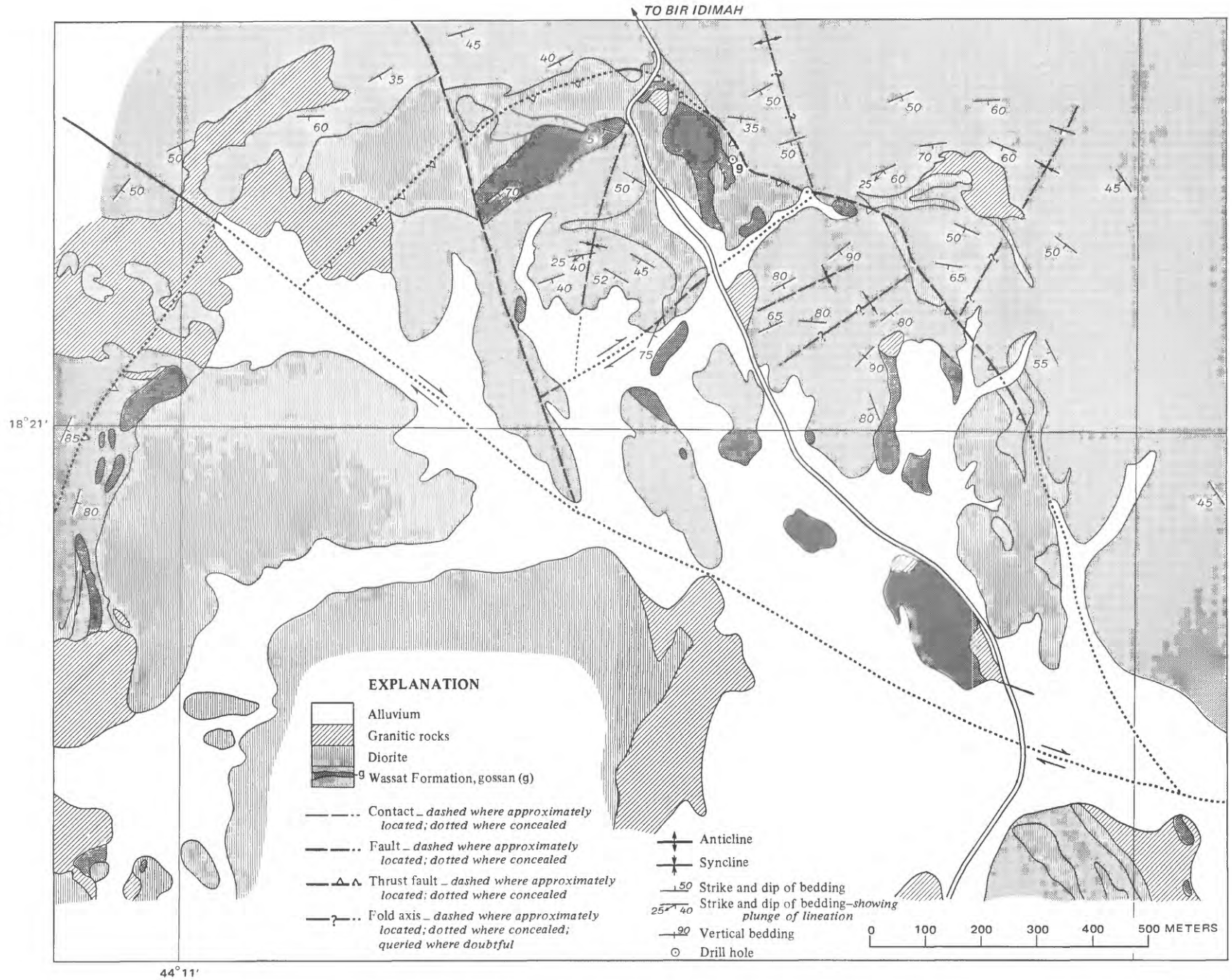


Figure 4.– Geologic map of thrust fault zone near drill hole WS-9.

Pyrite is the principal sulfide mineral at Wadi Wassat (Overstreet and Rossman, 1970; Jackaman, 1972). It occurs in four generations; three of these are primary, and the last is supergene: I, early cubic to anhedral pyrite that occurs mainly along bedding; II, later coarse-grained pyrite that occurs as metacrysts in pyrrhotite; III, veinlets of late pyrite that cut pyrites I and II; and IV, supergene pyrite associated with marcasite in the oxide zone.

The earliest primary pyrite is present as euhedral to anhedral grains and forms layers that commonly are parallel with laminations in the tuff (fig. 5A). Jackaman (1972) showed that this pyrite mimics bedding and graded bedding. Most grains are equidimensional and range from 50 to as much as 600 microns in diameter (fig. 5B); a few are elongate due to postdepositional shearing.

Pyrite of generation II formed as metacrysts in pyrrhotite; the most characteristic habit is large cubic crystals as much as 1 cm in diameter. These crystals show skeletal growth on their margins and have replaced the pyrrhotite (fig. 5C). Pyrrhotite is a metamorphic facies of pyrite that is best developed in zones of contact metamorphism. The pyrrhotite is present as anhedral grains that have ragged boundaries in contact with silicate gangue minerals.

The youngest primary pyrite (III) is present in fracture zones and veinlets that cut the older pyrrhotite and pyrite. It is commonly anhedral and is associated with quartz and other gangue minerals (fig. 5D).

The supergene pyrite (IV) and associated marcasite are mostly fine grained; they are present as concretionary masses and as disseminations in clay in the oxidized zone.

Gangue minerals in the iron sulfide bodies include chloritoid, sericite, biotite, tremolite, quartz, carbonate minerals, epidote, and zoisite. These commonly have replaced the pyrite along grain contacts, indicating that the pyrite developed prior to metamorphism.

The sulfide-bearing bodies at Wadi Wassat are lenticular, and they pinch and swell along strike. In the northern part of the mineralized zone (Segment I, fig. 2), the principal lens is about 3.3 km long and as much as 130 m thick. It consists of interlayered sulfide and silicate layers, as indicated in the logs of drill holes WS-1, -5, -3, and -4 (tables 3, 5, 8, and 10). Holes WS-3 and -4 intersected about 52 m of the ore zone that contains 80 percent or more of sulfide-bearing material.

In the southern part of segment I the sulfide zone is as much as 560 m wide; this unusual width is thought to be a result of duplication on three or more parallel folds (fig. 3). In drill hole WS-7 (table 13), a cumulative thickness of 52 m contained 80 percent or more of sulfide-bearing material, the same thickness reported for drill holes WS-3 and -4. South of drill hole WS-7 the gossan belt gradually narrows and is less than 100 m wide at the southern end of segment I.

In segment II (fig. 2) the ore zone is poorly exposed. It has a maximum outcrop width of 300 m; however, it is complexly broken by intrusive bodies and faults and may also be folded, so its true width is uncertain. In drill hole WS-8 (table 17), about 107 m of sulfide-bearing material were intersected, of which 41 m contained more than 80 percent pyrite and pyrrhotite. Drill hole WS-9 (table 20) cut two sulfide-bearing zones containing a cumulative thickness of 16 m of 80 percent sulfide-bearing material, mostly pyrrhotite.

In segment III the ore zone is narrow, commonly less than 50 m wide, and discontinuous. In segment IV the zone is as much as 250 m wide, but is complexly cut by dioritic and granitic bodies and terminates against granite at its southern end.

Origin of the deposits at Wadi Wassat

The gossans of the iron sulfide deposits at Wadi Wassat were originally interpreted by Overstreet (1968a, p. 6), on the basis of anomalously high molybdenum content, to "have formed from high-temperature sulfide minerals, probably pyrite and pyrrhotite." Later, after a study of core samples from drill hole WS-1, Overstreet and others (1967a) concluded that the pyrite was of mixed sedimentary and replacement origin. Still later, Overstreet (1967b, p. 18) suggested that "the pyrite...was deposited as a hydrothermal replacement mineral." Overstreet and others (1969b, p. 69) noted that "certain relict textures appear to be of syngenetic sedimentary or sedimentary-volcanic origin... the Wadi Wassat massive sulfide deposit is obviously polygenetic..." Overstreet and Rossman (1970, p. 51) reiterated "the concept of a metamorphosed syngenetic deposit... in and partly replacing a... sequence of sedimentary rocks of andesitic composition and associated bedded volcanic rocks in the andesite sequence."

This concept of a metamorphosed syngenetic deposit was generally accepted by Jackaman (1972), with some modifications. Jackaman noted that the pyrite grains mimicked bedding structures such as layering and grading. He

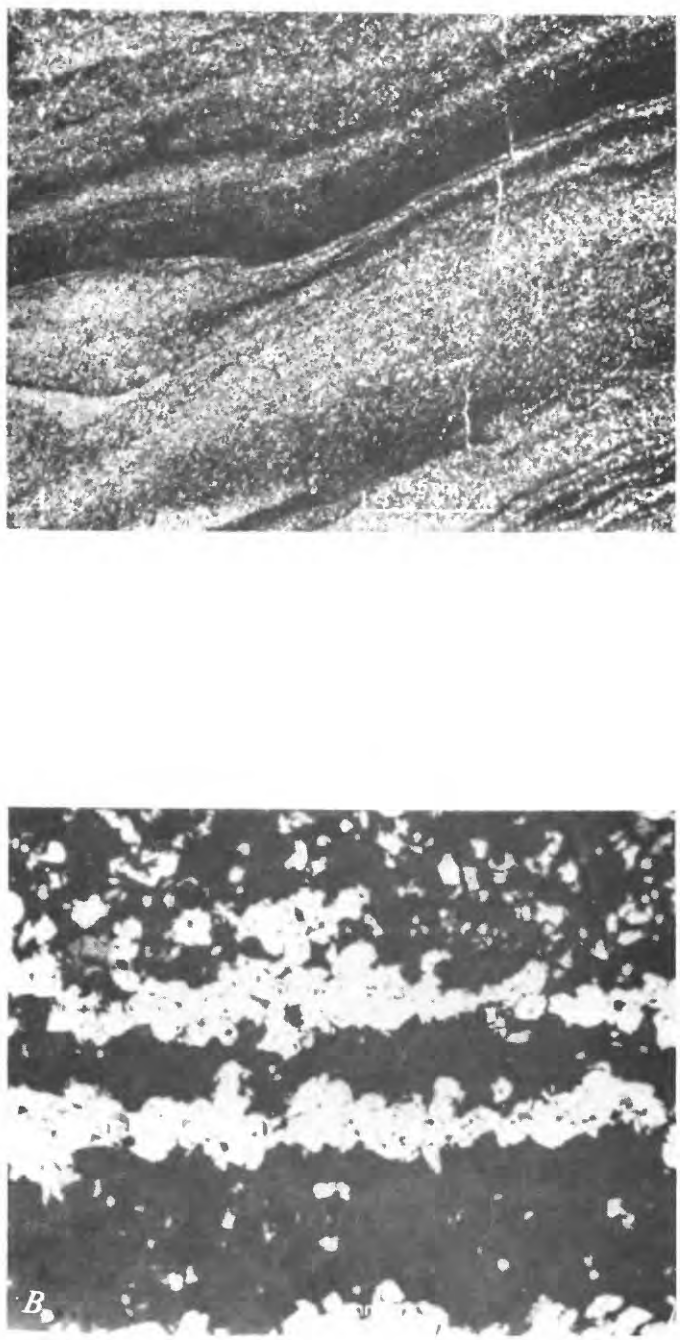
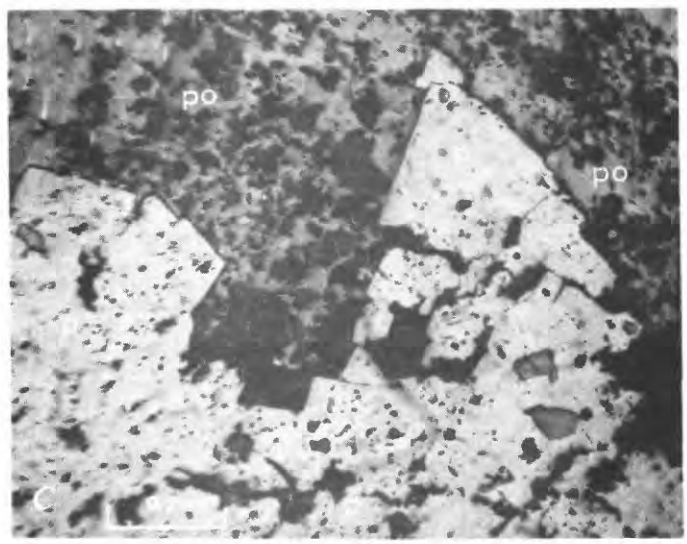


Figure 5.– Photographs and photomicrographs of sulfide ore.
A. Photograph showing layering in sulfide ore; dark layers are sulfides.
B. Photomicrograph of early layered pyrite (p); light-colored layers are quartz and silicate minerals.



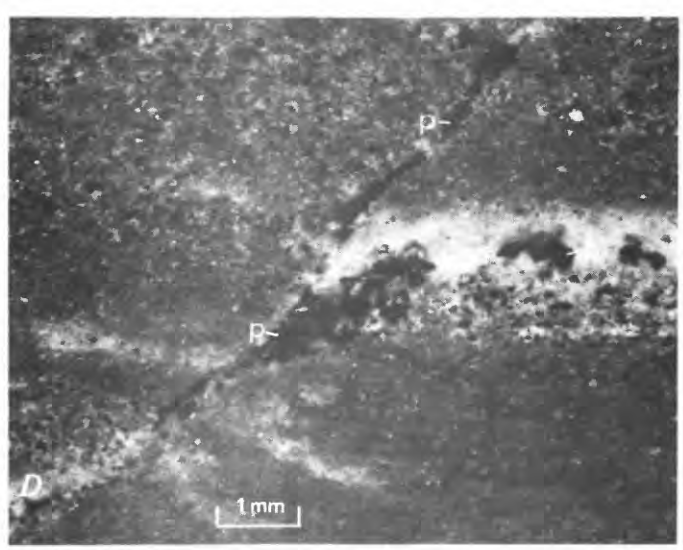


Figure 5.– Continued.

C. Photomicrograph of metamorphosed pyrite and pyrrhotite: pyrite metacrysts (p) have developed in a matrix of pyrrhotite (po)

D. Latest pyrite (p) in veins that cut earlier sulfide and silicate minerals.

pointed out that in part the pyrite enclosed original gangue material during growth and in part replaced the gangue. To explain this relationship, Jackaman postulated that the iron and base metals were derived from volcanic exhalations; the metals were thought to have been originally deposited as particles of oxides or hydroxides, then later sulfidized.

We argue that the sulfurization mechanism of Jackaman is improbable. The deposits are in fine-grained rocks that were probably deposited in a shallow to moderately deep aqueous environment (Goodwin, 1973); such rocks would have low permeability, thus inhibiting interstratal movement of solutions. If sulfurization had occurred, it seems likely that some remnants showing stages in the conversion process of oxides to sulfides would have remained. Such remnants have not been reported; therefore Roberts suggests that the iron sulfides were deposited mostly as syngenetic pyrite simultaneous with the deposition of associated siliceous sediments and tuffs. This suggestion is reinforced by the strongly negative sulfur isotope values in the pyrite (R.O. Rye, written commun., 1978)

Overstreet and others (1976, p. 104) considered the genesis of the deposits from the viewpoint of their geochemistry. They determined the abundances of minor elements in sulfides from the core of drill holes WS-6 and -7 and found that (p. 104) "minor elements in the core... correlate positively with syngenetic sedimentary and volcanic deposits and negatively with deposits of hydrothermal, magmatic, and metamorphic origin... the deposit is here thought to be formed under marine volcanic-sedimentary conditions."

In view of the emphasis on replacement of groundmass minerals and rock fragments by pyrite (Overstreet and Rossman, 1970; Jackaman, 1972), it seems likely that the formation of the deposits involved more than simple sedimentary processes. The replacement could have been partly a diagenetic process, that is, recrystallization of constituents already present in the rock; it may also have included significant addition of iron sulfides from deep-seated sources, such as visualized by Roberts (1976) for sulfide deposits of dual origin, that is, dual syngenetic and epigenetic deposits found elsewhere in Saudi Arabia. The iron sulfides could have been derived from deep-seated igneous or fumarolic sources that continued to supply metals to the system long after burial.

The essential steps in the formation of the iron sulfide deposits at Wadi Wassat are visualized as follows:

1. Volcanism and sedimentation resulted in the accumulation of pyroclastic, sedimentary, and volcanic rocks.

Fine-grained, massive syngenetic pyrite was deposited in layers and pods during periods of slow accumulation of volcanic and clastic materials.

Analyses of sulfur isotope ratios in sulfides from Wadi Wassat by Rye and others (1979) show strongly negative $\delta^{34}S$ values (-15.3 to -30.5 permil), which indicate deposition in a euxinic environment. The sulfur is considered by Rye to be largely derived from sea water sulfates.

2. Diagenetic alteration, including zeolitization, cementation and other processes, of the pyroclastic and sedimentary rocks followed. Some rearrangement of the iron sulfides probably took place at this time, leading to recrystallization and coarsening in grain size of the iron sulfides.

3. Possible late-stage introduction of iron sulfides and minor amounts of base metal sulfides from fluids of deep-seated (volcanogenic) origin also may have taken place (Corliss, 1971; Anderson and Halunen, 1974; McMurty and Burnett, 1975). Mauger (1972) has suggested that metals and sulfur in such deposits may be extracted from sediments by pore waters during compaction; the metal-bearing waters may move upward and deposit sulfides around submarine spring vents. Wright (1965) has also discussed the movement of metals through volcanic rocks.

4. Regional metamorphism and recrystallization of the rocks followed, favoring an increase in grain size of the pyrite and segregation into layers.

5. Finally, intrusion of diorite and granite bodies caused deformation, further recrystallization of pyrite to pyrrhotite, and mobilization of sulfides on a small scale.

Sampling program

In 1967 Rossman supervised the collection of about 1,200 gossan samples, of which 272 were analyzed in the USGS-DGMR Chemical Laboratory. The results of these analyses are summarized in table 1.

In March and April 1975, the cores of drill holes WS-1 through WS-9 were resampled at 1-m intervals and reanalyzed. Also, about 450 surface samples were collected for comparison of the geochemistry of surface samples with those from the cores (appendices 1 and 2). Most of the samples have been analyzed for manganese, nickel, cobalt, copper, lead, zinc, silver, gold, molybdenum, and chromium to facilitate direct comparison of the results with samples from Wadi Qatan (Dodge and Rossman, 1975).

Table 1.--*Summary of analytical results from 27% gossan samples, Wadi Wassat*

[Gossans designated by letters, as on plate 1. All results in parts per million except silver, which is expressed in ounces per ton. Copper, molybdenum, and zinc were analyzed chemically, silver by atomic absorption, nickel and cobalt by semiquantitative spectrography. -, indicates not analyzed]

	Cu	Mo	Zn	Ag	Ni	Co
		Gossan L—30 samples				
Mean	25	4	22	0	10	10
High	115	40	50	0	10	10
		Gossan K--3 samples				
Mean	10	35	16	0	10	10
High	10	75	25	0	10	10
		Gossan J--1 sample				
Values	10	15	25	0	10	10
		Gossan I (SE part)--5 samples				
Mean	18	4	15	.04	-	-
High	60	10	50	.19	-	-
		Gossan H—15 samples				
Mean	37	11	15	.04	-	-
High	150	40	50	.09	-	-
		Gossan G--25 samples				
Mean	24	6	8	.01	-	-
High	150	20	25	.05	-	-
		Gossan F (W part)--22 samples				
Mean	12	5	5	.04		

	Cu	Mo	Zn	Ag	Ni	Co
		Gossan E--111 samples				
Mean	25	10	21	.04	10	10
High	225	50	100	.04	10	10
		Gossan D--4 samples				
Mean	35	5	25	-	10	10
High	75	10	25	-	10	10
		Gossan C--16 samples				
Mean	6	5	25	-	10	10
High	20	10	50	-	10	10
		Gossan B--25 samples				
Mean	14	7	6	-	10	10
High	30	115	25	-	10	10
		Gossan A--4 samples				
Mean	35	14	12	-	10	10
High	75	40	25	-	10	10
		Bedded andesitic tuff--11 samples				
Mean	30	5	25	-	10	10
High	60	20	25	-	10	10

Description of the deposits

The gossans of iron sulfide deposits in Wadi Wassat are discontinuously exposed along a sinuous zone having a total strike length of about 16 km and a width of as much as 300 m. The lack of continuity is due in part to faulting, in part to folding, and in part to alluvial cover. The depth of oxidation in the district is variable, ranging from 16 m to 30 m.

Table 2.--*Depth of oxidation in the area*

Drill hole	Comment	Vertical depth (in meters)
WS-1	Depth to sulfides	20
WS-4	Depth to fresh bedded rock	16
WS-6	Depth to massive sulfides	23
WS-7	Depth to massive sulfides	17
WS-8	Depth to unweathered bedded rock	17
WS-9	Depth to fresh andesitic rock in flank of hill	30

The gossans will be described, beginning in the northern part of the area and continuing to the southwestern part (see plate). Areas of outcrop, as designated on figure 2, will be described separately as areas A to L, together with tables of descriptions and analyses of drill cores.

Area A Gossan

Area A gossan (17,520 sq m), in the northern part of the area (see plate), is about 720 m long and as much as 90 m wide. The area was sampled along several lines, and two diamond drill holes, WS-1 and WS-5, were put down in the gossan. The results of assays of surface samples are given in appendix 1.

Drill hole WS-1.--Hole WS-1 is located near the northern end of the mapped area, at an altitude of 1,203 m (see plate). It was drilled S.67°E., at an inclination of -45°, and is 139.5 m long. Fresh sulfides were encountered at a depth of 30 m, where a mineralized zone 68 m thick was intersected (table 3). This zone contained a cumulative thickness of 25 m of 80-100 percent iron sulfide-bearing material (fig. 6A).

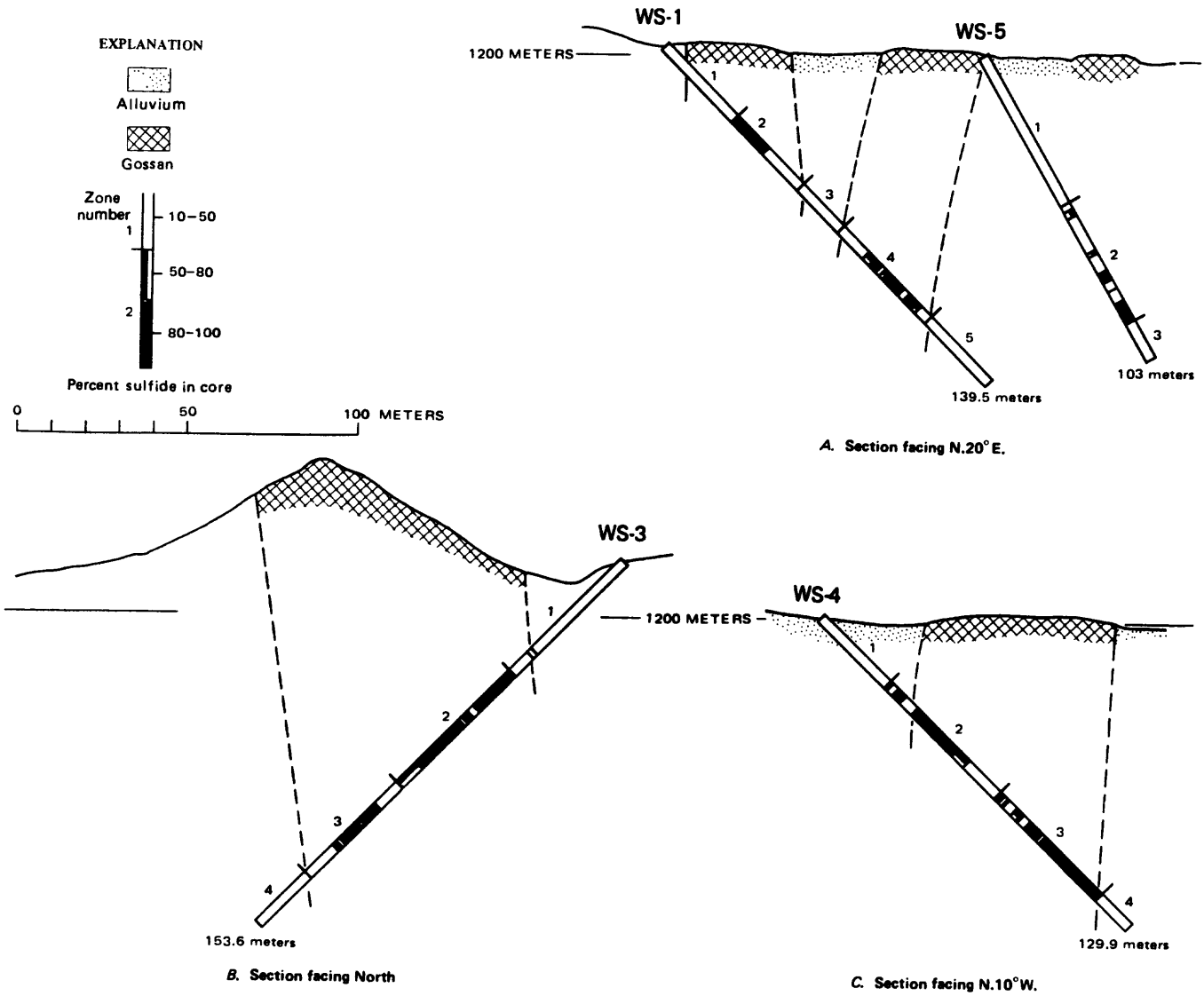


Figure 6.– Cross sections along drill holes WS-1, -5, -3, -4, -6, -7, -8, and -9.

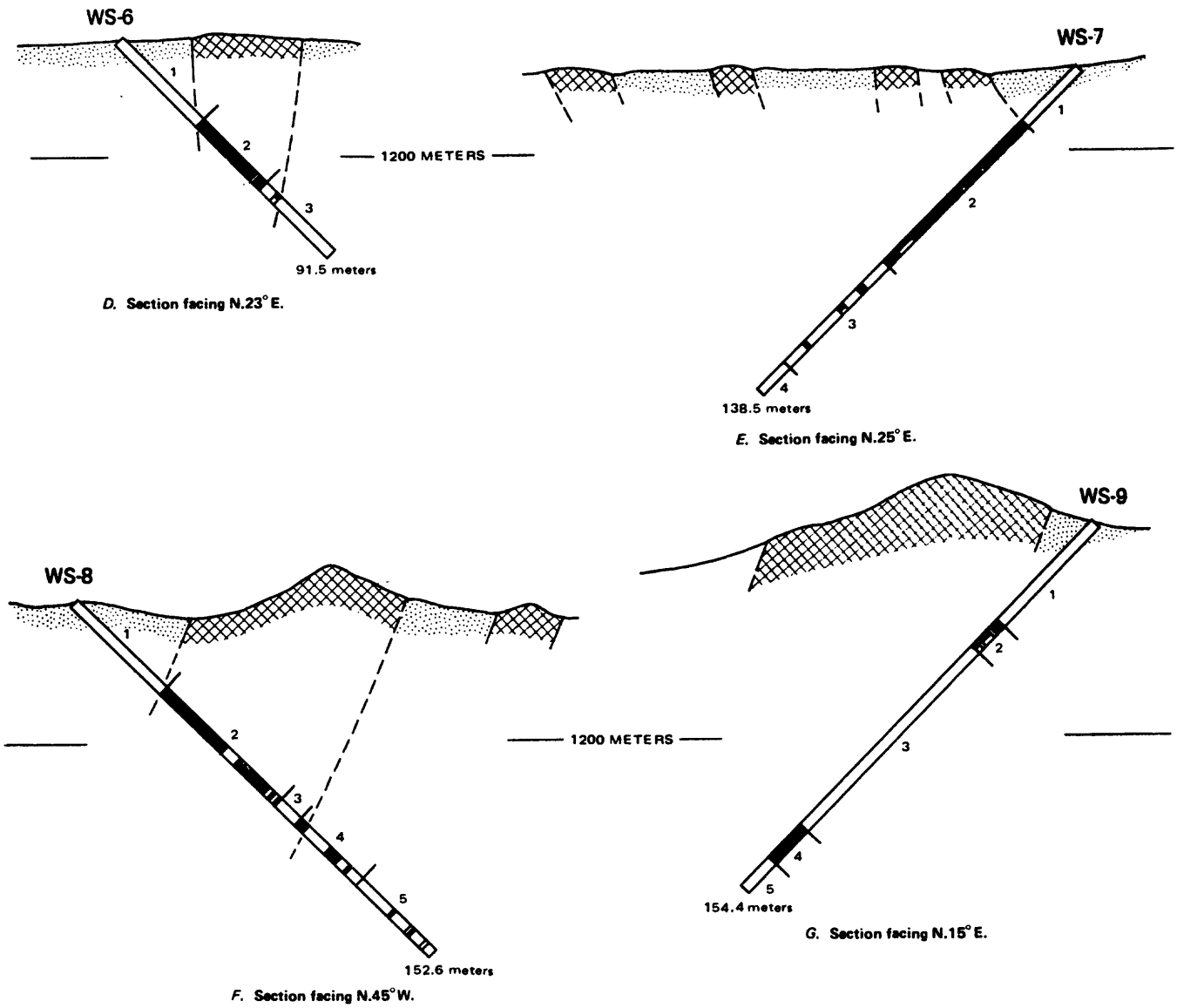


Figure 6.– Continued.

Table 3.--*Summary log of drill hole WS-1*
[Percent pyrite shown in parentheses]

Interval (meters)	Description
0-30	Oxidized material
30-31	Massive pyrite
31-43	(80)
43-47	Andesite bedded sequence (10)
47-58	Diorite (10)
58-75	Fine-grained diorite
75-76	Andesite bedded sequence
76-78	15 percent pyrite grading to 30 percent pyrite at 78 m
78-80	Andesite, well-bedded (20)
80-83	(40)
83-85	(30-40)
85-86	(10-15)
86-87	(50)
87-89	(60-80)
89-90	(80)
90-92	(90)
92-93	(20)
93-95	75 percent pyrite (6 to 12 cm intervals of 20 percent pyrite)
95-101	(90)
101-103	Fine-grained bedded andesite
103-107	(90)
107-108	(50-75)
108-110	(30) well-bedded
110-111	(5-25)
111-113	(20-30)
113-122	Fine-grained bedded andesite
122-132	Fine-grained bedded andesite
132-139.5	Fine-grained bedded andesite, end of hole

An electromagnetic survey by Allen and Davis (1969a, b) showed a pronounced high east of the projected end of hole WS-1. Hole WS-5 was drilled to test this magnetically high area and intersected 6.72 m of massive sulfides.

Analyses of core samples from hole WS-1 are given in table 4.

Drill hole WS-5.--Hole WS-5 is located about about 100 m east of hole WS-1, at an altitude of 1,201 m. It was drilled S.72°E., at an inclination of -60°, and is 103 m long (table 5). Hole WS-5 was designed to intersect a mineralized zone and an electromagnetic anomaly east of the zone explored in hole WS-1 (Allen and Davis, 1969a, b). The hole passed through bedded andesitic tuff and intersected massive pyrite and pyrrhotite at 53 m. A cumulative thickness of about 7 m of 80 percent iron sulfide-bearing material was found (fig. 6A).

Analyses of core samples from hole WS-5 are listed in table 6, and major element chemical analyses are in table 7.

Area B gossan

Area B (105,110 sq m) is 1700 m long and as much as 200 m wide; it is displaced about 500 m to the southeast from area A along a northwest-trending, left-lateral fault. The gossan is siliceous and crops out as a prominent ridge for most of this distance; at the southern end it has been cut by many dikes of granitic to granodioritic composition. The results of surface sampling are given in appendix 1.

Three holes, WS-2, -3, and -4, were drilled in area B. Hole WS-2 was in rubbly rock that caved in; the hole was accordingly abandoned. The summary logs and analyses of the core of holes WS-3 and WS-4 follow (tables 8-12).

Drill hole WS-3.--Hole WS-3 is located 200 m southeast of hole WS-2, at an altitude of 1,215 m (see plate). The hole was drilled west, at an inclination of -45°, and is 158.6 m long. Eighty meters of mineralized rock were intersected, of which about 52 m contained 80 percent or more sulfide-bearing material (fig. 6B, table 8).

Drill hole WS-3 intersected massive sulfides at a depth of 46.5 m and remained in sulfide-bearing material to a depth of 132 m. This sulfide-bearing interval appears to be representative of the Wadi Wassat sulfide deposits; it consists of marginal zones of massive pyrite and a central zone containing 10-50 percent pyrite. Analyses of core samples are given in table 9.

Table 4.--*Analyses of cores from drill hole WS-1*

[Material analyzed: MP, masive pyrite; DP, disseminated pyrite. Copper, results in parts per million, determined by semiquantitative spectrography by C.E. Thompson, USGS, and Mohamed Jambi, DGMR. Gold and silver, results in ounces per ton, determined by fire assay by S.M. Bahijri, DGMR. tr = trace, nil = not detected, -= not analyzed]

Sample number	Interval (meters)	Copper	Gold	Silver	Material analyzed
31010	29-30	10	tr	0.26	MP
31011	32-34	10	tr	.49	MP
31028	35	10	.02	nil	MP
31012	36-38	10	tr	1.68	MP
31029	39	70	tr	.12	DP
31013	40	10	tr	.38	MP
31030	41	10	nil	.14	DP
31014	42	70	nil	.52	MP
31015	76	20	nil	.16	MP
31031	78	70	0.02	nil	DP
31016	79	20	tr	.8	DP
31017	82	30	nil	nil	DP
31018	85	20	nil	1.04	DP
31032	86	10	tr	nil	MP
31019	88	20	nil	.52	DP
31033	89	10	tr	nil	MP
31020	91	15	nil	.12	MP
31034	93	70	tr	nil	DP
31021	94	10	tr	.46	MP
31035	96	10	tr	nil	MP
31022	97	10	nil	.35	MP
31036	99	100	.02	nil	DP
31023	100	10	nil	.54	MP
31024	104	-	.02	.6	MP
31037	105	15	.02	.12	MP
31025	106	-	nil	.92	MP
31026	109	-	nil	.82	DP
31027	112	-	nil	.88	DP

Table 5.--*Summary log of drill hole WS-5*
[Percent pyrite shown in parentheses]

Interval (meters)	Description
0-50	Bedded andesite, pyrite (10)
50-53	Andesite
53-54	Pyrite (60)
54-55	Pyrite (85)
55-57	Pyrite (40)
57-59	Pyrite (30-50)
59-63	Pyrite, mainly in veins (30)
63-65	Gray andesite, pyrite (10)
65-66	Gray andesite, pyrite (20)
66-67	Pyrite (60)
67-68	Black bedded rock (10)
68-69	Gray andesite
69-70	Black bedded rock (10)
70-73	Pyrrhotite (10)
73-76	Pyrrhotite (90)
76-79	Pyrrhotite-pyrite (20-50)
79-83	Pyrite-pyrrhotite (90)
83-89	Pyrite-pyrrhotite (10)
89-90	Pyrrhotite-pyrite (10)
90-103	Gray andesite, end of hole

Table 6.--*Analyses of core from drill hole WS-5*

[Copper results in ppm, silver and gold in ounces per ton, percent pyrite in parentheses. Chemical analyses by Ibrahim Baradja, fire assays by S.M. Bahijri, and semiquantitative spectrographic analyses by Mohamed Jambi, USGS-DGMR Chemical Laboratory]

Sample number	Interval (meters)	Copper		Gold	Silver	Material analyzed
		Spectro-graphic	Chemical	Fire assay		
35095	52	50	15	nil	0.14	Andesite
35094	54	15	<10	nil	nil	Pyrite (60)
35093	56	15	15	nil	.12	Pyrite (40)
35092	59	20	30	nil	.26	Pyrite (30)
35091	61	20	40	nil	.48	Pyrite (30)
35090	63	50	75	nil	.46	Pyrite (30)
35089	66	20	30	nil	.52	Pyrite (30)
35088	68	30	40	nil	.09	Andesite
35087	70	20	20	nil	.62	Pyrite (10)
35086	74	30	30	nil	.26	Pyrite (90)
35085	76	20	10	nil	.44	--
35084	79	15	<10	nil	.13	Pyrite(20-50)
35083	81	10	<10	nil	.14	Pyrite (90)
35082	83	70	115	nil	.13	Pyrite (90)
35081	86	30	60	nil	.18	Pyrite (10)

Table 7.--*Major element chemical analyses of core from drill hole WS-5*
[*, indicates total S and Fe, respectively. Rapid rock analyses under the direction of L. Shapiro, USGS Laboratory, Washington, D.C.]

Sample number	Interval (meters)	SiO_2	Al_2O_3	S*	Fe*	MgO	CaO	Na_2O	K_2O	H_2O-	H_2O+	TiO_2	P_2O_5	MnO	CO_2	Sum
		(Results in weight percent)														
35095	52	20.2	6.2	30.1	30.1	1.6	2.8	0	1.9	0.61	1.8	0.49	0.22	0.08	0.30	96
35094	54	12.5	3.1	37.8	35.7	1.0	1.8	0	.45	.69	3.2	.14	.18	.14	.94	98
35093	56	35.2	9.9	22.1	21.9	.85	1.2	1.2	2.2	.44	1.8	.44	.16	.04	.05	97
35092	59	41.9	12.0	16.5	17.1	1.0	1.7	2.1	2.2	.31	1.8	.47	.17	.05	.42	97
35091	61	54.1	14.2	9.0	10.6	1.5	1.0	2.5	2.0	.33	2.7	.58	.17	.06	.05	99
35090	63	46.1	11.4	13.3	17.9	1.5	.55	.15	2.0	.37	1.6	.54	.19	.10	.08	96
35089	66	48.4	13.4	7.5	11.1	2.3	2.6	.75	2.4	.68	4.2	.70	.21	.13	2.8	97
35088	68	40.7	9.3	15.8	23.1	1.0	1.4	0	.85	.27	4.0	.46	.19	.08	.69	98
35087	70	39.0	9.1	18.2	22.5	.90	.25	.45	1.2	.46	3.4	.25	.22	.07	.45	96
35086	74	18.1	3.1	16.2	44.2	.25	.45	0	.60	.58	1.7	.19	.25	.09	1.2	87
35085	76	49.9	5.4	15.5	19.8	.50	2.7	0	.20	.58	2.4	.40	.16	.09	.21	98
35084	79	17.8	1.1	36.1	35.9	.37	1.0	0	.20	.27	1.8	.20	.17	.03	.62	96
35083	81	16.5	1.8	32.7	32.5	.45	6.4	.15	.25	.21	2.0	.18	.17	.04	2.9	96
35082	83	45.6	11.7	9.6	14.8	3.4	3.0	1.2	2.5	.29	3.4	.48	.38	.13	.68	97
35081	86	49.4	7.7	6.2	16.8	4.6	4.6	0	.44	.61	3.9	.67	.30	.15	.58	91

Table 8.--*Summary log of drill hole WS-3*
[Percent pyrite in parentheses]

Interval (meters)	Description
0-29	Porphyritic syenite dike
29-38	Weathered andesite
38-39.5	Disseminated pyrite in andesite
39.5-46.5	Andesite
46.5-61	(90)
61-61.5	(10)
61.5-62	(80)
62-64	(20-30)
64-66	(90)
66-67	(85)
67-68	(20)
68-86	(90)
86-90	(50)
90-93	(75)
93-94	(50)
94-95	(15)
95-96	Core missing
96-100	(10-25)
100-103	Andesite (25)
103-111	(90)
111-118	(80)
118-119	(10)
119-121	(70-85)
121-122	(10)
122-123	Bedded andesite
123-123.5	(20)
123.5-124	(30)
126-127	(20)
127-129	(40)
132-143	Andesite
143-153.6	Brecciated andesite, no sulfides, end of hole

Table 9.--*Analyses of core from drill hole WS-3*

[n.d. = not determined; - = not found; tr = trace. Gold and silver determined by fire assay by S.M. Bahijri. Copper of samples 31038, 31039, and 31040 determined by semiquantitative spectrographic analysis by C.E. Thompson and Mohamed Jambi. All other copper, lead, and zinc determinations are colorimetric chemical analyses by Saeed Osman. Work done at USGS-DGMR Chemical Laboratory]

Sample Number	Interval (meters)	Gold	Silver	Copper	Lead	Zinc
		ounces per ton		percent		
31038	48–49	tr	0.12	0.0015	n.d.	-
31039	53–54	tr	.11	.0015	-	-
31040	56–58	tr	.23	.0015	-	-
39113	61	-	-	<.002	<.0025	<.005
39114	66	-	-	<.002	<.0025	<.005
39123	69	-	-	<.002	<.0025	<.005
39124	72	-	-	-	-	-
39125	75	-	-	<.002	<.0025	.005
39126	78	-	-	<.002	<.0025	.005
39120	80	-	-	<.002	<.0025	<.005
39121	84	-	-	<.002	<.0025	<.005
39122	87	-	-	<.002	<.0025	<.005
39118	90	-	-	<.002	<.0025	<.005
39119	93	-	-	.005	<.0025	<.005
39131	103	-	-	<.002	<.0025	<.005
39132	108	-	-	<.002	<.0025	<.005
39133	110	-	-	<.002	<.0025	<.005
39127	111	-	-	<.002	<.0025	<.005
39128	114	n.d.	-	.002	<.0025	.015
39129	116	-	-	.002	<.0025	.005
39130	121	-	-	-	-	-

Drill hole WS-4.--Hole WS-4 is located about 700 m southeast of hole WS-1 (see plate), on the western side of the gossan explored by holes WS-2 and -3. The collar of the hole is at an altitude of 1,200 m. The hole was drilled N.80°E., at an inclination of -45°, and is 129.9 m long. It was in mineralized rock for 77 m, of which about 52 m contained 80 percent or more sulfide-bearing rock (fig. 6C).

The hole was drilled to intersect the sulfide zone beneath a gossan. Although massive pyrite was intersected at a depth of 28 m, the principal body was not cut until 42 m (fig. 5C, plate). The hole probably passed through most of the mineralized zone (table 10). Massive pyrite is present both above and below the steeply dipping zone, with 5 to 50 percent pyrite in the center. Analyses of core samples are given in table 11. Major element chemical analyses are given in table 12.

Area C

Area C covers an area of 19,880 sq m and contains gossan outcrops over a strike length of about 780 m and a width of as much as 65 m. It overlaps slightly with area B, suggesting either that it is a separate mineralized lens or a segment displaced on a north-northwest-trending, right-lateral fault.

Area C was sampled along several lines. Assays of gossan surface samples are given in appendix 1.

Area D

Area D covers an area of 24,240 sq m and is 650 m long and as much as 60 m wide. It is a continuation of area C, but has been displaced about 100 m to the east on a northwest-trending, left-lateral fault. At the southern end, the gossan either pinches out completely or plunges beneath the surface.

Assays of gossan surface samples are given in appendix 1.

Area E

Area E covers an area of 289,780 sq m and is 2.1 km long and as much as 560 m wide. This unusual width may be the result of duplication by folding and the mineralized zone may also be thicker here. Several mineralized beds may be present; some units on the western side are siliceous and crop out prominently. The units on the eastern side are not resistant and are overlain in places by soil crustified with iron oxides, sulfur, melanterite, and other secondary minerals.

Table 10.--*Summary log of drill hole WS-4*
[Percent pyrite shown in parentheses]

Interval (meters)	Description
0-13	Weathered andesite
13-23	Gray andesite
23-28	Weathered andesite
28-29	(80)
29-30	Core is soft, weathered, and contains veinlets of melanterite
30-31	Oxidized material
31-32	(90)
32-34	(90); lower 3.6 cm contains disseminated pyrite
34-35	Andesite (10)
35-39	Disseminated pyrite in calcite
39-56	(90)
56-58	(30-50) with calcite
58-59	(50-75)
59-60	(30)
60-61	(80)
61-62	(30)
62-64	(10)
64-66	(10-20)
66-75	Pyritiferous bedded andesite
75-76	(90)
76-76.5	(15)
76.5-77	(30-40)
77-78	(80)
78-80	(20)
80-81	(10)
81-81.5	(75)
81.5-83.5	(30-40)
83.5-84	(50)
84-85	(10)
85-87	(20-30)
87-91	(90)
91-92	90 percent pyrite and pyrrhotite
92-93	(20-40)
93-94	(90)
94-95	(10-30)
95-105	90 percent pyrite except for 0.3 m bedded interval at 101 (30 percent)
105-114	90 percent pyrite except for 0.5 m rhyolite dike at 114 m
114-117	(90)
117-121	(10-40)
121-129.9	(10-30), end of hole

Table 11.--*Analyses of core from drill hole WS-4*

[tr = trace, nil = not found, - = not determined. Copper results in parts per million, gold and silver in ounces per ton. Material analyzed: MP, massive pyrite; DP, disseminated pyrite; percent pyrite in parentheses. Chemical analyses by I. Baradja, fire assays by S.M. Bahijri, semiquantitative spectrographic analyses by K. Shahwan, USGS-DGMR Chemical Laboratory]

Sample number	Interval (meters)	Copper		Gold	Silver	Material analyzed
		Spectrographic	Chemical	Fire assay		
35037	28	15	<10	nil	0.09	MP
35038	31	15	<10	nil	.09	MP
35039	34	20	<10	nil	.13	DP
35040	35	15	<10	tr	.27	DP
35041	42	10	<10	tr	.17	MP
35041A	45	10	<10	tr	.21	MP
35042	48	10	<10	tr	.18	MP
35043	51	10	<10	tr	.26	MP
35044	50	-	<10	-	-	?
35045	54	-	<10	tr	.26	MP
35046	55	20	<10	nil	.17	MP
35047	58	40	20	nil	.34	(30-50)
35048	61	40	20	nil	.28	(30)
35049	64	40	20	nil	.32	?
35052	67	40	10	nil	.36	(10-30)
35054	70	40	60	nil	.09	(10-20)
35055	73	70	75	nil	.16	DP
35056	76	30	<10	nil	.05	MP
35057	79	15	30	nil	.21	(20)
35058	82	15	<10	nil	.05	(30-40)
35059	85	15	<10	nil	.08	(10)
35063	87	15	<10	nil	.06	(20-30)
35065	91	15	<10	nil	.12	MP
35068	93	15	<10	nil	.15	(90)
35069	99	15	<10	nil	.14	(90)
35070	102	15	<10	nil	.52	(90)
35071	105	10	<10	nil	.15	(90)
35072	108	10	<10	nil	nil	(90)
35073	111	10	10	nil	.08	(90)
35074	114	10	10	nil	.06	(90)
35076	117	10	10	nil	.11	MP
35077	120	20	10	nil	.18	(10-40)
35078	124	20	30	nil	.13	(10-30)
35079	127	20	10	nil	.16	(10-30)
35080	125	30	60	nil	.34	(10-30)

Table 12.--*Major element chemical analyses of core from drill hole WS-4*

[*, indicates total S and Fe, respectively. Rapid rock analyses under the direction of L. Shapiro, USGS Laboratory, Washington, D.C.]

Sample number	Interval (meters)	SiO_2	Al_2O_3	S*	Fe*	MgO	CaO	Na_2O	K_2O	H_2O-	H_2O+	TiO_2	P_2O_5	MnO	CO_2	Sum
		(Results in weight percent)														
35037	28	10.3	0.55	44.0	36.0	0	0.05	0.36	0.10	0.35	2.5	0.17	0.15	0	<.05	95
35058	31	8.5	1.7	42.4	37.4	.11	0	.18	.50	.58	1.7	.08	.15	0	<.05	94
35039	34	8.3	2.4	41.1	35.9	1.0	.83	.02	.17	.27	2.8	.10	.16	.06	.11	95
35040	35	11.3	2.7	40.2	34.0	1.2	1.3	.13	.95	.20	1.9	.14	.25	.07	.10	94
35041	42	5.5	1.9	44.6	39.0	.26	.42	.05	.60	.68	2.2	.08	.29	.04	<.05	95
35041A	45	4.9	2.7	42.3	38.2	.74	1.8	.03	.27	.32	3.0	.09	.23	.06	.11	95
35042	48	8.4	3.0	40.2	37.7	1.0	1.6	.26	.65	.65	2.6	.11	.23	.13	<.05	97
35043	51	15.2	4.4	36.3	34.7	.58	.77	.68	.85	.71	3.0	.15	.29	.07	<.05	98
35045	54	10.0	1.8	42.7	39.2	.58	1.4	.10	.13	.64	3.0	.07	.19	.08	<.05	100
35046	55	31.5	12.4	21.8	21.3	1.8	1.7	1.1	3.8	.31	1.9	.44	.54	.09	<.05	99
35047	58	39.3	11.2	15.6	16.8	4.8	3.1	1.4	2.0	.22	2.3	.41	.54	.13	.09	82
35048	61	51.3	13.4	6.5	9.2	4.3	4.2	1.6	3.2	.29	1.1	.57	.63	.12	.10	96
35049	64	42.2	12.3	7.8	11.0	5.6	8.2	1.6	3.0	.25	2.0	.40	.66	.15	3.1	98
35052	67	36.2	10.2	14.9	18.3	5.0	5.1	.79	2.3	.37	1.1	.37	.54	.12	.06	95
35054	70	47.4	12.8	9.1	11.7	4.4	3.1	1.4	3.8	.19	2.4	.39	.63	.12	.08	98
35055	73	57.3	16.3	1.2	5.2	4.1	4.1	2.1	4.0	.12	1.6	.46	.52	.17	.15	98
35056	76	42.7	10.0	15.2	16.4	2.6	4.0	1.1	2.8	.17	2.0	.39	.38	.11	.16	98
35057	79	59.2	11.6	5.5	8.8	2.6	2.4	2.0	1.8	.20	2.6	.60	.24	.14	<.05	98
35058	82	40.4	8.5	21.7	21.5	1.2	.70	1.4	.63	.29	2.0	.34	.20	.06	<.05	99
35059	85	50.8	10.4	13.6	13.7	1.8	2.0	1.6	1.5	.29	2.0	.49	.21	.08	<.05	98
35063	87	45.9	11.5	16.1	15.9	1.2	.85	1.6	2.8	.31	1.8	.53	.21	.04	<.05	99
35065	91	14.9	2.4	36.2	35.7	.89	.22	.43	.10	.40	2.1	.13	.18	.04	<.05	95
35068	93	27.0	7.4	27.8	27.6	1.3	1.2	1.2	1.2	.37	1.9	.39	.24	.06	<.05	98
35069	99	16.2	4.3	37.4	32.8	.96	1.2	.51	.80	.52	2.2	.24	.20	.05	<.05	96
35070	102	10.0	1.4	43.5	35.7	1.1	.35	.18	.10	.23	2.2	.07	.28	.04	<.05	99
35071	105	12.6	1.4	41.2	36.4	.27	.22	.53	.05	.18	2.7	.07	.19	.03	<.05	98
35072	108	4.5	1.8	43.1	41.5	1.4	1.5	.07	.22	.38	2.1	.10	.19	.10	.20	97
35073	111	4.5	1.6	46.3	39.7	.47	1.2	.38	0	.17	2.0	.07	.16	.07	.18	96
35074	114	9.6	2.8	39.5	36.6	2.1	3.0	.20	.52	.32	1.6	.13	.19	.09	.65	97
35076	117	12.6	3.4	37.1	34.7	1.9	3.2	.12	.57	.42	1.7	.16	.19	.05	<.05	96
35077	120	38.4	10.4	14.4	17.3	7.5	4.0	.48	.76	.31	4.1	.39	.26	.12	<.05	98
35078	124	36.5	9.9	14.9	17.1	7.6	6.9	.30	.82	.33	2.2	.36	.27	.14	<.05	97
35079	127	43.2	11.0	7.1	11.7	7.6	9.5	.13	2.0	.22	2.2	.42	.35	.16	<.05	96
35080	125	35.6	9.0	12.5	17.3	7.7	9.5	.04	.75	.18	2.2	.42	.31	.16	.12	96

Surface samples collected in the area were analyzed (appendix 1).

Drill hole WS-7.--Hole WS-7 is located on the northeastern side of the gossan (see plate). The hole was drilled N.65°W., at an inclination of -45°, for a length of 138.5 m. The altitude at the collar of the hole is 1,225 m. The hole penetrated only a small part of the mineralized zone overlain by gossan. The gossan along the western side of the area was not explored, either by drilling or by geophysical surveys. About 103 m of mineralization were intersected in the hole, of which a cumulative thickness of 52 m contained more than 80 percent sulfide-bearing material (fig. 6E, table 13).

Analyses of core from drill hole WS-7 are given in table 14.

Area F

Area F is a continuation of area E and is located on the southern side of Wadi ab Arram. It consists of two lenses of gossan whose combined area is about 34,910 sq m; the longer lense is 370 m long and as much as 100 m wide, and the shorter lense is about 360 m long and as much as 60 m wide.

Analyses of surface samples are given in appendix 1.

Drill hole WS-6.--Drill hole WS-6 was drilled into the into the gossan on the eastern side of area F. The collar is at an altitude of 1,235 m. The hole is 91.5 m long and was drilled S.67°E., at an inclination of -45°. About 26 m of material containing 80 percent or more pyrite-bearing material were cut in the hole (fig. 6D, table 15). Analyses of the core are given in table 16.

Area G gossan

Area G gossan covers an area of 35,600 sq m and is a southward continuation of area F. It has been displaced about 200 m to the southeast of area F on a northwest-trending, left-lateral fault. The gossan ends against another fault that trends north. The gossan is 1,100 m long and as much as 130 m wide. Some parts are siliceous and crop out prominently, but much of the gossanous area has low relief.

The analyses of surface samples are given in appendix 1.

Area H gossan

The gossan of area H is about 1,100 m long and is as much as 320 m wide. It covers an area of 74,580 sq m and strikes

Table 13.--*Summary log of drill hole WS-7*
[Adapted from Overstreet and others, 1969b
Percent pyrite in parentheses]

Interval (meters)	Description
0-16.4	Alluvium
16.4-17.2	Aplite (1)
17.2-19.7	Altered diorite (1)
19.7-25.2	Gossan and gouge
24.2-33.0	(90-99)
33.0-33.5	Gypsiferous massive pyrite
33.5-42.0	(85-99)
42.0-42.8	Disseminated pyrite in argillite (20-70)
42.8-50.0	(95-99)
50.0-52.5	Disseminated pyrite in agglomerate (20-60)
52.5-71.0	(90-99)
71.0-72.4	Interlayered massive and disseminated pyrite (40-99)
72.4-78.8	Disseminated pyrite (20-60)
78.8-83.5	Massive pyrite
83.5-92.9	Disseminated pyrite
92.9-94.8	Massive pyrite
94.8-108.8	Disseminated pyrite (85)
108.8-117.5	Disseminated pyrite (10-30)
117.5-119	Massive pyrite (85-80)
119-126.4	Massive and disseminated pyrite, interlayered (1-15)
126.4-128.5	Disseminated pyrite (2-5)
128.5-138.5	Massive andesite, disseminated pyrite (0.5), end of hole

Table 14.--*Analyses of core from drill hole WS-7*

[nil = not detected. Chemical analyses for copper and zinc by John C. Chandler, USGS Laboratory, Washington, D.C. Fire assays for gold and silver by M. Fourati, USGS-DGMR Chemical Laboratory]

Sample number	Interval (meters)	Copper (parts per million)	Zinc (parts per million)	Gold (ounces per ton)	Silver (ounces per ton)
30087	24-26	10	3	nil	0.48
30088	29-30	<2	5	nil	.40
30089	32-33	<2	<2	nil	.34
30090	39-40	5	9	nil	.47
30091	42-42.5	37	72	nil	.24
30092	45-45.5	10	34	nil	.16
30093	47-47.5	71	410	nil	.23
30094	48.4-49	<2	34	nil	.39
30095	52.5-53	<2	27	nil	.40
30096	54.5-55	4	6	nil	.32
30097	58-58.5	7	16	nil	.32
30098	61-61.5	<2	16	nil	.32
30099	64-64.5	11	29	nil	.12
30100	67-67.5	<2	8	nil	.04
30101	70-70.5	9	37	nil	.24
30102	73-73.5	28	47	nil	.28
30103	76-76.5	21	51	nil	.28
30104	79-79.5	10	46	nil	.38
30105	82-82.5	<2	13	nil	.23
30107	85-85.5	24	49	nil	nil
30108	88-88.5	7	32	nil	nil
30109	91-91.5	41	42	nil	.06
30110	94-94.5	4	21	nil	nil
30111	97.5-98	45	36	nil	nil
30112	100-100.5	72	36	nil	.16
30113	103.5-104	37	32	nil	nil
30114	106.5-107	93	90	nil	.06
30115	109.5-110	62	50	nil	.04
30116	112.5-113	28	35	nil	nil
30117	118.5-119	43	24	nil	nil
30118	122-122.5	46	51	nil	.06
30119	125-125.5	20	29	nil	.12
30120	128-128.5	71	57	nil	.40
30121	131-131.5	73	62	nil	.26
30122	134-134.5	43	32	nil	.28
30123	137-137.5	56	43	nil	.16

Table 15.--*Summary log of drill hole WS-6*

[Adapted from Overstreet and others, 1969. Percent pyrite in parentheses]

Interval (meters)	Description
0-18.2	Alluvium and weathered rock
18.2-21.2	Gossan
21.2-22.7	Leached gray andesite
22.7-25.1	Leached microdioritic porphyry
25.1-27.3	Leached microdiorite
27.3-30.3	Leached diorite altered to gypsiferous rock
30.3-33.3	Clay, gypsum, and iron oxide
33.3-35.7	Upper part of interval is oxidized; lower part is massive pyrite
35.7-43.3	(95)
43.3-48.0	(90)
48.0-55.7	(95)
55.7-58.8	Massive and disseminated pyrite, average (40)
58.8-62.0	(85-90)
62.0-64.0	Average (40)
64.0-66.8	(5-15)
66.8-68.2	Disseminated pyrite in microdiorite (30-60)
68.2-69.2	Andesite with disseminated pyrite
69.2-71.2	Disseminated pyrite in andesitic agglomerate (5-60)
71.2-74.2	Disseminated pyrite in andesitic agglomerate, (up to 25)
74.2-91.5	Disseminated pyrite in masssive andesite and andesitic agglomerate (1-15)

Table 16.--*Analyses of core from drill hole WS-6*

[nil = not detected. Copper and zinc results in parts per million, silver and gold in ounces per ton. Chemical analyses for copper and zinc by John C. Chandler, USGS Laboratory, Washington, D.C. Fire assays for gold and silver by M. Fourati, spectrographic analyses for copper, USGS-DGMR Chemical Laboratory]

Sample number	Interval (meters)	Copper		Gold	Silver	Zinc
		Chemical	Spectro-graphic			
30129	48.5–49	5	<10	nil	0.24	27
30130	51.5–52	10	<10	nil	.60	8
30131	54.5–55	5	<10	nil	.54	8
30132	57–58.5	5	<10	nil	.61	14
30133	60–61.5	14	10	nil	.50	16
30134	64–64.5	9	10	nil	.66	11
30135	67–67.4	68	75	nil	.68	22
30136	70–70.5	86	115	nil	.60	42
30140	79–79.5	78	115	nil	.68	11
30144	88–88.5	60	75	nil	.62	12

north-northwest and dips west-southwest. Originally the mineralized zone of area H was probably continuous with that of area G, but is now displaced about 400 m to the north of area G. On the north, gossan H apparently ends against a fault in Wadi ab Arram.

Analyses of surface samples collected in area H are given in appendix 1.

Drill hole WS-8.--Hole WS-8, which was drilled in the northwestern part of the gossan, is at an altitude of 1,244 m; it is 152.6 m long and was drilled N.45°E., at an inclination of -45°. About 107 m of massive and disseminated pyrite and pyrrhotite were cut in the hole; of this, a cumulative thickness of 41 m is 80 percent or more sulfide-bearing material (fig. 6F, table 17). Analyses of core samples are tabulated in table 18. Major element chemical analyses of 30 samples from drill hole WS-8 are given in table 19.

Area I gossan

Gossan bodies in Area I cover an area of 76,900 sq m and are scattered along a zone about 1,300 m long and 200 m to 300 m wide. The bodies are poorly exposed and crop out mostly on low hills that rise only a few meters above the pediment surface. At the northwestern end of the area, the mineralized zone forms a tight arc as it bends from a northwest-trending strike and southwest dip to a southwest-trending strike and southeast dip.

Analyses of surface samples are given in appendix 1.

Drill hole WS-9.--Hole WS-9 was drilled in the northwestern part of the gossan. The collar of the hole is at an altitude of 1,265 m; it is 154.4 m long and was drilled N.75°W., at an inclination of -45° (fig. 6G, table 20). It penetrated two sulfide zones about 88 m apart; the cumulative thickness was 16 m of 80 percent sulfide-bearing material, mostly pyrrhotite.

Analyses of core from hole WS-9 are given in tables 21 and 22.

Table 17.--*Summary log of drill hole WS-8*

Interval (meters)	Description
0-27	Weathered material
27-34	Andesite intruded by granite at 32 m
34-38	Gray, fine-grained andesite with feldspar phenocrysts
38-39	30-50 percent pyrite-pyrrhotite
39-41	Gray andesite, 90
41-44	80 pyrite
44-48	90 pyrite
48-49	50 percent pyrite-pyrrhotite
49-58	90 percent pyrite-pyrrhotite
58-59	75 percent pyrite-pyrrhotite
59-64	80 percent pyrrhotite
64-65	Gray andesite (<10 pyrite)
65-67	40 percent pyrrhotite
67-69	10 percent pyrrhotite
69-70	75 percent pyrrhotite
70-82	90 percent pyrrhotite
82-84	30 percent pyrrhotite
84-85	90 percent pyrrhotite, disseminated pyrite
85-86	50-70 percent pyrrhotite
86-87	90 percent pyrrhotite
87-95	Gray andesite, intruded by granite
95-96	Andesite
96-99	Massive pyrrhotite
99-108	Disseminated pyrrhotite
108-109	85 percent pyrrhotite
109-110	45 percent pyrrhotite
110-112	Massive pyrrhotite
112-116	Gray andesite
116-117	80-90 percent pyrrhotite
117-121	Gray andesite, 30 percent pyrrhotite
121-125	Gray andesite
125-134	Gray andesite intruded by diorite
134-135	Gray andesite
135-136	80-90 percent pyrrhotite
136-142	Gray andesite intruded by diorite
142-143	10-50 percent pyrrhotite
143-144	Gray andesite, 90 percent pyrrhotite
144-152.6	Gray andesite intruded by diorite except for the interval 149-150 m which is 30-50 percent pyrrhotite, end of hole

Table 18.--*Analyses of core from drill hole WS-8*

[- = not determined. Copper results in parts per million, silver in ounces per ton. Material sampled: MP, massive pyrite; DP disseminated pyrite. Percent pyrite in parentheses. Chemical analyses for copper by Ibrahim Baradja, fire assay for silver by S.M. Bahijri, spectrographic analyses for copper by K. Shahwan, USGS-DGMR Chemical Laboratory]

Sample number	Interval (meters)	Copper		Silver	Material analyzed
		Spectro-graphic	Chemical		
35125	39	-	-	0.14	(90)
35124	41	-	-	.04	(90)
35123	43	-	-	.02	(90)
35122	47	-	-	.10	(90)
35121	50	-	-	.06	(90)
35120	53	-	-	.09	(90)
35119	56	-	-	.02	(90)
35118	59	-	-	.32	(75)
35117	61	-	-	.40	(80)
53116	64	-	-	.12	(80)
35115	66	-	-	.02	(40)
35114	70	20	10	.08	(75)
35113	72	20	10	.06	(90)
35112	75	20	10	.14	(90)
35111	77	20	10	nil	(90)
35110	81	20	10	.11	(90)
35109	84	30	10	nil	(30)
35108	85	20	10	.14	(90)
35107	87	30	10	.17	DP
35106	90	70	115	1.06	(50-70)
35105	94	30	60	1.12	(90)
35104	-	15	20	.06	-
35103	-	20	10	.24	-
35102	112	15	10	.36	MP
35101	118	70	15	.38	(80-90)
35100	121	70	75	.32	(30)
35099	130	100	225	.16	Andesite
35098	136	100	10	.36	(80-90)
35097	142	70	-	.24	(60)
35096	144	100	10	.16	Andesite

Table 19.--*Major element chemical analyses of core from WS-8*

[* indicates total S and Fe, respectively. Rapid rock analyses under the direction of L. Shapiro, USGS Laboratory, Washington, D.C.]

Sample number	Interval (meters)	SiO_2	Al_2O_3	S*	Fe*	MgO	CaO	Na_2O	K_2O	H_2O-	H_2O+	TiO_2	P_2O_5	MnO	CO_2	Sum
		(Results in weight percent)														
35125	39	30.8	7.8	16.6	32.7	1.2	1.2	1.4	1.2	0.50	0.90	0.32	0.24	0.07	<.05	95
35124	41	33.6	10.5	12.8	29.1	1.6	2.3	2.3	1.0	.16	.94	.29	.26	.07	<.05	93
35123	43	23.2	7.4	15.7	36.6	1.4	4.0	1.2	.85	.18	.80	.24	.27	.31	<.05	92
35122	47	9.0	4.2	25.3	48.7	.35	1.4	.45	.40	.52	.38	.09	.24	.31	.08	91
35121	50	24.6	5.6	15.9	40.1	.92	1.0	1.4	1.2	.08	.58	.20	.25	.05	.05	92
35120	53	11.7	4.4	16.8	42.4	2.2	6.5	.25	.72	.09	.60	.15	.24	.08	2.5	97
35119	56	16.4	6.0	21.8	44.6	.70	1.3	.80	.45	.27	.85	.14	.25	.05	<.05	94
35118	59	44.1	14.0	9.4	16.9	2.1	2.6	3.1	3.5	.18	1.2	.14	.24	.05	<.05	98
35117	61	17.2	5.5	22.8	16.8	2.2	3.7	3.1	.82	.58	.31	.26	.06	.05	<.05	78
35116	64	13.8	4.5	22.8	41.0	.80	1.5	.80	.95	.18	.82	.25	.24	.05	<.05	98
35115	66	46.4	14.1	7.6	15.8	2.8	2.8	3.2	3.1	.18	.34	.14	.25	.09	<.05	97
35114	70	20.7	6.3	27.2	37.3	.92	1.9	1.1	1.2	.39	1.6	.42	.35	.06	<.05	93
35113	72	12.2	4.2	36.6	37.1	1.0	2.0	1.2	.70	.92	.68	.17	.24	.08	<.05	97
35112	75	18.6	5.5	26.1	39.3	.65	1.1	.80	.40	.79	.71	.12	.22	.04	.05	94
35111	77	25.7	8.3	13.8	37.8	.80	1.3	.95	.60	.14	.48	.17	.23	.07	.05	90
35110	81	21.0	7.5	20.8	36.2	1.0	3.2	1.3	1.0	.08	.77	.24	.24	.09	.05	94
35109	84	15.5	4.8	19.7	39.2	1.0	1.8	1.2	.65	.36	.39	.19	.24	.06	.05	90
35108	85	32.6	8.8	13.4	31.6	1.2	1.2	1.7	2.4	.18	.82	.16	.29	.06	.05	94
35107	87	27.9	9.3	10.0	31.2	1.1	1.6	1.4	1.6	.15	2.9	.20	.23	.06	.05	88
35106	90	39.8	12.3	12.3	16.7	3.4	3.1	1.8	4.1	.55	2.9	.21	.26	.12	.11	96
35105	94	48.7	15.5	5.6	9.4	4.7	4.2	2.6	4.2	.32	1.7	.79	1.2	.12	.65	100
35104	-	38.6	10.5	12.7	20.4	2.4	5.0	1.7	.75	.32	2.2	.32	.41	.11	.05	95
35103	-	20.7	8.0	24.7	35.2	1.3	1.7	1.9	.20	1.1	1.2	.16	.21	.08	.05	96
35102	112	54.6	18.2	2.2	6.6	2.6	4.1	4.8	2.8	.34	1.4	.52	.31	.16	.05	99
35101	118	38.3	12.3	6.5	23.4	2.4	2.1	2.4	1.4	.36	1.1	.52	.25	.12	.05	91
35100	121	43.8	12.4	7.9	15.3	4.1	3.4	2.0	3.9	.59	1.5	.36	.51	.13	.05	96
35099	130	44.4	14.7	7.7	15.5	2.5	2.1	3.1	3.0	.59	1.8	.44	.36	.12	.18	96
35098	136	17.6	6.3	17.6	42.0	.80	1.9	1.2	.80	.16	1.2	.18	.25	.05	.11	93
35097	142	23.1	6.7	20.8	37.2	.85	1.6	1.4	1.2	.60	1.7	.15	.22	.04	.05	97
35096	144	9.4	2.8	18.2	50.4	.17	1.6	.20	.35	.11	.70	.08	.25	.09	.12	84

Table 20.--*Summary log of drill hole WS-9*

Interval (meters)	Description
0-35	Diorite, fine-grained (little core 15-35 m)
35-42	Diorite, fine- to coarse-grained, slightly pyritic
42-45	Pyrrhotite, 90 percent sulfide
45-46	Andesite with pyrite and pyrrhotite, 5-10 percent sulfide
46-50	Pyrrhotite, some pyrite, 40-60 percent sulfide
50-51	Diorite, some pyrrhotite, <5 percent sulfide
51-53	Pyrrhotite, some pyrite, 60-80 percent sulfide in diorite. Faults at 53 m at acute angle to axis of core
53-67	Diorite, trace pyrrhotite
67-76	Brecciated zones cemented by pyrrhotite, pyrite, and calcite in andesitic sedimentary rock, calc-silicate rock, and chloritic and kaolinitic diorite
76-89	Diorite; chloritic and calc-silicate rock, slightly pyritic
89-91	Calc-silicate rock, brecciated, pyritic
91-93	Diorite, chloritic
93-106	Argillite, calc-silicate, contorted
106-111	Diorite, brecciated in part, calcite veins
111-117	Argillite and calc-silicate; breccia zone with calcite veining and cement. Structures about parallel to axis of core
117-129	Diorite, chloritic, and argillite. Brecciated 122-123 m with some pyrrhotite and pyrite
129-142	Pyrrhotite, massive, 80-90 percent sulfide
142-143	Diabase
143-154.4	Argillaceous calc-silicate rock, contorted

Table 21.--*Analyses of core from drill hole WS-9*

[nil = not detected. Copper results in parts per million, silver and gold in ounces per ton. Material analyzed: MP, massive pyrite; DP, disseminated pyrite. Fire assays for gold and silver by S.M. Bahijri, chemical analyses for copper by Ibrahim Baradja, spectrographic analyses by K. Shahwan, USGS-DGMR Chemical Laboratory]

Sample number	Interval (meters)	Copper		Gold	Silver	Material analyzed
		Spectro-graphic	Chemical	Fire assay		
35003	37	30	30	nil	nil	DP
35005	42	10	10	nil	0.10	DP
35006	42.5	10	10	nil	.17	MP
35007	43	10	10	nil	.17	MP
35008	43.5	20	10	nil	.13	MP
35011	44	150	10	nil	.11	MP
35013	46	10	10	nil	.14	MP
35019	120	15	10	nil	.16	DP
35020	123	15	10	nil	.28	DP
35024	129	20	10	nil	.16	MP
35027	130	20	10	nil	.06	MP
35029	137	20	<10	nil	.17	MP
35031	138	15	<10	nil	.05	MP
35033	141	15	<10	nil	.11	MP

Table 22.--*Major element chemical analyses of core from drill hole WS-9*

[* indicates total S and Fe, respectively. Rapid rock analyses under the direction of L. Shapiro, USGS Laboratory, Washington, D.C.]

Sample number	Interval (meters)	SiO_2	Al_2O_3	S*	Fe*	MgO	CaO	Na_2O	K_2O	H_2O-	H_2O+	TiO_2	P_2O_5	MnO	CO_2	Sum
		(Results in weight percent)														
35003	37	48.1	8.0	2.6	6.8	15.2	11.4	0.94	0.65	0.18	2.4	0.44	0.40	0.18	0.08	97
35005	42	15.4	5.6	26.0	39.9	2.1	1.8	.62	.37	.90	2.3	.30	.30	.12	<.05	96
35006	42.5	10.8	3.8	21.0	50.6	.86	1.1	.71	.37	.21	.56	.15	.26	.04	<.05	90
35007	43	19.8	5.4	20.9	42.5	.84	.70	1.2	1.5	.10	.84	.31	.26	.05	<.05	94
35008	43.5	43.2	9.0	4.6	15.9	8.1	.94	1.5	.45	.25	2.0	.36	.59	.29	.21	87
35011	44	23.2	5.7	19.9	35.4	2.2	2.5	.90	.72	.52	2.8	.26	.24	.14	1.6	96
35013	46	16.7	4.3	32.4	35.0	1.8	1.2	.57	.52	.66	3.2	.25	.19	.07	3.0	100
35019	120	39.4	11.4	5.4	7.8	5.2	8.8	1.8	.80	2.7	6.1	1.0	.34	.09	8.8	100
35020	123	42.4	12.2	1.2	5.8	5.5	8.6	1.8	1.4	.39	8.3	.79	.44	.14	10.2	99
35024	129	9.1	2.3	20.5	52.2	.91	1.9	.38	.45	.30	.90	.11	.21	.12	.52	90
35027	130	7.8	2.4	22.6	53.2	.56	.95	0	.32	.35	.65	.11	.23	.08	.05	89
35029	137	6.7	2.2	25.8	53.2	.52	1.0	.02	.08	.57	.63	.06	.23	.05	.05	92
35031	138	9.0	3.2	27.0	48.2	.85	1.0	.29	.62	.78	1.0	.12	.23	.14	.05	92
35033	141	10.3	3.4	30.9	43.4	.53	.85	.23	.22	1.6	1.7	.14	.22	.07	.05	94

Area J gossan

The area J gossan covers an area of 10,390 sq m and is a discontinuous zone about 500 m long and 10 to 40 m wide. The zone is truncated by granitic bodies to the north and south and by a dioritic body to the east.

Analyses of surface samples are given in appendix 1.

Area K gossan

The area K gossan is 400 m long and is 15 to 60 m wide; it covers an area of 14,790 sq m. It ends against granitic rocks to the north and dioritic rocks to the east and is overlapped by alluvium in a tributary of Wadi Mahal on the south.

Analyses of surface samples are given in appendix 1.

Area L

Area L covers an area of 60,760 sq m and is shown in the southwestern part of the plate. The principal gossan zone has an overall length of about 750 m and a width of as much as 200 m. The area contains discontinuous gossan bodies that are separated by septae of granite and diorite intrusive bodies and probably underlain by intrusive rocks at shallow depths.

Samples along several lines cut across the area. The analyses of these samples are given in appendix 1.

Geochemistry

Minor elements in pyrite-pyrrhotite-bearing core from Wadi Wassat are present in comparatively low abundances. Precious metals are virtually absent, base metal abundances are low, and many other elements are present in amounts below their detection limits (Overstreet and others, 1976).

In drill holes WS-6 and WS-7, Overstreet and others (1976) found that 16 elements, antimony, arsenic, beryllium, bismuth, cadmium, germanium, gold, silver, tin, lanthanum, niobium, selenium, tellurium, thallium, tungsten, and vanadium, are present in both the massive sulfide-bearing material and the wall-rock material in amounts below the limits of analytical detection for the methods used. Minor elements present in greater amounts in the massive sulfide-bearing material than in the wall-rock material are boron, cobalt, gallium, lead, molybdenum, and tin. The minor elements that are more abundant in the wall-rock material than in the sulfide-bearing material are barium, chromium, copper, lith-

ium, manganese, mercury, nickel, rubidium, scandium, titanium, vanadium, yttrium, zinc, and zirconium.

Results of analytical work

Approximately 1100 samples from Wadi Wassat were analyzed in the USGS-DGMR Chemical Laboratory in Jiddah. Of these, about 450 were gossan samples and 650 were sulfide-bearing samples from drill core. In addition to nickel and cobalt, silver, copper, lead, zinc, manganese, chromium, and molybdenum were routinely determined; gold was also determined in some samples. These analytical determinations were entered in the DGMR PDP-11/45 computer, and the means and correlation coefficients were calculated.

Resources

Mapping in the Wadi Wassat area indicates that about 765,000 sq m of gossans are exposed (plate). Some of these gossans were explored and found to grade into sulfide-bearing units at a depth of about 30 m. The calculation of sulfide resources is subject to some uncertainties, but using reasonable assumptions, estimates of the minimum available tonnage can be made.

During exploration, the percentage of pyrite and pyrrhotite in each unit of core was estimated, and the unit was placed into one of the following classes: 100-80 percent sulfide, 80-50 percent sulfide, and 50-10 percent sulfide (table 23). The total length of each class was then divided by the total aggregate length, giving the following percentages of each class:

100-80 percent - 53 percent of total mineralized interval
80-50 percent - 6 percent of total mineralized interval
50-10 percent - 41 percent of total mineralized interval

Hole WS-5 was excluded from the computation, because it explored a stratigraphically higher bed that is not considered to be representative of the other mineralized beds.

The computation of tonnage of sulfide ore was carried out as follows:

The percentage of sulfide-bearing material containing more than 80 percent sulfide (53 percent) is multiplied by the specific gravity of pyrite (5.0), and then by the total area square meters (less areas J, K, and L, 678,520 sq m) of gossan (appendix 1) to give metric tons per meter depth. Thus .53 x 5.0 x .80 x 678,520 x 100 = 143,846,240 (total metric tons per 100 m depth).

Table 23.--*Distribution of pyrite and pyrrhotite in drill holes WS-1 through WS-9*

[Thickness computed on assumption that all bedding is vertical]

Hole number	Cumulative length (meters) Percent sulfide class 100-80	80-50	50-10	Total
1	25	6	37	68
3	52	10	18	80
4	52	2	23	77
5	7	2	70	79
6	26	-	14	40
7	52	-	28	80
8	41	5	15	61
9	16	2	4	22

On the assumption that the interval from the surface to the bottom of the oxidized zone (averaging about 25 m) to the bottom of the holes (averaging about 100 m) is 80 percent sulfide-bearing ore, then the resources are 75 percent of 143,846,240, or 107,884,680 tons, which can be rounded off to 107,500,000 tons. This iron sulfide resource averages about 40 percent iron and 35 percent sulfur.

In addition, large blocks in areas J, K, and L, which may be underlain by sulfide-bearing material, were not included in the calculations, and therefore the resources calculated above represent a minimum value. In order to obtain a more accurate idea of the total available tonnage, additional drilling both along strike and down dip is required.

REFERENCES CITED

Akhrass, M. N., 1966, Magnetic survey on the gossan of Wadi Wassat (near Bi'r Idimah): Saudi Arabian Directorate General of Mineral Resources Open-File Report 267, 2 p.

Allen, R. V., and Davis, W. E., 1969a, Geophysical investigations in the Bi'r Idimah-Wadi Wassat area, Saudi Arabia-- Part One: U.S. Geological Survey Open-File Report (IR)SA-53, 3 p.

_____ 1969b, Geophysical investigations in the Bi'r Idimah-Wadi Wassat area, Saudi Arabia-- Part Two: U.S. Geological Survey Open-File Report (IR)SA-54, 4 p.

Anderson, R. N., and Halunen, A. J., 1974, Implications of heat flow for metallogenesis in the Bauer Deep: Nature, v. 251, p. 473-75.

Brown, D. G., and Jackson, R. O., 1959, Geology of the Asir quadrangle, Kingdom of Saudi Arabia: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-217A, scale 1:500,000.

Cohee, G. C., 1974, Stratigraphic nomenclature in reports of the U.S. Geological Survey: Washington, D.C., Geologic Names Committee, 45 p.

Corliss, J. G., 1971, The origin of metal-bearing submarine hydrothermal solutions: Journal of Geophysical Research, v. 76, p. 8128-8138.

Dodge, F. C. W., and Rossman, D. L., 1975, Mineralization in the Wadi Qatan area, Kingdom of Saudi Arabia: U.S. Geological Survey Saudi Arabian Project Report 190, 71 p. (U.S. Geological Survey Open-File Report 75-309).

Goodwin, A. M., 1973, Archean iron-formations and tectonic basins of the Canadian Shield: Economic Geology, v. 68, p. 915-933.

Greenwood, W. R., 1980, Reconnaissance geology of the Wadi Wassat quadrangle sheet 18/44 C, Kingdom of Saudi Arabia: Saudi Arabian Directorate General of Mineral Resources Geologic Map GM-40, 52 p., scale 1:100,000.

Jackaman, Barry, 1972, Genetic and environmental factors controlling the formation of the massive sulfide deposits of Wadi Bidah and Wadi Wassat, Saudi Arabia: Saudi Arabian Directorate General of Mineral Resources Technical Record, TR-1972-1, 244 p.

Kuno, H., 1966, Lateral variation of basalt magma type across continental margins and island arcs: Bulletin Volcanologique, v. 29, p. 195-221.

Martin, Conrad, 1973, Wadi Wassat pyrite, in Mineral resources research, 1968-69: Saudi Arabian Directorate General of Mineral Resources, p. 94-96.

Mauger, R. L., 1972, A sulfur isotope study of the Ducktown Tennessee district, U.S.A.: Economic Geology, v. 67, p. 497-510.

McMurty, G. M., and Burnett, W. C., 1975, Hydrothermal metallogenesis in the Bauer Deep of the southeastern Pacific: Nature, v. 254, p. 42-44.

Overstreet, W. C., 1968a, Mineral investigations between Khamis Mushayt and Bi'r Idimah, Saudi Arabia: U.S. Geological Survey Open-File Report (IR)SA-23, 18 p.

_____ 1968b, Mineral exploration between Bi'r Idimah and Wadi Haraman, Asir quadrangle, Saudi Arabia: U.S. Geological Survey Open-File Report (IR)SA-39, 70 p.

_____ 1968c, Preliminary results of a trip October 30-December 21, 1965, to the area between Sha'ya and Jabal Bani Bisqan, Saudi Arabia, together with a synopsis of mineral reconnaissance in the Asir quadrangle: U.S. Geological Survey Open-File Report (IR)SA-40, 48 p.

_____ 1969d, Summary of results from a trip February 6-March 5, 1966, to Bi'r Idimah, Jabal Ashirah, and the As Sarat mountains, Saudi Arabia: U.S. Geological Survey Open-File Report (IR)SA-49, 47 p.

Overstreet, W. C., Bahijri, S. M., Fourati, M. A., and Gonzales, Louis, 1967a, Progress Report II. Assays and analysis of pyritic core from Wadi Wassat gossan, Saudi Arabia: U.S. Geological Survey Open-File Report (IR)SA-63, 8 p.

Overstreet, W. C., Bahijri, S. M., and Shararahly, A. H., 1969a, Results of a trip October 25-29, 1966, to the Bi'r el Adhbat area and the Esh Qay'ib (Esh Sha'ib) mine, eastern Asir, Saudi Arabia, including assays of materials from ancient mines in the eastern Asir: U.S. Geological Survey Open-File Report (IR)SA-84, 20 p.

Overstreet, W. C., Gonzalez, Louis, Thompson, C. E., Fourati, M. A., Sharah, Ali, and Sumbul, Jamal, 1967b, Progress report on analyses of pyritic core from diamond drill holes under gossan at Wadi Wassat, Saudi Arabia: U.S. Geological Survey Open-File Report (IR)SA-58, 17 p.

Overstreet, W. C., Hubert, A. E., Crenshaw, G. L.,, and Mosier, E. L., 1976, Petrogenic significance of minor elements in pyritic core from the Wadi Wassat massive sulfide deposit, Kingdom of Saudi Arabia: U.S. Geological Survey Saudi Arabia Project Report 214, 116 p. (U.S. Geological Survey Open-File Report 76-863).

Overstreet, W. C., Raisanen, Eino, Fourati, M. A., Shahwan, K. H., and Baradja, Ibrahim, 1969b, Progress Report III. Description and analyses of pyritic core from drill holes 6 and 7, Wadi Wassat area: U.S. Geological Survey Open-File Report (IR)SA-92, 75 p.

Overstreet, W. C., and Rossman, D. L., 1970, Reconnaissances geology of the Wadi Wassat quadrangle, Kingdom of Saudi Arabia: U.S. Geological Survey Open-File Report (IR)SA-117, 67 p.

Roberts, Ralph, J., 1976, The genesis of disseminated and massive sulfide deposits in Saudi Arabia: U.S. Geological Survey Saudi Arabian Project Report 207, 54 p. (U.S. Geologicval Survey Open-File Report 76-602).

Rye, R. O., Roberts, R. J., and Mawad, M. M., 1979, Preliminary sulfur isotope investigations of mineral deposits in the Precambrian Shield, Kingdom of Saudi Arabia, in Evolution and mineralization of the Arabian-Nubian Shield: Oxford, Pergamon Press, v. 1, p. 131-140.

Weissenborn, A. E., and Earhart, R. L., 1969, Appraisal of the Wadi Wassat and Wadi Adhbat pyrite deposits, Asir quadrangle, Kingdom of Saudi Arabia: U.S. Geological Survey Open-File Report (IR)SA-101, 21 p.

Wilch, L. O., 1978, Rock analysis storage system (RASS), Saudi Arabia - An introduction to the system and sample submittal manual - 1978, with a section on Keypunching instructions by L. O. Wilch, and L. D. North: U.S. Geological Survey Saudi Arabian Project Report 241, 42 p. (U.S. Geological Survey Open-File Report 79-591).

Wright, C. M., 1965, Syngenetic pyrite associated with a Precambrian iron ore deposit: Economic Geology, v. 60, p. 998-1019.

APPENDIX 1

A. *List of surface sample areas (gossans) and sample numbers*

Area A

87892-897
87938-939

Area B

87850-863
87864-873
87874-881
87882-889
87890-891

Area C

87824-829
87830-835
87836-838
87839-849

Area D

87811-815
87816-823

Area E

87730-749
87750-774
87775-810
87898-914

Area F

87718-729

Area G

87681-717

Area H

87645-655
87656-680
87915-922

Area I

87586-600
87601-611
87612-622
87623-624
87625-629
87630-639
87640-644
87923-939

Area J

87569-585

Area K

87553-568

Area L

87470-477
87500-506
87507-531
87532-533
87534-545
87546-552

B. *Areas of gossan blocks (in square meters)*

A.	17,519	17,520	
B.	105,114	105,110	
C.	19,876	19,880	
D.	24,239	24,240	
E.	289,778	289,780	
F.	34,912	34,910	
G.	35,620	35,600	
H.	74,582	74,580	
I.	76,897	76,900	
	SUBTOTAL	678,520	
J.	10,930	10,930	not included
K.	14,788	14,790	in tonnage cal-
L.	60,759	60,760	culations
	TOTAL	765,000	

C. *Descriptions and geochemical data for gossan samples*

Description codes (pages 58-66); Wilch, 1978)

Column*	Field	Code	Meaning
11	rock type	A	rock
12	sample type	B	composite
13	sample source	A	outcrop
14	rock type	Y	other
17	matrix	A	silica
19	oxidation state	A	oxidized
21	ore minerals	D	other
22	mineral deposit form	D	massive sulfide
24	geologic age	D	late Precambrian
25-26	rock name	GO	gossan
28	area		alphabetic code refers to areas as on figure 2 (see text, p. 21)
29	subarea		numeric code (see Blain, 1981, fig. 13, for location of subarea)

* numbers read vertically on listing

Geochemical data: AA, atomic absorption analysis; P, partial digestion; T, total digestion; CM, colorimetric analysis. Cu, copper; Pb, lead; Zn, zinc; Ag, silver; Co, cobalt; Ni, nickel; Mo, molybdenum; Cr, chromium; Mn, manganese. N, not detected at value stated; L, less than value stated; B, not analyzed.

SAMPLE ID	LAST UPDATE	DATE SUBMITTED	PROJECT NO	MISSION	FIELD NO	JOB NO	1 1 1 1 1 1 1 1 2 3 4 5 6 7	1 2 2 2 2 2 2 2 2 3 3 9 0 1 2 3 4 5 6 7 8 9 0 5	CODED DATA
87470	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 1
87471	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 1
87472	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A		D D D G O L 1
87473	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A		D D D G O L 1
87474	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A		D D D G O L 1
87475	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A		D D D G O L 1
87476	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A		D D D G O L 1
87477	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A		D D D G O L 1
87501	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A		D D D G O L 1
87502	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 1
87503	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 1
87504	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 1
87505	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 1
87506	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 1
87507	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 2
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SAMPLE ID	LAST UPDATE	DATE SUBMITTED	PROJECT NO	MISSION	FIELD NO	JOB NO	CODED DATA 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 3 3 1 2 3 4 5 6 7 9 0 1 2 3 4 5 6 7 8 9 0 5
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SAMPLE ID	LAST UPDATE	DATE SUBMITTED	PROJECT NO	MISSION	FIELD NO	JOB NO	CODED DATA 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 3 3 1 2 3 4 5 6 7 9 0 1 2 3 4 5 6 7 8 9 0 5
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SAMPLE ID	LAST UPDATE	DATE SUBMITTED	PROJECT NO	MISSION	FIELD NO	JOB NO	CODED DATA 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 3 3 1 2 3 4 5 6 7 9 0 1 2 3 4 5 6 7 8 9 0 5
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SAMPLE ID	LAST UPDATE	DATE SUBMITTED	PROJECT NO	MISSION	FIELD NO	JOB NO	CODED DATA 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 3 3 1 2 3 4 5 6 7 9 0 1 2 3 4 5 6 7 8 9 0 5
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87761	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 5
87762	8- 1-10	78- 1 1	516	USGS		HM554	A B A Y A D D D G 0 E 5
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87765	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 6
87766	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 6
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87791	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 2
87792	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 2
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87798	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 2
87799	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 3
87801	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 3

SAMPLE ID	LAST UPDATE	DATE SUBMITTED	PROJECT NO	MISSION	FIELD NO	JOB NO	CODED DATA 1111111 1222222222233 1234567 9012345678905
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87807	8- 1-10	78- 1- 1	516	USGS		HM554	ABAY A DD DGO E3
87808	8- 1-10	78- 1- 1	516	USGS		HM554	ABAY A DD DGO E3
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87812	8- 1-10	78- 1- 1	516	USGS		HM554	ABAY A DD DGO D2
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87814	8- 1-10	78- 1- 1	516	USGS		HM554	ABAY A DD DGO D2
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87816	8- 1-10	78- 1- 1	516	USGS		HM554	ABAY A DD DGO D1
87817	8- 1-10	78- 1- 1	516	USGS		HM554	ABAY A DD DGO D1
87818	8- 1-10	78- 1- 1	516	USGS		HM554	ABAY A DD DGO C1
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87824	8- 1-10	78- 1- 1	516	USGS		HM554	ABAY A DD DGO C3
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87847	8- 1-10	78- 1- 1	516	USGS		HM554	ABAY A DD DGO C1
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SAMPLE ID	LAST UPDATE	DATE SUBMITTED	PROJECT NO	MISSION	FIELD NO	JOB NO	CODED DATA 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 3 3 1 2 3 4 5 6 7 9 0 1 2 3 4 5 6 7 8 9 0 5
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87862	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 B 5
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87868	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 B 4
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87870	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 B 4
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87893	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 A 2
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87898	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 7
87899	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 7
87900	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 E 7
87901	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 L 7
87902	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 L 7
87903	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y A D D D G 0 L 7

SAMPLE ID	LAST UPDATE	DATE SUBMITTED	PROJECT NO	MISSION	FIELD NO	JOB NO	1 1 1 1 1 1 1 1 2 3 4 5 6 7	1 2 2 2 2 2 2 2 2 3 3 9 0 1 2 3 4 5 6 7 8 9 0 5	CODED DATA
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87907	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 7
87908	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 7
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87910	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O L 7
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87923	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87924	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87925	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87926	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87927	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87928	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87929	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87930	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87931	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87932	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87933	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87934	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87935	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87936	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87937	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O I 3
87938	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O A 1
87939	8- 1-10	78- 1- 1	516	USGS		HM554	A B A Y	A	D D D G O A 1

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87470	18 20 06N	44 09 33E	35.0000	10.0000	50.0000	40.0000	40.0000	4.5000	5.0000L	120.0000
87471	18 20 06N	44 09 33E	60.0000	10.0000	65.0000	45.0000	210.0000	1.5000	5.0000N	1075.0000
87472	18 20 06N	44 09 33E	65.0000	10.0000	100.0000	70.0000	200.0000	2.0000	5.0000L	110.0000
87473	18 20 06N	44 09 33E	30.0000	35.0000	45.0000	40.0000	50.0000	4.5000	5.0000L	95.0000
87474	18 20 05N	44 09 33E	50.0000	40.0000	75.0000	55.0000	120.0000	3.5000	5.0000L	80.0000
87475	18 20 05N	44 09 33E	80.0000	20.0000	70.0000	60.0000	140.0000	1.5000	5.0000N	1250.0000
87476	18 20 04N	44 09 33E	70.0000	25.0000	70.0000	50.0000	130.0000	3.0000	5.0000L	100.0000
87477	18 20 04N	44 09 33E	55.0000	25.0000	40.0000	25.0000	30.0000	3.0000	5.0000L	90.0000
87501	18 20 08N	44 09 35E	45.0000	35.0000	70.0000	45.0000	70.0000	1.5000	5.0000	520.0000
87502	18 20 08N	44 09 37E	95.0000	20.0000	65.0000	40.0000	45.0000	4.5000	5.0000	200.0000
87503	18 20 08N	44 09 37E	50.0000	15.0000	45.0000	40.0000	265.0000	0.5000N	5.0000	1000.0000
87504	18 20 08N	44 09 37E	30.0000	15.0000	50.0000	30.0000	30.0000	3.0000	5.0000	150.0000
87505	18 20 08N	44 09 37E	40.0000	25.0000	40.0000	30.0000	35.0000	3.0000	10.0000	100.0000
87506	18 20 08N	44 09 37E	50.0000	25.0000	45.0000	35.0000	45.0000	5.0000	5.0000	95.0000
87507	18 20 07N	44 09 39E	65.0000	10.0000	45.0000	45.0000	40.0000	1.0000	5.0000	600.0000
87508	18 20 07N	44 09 40E	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B
87509	18 20 07N	44 09 40E	60.0000	25.0000	50.0000	45.0000	65.0000	4.5000	5.0000	175.0000
87510	18 20 06N	44 09 40E	40.0000	25.0000	65.0000	55.0000	80.0000	2.0000	10.0000	300.0000
87511	18 33 50N	44 16 11E	55.0000	15.0000	30.0000	35.0000	35.0000	2.0000	10.0000	525.0000
87512	18 20 06N	44 09 40E	50.0000	20.0000	50.0000	35.0000	45.0000	4.0000	10.0000	210.0000
87513	18 20 06N	44 09 40E	45.0000	40.0000	40.0000	45.0000	65.0000	4.0000	10.0000	225.0000
87514	18 20 05N	44 09 40E	75.0000	40.0000	45.0000	35.0000	40.0000	2.0000	5.0000	250.0000
87515	18 20 05N	44 09 40E	55.0000	25.0000	35.0000	40.0000	40.0000	1.0000	5.0000	650.0000
87516	18 20 05N	44 09 40E	30.0000	20.0000	65.0000	35.0000	65.0000	3.5000	5.0000	400.0000
87517	18 20 04N	44 09 40E	25.0000	20.0000	50.0000	20.0000	30.0000	3.5000	5.0000	225.0000
87518	18 20 04N	44 09 40E	115.0000	40.0000	115.0000	75.0000	150.0000	4.0000	5.0000L	850.0000
87519	18 20 03N	44 09 40E	125.0000	15.0000	95.0000	75.0000	140.0000	1.0000	5.0000L	675.0000
87520	18 20 03N	44 09 40E	45.0000	35.0000	45.0000	20.0000	25.0000	2.5000	5.0000L	200.0000
87521	18 20 03N	44 09 40E	30.0000	20.0000	35.0000	25.0000	25.0000	3.0000	5.0000	125.0000
87522	18 20 02N	44 09 40E	10.0000	20.0000	30.0000	15.0000	15.0000	3.0000	40.0000	100.0000
87523	18 20 02N	44 09 40E	15.0000	20.0000	20.0000	25.0000	25.0000	0.5000N	5.0000	400.0000
87524	18 20 02N	44 09 40E	15.0000	25.0000	30.0000	10.0000	20.0000	2.5000	5.0000	90.0000
87525	18 20 02N	44 09 40E	15.0000	25.0000	45.0000	25.0000	20.0000	3.0000	5.0000	90.0000
87526	18 20 01N	44 09 40E	30.0000	20.0000	40.0000	10.0000	20.0000	2.5000	5.0000	200.0000
87527	18 20 01N	44 09 40E	25.0000	25.0000	25.0000	25.0000	15.0000	0.5000N	5.0000	250.0000
87528	18 20 01N	44 09 40E	35.0000	25.0000	45.0000	15.0000	20.0000	3.5000	5.0000	125.0000
87529	18 20 01N	44 09 40E	35.0000	15.0000	40.0000	15.0000	20.0000	2.0000	5.0000	180.0000
87530	18 20 00N	44 09 40E	55.0000	25.0000	50.0000	15.0000	35.0000	2.0000	5.0000	200.0000
87531	18 19 59N	44 09 40E	50.0000	10.0000	40.0000	30.0000	45.0000	0.5000	5.0000	450.0000
87532	18 20 06N	44 10 03E	20.0000	20.0000	50.0000	25.0000	25.0000	4.0000	5.0000	200.0000
87533	18 20 10N	44 10 00E	40.0000	15.0000	35.0000	30.0000	25.0000	1.5000	5.0000L	325.0000
87534	18 20 00N	44 09 55E	45.0000	20.0000	45.0000	15.0000	25.0000	2.5000	5.0000L	250.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87470	18 20 06N	44 09 33E	200.0000
87471	18 20 06N	44 09 33E	425.0000
87472	18 20 06N	44 09 33E	1200.0000
87473	18 20 06N	44 09 33E	185.0000
87474	18 20 05N	44 09 33E	650.0000
87475	18 20 05N	44 09 33E	750.0000
87476	18 20 04N	44 09 33E	600.0000
87477	18 20 04N	44 09 33E	50.0000
87501	18 20 08N	44 09 35E	800.0000
87502	18 20 08N	44 09 37E	330.0000
87503	18 20 08N	44 09 37E	310.0000
87504	18 20 08N	44 09 37E	150.0000
87505	18 20 08N	44 09 37E	140.0000
87506	18 20 08N	44 09 37E	165.0000
87507	18 20 07N	44 09 39E	285.0000
87508	18 20 07N	44 09 40E	0.0000B
87509	18 20 07N	44 09 40E	230.0000
87510	18 20 06N	44 09 40E	350.0000
87511	18 33 50N	44 16 11E	80.0000
87512	18 20 06N	44 09 40E	90.0000
87513	18 20 06N	44 09 40E	125.0000
87514	18 20 05N	44 09 40E	110.0000
87515	18 20 05N	44 09 40E	95.0000
87516	18 20 05N	44 09 40E	150.0000
87517	18 20 04N	44 09 40E	75.0000
87518	18 20 04N	44 09 40E	1300.0000
87519	18 20 03N	44 09 40E	1250.0000
87520	18 20 03N	44 09 40E	185.0000
87521	18 20 03N	44 09 40E	65.0000
87522	18 20 02N	44 09 40E	40.0000
87523	18 20 02N	44 09 40E	55.0000
87524	18 20 02N	44 09 40E	75.0000
87525	18 20 02N	44 09 40E	20.0000
87526	18 20 01N	44 09 40E	20.0000
87527	18 20 01N	44 09 40E	55.0000
87528	18 20 01N	44 09 40E	25.0000
87529	18 20 01N	44 09 40E	60.0000
87530	18 20 00N	44 09 40E	40.0000
87531	18 19 57N	44 09 40E	130.0000
87532	18 20 06N	44 10 03E	45.0000
87533	18 20 10N	44 10 00E	100.0000
87534	18 20 00N	44 09 55E	55.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87535	18 20 00N	44 09 55E	20.0000	20.0000	25.0000	25.0000	25.0000	0.5000N	5.0000	425.0000
87536	18 20 01N	44 09 55E	5.0000	30.0000	40.0000	20.0000	25.0000	2.5000	5.0000L	150.0000
87537	18 20 01N	44 09 55E	5.0000	20.0000	40.0000	20.0000	30.0000	2.0000	5.0000	100.0000
87538	18 20 01N	44 09 56E	15.0000	25.0000	40.0000	40.0000	35.0000	2.5000	5.0000L	250.0000
87539	18 20 02N	44 09 56E	30.0000	15.0000	45.0000	20.0000	25.0000	0.5000	5.0000	225.0000
87540	18 20 02N	44 09 56E	35.0000	15.0000	70.0000	35.0000	40.0000	2.0000	5.0000L	200.0000
87541	18 20 02N	44 09 55E	70.0000	20.0000	65.0000	25.0000	35.0000	1.0000	5.0000	100.0000
87542	18 20 03N	44 09 55E	35.0000	20.0000	40.0000	30.0000	30.0000	1.0000	5.0000L	110.0000
87543	18 20 03N	44 09 55E	30.0000	15.0000	15.0000	20.0000	25.0000	0.5000N	5.0000L	1000.0000
87544	18 20 04N	44 09 55E	40.0000	20.0000	55.0000	35.0000	35.0000	3.0000	5.0000L	350.0000
87545	18 20 04N	44 09 55E	850.0000	30.0000	175.0000	30.0000	120.0000	3.0000	5.0000L	220.0000
87546	18 20 03N	44 09 58E	20.0000	15.0000	50.0000	25.0000	35.0000	3.0000	5.0000L	210.0000
87547	18 20 03N	44 09 58E	10.0000	20.0000	10.0000	20.0000	20.0000	0.5000N	5.0000L	900.0000
87548	18 20 04N	44 09 58E	100.0000	25.0000	65.0000	15.0000	40.0000	3.0000	5.0000L	200.0000
87549	18 20 04N	44 09 58E	20.0000	15.0000	50.0000	30.0000	30.0000	4.0000	5.0000L	110.0000
87550	18 20 04N	44 09 59E	50.0000	10.0000	65.0000	30.0000	35.0000	5.0000	5.0000L	150.0000
87551	18 20 00N	44 09 58E	25.0000	20.0000	40.0000	20.0000	25.0000	1.0000	5.0000L	575.0000
87552	18 20 00N	44 09 58E	35.0000	20.0000	60.0000	35.0000	45.0000	3.0000	5.0000L	100.0000
87553	18 20 25N	44 10 50E	30.0000	25.0000	60.0000	30.0000	35.0000	4.0000	10.0000	200.0000
87554	18 20 25N	44 10 50E	20.0000	25.0000	45.0000	50.0000	40.0000	4.5000	10.0000	110.0000
87555	18 20 26N	44 10 50E	10.0000	10.0000L	10.0000	10.0000	10.0000L	0.5000N	5.0000	950.0000
87556	18 20 26N	44 10 49E	10.0000	20.0000	20.0000	35.0000	30.0000	2.5000	20.0000	105.0000
87557	18 20 27N	44 10 49E	15.0000	20.0000	45.0000	30.0000	25.0000	2.5000	15.0000	100.0000
87558	18 20 30N	44 10 52E	35.0000	15.0000	115.0000	30.0000	40.0000	4.0000	5.0000	180.0000
87559	18 20 30N	44 10 52E	45.0000	25.0000	35.0000	25.0000	25.0000	0.5000	5.0000	325.0000
87560	18 20 30N	44 10 52E	25.0000	15.0000	50.0000	30.0000	25.0000	3.5000	5.0000	130.0000
87561	18 20 30N	44 10 51E	10.0000	15.0000	85.0000	35.0000	30.0000	1.5000	5.0000	110.0000
87562	18 20 30N	44 10 51E	20.0000	10.0000L	45.0000	15.0000	25.0000	3.0000	5.0000	130.0000
87563	18 20 31N	44 10 51E	25.0000	15.0000	40.0000	20.0000	20.0000	0.5000N	5.0000	375.0000
87564	18 20 31N	44 10 51E	15.0000	15.0000	20.0000	30.0000	25.0000	0.5000N	10.0000	110.0000
87565	18 20 31N	44 10 50E	50.0000	20.0000	60.0000	30.0000	35.0000	3.5000	5.0000	300.0000
87566	18 20 34N	44 10 55E	15.0000	30.0000	50.0000	30.0000	25.0000	3.0000	15.0000	300.0000
87567	18 20 34N	44 10 55E	35.0000	30.0000	25.0000	30.0000	30.0000	1.0000	30.0000	550.0000
87568	18 20 35N	44 10 54E	60.0000	35.0000	70.0000	40.0000	50.0000	1.0000	5.0000	400.0000
87569	18 20 48N	44 10 55E	35.0000	20.0000	50.0000	25.0000	30.0000	3.0000	20.0000	85.0000
87570	18 20 49N	44 10 55E	30.0000	35.0000	45.0000	40.0000	25.0000	4.0000	5.0000	165.0000
87571	18 20 50N	44 10 55E	40.0000	20.0000	30.0000	25.0000	40.0000	1.0000	5.0000	500.0000
87572	18 20 51N	44 10 55E	45.0000	35.0000	40.0000	30.0000	30.0000	2.5000	10.0000	350.0000
87573	18 20 52N	44 10 54E	35.0000	30.0000	25.0000	40.0000	25.0000	4.0000	10.0000	110.0000
87574	18 20 53N	44 10 54E	35.0000	15.0000	20.0000	30.0000	25.0000	2.5000	5.0000	125.0000
87575	18 20 57N	44 10 56E	25.0000	20.0000	15.0000	30.0000	20.0000	0.5000	15.0000	150.0000
87576	18 20 57N	44 10 56E	40.0000	15.0000	30.0000	30.0000	25.0000	4.0000	15.0000	125.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87535	18 20 00N	44 09 55E	60.0000
87536	18 20 01N	44 09 55E	50.0000
87537	18 20 01N	44 09 55E	35.0000
87538	18 20 01N	44 09 56E	250.0000
87539	18 20 02N	44 09 56E	180.0000
87540	18 20 02N	44 09 56E	170.0000
87541	18 20 02N	44 09 55E	35.0000
87542	18 20 03N	44 09 55E	55.0000
87543	18 20 03N	44 09 55E	70.0000
87544	18 20 04N	44 09 55E	115.0000
87545	18 20 04N	44 09 55E	270.0000
87546	18 20 03N	44 09 58E	35.0000
87547	18 20 03N	44 09 58E	55.0000
87548	18 20 04N	44 09 58E	70.0000
87549	18 20 04N	44 09 58E	95.0000
87550	18 20 04N	44 09 59E	110.0000
87551	18 20 08N	44 09 58E	160.0000
87552	18 20 08N	44 09 58E	250.0000
87553	18 20 25N	44 10 50E	75.0000
87554	18 20 25N	44 10 50E	70.0000
87555	18 20 26N	44 10 50E	35.0000
87556	18 20 26N	44 10 49E	45.0000
87557	18 20 27N	44 10 49E	40.0000
87558	18 20 30N	44 10 52E	215.0000
87559	18 20 30N	44 10 52E	215.0000
87560	18 20 30N	44 10 52E	170.0000
87561	18 20 30N	44 10 51E	25.0000
87562	18 20 30N	44 10 51E	35.0000
87563	18 20 31N	44 10 51E	90.0000
87564	18 20 31N	44 10 51E	30.0000
87565	18 20 31N	44 10 50E	95.0000
87566	18 20 34N	44 10 55E	90.0000
87567	18 20 34N	44 10 55E	160.0000
87568	18 20 35N	44 10 54E	220.0000
87569	18 20 48N	44 10 55E	230.0000
87570	18 20 49N	44 10 55E	160.0000
87571	18 20 50N	44 10 55E	210.0000
87572	18 20 51N	44 10 55E	120.0000
87573	18 20 52N	44 10 54E	115.0000
87574	18 20 53N	44 10 54E	140.0000
87575	18 20 57N	44 10 56E	85.0000
87576	18 20 57N	44 10 56E	85.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87577	18 20 59N	44 10 56E	45.0000	20.0000	30.0000	40.0000	40.0000	3.5000	20.0000	200.0000
87578	18 21 02N	44 10 57E	45.0000	15.0000	35.0000	35.0000	40.0000	3.5000	10.0000	300.0000
87579	18 21 01N	44 10 57E	40.0000	20.0000	25.0000	25.0000	30.0000	0.5000N	10.0000	500.0000
87580	18 21 01N	44 10 58E	55.0000	20.0000	30.0000	25.0000	50.0000	2.0000	10.0000	85.0000
87581	18 21 01N	44 10 58E	45.0000	20.0000	25.0000	20.0000	45.0000	1.5000	10.0000	50.0000
87582	18 21 03N	44 10 58E	35.0000	20.0000	45.0000	30.0000	20.0000	2.0000	60.0000	85.0000
87583	18 21 03N	44 10 59E	20.0000	20.0000	20.0000	25.0000	20.0000	1.5000	15.0000	425.0000
87584	18 21 02N	44 11 00E	15.0000	20.0000	35.0000	35.0000	25.0000	2.5000	40.0000	85.0000
87585	18 21 02N	44 11 10E	25.0000	10.0000	20.0000	15.0000	15.0000	2.0000	20.0000	90.0000
87586	18 21 13N	44 11 21E	30.0000	10.0000	15.0000	30.0000	25.0000	1.5000	5.0000L	184.0000
87587	18 21 14N	44 11 21E	40.0000	15.0000	15.0000	20.0000	25.0000	4.0000	5.0000L	132.0000
87588	18 21 15N	44 11 21E	25.0000	10.0000	155.0000	10.0000	30.0000	1.0000	5.0000L	128.0000
87589	18 21 15N	44 11 20E	30.0000	20.0000	15.0000	30.0000	20.0000	0.5000	5.0000L	375.0000
87590	18 21 16N	44 11 21E	35.0000	20.0000	20.0000	35.0000	30.0000	3.0000	10.0000	144.0000
87591	18 21 16N	44 11 22E	70.0000	10.0000L	40.0000	15.0000	20.0000	2.0000	5.0000	160.0000
87592	18 21 15N	44 11 22E	20.0000	10.0000N	70.0000	45.0000	40.0000	0.5000	10.0000	100.0000
87593	18 21 15N	44 11 23E	20.0000	20.0000	15.0000	15.0000	25.0000	0.5000N	20.0000	975.0000
87594	18 21 15N	44 11 23E	30.0000	30.0000	55.0000	30.0000	30.0000	2.0000	5.0000	124.0000
87595	18 21 15N	44 11 24E	30.0000	25.0000	45.0000	30.0000	25.0000	1.5000	10.0000	132.0000
87596	18 21 15N	44 11 25E	100.0000	30.0000	45.0000	40.0000	50.0000	4.5000	10.0000	164.0000
87597	18 21 18N	44 11 26E	45.0000	50.0000	70.0000	20.0000	25.0000	0.5000N	40.0000	650.0000
87598	18 21 18N	44 11 26E	45.0000	15.0000	25.0000	25.0000	20.0000	2.0000	20.0000	275.0000
87599	18 21 17N	44 11 27E	35.0000	10.0000L	35.0000	15.0000	15.0000	1.0000	5.0000	140.0000
87600	18 21 17N	44 11 27E	40.0000	25.0000	35.0000	30.0000	25.0000	1.5000	5.0000	200.0000
87601	18 21 17N	44 11 28E	60.0000	20.0000	30.0000	25.0000	40.0000	1.5000	10.0000	575.0000
87602	18 21 17N	44 11 34E	35.0000	20.0000	25.0000	20.0000	50.0000	4.5000	20.0000	110.0000
87603	18 21 17N	44 11 34E	25.0000	10.0000	35.0000	25.0000	25.0000	3.5000	15.0000	85.0000
87604	18 21 17N	44 11 34E	35.0000	20.0000	25.0000	30.0000	20.0000	3.0000	5.0000	50.0000
87605	18 21 17N	44 11 33E	20.0000	25.0000	25.0000	20.0000	25.0000	1.5000	10.0000	225.0000
87606	18 21 17N	44 11 33E	25.0000	15.0000	20.0000	50.0000	30.0000	0.7000	5.0000	50.0000
87607	18 21 17N	44 11 32E	30.0000	20.0000	15.0000	35.0000	15.0000	0.5000N	30.0000	70.0000
87608	18 21 17N	44 11 32E	25.0000	10.0000	20.0000	30.0000	25.0000	0.7000	5.0000	85.0000
87609	18 21 17N	44 11 32E	20.0000	20.0000	15.0000	20.0000	20.0000	1.5000	5.0000	675.0000
87610	18 21 17N	44 11 31E	30.0000	10.0000	20.0000	40.0000	25.0000	0.5000N	10.0000	85.0000
87611	18 21 17N	44 11 31E	40.0000	10.0000	20.0000	35.0000	15.0000	0.5000N	5.0000	60.0000
87612	18 21 16N	44 11 35E	30.0000	20.0000	25.0000	35.0000	25.0000	1.5000	25.0000	85.0000
87613	18 21 15N	44 11 35E	20.0000	30.0000	25.0000	25.0000	30.0000	2.5000	25.0000	600.0000
87614	18 21 14N	44 11 33E	35.0000	20.0000	25.0000	30.0000	15.0000	3.5000	20.0000	90.0000
87615	18 21 15N	44 11 33E	25.0000	15.0000	25.0000	45.0000	25.0000	2.0000	5.0000	70.0000
87616	18 21 13N	44 11 33E	35.0000	15.0000	20.0000	35.0000	20.0000	3.0000	15.0000	65.0000
87617	18 21 11N	44 11 33E	25.0000	35.0000	25.0000	25.0000	25.0000	3.5000	15.0000	500.0000
87618	18 21 18N	44 11 34E	25.0000	10.0000	25.0000	35.0000	20.0000	2.0000	5.0000	60.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87577	18 20 59N	44 10 56E	200.0000
87578	18 21 02N	44 10 57E	105.0000
87579	18 21 01N	44 10 57E	110.0000
87580	18 21 01N	44 10 58E	80.0000
87581	18 21 01N	44 10 58E	55.0000
87582	18 21 03N	44 10 58E	135.0000
87583	18 21 03N	44 10 59E	100.0000
87584	18 21 02N	44 11 00E	110.0000
87585	18 21 02N	44 11 10E	65.0000
87586	18 21 13N	44 11 21E	70.0000
87587	18 21 14N	44 11 21E	60.0000
87588	18 21 15N	44 11 21E	35.0000
87589	18 21 15N	44 11 20E	70.0000
87590	18 21 16N	44 11 21E	145.0000
87591	18 21 16N	44 11 22E	95.0000
87592	18 21 15N	44 11 22E	25.0000
87593	18 21 15N	44 11 23E	80.0000
87594	18 21 15N	44 11 23E	415.0000
87595	18 21 15N	44 11 24E	65.0000
87596	18 21 15N	44 11 25E	170.0000
87597	18 21 18N	44 11 26E	255.0000
87598	18 21 18N	44 11 26E	165.0000
87599	18 21 17N	44 11 27E	90.0000
87600	18 21 17N	44 11 27E	110.0000
87601	18 21 17N	44 11 28E	230.0000
87602	18 21 17N	44 11 34E	170.0000
87603	18 21 17N	44 11 34E	165.0000
87604	18 21 17N	44 11 34E	155.0000
87605	18 21 17N	44 11 33E	190.0000
87606	18 21 17N	44 11 33E	220.0000
87607	18 21 17N	44 11 32E	95.0000
87608	18 21 17N	44 11 32E	115.0000
87609	18 21 17N	44 11 32E	110.0000
87610	18 21 17N	44 11 31E	140.0000
87611	18 21 17N	44 11 31E	165.0000
87612	18 21 16N	44 11 35E	165.0000
87613	18 21 15N	44 11 35E	160.0000
87614	18 21 14N	44 11 33E	200.0000
87615	18 21 15N	44 11 33E	185.0000
87616	18 21 13N	44 11 33E	120.0000
87617	18 21 11N	44 11 33E	120.0000
87618	18 21 18N	44 11 34E	185.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87619	18 21 18N	44 11 33E	30.0000	15.0000	20.0000	40.0000	30.0000	3.5000	80.0000	85.0000
87620	18 21 17N	44 11 33E	20.0000	10.0000	20.0000	35.0000	20.0000	3.0000	20.0000	60.0000
87621	18 21 16N	44 11 32E	10.0000	30.0000	20.0000	15.0000	20.0000	2.0000	20.0000	375.0000
87622	18 21 16N	44 11 32E	15.0000	15.0000	20.0000	40.0000	20.0000	3.5000	25.0000	90.0000
87623	18 21 13N	44 11 41E	25.0000	15.0000	25.0000	40.0000	30.0000	3.0000	25.0000	50.0000
87625	18 20 53N	44 11 41E	25.0000	15.0000	30.0000	45.0000	25.0000	1.5000	5.0000	90.0000
87626	18 20 53N	44 11 40E	20.0000	10.0000	20.0000	35.0000	15.0000	0.7000	5.0000	100.0000
87627	18 20 54N	44 11 39E	30.0000	20.0000	15.0000	10.0000	30.0000	1.0000	10.0000	600.0000
87628	18 20 54N	44 11 38E	35.0000	10.0000	25.0000	45.0000	35.0000	1.5000	5.0000	95.0000
87629	18 20 55N	44 11 38E	25.0000	15.0000	40.0000	55.0000	75.0000	2.0000	5.0000L	70.0000
87630	18 20 50N	44 11 44E	50.0000	10.0000	30.0000	40.0000	25.0000	0.7000	5.0000L	65.0000
87631	18 20 50N	44 11 44E	20.0000	25.0000	20.0000	20.0000	25.0000	0.5000	5.0000L	200.0000
87632	18 20 50N	44 11 45E	30.0000	10.0000	25.0000	40.0000	20.0000	2.0000	5.0000	80.0000
87633	18 20 50N	44 11 45E	35.0000	10.0000L	25.0000	45.0000	40.0000	1.5000	5.0000	120.0000
87634	18 20 50N	44 11 46E	30.0000	10.0000	25.0000	60.0000	45.0000	2.0000	5.0000L	150.0000
87635	18 20 50N	44 11 46E	25.0000	15.0000	25.0000	20.0000	15.0000	0.5000	15.0000	200.0000
87636	18 20 51N	44 11 47E	25.0000	15.0000	20.0000	35.0000	20.0000	2.0000	10.0000	50.0000
87637	18 20 51N	44 11 47E	55.0000	15.0000	25.0000	40.0000	25.0000	1.5000	5.0000L	65.0000
87638	18 20 51N	44 11 48E	20.0000	10.0000	20.0000	25.0000	10.0000	2.0000	5.0000	80.0000
87639	18 20 51N	44 11 48E	20.0000	20.0000	20.0000	15.0000	20.0000	0.5000	5.0000L	650.0000
87640	18 20 45N	44 11 48E	25.0000	10.0000	15.0000	35.0000	15.0000	2.0000	5.0000L	50.0000
87641	18 20 46N	44 11 48E	15.0000	10.0000	20.0000	30.0000	10.0000	2.0000	5.0000L	50.0000
87642	18 20 46N	44 11 48E	20.0000	10.0000	20.0000	30.0000	10.0000	2.0000	5.0000L	50.0000
87643	18 20 47N	44 11 49E	10.0000	15.0000	20.0000	15.0000	20.0000	1.0000	5.0000	300.0000
87644	18 20 48N	44 11 50E	15.0000	10.0000	20.0000	40.0000	10.0000	3.0000	5.0000	100.0000
87645	18 20 33N	44 12 13E	30.0000	35.0000	25.0000	20.0000	20.0000	1.0000	15.0000	650.0000
87646	18 20 33N	44 12 12E	35.0000	10.0000	20.0000	40.0000	25.0000	3.5000	15.0000	70.0000
87647	18 20 32N	44 12 11E	40.0000	25.0000	30.0000	20.0000	25.0000	3.5000	10.0000	135.0000
87648	18 20 32N	44 12 10E	25.0000	20.0000	25.0000	35.0000	30.0000	3.5000	80.0000	60.0000
87649	18 20 32N	44 12 09E	25.0000	15.0000	20.0000	20.0000	25.0000	1.0000	80.0000	300.0000
87650	18 20 31N	44 12 08E	25.0000	10.0000	20.0000	40.0000	35.0000	3.5000	40.0000	50.0000
87651	18 20 31N	44 12 07E	20.0000	10.0000	25.0000	45.0000	25.0000	3.5000	90.0000	55.0000
87652	18 20 30N	44 12 06E	35.0000	15.0000	20.0000	50.0000	30.0000	3.5000	30.0000	50.0000
87653	18 20 29N	44 12 05E	40.0000	20.0000	25.0000	25.0000	55.0000	0.5000	70.0000	250.0000
87654	18 20 29N	44 12 04E	65.0000	10.0000	30.0000	40.0000	30.0000	1.5000	30.0000	50.0000
87655	18 20 28N	44 12 04E	50.0000	15.0000	25.0000	40.0000	30.0000	2.0000	80.0000	50.0000
87656	18 20 23N	44 12 16E	50.0000	10.0000	20.0000	45.0000	25.0000	2.0000	20.0000	50.0000
87657	18 20 24N	44 12 16E	15.0000	10.0000	15.0000	15.0000	20.0000	1.5000	10.0000	150.0000
87658	18 20 24N	44 12 17E	35.0000	10.0000	15.0000	30.0000	20.0000	2.0000	5.0000L	110.0000
87659	18 20 24N	44 12 17E	25.0000	15.0000	20.0000	35.0000	30.0000	2.0000	5.0000L	70.0000
87660	18 20 25N	44 12 17E	20.0000	10.0000	15.0000	50.0000	40.0000	2.0000	5.0000L	65.0000
87661	18 20 25N	44 12 17E	10.0000	15.0000	15.0000	15.0000	25.0000	1.0000	5.0000L	625.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87619	18 21 18N	44 11 33E	150.0000
87620	18 21 17N	44 11 33E	125.0000
87621	18 21 16N	44 11 32E	140.0000
87622	18 21 16N	44 11 32E	185.0000
87623	18 21 13N	44 11 41E	105.0000
87625	18 20 53N	44 11 41E	220.0000
87626	18 20 53N	44 11 40E	70.0000
87627	18 20 54N	44 11 39E	105.0000
87628	18 20 54N	44 11 38E	210.0000
87629	18 20 55N	44 11 38E	420.0000
87630	18 20 50N	44 11 44E	60.0000
87631	18 20 50N	44 11 44E	80.0000
87632	18 20 50N	44 11 45E	115.0000
87633	18 20 50N	44 11 45E	305.0000
87634	18 20 50N	44 11 46E	190.0000
87635	18 20 50N	44 11 46E	175.0000
87636	18 20 51N	44 11 47E	120.0000
87637	18 20 51N	44 11 47E	175.0000
87638	18 20 51N	44 11 48E	80.0000
87639	18 20 51N	44 11 48E	100.0000
87640	18 20 45N	44 11 48E	70.0000
87641	18 20 46N	44 11 48E	150.0000
87642	18 20 46N	44 11 48E	110.0000
87643	18 20 47N	44 11 49E	120.0000
87644	18 20 48N	44 11 50E	90.0000
87645	18 20 33N	44 12 13E	70.0000
87646	18 20 33N	44 12 12E	60.0000
87647	18 20 32N	44 12 11E	330.0000
87648	18 20 32N	44 12 10E	70.0000
87649	18 20 32N	44 12 09E	95.0000
87650	18 20 31N	44 12 08E	85.0000
87651	18 20 31N	44 12 07E	45.0000
87652	18 20 30N	44 12 06E	95.0000
87653	18 20 29N	44 12 05E	350.0000
87654	18 20 29N	44 12 04E	145.0000
87655	18 20 28N	44 12 04E	255.0000
87656	18 20 23N	44 12 16E	70.0000
87657	18 20 24N	44 12 16E	50.0000
87658	18 20 24N	44 12 17E	50.0000
87659	18 20 24N	44 12 17E	105.0000
87660	18 20 25N	44 12 17E	85.0000
87661	18 20 25N	44 12 17E	85.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87662	18 20 26N	44 12 18E	35.0000	10.0000	10.0000	35.0000	20.0000	2.0000	5.0000L	110.0000
87663	18 20 23N	44 12 18E	35.0000	10.0000	20.0000	30.0000	20.0000	1.5000	5.0000L	105.0000
87664	18 20 24N	44 12 19E	45.0000	10.0000	15.0000	30.0000	20.0000	2.0000	10.0000	30.0000
87665	18 20 24N	44 12 19E	35.0000	15.0000	15.0000	20.0000	20.0000	1.0000	10.0000	525.0000
87666	18 20 24N	44 12 19E	60.0000	10.0000	20.0000	35.0000	20.0000	1.5000	10.0000	30.0000
87667	18 20 17N	44 12 19E	55.0000	15.0000	30.0000	45.0000	35.0000	3.0000	10.0000	50.0000
87668	18 20 17N	44 12 19E	40.0000	15.0000	25.0000	35.0000	35.0000	3.0000	5.0000	25.0000
87669	18 20 18N	44 12 20E	45.0000	20.0000	20.0000	20.0000	20.0000	1.0000	10.0000	625.0000
87670	18 20 18N	44 12 20E	35.0000	15.0000	15.0000	35.0000	20.0000	2.0000	10.0000	30.0000
87671	18 20 18N	44 12 20E	40.0000	15.0000	15.0000	40.0000	25.0000	2.0000	5.0000L	30.0000
87672	18 20 18N	44 12 21E	35.0000	25.0000	10.0000	40.0000	15.0000	2.0000	5.0000	90.0000
87673	18 20 19N	44 12 21E	50.0000	20.0000	15.0000	15.0000	25.0000	1.5000	5.0000L	225.0000
87674	18 20 19N	44 12 21E	30.0000	20.0000	15.0000	30.0000	25.0000	2.0000	5.0000	50.0000
87675	18 20 19N	44 12 22E	50.0000	10.0000L	15.0000	20.0000	30.0000	3.0000	10.0000	30.0000
87676	18 20 19N	44 12 22E	40.0000	10.0000	20.0000	25.0000	35.0000	2.0000	10.0000	85.0000
87677	18 20 20N	44 12 22E	10.0000	10.0000N	5.0000	10.0000N	10.0000	1.0000	10.0000	575.0000
87678	18 20 20N	44 12 23E	125.0000	15.0000	25.0000	30.0000	40.0000	3.0000	10.0000	45.0000
87679	18 20 20N	44 12 23E	35.0000	10.0000	25.0000	25.0000	30.0000	3.0000	10.0000	65.0000
87680	18 20 20N	44 12 23E	50.0000	15.0000	30.0000	25.0000	40.0000	3.0000	5.0000	90.0000
87681	18 19 57N	44 12 27E	80.0000	25.0000	25.0000	20.0000	25.0000	2.5000	40.0000	650.0000
87682	18 19 57N	44 12 27E	50.0000	15.0000	35.0000	50.0000	50.0000	3.5000	10.0000	95.0000
87683	18 19 56N	44 12 27E	55.0000	15.0000	25.0000	50.0000	55.0000	3.5000	20.0000	130.0000
87684	18 19 56N	44 12 27E	60.0000	15.0000	25.0000	45.0000	55.0000	3.0000	10.0000	95.0000
87685	18 19 55N	44 12 27E	50.0000	25.0000	20.0000	25.0000	25.0000	2.5000	10.0000	1000.0000
87686	18 19 55N	44 12 27E	110.0000	15.0000	60.0000	35.0000	40.0000	4.0000	5.0000	80.0000
87687	18 19 54N	44 12 27E	35.0000	10.0000	25.0000	35.0000	30.0000	3.0000	5.0000	80.0000
87688	18 19 54N	44 12 27E	35.0000	10.0000	25.0000	30.0000	30.0000	1.5000	5.0000L	110.0000
87689	18 19 54N	44 12 27E	35.0000	25.0000	30.0000	25.0000	25.0000	1.5000	5.0000	425.0000
87690	18 19 53N	44 12 27E	45.0000	20.0000	15.0000	40.0000	55.0000	1.5000	20.0000	70.0000
87691	18 20 02N	44 12 31E	45.0000	15.0000	20.0000	30.0000	40.0000	0.7000	30.0000	50.0000
87692	18 20 02N	44 12 32E	40.0000	20.0000	25.0000	50.0000	45.0000	2.0000	10.0000	65.0000
87693	18 20 02N	44 12 32E	15.0000	20.0000	35.0000	40.0000	25.0000	1.0000	5.0000	475.0000
87694	18 20 01N	44 12 33E	45.0000	10.0000	30.0000	40.0000	50.0000	2.0000	5.0000	70.0000
87695	18 20 01N	44 12 33E	50.0000	15.0000	20.0000	35.0000	35.0000	2.0000	5.0000	85.0000
87697	18 20 00N	44 12 34E	45.0000	25.0000	20.0000	25.0000	25.0000	1.0000	5.0000L	575.0000
87698	18 20 00N	44 12 55E	15.0000	15.0000	20.0000	35.0000	30.0000	1.5000	5.0000L	90.0000
87699	18 20 00N	44 12 35E	30.0000	15.0000	15.0000	35.0000	30.0000	1.5000	5.0000	85.0000
87700	18 20 00N	44 12 36E	30.0000	25.0000	20.0000	35.0000	40.0000	1.5000	10.0000	105.0000
87701	18 20 08N	44 12 34E	65.0000	25.0000	35.0000	25.0000	30.0000	1.5000	5.0000L	275.0000
87702	18 20 08N	44 12 35E	20.0000	25.0000	15.0000	35.0000	40.0000	1.5000	5.0000	70.0000
87703	18 20 08N	44 12 35E	30.0000	25.0000	15.0000	30.0000	40.0000	1.5000	5.0000L	60.0000
87704	18 20 07N	44 12 36E	30.0000	35.0000	15.0000	20.0000	35.0000	1.5000	5.0000	85.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87662	18 20 26N	44 12 18E	95.0000
87663	18 20 23N	44 12 18E	25.0000
87664	18 20 24N	44 12 19E	30.0000
87665	18 20 24N	44 12 19E	70.0000
87666	18 20 24N	44 12 19E	85.0000
87667	18 20 17N	44 12 19E	170.0000
87668	18 20 17N	44 12 19E	170.0000
87669	18 20 18N	44 12 20E	175.0000
87670	18 20 18N	44 12 20E	85.0000
87671	18 20 18N	44 12 20E	145.0000
87672	18 20 18N	44 12 21E	95.0000
87673	18 20 19N	44 12 21E	45.0000
87674	18 20 19N	44 12 21E	110.0000
87675	18 20 19N	44 12 22E	130.0000
87676	18 20 19N	44 12 22E	175.0000
87677	18 20 20N	44 12 22E	15.0000
87678	18 20 20N	44 12 23E	80.0000
87679	18 20 20N	44 12 23E	135.0000
87680	18 20 20N	44 12 23E	125.0000
87681	18 19 57N	44 12 27E	115.0000
87682	18 19 57N	44 12 27E	185.0000
87683	18 19 56N	44 12 27E	180.0000
87684	18 19 56N	44 12 27E	135.0000
87685	18 19 55N	44 12 27E	220.0000
87686	18 19 55N	44 12 27E	220.0000
87687	18 19 54N	44 12 27E	220.0000
87688	18 19 54N	44 12 27E	105.0000
87689	18 19 54N	44 12 27E	100.0000
87690	18 19 53N	44 12 27E	105.0000
87691	18 20 02N	44 12 31E	100.0000
87692	18 20 02N	44 12 32E	145.0000
87693	18 20 02N	44 12 32E	244.0000
87694	18 20 01N	44 12 33E	330.0000
87695	18 20 01N	44 12 33E	85.0000
87697	18 20 00N	44 12 34E	70.0000
87698	18 20 00N	44 12 55E	70.0000
87699	18 20 00N	44 12 35E	60.0000
87700	18 20 00N	44 12 36E	95.0000
87701	18 20 08N	44 12 34E	135.0000
87702	18 20 08N	44 12 35E	120.0000
87703	18 20 08N	44 12 35E	125.0000
87704	18 20 07N	44 12 36E	140.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI P	AA-AG-T	CM-MO	CM-CR
87705	18 20 05N	44 12 32E	20.0000	20.0000	30.0000	20.0000	25.0000	2.0000	5.0000L	175.0000
87706	18 20 04N	44 12 33E	10.0000	15.0000	15.0000	30.0000	35.0000	1.5000	10.0000	70.0000
87707	18 33 50N	44 21 03E	20.0000	20.0000	15.0000	30.0000	40.0000	1.5000	5.0000L	110.0000
87708	18 33 50N	44 21 06E	20.0000	20.0000	15.0000	40.0000	35.0000	1.5000	5.0000L	90.0000
87709	18 33 50N	44 21 06E	30.0000	25.0000	40.0000	20.0000	35.0000	1.5000	5.0000L	175.0000
87710	18 20 06N	44 12 37E	85.0000	10.0000	25.0000	45.0000	40.0000	2.0000	5.0000	80.0000
87711	18 20 05N	44 12 37E	25.0000	10.0000L	15.0000	30.0000	20.0000	1.5000	5.0000L	95.0000
87712	18 20 05N	44 12 38E	10.0000	15.0000	15.0000	25.0000	25.0000	2.0000	5.0000L	70.0000
87713	18 20 05N	44 12 39E	40.0000	25.0000	25.0000	20.0000	25.0000	1.5000	5.0000L	600.0000
87714	18 20 16N	44 12 38E	20.0000	15.0000	15.0000	20.0000	30.0000	0.7000	5.0000L	75.0000
87715	18 20 16N	44 12 38E	20.0000	10.0000	15.0000	30.0000	40.0000	0.7000	5.0000L	90.0000
87716	18 20 16N	44 12 39E	15.0000	10.0000L	15.0000	25.0000	25.0000	0.7000	5.0000	65.0000
87717	18 20 15N	44 12 41E	15.0000	20.0000	25.0000	20.0000	25.0000	6.0000	5.0000L	425.0000
87718	18 20 37N	44 12 43E	10.0000	25.0000	15.0000	15.0000	10.0000	5.0000	15.0000	200.0000
87719	18 20 36N	44 12 46E	30.0000	25.0000	25.0000	15.0000	15.0000	4.5000	20.0000	250.0000
87720	18 20 33N	44 12 43E	10.0000	25.0000	25.0000	15.0000	20.0000	0.5000	5.0000L	170.0000
87721	18 20 32N	44 12 44E	15.0000	25.0000	30.0000	15.0000	25.0000	0.5000N	5.0000L	575.0000
87722	18 20 32N	44 12 45E	30.0000	50.0000	30.0000	25.0000	50.0000	2.0000	10.0000	125.0000
87723	18 20 33N	44 12 39E	20.0000	40.0000	30.0000	20.0000	10.0000	0.5000	5.0000L	100.0000
87724	18 20 33N	44 12 39E	20.0000	10.0000L	15.0000	10.0000	10.0000	0.5000N	5.0000L	90.0000
87725	18 20 33N	44 12 38E	5.0000	10.0000	30.0000	15.0000	15.0000	0.5000N	5.0000L	475.0000
87726	18 20 34N	44 12 38E	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B
87727	18 20 34N	44 12 37E	10.0000	10.0000L	20.0000	10.0000L	10.0000	0.5000	5.0000L	75.0000
87728	18 20 34N	44 12 37E	10.0000	15.0000	20.0000	10.0000	15.0000	0.5000	5.0000L	55.0000
87729	18 20 34N	44 12 36E	25.0000	25.0000	20.0000	25.0000	15.0000	1.5000	5.0000L	100.0000
87730	18 21 00N	44 12 54E	10.0000	15.0000	20.0000	10.0000L	15.0000	0.5000N	10.0000	200.0000
87731	18 21 00N	44 12 54E	15.0000	25.0000	25.0000	20.0000	20.0000	0.5000	20.0000	65.0000
87732	18 21 00N	44 12 53E	65.0000	30.0000	40.0000	30.0000	25.0000	0.5000	5.0000L	60.0000
87733	18 21 00N	44 12 52E	5.0000N	30.0000	15.0000	15.0000	15.0000	0.5000	5.0000	75.0000
87734	18 21 00N	44 12 51E	5.0000	20.0000	25.0000	20.0000	15.0000	0.5000N	10.0000	125.0000
87735	18 21 01N	44 12 50E	30.0000	45.0000	25.0000	25.0000	20.0000	1.5000	5.0000L	300.0000
87736	18 21 01N	44 12 49E	10.0000	35.0000	20.0000	20.0000	10.0000	0.5000	5.0000	90.0000
87737	18 21 01N	44 12 48E	10.0000	35.0000	20.0000	15.0000	10.0000	0.5000	5.0000	125.0000
87738	18 21 01N	44 12 47E	15.0000	30.0000	25.0000	30.0000	25.0000	1.0000	5.0000	125.0000
87739	18 21 01N	44 12 47E	5.0000	25.0000	10.0000	15.0000	10.0000L	0.5000N	5.0000	90.0000
87740	18 21 01N	44 12 46E	5.0000	30.0000	15.0000	30.0000	15.0000	0.5000N	5.0000	95.0000
87741	18 21 01N	44 12 46E	10.0000	40.0000	20.0000	20.0000	15.0000	0.5000	5.0000	50.0000
87742	18 21 01N	44 12 46E	5.0000	30.0000	25.0000	20.0000	15.0000	1.0000	5.0000	650.0000
87743	18 21 01N	44 12 45E	5.0000	30.0000	10.0000	20.0000	10.0000L	0.5000N	5.0000L	165.0000
87744	18 21 01N	44 12 45E	10.0000	10.0000N	20.0000	15.0000	10.0000	0.5000N	5.0000L	135.0000
87745	18 21 03N	44 12 44E	10.0000	10.0000	15.0000	15.0000	15.0000	0.5000N	5.0000L	325.0000
87746	18 21 03N	44 12 44E	5.0000	20.0000	40.0000	15.0000	25.0000	1.0000	5.0000L	400.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87705	18 20 05N	44 12 32E	120.0000
87706	18 20 04N	44 12 33E	75.0000
87707	18 33 50N	44 21 03E	155.0000
87708	18 33 50N	44 21 06E	55.0000
87709	18 33 50N	44 21 06E	70.0000
87710	18 20 06N	44 12 37E	60.0000
87711	18 20 05N	44 12 37E	70.0000
87712	18 20 05N	44 12 38E	45.0000
87713	18 20 05N	44 12 39E	135.0000
87714	18 20 16N	44 12 38E	100.0000
87715	18 20 16N	44 12 38E	145.0000
87716	18 20 16N	44 12 39E	135.0000
87717	18 20 15N	44 12 41E	125.0000
87718	18 20 37N	44 12 43E	65.0000
87719	18 20 36N	44 12 46E	50.0000
87720	18 20 33N	44 12 43E	110.0000
87721	18 20 32N	44 12 44E	75.0000
87722	18 20 32N	44 12 45E	165.0000
87723	18 20 33N	44 12 39E	125.0000
87724	18 20 33N	44 12 39E	95.0000
87725	18 20 33N	44 12 38E	125.0000
87726	18 20 34N	44 12 38E	0.00008
87727	18 20 34N	44 12 37E	80.0000
87728	18 20 34N	44 12 37E	55.0000
87729	18 20 34N	44 12 36E	105.0000
87730	18 21 00N	44 12 54E	95.0000
87731	18 21 00N	44 12 54E	85.0000
87732	18 21 00N	44 12 53E	140.0000
87733	18 21 00N	44 12 52E	35.0000
87734	18 21 00N	44 12 51E	25.0000
87735	18 21 01N	44 12 50E	135.0000
87736	18 21 01N	44 12 49E	100.0000
87737	18 21 01N	44 12 48E	65.0000
87738	18 21 01N	44 12 47E	120.0000
87739	18 21 01N	44 12 47E	25.0000
87740	18 21 01N	44 12 46E	105.0000
87741	18 21 01N	44 12 46E	150.0000
87742	18 21 01N	44 12 46E	90.0000
87743	18 21 01N	44 12 45E	70.0000
87744	18 21 01N	44 12 45E	55.0000
87745	18 21 03N	44 12 44E	75.0000
87746	18 21 03N	44 12 44E	70.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87747	18 21 03N	44 12 43E	25.0000	25.0000	35.0000	35.0000	20.0000	0.5000	5.0000	180.0000
87748	18 21 03N	44 12 43E	20.0000	30.0000	40.0000	30.0000	15.0000	1.5000	5.0000L	250.0000
87749	18 21 03N	44 12 43E	15.0000	35.0000	25.0000	25.0000	20.0000	2.0000	5.0000L	225.0000
87750	18 21 23N	44 12 43E	15.0000	25.0000	20.0000	25.0000	15.0000	1.0000	5.0000L	325.0000
87751	18 21 23N	44 12 43E	15.0000	25.0000	15.0000	20.0000	20.0000	1.5000	5.0000L	125.0000
87752	18 21 23N	44 12 50E	10.0000	10.0000	20.0000	15.0000	20.0000	1.5000	5.0000L	190.0000
87753	18 21 23N	44 12 50E	5.0000	15.0000	15.0000	15.0000	20.0000	1.5000	5.0000L	170.0000
87754	18 21 22N	44 12 51E	10.0000	20.0000	25.0000	25.0000	25.0000	1.0000	5.0000	400.0000
87755	18 21 22N	44 12 51E	20.0000	35.0000	25.0000	30.0000	25.0000	2.0000	20.0000	140.0000
87756	18 21 22N	44 12 51E	10.0000	30.0000	20.0000	20.0000	20.0000	2.0000	5.0000	150.0000
87757	18 21 22N	44 12 52E	15.0000	25.0000	20.0000	35.0000	25.0000	2.0000	5.0000L	220.0000
87758	18 21 22N	44 12 52E	30.0000	25.0000	60.0000	30.0000	30.0000	0.5000N	5.0000L	125.0000
87759	18 21 21N	44 12 53E	15.0000	20.0000	20.0000	15.0000	15.0000	1.5000	5.0000L	170.0000
87760	18 21 21N	44 12 53E	10.0000	25.0000	20.0000	20.0000	15.0000	2.0000	5.0000L	160.0000
87761	18 21 21N	44 12 53E	10.0000	10.0000	20.0000	20.0000	15.0000	2.0000	20.0000	225.0000
87762	18 21 21N	44 12 54E	15.0000	20.0000	25.0000	35.0000	30.0000	1.0000	5.0000	150.0000
87763	18 21 20N	44 12 55E	55.0000	15.0000	15.0000	25.0000	25.0000	2.9000	5.0000L	600.0000
87764	18 21 20N	44 12 55E	25.0000	15.0000	15.0000	15.0000	15.0000	0.5000	5.0000L	200.0000
87765	18 21 19N	44 12 55E	5.0000	20.0000	10.0000	15.0000	10.0000	0.5000N	5.0000L	100.0000
87766	18 21 19N	44 12 55E	5.0000	140.0000	15.0000	20.0000	10.0000	0.5000	5.0000L	85.0000
87767	18 21 21N	44 12 56E	50.0000	10.0000	35.0000	40.0000	70.0000	0.5000N	5.0000L	700.0000
87768	18 21 21N	44 12 56E	80.0000	55.0000	35.0000	35.0000	50.0000	1.5000	5.0000L	125.0000
87769	18 21 20N	44 12 56E	45.0000	20.0000	25.0000	30.0000	50.0000	0.5000N	5.0000L	90.0000
87770	18 21 20N	44 12 56E	70.0000	10.0000L	30.0000	25.0000	40.0000	1.5000	5.0000	85.0000
87771	18 21 18N	44 13 00E	45.0000	10.0000	45.0000	45.0000	35.0000	1.0000	5.0000L	225.0000
87772	18 21 18N	44 13 00E	30.0000	10.0000	45.0000	30.0000	25.0000	2.0000	5.0000	100.0000
87773	18 21 17N	44 13 01E	10.0000	10.0000L	20.0000	15.0000	15.0000	2.0000	5.0000L	130.0000
87774	18 21 17N	44 13 04E	10.0000	10.0000N	60.0000	20.0000	50.0000	2.0000	10.0000	90.0000
87775	18 21 28N	44 12 53E	10.0000	10.0000	20.0000	15.0000	25.0000	0.5000N	5.0000L	525.0000
87776	18 21 28N	44 12 53E	15.0000	35.0000	20.0000	15.0000	20.0000	1.5000	5.0000	85.0000
87777	18 21 28N	44 12 53E	10.0000	25.0000	10.0000	10.0000	10.0000	0.5000	5.0000	105.0000
87778	18 21 28N	44 12 54E	5.0000	30.0000	15.0000	15.0000	15.0000	0.5000	5.0000	70.0000
87779	18 21 27N	44 12 54E	15.0000	35.0000	20.0000	25.0000	15.0000	1.5000	20.0000	125.0000
87780	18 21 27N	44 12 54E	5.0000	15.0000	20.0000	20.0000	25.0000	0.5000N	5.0000L	400.0000
87781	18 21 27N	44 12 55E	15.0000	20.0000	25.0000	15.0000	15.0000	0.5000	5.0000L	80.0000
87782	18 21 27N	44 12 55E	15.0000	50.0000	25.0000	25.0000	30.0000	4.0000	40.0000	200.0000
87783	18 21 27N	44 12 56E	5.0000	15.0000	10.0000	10.0000	15.0000	0.5000	5.0000L	105.0000
87784	18 21 27N	44 12 56E	5.0000	10.0000L	15.0000	10.0000	15.0000	0.5000	5.0000L	90.0000
87785	18 21 27N	44 12 57E	10.0000	20.0000	15.0000	25.0000	20.0000	1.0000	5.0000L	650.0000
87786	18 21 26N	44 12 57E	10.0000	15.0000	20.0000	15.0000	15.0000	0.5000	5.0000	135.0000
87787	18 21 26N	44 12 58E	10.0000	10.0000	10.0000	15.0000	15.0000	0.5000	5.0000	80.0000
87788	18 21 26N	44 12 58E	10.0000	10.0000	20.0000	15.0000	10.0000	0.5000	10.0000	90.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87747	18 21 03N	44 12 43E	130.0000
87748	18 21 03N	44 12 43E	100.0000
87749	18 21 03N	44 12 43E	150.0000
87750	18 21 23N	44 12 43E	65.0000
87751	18 21 23N	44 12 43E	135.0000
87752	18 21 23N	44 12 50E	95.0000
87753	18 21 23N	44 12 50E	95.0000
87754	18 21 22N	44 12 51E	240.0000
87755	18 21 22N	44 12 51E	115.0000
87756	18 21 22N	44 12 51E	90.0000
87757	18 21 22N	44 12 52E	100.0000
87758	18 21 22N	44 12 52E	190.0000
87759	18 21 21N	44 12 53E	110.0000
87760	18 21 21N	44 12 53E	65.0000
87761	18 21 21N	44 12 53E	55.0000
87762	18 21 21N	44 12 54E	75.0000
87763	18 21 20N	44 12 55E	90.0000
87764	18 21 20N	44 12 55E	55.0000
87765	18 21 19N	44 12 55E	70.0000
87766	18 21 19N	44 12 55E	85.0000
87767	18 21 21N	44 12 56E	210.0000
87768	18 21 21N	44 12 56E	350.0000
87769	18 21 20N	44 12 56E	275.0000
87770	18 21 20N	44 12 56E	230.0000
87771	18 21 18N	44 13 00E	280.0000
87772	18 21 18N	44 13 00E	115.0000
87773	18 21 17N	44 13 01E	30.0000
87774	18 21 17N	44 13 04E	40.0000
87775	18 21 28N	44 12 53E	125.0000
87776	18 21 28N	44 12 53E	105.0000
87777	18 21 28N	44 12 53E	55.0000
87778	18 21 28N	44 12 54E	95.0000
87779	18 21 27N	44 12 54E	120.0000
87780	18 21 27N	44 12 54E	105.0000
87781	18 21 27N	44 12 55E	80.0000
87782	18 21 27N	44 12 55E	110.0000
87783	18 21 27N	44 12 56E	75.0000
87784	18 21 27N	44 12 56E	155.0000
87785	18 21 27N	44 12 57E	120.0000
87786	18 21 26N	44 12 57E	175.0000
87787	18 21 26N	44 12 58E	145.0000
87788	18 21 26N	44 12 58E	45.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87789	18 21 26N	44 12 58E	10.0000	35.0000	20.0000	15.0000	25.0000	1.0000	10.0000	250.0000
87790	18 21 26N	44 13 01E	25.0000	20.0000	25.0000	35.0000	40.0000	2.0000	10.0000	105.0000
87791	18 21 25N	44 13 02E	25.0000	20.0000	20.0000	20.0000	15.0000	2.0000	5.0000L	250.0000
87792	18 21 25N	44 13 03E	15.0000	20.0000	15.0000	30.0000	10.0000	1.5000	5.0000L	300.0000
87793	18 21 24N	44 13 04E	15.0000	35.0000	25.0000	25.0000	25.0000	0.5000N	5.0000	500.0000
87794	18 21 24N	44 13 04E	10.0000	25.0000	20.0000	35.0000	20.0000	4.0000	5.0000L	350.0000
87795	18 21 24N	44 13 05E	5.0000	25.0000	15.0000	15.0000	10.0000	0.5000N	5.0000L	125.0000
87796	18 21 23N	44 13 05E	10.0000	25.0000	25.0000	15.0000	10.0000	0.5000	5.0000L	60.0000
87797	18 21 23N	44 13 06E	10.0000	20.0000	25.0000	65.0000	15.0000	0.5000N	5.0000L	200.0000
87798	18 21 23N	44 12 06E	15.0000	15.0000	10.0000	10.0000	10.0000	1.5000	5.0000	65.0000
87799	18 21 21N	44 13 02E	10.0000	15.0000	40.0000	20.0000	10.0000	2.0000	5.0000	50.0000
87801	18 21 21N	44 13 03E	5.0000	10.0000L	15.0000	15.0000	25.0000	0.5000N	5.0000	125.0000
87802	18 21 21N	44 13 04E	10.0000	20.0000	35.0000	15.0000	25.0000	0.5000N	10.0000	650.0000
87803	18 21 21N	44 13 04E	15.0000	40.0000	15.0000	25.0000	20.0000	2.0000	5.0000L	70.0000
87804	18 21 20N	44 13 05E	10.0000	30.0000	15.0000	25.0000	15.0000	1.5000	5.0000L	80.0000
87805	18 21 20N	44 13 05E	10.0000	25.0000	20.0000	20.0000	15.0000	2.0000	5.0000	75.0000
87806	18 21 20N	44 13 06E	10.0000	20.0000	20.0000	20.0000	20.0000	0.5000N	5.0000	625.0000
87807	18 21 20N	44 13 06E	10.0000	30.0000	30.0000	15.0000	25.0000	1.5000	5.0000L	90.0000
87808	18 21 20N	44 13 07E	10.0000	30.0000	15.0000	20.0000	15.0000	1.5000	10.0000	65.0000
87809	18 21 20N	44 13 07E	20.0000	55.0000	20.0000	25.0000	15.0000	2.0000	5.0000	250.0000
87810	18 21 26N	44 13 01E	25.0000	20.0000	25.0000	10.0000	15.0000	0.5000N	5.0000L	975.0000
87811	18 22 05N	44 13 24E	20.0000	30.0000	35.0000	35.0000	50.0000	2.0000	5.0000	105.0000
87812	18 22 04N	44 13 25E	15.0000	20.0000	20.0000	25.0000	35.0000	1.5000	5.0000	25.0000
87813	18 22 10N	44 13 27E	20.0000	160.0000	30.0000	25.0000	25.0000	2.9000	5.0000	95.0000
87814	18 22 09N	44 13 27E	45.0000	20.0000	45.0000	30.0000	50.0000	0.5000N	10.0000	225.0000
87815	18 22 09N	44 13 28E	5.0000	30.0000	25.0000	30.0000	15.0000	2.9000	5.0000L	65.0000
87816	18 22 16N	44 13 27E	25.0000	25.0000	35.0000	35.0000	15.0000	1.5000	5.0000	100.0000
87817	18 22 16N	44 13 28E	20.0000	25.0000	15.0000	30.0000	10.0000	2.9000	5.0000L	60.0000
87818	18 22 16N	44 13 29E	40.0000	20.0000	35.0000	35.0000	25.0000	2.0000	5.0000	250.0000
87819	18 22 20N	44 13 29E	50.0000	25.0000	55.0000	30.0000	20.0000	1.5000	5.0000	300.0000
87820	18 22 20N	44 13 28E	25.0000	10.0000L	25.0000	15.0000	10.0000	0.5000	5.0000	100.0000
87821	18 22 20N	44 13 28E	15.0000	15.0000	20.0000	25.0000	10.0000L	1.5000	5.0000	65.0000
87822	18 22 20N	44 13 29E	20.0000	25.0000	35.0000	25.0000	20.0000	1.0000	5.0000	500.0000
87823	18 22 20N	44 13 29E	45.0000	10.0000	40.0000	45.0000	15.0000	0.5000	5.0000	200.0000
87824	18 22 27N	44 13 28E	35.0000	15.0000	45.0000	30.0000	15.0000	1.5000	5.0000	190.0000
87825	18 22 27N	44 13 28E	15.0000	10.0000N	35.0000	25.0000	10.0000L	1.5000	5.0000	100.0000
87826	18 22 27N	44 13 28E	20.0000	25.0000	25.0000	25.0000	15.0000	0.5000N	5.0000	725.0000
87827	18 22 27N	44 13 27E	20.0000	10.0000N	15.0000	15.0000	10.0000L	1.5000	5.0000L	90.0000
87828	18 22 27N	44 13 27E	30.0000	10.0000	20.0000	20.0000	10.0000L	2.0000	5.0000	200.0000
87829	18 22 27N	44 13 26E	30.0000	10.0000	20.0000	25.0000	10.0000L	1.5000	5.0000	250.0000
87830	18 22 31N	44 13 27E	40.0000	25.0000	40.0000	40.0000	30.0000	1.5000	10.0000	250.0000
87831	18 22 31N	44 13 27E	15.0000	35.0000	20.0000	25.0000	25.0000	2.5000	5.0000	65.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87789	18 21 26N	44 12 58E	90.0000
87790	18 21 26N	44 13 01E	95.0000
87791	18 21 25N	44 13 02E	115.0000
87792	18 21 25N	44 13 03E	85.0000
87793	18 21 24N	44 13 04E	95.0000
87794	18 21 24N	44 13 04E	55.0000
87795	18 21 24N	44 13 05E	40.0000
87796	18 21 23N	44 13 05E	40.0000
87797	18 21 23N	44 13 06E	95.0000
87798	18 21 23N	44 12 06E	65.0000
87799	18 21 21N	44 13 02E	45.0000
87801	18 21 21N	44 13 03E	75.0000
87802	18 21 21N	44 13 04E	85.0000
87803	18 21 21N	44 13 04E	95.0000
87804	18 21 20N	44 13 05E	85.0000
87805	18 21 20N	44 13 05E	95.0000
87806	18 21 20N	44 13 06E	135.0000
87807	18 21 20N	44 13 06E	115.0000
87808	18 21 20N	44 13 07E	80.0000
87809	18 21 20N	44 13 07E	40.0000
87810	18 21 26N	44 13 01E	30.0000
87811	18 22 05N	44 13 24E	500.0000
87812	18 22 04N	44 13 25E	185.0000
87813	18 22 10N	44 13 27E	215.0000
87814	18 22 09N	44 13 27E	355.0000
87815	18 22 09N	44 13 28E	190.0000
87816	18 22 16N	44 13 27E	300.0000
87817	18 22 16N	44 13 28E	55.0000
87818	18 22 16N	44 13 29E	395.0000
87819	18 22 20N	44 13 29E	750.0000
87820	18 22 20N	44 13 28E	120.0000
87821	18 22 20N	44 13 28E	120.0000
87822	18 22 20N	44 13 29E	80.0000
87823	18 22 20N	44 13 29E	325.0000
87824	18 22 27N	44 13 28E	205.0000
87825	18 22 27N	44 13 28E	200.0000
87826	18 22 27N	44 13 28E	55.0000
87827	18 22 27N	44 13 27E	35.0000
87828	18 22 27N	44 13 27E	180.0000
87829	18 22 27N	44 13 26E	105.0000
87830	18 22 31N	44 13 27E	230.0000
87831	18 22 31N	44 13 27E	95.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87832	18 22 31N	44 13 28E	10.0000	20.0000	15.0000	20.0000	30.0000	1.7500	10.0000	50.0000
87833	18 22 31N	44 13 28E	35.0000	25.0000	30.0000	30.0000	20.0000	1.7500	5.0000L	75.0000
87834	18 37 53N	44 22 47E	15.0000	20.0000	30.0000	30.0000	25.0000	1.0000	5.0000	175.0000
87835	18 22 31N	44 13 29E	50.0000	15.0000	60.0000	10.0000L	40.0000	1.7500	5.0000	70.0000
87836	18 22 37N	44 13 30E	20.0000	15.0000	35.0000	35.0000	30.0000	2.5000	5.0000	155.0000
87837	18 22 37N	44 13 28E	10.0000	20.0000	15.0000	15.0000	25.0000	1.7500	5.0000L	140.0000
87838	18 22 37N	44 13 27E	10.0000	15.0000	40.0000	15.0000	20.0000	1.0000	5.0000L	250.0000
87839	18 22 41N	44 13 30E	10.0000	20.0000	10.0000	15.0000	20.0000	2.5000	5.0000	275.0000
87840	18 22 43N	44 13 30E	10.0000	15.0000	20.0000	15.0000	20.0000	1.7500	5.0000	140.0000
87841	18 22 43N	44 13 30E	45.0000	20.0000	25.0000	25.0000	50.0000	1.7500	5.0000	110.0000
87842	18 22 45N	44 13 28E	10.0000	25.0000	25.0000	35.0000	20.0000	1.0000	10.0000	400.0000
87843	18 22 47N	44 13 27E	20.0000	20.0000	20.0000	20.0000	35.0000	2.5000	5.0000	225.0000
87844	18 22 47N	44 13 27E	25.0000	15.0000	20.0000	20.0000	30.0000	1.7500	5.0000	110.0000
87845	18 22 47N	44 13 28E	30.0000	15.0000	25.0000	20.0000	40.0000	2.5000	5.0000	140.0000
87846	18 22 47N	44 13 28E	20.0000	10.0000	30.0000	25.0000	25.0000	0.5000N	5.0000	700.0000
87847	18 22 47N	44 13 29E	40.0000	15.0000	35.0000	30.0000	45.0000	2.5000	5.0000	140.0000
87848	18 38 34N	44 22 44E	15.0000	15.0000	20.0000	10.0000	25.0000	1.7500	5.0000	150.0000
87849	18 22 52N	44 13 31E	30.0000	15.0000	20.0000	10.0000	20.0000	1.7500	5.0000L	115.0000
87850	18 23 04N	44 13 30E	20.0000	35.0000	40.0000	30.0000	35.0000	0.5000N	5.0000L	600.0000
87851	18 23 04N	44 13 30E	5.0000	5.0000	25.0000	10.0000L	20.0000	0.7500	5.0000L	225.0000
87852	18 23 04N	44 13 30E	15.0000	10.0000L	25.0000	10.0000	25.0000	1.7500	5.0000	190.0000
87853	18 23 04N	44 13 31E	10.0000	15.0000	15.0000	10.0000	25.0000	1.7500	5.0000L	210.0000
87854	18 23 04N	44 13 31E	15.0000	25.0000	25.0000	30.0000	45.0000	0.5000N	5.0000	700.0000
87855	18 23 04N	44 13 31E	10.0000	25.0000	35.0000	25.0000	35.0000	2.5000	5.0000	90.0000
87856	18 23 04N	44 13 32E	10.0000	25.0000	20.0000	25.0000	35.0000	2.5000	5.0000	40.0000
87857	18 23 04N	44 13 32E	10.0000	10.0000	10.0000	10.0000	20.0000	1.7500	5.0000	115.0000
87858	18 23 04N	44 13 33E	15.0000	10.0000L	20.0000	10.0000	30.0000	0.5000N	10.0000	675.0000
87859	18 23 04N	44 13 33E	15.0000	20.0000	15.0000	10.0000	25.0000	2.5000	5.0000L	125.0000
87860	18 23 04N	44 13 33E	20.0000	15.0000	15.0000	15.0000	35.0000	1.7500	5.0000	120.0000
87861	18 23 04N	44 13 34E	15.0000	15.0000	15.0000	15.0000	40.0000	1.7500	5.0000	115.0000
87862	18 23 04N	44 13 34E	40.0000	25.0000	20.0000	30.0000	20.0000	0.5000N	5.0000	250.0000
87863	18 38 44N	44 23 07E	30.0000	20.0000	25.0000	25.0000	45.0000	2.5000	5.0000L	240.0000
87864	18 23 13N	44 13 29E	20.0000	30.0000	25.0000	20.0000	35.0000	2.5000	5.0000L	70.0000
87865	18 23 13N	44 13 29E	10.0000	25.0000	15.0000	10.0000	30.0000	1.7500	5.0000L	80.0000
87866	18 23 13N	44 13 29E	15.0000	10.0000	20.0000	10.0000	20.0000	0.5000N	5.0000L	300.0000
87867	18 23 13N	44 13 30E	5.0000	15.0000	10.0000	10.0000	25.0000	2.5000	5.0000L	90.0000
87868	18 23 13N	44 13 30E	10.0000	20.0000	15.0000	10.0000	35.0000	1.7500	5.0000L	40.0000
87869	18 23 13N	44 13 31E	15.0000	30.0000	25.0000	10.0000	40.0000	1.7500	5.0000L	35.0000
87870	18 23 13N	44 13 31E	15.0000	30.0000	20.0000	15.0000	30.0000	0.5000N	5.0000	175.0000
87871	18 23 13N	44 13 32E	5.0000	25.0000	15.0000	15.0000	25.0000	1.7500	5.0000	35.0000
87872	18 23 13N	44 13 32E	5.0000	15.0000	15.0000	15.0000	30.0000	1.7500	5.0000	30.0000
87873	18 23 13N	44 13 33E	5.0000	15.0000	10.0000	10.0000L	25.0000	0.7500	5.0000	40.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87832	18 22 31N	44 13 28E	65.0000
87833	18 22 31N	44 13 28E	120.0000
87834	18 37 53N	44 22 47E	245.0000
87835	18 22 31N	44 13 29E	230.0000
87836	18 22 37N	44 13 30E	65.0000
87837	18 22 37N	44 13 28E	35.0000
87838	18 22 37N	44 13 27E	80.0000
87839	18 22 41N	44 13 30E	120.0000
87840	18 22 43N	44 13 30E	60.0000
87841	18 22 43N	44 13 30E	375.0000
87842	18 22 45N	44 13 28E	115.0000
87843	18 22 47N	44 13 27E	90.0000
87844	18 22 47N	44 13 27E	165.0000
87845	18 22 47N	44 13 28E	140.0000
87846	18 22 47N	44 13 28E	100.0000
87847	18 22 47N	44 13 29E	235.0000
87848	18 38 34N	44 22 44E	15.0000
87849	18 22 52N	44 13 31E	135.0000
87850	18 23 04N	44 13 30E	500.0000
87851	18 23 04N	44 13 30E	275.0000
87852	18 23 04N	44 13 30E	115.0000
87853	18 23 04N	44 13 31E	175.0000
87854	18 23 04N	44 13 31E	65.0000
87855	18 23 04N	44 13 31E	60.0000
87856	18 23 04N	44 13 32E	45.0000
87857	18 23 04N	44 13 32E	180.0000
87858	18 23 04N	44 13 33E	185.0000
87859	18 23 04N	44 13 33E	110.0000
87860	18 23 04N	44 13 33E	145.0000
87861	18 23 04N	44 13 34E	140.0000
87862	18 23 04N	44 13 34E	105.0000
87863	18 38 44N	44 23 07E	190.0000
87864	18 23 13N	44 13 29E	185.0000
87865	18 23 13N	44 13 29E	70.0000
87866	18 23 13N	44 13 29E	130.0000
87867	18 23 13N	44 13 30E	110.0000
87868	18 23 13N	44 13 30E	125.0000
87869	18 23 13N	44 13 31E	175.0000
87870	18 23 13N	44 13 31E	85.0000
87871	18 23 13N	44 13 32E	45.0000
87872	18 23 13N	44 13 32E	55.0000
87873	18 23 13N	44 13 33E	105.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87874	18 23 31N	44 13 27E	30.0000	20.0000	30.0000	25.0000	20.0000	0.5000N	5.0000	700.0000
87875	18 23 31N	44 13 28E	15.0000	30.0000	15.0000	10.0000	40.0000	2.5000	5.0000L	35.0000
87876	18 23 31N	44 13 28E	15.0000	15.0000	15.0000	10.0000	30.0000	1.7500	5.0000L	40.0000
87877	18 23 31N	44 13 29E	15.0000	20.0000	15.0000	20.0000	35.0000	2.5000	5.0000L	60.0000
87878	18 23 31N	44 13 29E	15.0000	30.0000	20.0000	20.0000	25.0000	0.5000N	5.0000L	325.0000
87879	18 23 31N	44 13 30E	10.0000	10.0000	10.0000	15.0000	30.0000	1.7500	5.0000L	90.0000
87880	18 23 31N	44 13 30E	15.0000	10.0000	15.0000	15.0000	35.0000	2.5000	5.0000L	100.0000
87881	18 23 31N	44 13 31E	25.0000	15.0000	20.0000	15.0000	20.0000	3.0000	5.0000L	200.0000
87882	18 23 27N	44 13 27E	25.0000	45.0000	25.0000	30.0000	25.0000	0.5000N	5.0000	225.0000
87883	18 23 27N	44 13 27E	25.0000	15.0000	20.0000	20.0000	30.0000	1.7000	5.0000L	50.0000
87884	18 23 27N	44 13 28E	30.0000	20.0000	15.0000	10.0000L	35.0000	1.7000	5.0000	60.0000
87885	18 23 27N	44 13 28E	25.0000	20.0000	20.0000	10.0000	35.0000	3.7000	5.0000	80.0000
87886	18 23 27N	44 13 29E	5.0000	15.0000	20.0000	10.0000	20.0000	0.5000N	5.0000	750.0000
87887	18 23 27N	44 13 29E	10.0000	15.0000	10.0000	10.0000L	30.0000	1.7000	5.0000	30.0000
87888	18 23 27N	44 13 30E	10.0000	25.0000	20.0000	15.0000	25.0000	1.7000	5.0000	30.0000
87889	18 23 27N	44 13 30E	10.0000	20.0000	15.0000	15.0000	30.0000	1.7000	5.0000	35.0000
87890	18 22 42N	44 13 39E	5.0000	20.0000	25.0000	10.0000	30.0000	0.5000N	5.0000	275.0000
87891	18 23 45N	44 13 29E	30.0000	25.0000	15.0000	30.0000	45.0000	1.7000	20.0000	40.0000
87892	18 24 05N	44 13 17E	10.0000	20.0000	30.0000	15.0000	35.0000	4.2000	30.0000	60.0000
87893	18 24 05N	44 13 17E	10.0000	20.0000	15.0000	25.0000	50.0000	3.0000	20.0000	30.0000
87894	18 24 05N	44 13 17E	10.0000	35.0000	20.0000	25.0000	20.0000	0.5000N	20.0000	1200.0000
87895	18 24 04N	44 13 18E	5.0000	15.0000	10.0000	25.0000	20.0000	3.0000	20.0000	35.0000
87896	18 24 04N	44 13 19E	20.0000	20.0000	20.0000	15.0000	30.0000	2.5000	10.0000	85.0000
87897	18 24 04N	44 13 19E	30.0000	15.0000	25.0000	20.0000	35.0000	3.0000	40.0000	50.0000
87898	18 21 11N	44 12 42E	15.0000	20.0000	20.0000	15.0000	20.0000	0.5000N	5.0000	300.0000
87899	18 21 10N	44 12 42E	10.0000	10.0000L	10.0000	10.0000L	30.0000	1.7000	5.0000L	40.0000
87900	18 21 10N	44 12 43E	10.0000	10.0000	10.0000	10.0000	30.0000	1.7000	5.0000L	195.0000
87901	18 21 10N	44 12 44E	10.0000	10.0000	10.0000	10.0000L	35.0000	1.7000	5.0000L	70.0000
87902	18 21 10N	44 12 44E	10.0000	25.0000	20.0000	15.0000	20.0000	0.5000N	5.0000L	150.0000
87903	18 21 10N	44 12 45E	10.0000	10.0000	10.0000	10.0000L	35.0000	0.7000	5.0000L	105.0000
87904	18 21 10N	44 12 46E	5.0000	15.0000	10.0000	10.0000	20.0000	1.7000	5.0000L	120.0000
87905	18 21 09N	44 12 46E	10.0000	10.0000L	10.0000	10.0000N	20.0000	0.7000	5.0000L	155.0000
87906	18 21 09N	44 12 47E	30.0000	35.0000	40.0000	35.0000	25.0000	0.5000N	5.0000L	1000.0000
87907	18 21 09N	44 12 48E	50.0000	15.0000	30.0000	40.0000	40.0000	2.5000	5.0000L	90.0000
87908	18 21 09N	44 12 49E	40.0000	10.0000	25.0000	20.0000	30.0000	1.7000	5.0000	80.0000
87909	18 21 09N	44 12 49E	10.0000	20.0000	20.0000	25.0000	45.0000	2.5000	10.0000	70.0000
87910	18 21 09N	44 12 50E	20.0000	20.0000	20.0000	15.0000	25.0000	0.5000N	10.0000	150.0000
87911	18 21 08N	44 12 51E	5.0000	15.0000	15.0000	15.0000	35.0000	1.7000	15.0000	70.0000
87912	18 21 08N	44 12 52E	10.0000	15.0000	20.0000	10.0000	30.0000	1.7000	20.0000	50.0000
87913	18 21 08N	44 12 52E	10.0000	10.0000	15.0000	10.0000	15.0000	0.7000	20.0000	70.0000
87914	18 21 08N	44 12 53E	15.0000	30.0000	20.0000	25.0000	25.0000	0.5000N	60.0000	150.0000
87915	18 20 14N	44 12 22E	20.0000	20.0000	20.0000	30.0000	30.0000	3.7000	30.0000	60.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87874	18 23 31N	44 13 27E	95.0000
87875	18 23 31N	44 13 28E	75.0000
87876	18 23 31N	44 13 28E	85.0000
87877	18 23 31N	44 13 29E	125.0000
87878	18 23 31N	44 13 29E	125.0000
87879	18 23 31N	44 13 30E	85.0000
87880	18 23 31N	44 13 30E	85.0000
87881	18 23 31N	44 13 31E	110.0000
87882	18 23 27N	44 13 27E	175.0000
87883	18 23 27N	44 13 27E	145.0000
87884	18 23 27N	44 13 28E	170.0000
87885	18 23 27N	44 13 28E	225.0000
87886	18 23 27N	44 13 29E	80.0000
87887	18 23 27N	44 13 29E	55.0000
87888	18 23 27N	44 13 30E	75.0000
87889	18 23 27N	44 13 30E	65.0000
87890	18 22 42N	44 13 39E	115.0000
87891	18 23 45N	44 13 29E	55.0000
87892	18 24 05N	44 13 17E	100.0000
87893	18 24 05N	44 13 17E	30.0000
87894	18 24 05N	44 13 17E	45.0000
87895	18 24 04N	44 13 18E	30.0000
87896	18 24 04N	44 13 19E	40.0000
87897	18 24 04N	44 13 19E	350.0000
87898	18 21 11N	44 12 42E	45.0000
87899	18 21 10N	44 12 42E	125.0000
87900	18 21 10N	44 12 43E	70.0000
87901	18 21 10N	44 12 44E	75.0000
87902	18 21 10N	44 12 44E	215.0000
87903	18 21 10N	44 12 45E	125.0000
87904	18 21 10N	44 12 46E	100.0000
87905	18 21 09N	44 12 46E	160.0000
87906	18 21 09N	44 12 47E	65.0000
87907	18 21 09N	44 12 48E	400.0000
87908	18 21 09N	44 12 49E	115.0000
87909	18 21 09N	44 12 49E	65.0000
87910	18 21 09N	44 12 50E	55.0000
87911	18 21 08N	44 12 51E	75.0000
87912	18 21 08N	44 12 52E	65.0000
87913	18 21 08N	44 12 52E	90.0000
87914	18 21 08N	44 12 53E	155.0000
87915	18 20 14N	44 12 22E	175.0000

GOSSANS AT WADI WASSAT KINGDOM OF SAUDI ARABIA (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-CO-P	AA-NI-P	AA-AG-T	CM-MO	CM-CR
87916	18 20 14N	44 12 22E	15.0000	20.0000	25.0000	30.0000	25.0000	3.0000	30.0000	50.0000
87917	18 20 15N	44 12 23E	15.0000	10.0000	20.0000	10.0000	25.0000	3.0000	15.0000	40.0000
87918	18 20 15N	44 12 23E	30.0000	25.0000	55.0000	25.0000	25.0000	0.5000N	15.0000	700.0000
87919	18 20 15N	44 12 23E	25.0000	15.0000	20.0000	25.0000	35.0000	2.5000	15.0000	45.0000
87920	18 20 16N	44 12 24E	30.0000	15.0000	20.0000	40.0000	30.0000	2.5000	10.0000	50.0000
87921	18 20 16N	44 12 24E	35.0000	15.0000	20.0000	25.0000	45.0000	2.5000	5.0000L	45.0000
87922	18 20 16N	44 12 24E	60.0000	20.0000	35.0000	40.0000	60.0000	0.5000N	5.0000	900.0000
87923	18 20 58N	44 11 44E	45.0000	15.0000	35.0000	30.0000	20.0000	1.7000	5.0000	40.0000
87924	18 20 58N	44 11 44E	60.0000	15.0000	30.0000	30.0000	40.0000	0.7000	10.0000	80.0000
87925	18 20 58N	44 11 44E	25.0000	10.0000	25.0000	15.0000	30.0000	2.5000	10.0000	90.0000
87926	18 20 58N	44 11 44E	40.0000	35.0000	25.0000	20.0000	25.0000	0.5000N	10.0000	825.0000
87927	18 20 58N	44 11 45E	25.0000	10.0000	50.0000	20.0000	40.0000	1.7000	5.0000	80.0000
87928	18 20 58N	44 11 45E	45.0000	15.0000	25.0000	30.0000	35.0000	2.5000	5.0000	105.0000
87929	18 20 58N	44 11 45E	15.0000	20.0000	30.0000	20.0000	40.0000	2.5000	10.0000	40.0000
87930	18 20 58N	44 11 46E	30.0000	20.0000	15.0000	20.0000	25.0000	0.5000N	20.0000	350.0000
87931	18 20 58N	44 11 46E	20.0000	15.0000	20.0000	25.0000	45.0000	1.7000	15.0000	90.0000
87932	18 20 57N	44 11 46E	20.0000	15.0000	20.0000	20.0000	40.0000	1.7000	10.0000	75.0000
87933	18 20 57N	44 11 47E	25.0000	15.0000	25.0000	25.0000	30.0000	1.7000	10.0000	210.0000
87934	18 20 57N	44 11 47E	65.0000	15.0000	30.0000	30.0000	60.0000	0.5000N	5.0000	1000.0000
87935	18 20 56N	44 11 47E	25.0000	15.0000	20.0000	15.0000	30.0000	1.7000	10.0000	120.0000
87936	18 20 56N	44 11 47E	30.0000	15.0000	25.0000	25.0000	30.0000	1.7000	10.0000	85.0000
87937	18 20 56N	44 11 47E	25.0000	10.0000L	25.0000	30.0000	40.0000	2.5000	5.0000	100.0000
87938	18 24 20N	44 13 16E	20.0000	30.0000	20.0000	30.0000	25.0000	0.5000N	15.0000	425.0000
87939	18 24 20N	44 13 18E	10.0000	10.0000	15.0000	10.0000L	25.0000	1.7000	20.0000	120.0000

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
87916	18 20 14N	44 12 22E	50.0000
87917	18 20 15N	44 12 23E	45.0000
87918	18 20 15N	44 12 23E	95.0000
87919	18 20 15N	44 12 23E	70.0000
87920	18 20 16N	44 12 24E	120.0000
87921	18 20 16N	44 12 24E	150.0000
87922	18 20 16N	44 12 24E	240.0000
87923	18 20 58N	44 11 44E	120.0000
87924	18 20 58N	44 11 44E	125.0000
87925	18 20 58N	44 11 44E	65.0000
87926	18 20 58N	44 11 44E	80.0000
87927	18 20 58N	44 11 45E	85.0000
87928	18 20 58N	44 11 45E	120.0000
87929	18 20 58N	44 11 45E	55.0000
87930	18 20 58N	44 11 46E	50.0000
87931	18 20 58N	44 11 46E	45.0000
87932	18 20 57N	44 11 46E	70.0000
87933	18 20 57N	44 11 47E	90.0000
87934	18 20 57N	44 11 47E	95.0000
87935	18 20 56N	44 11 47E	40.0000
87936	18 20 56N	44 11 47E	145.0000
87937	18 20 56N	44 11 47E	150.0000
87938	18 24 20N	44 13 16E	55.0000
87939	18 24 20N	44 13 18E	80.0000

50039 -- STOP

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APPENDIX 2

A. *Locations, altitudes, azimuths, and inclinations of diamond drill holes*

[Elevations by Wallace and Tiernan Altimeter calibrated in 10-m divisions, referred to reference points and existing 1:10,000-scale 10-m contour interval topographic map. Holes located on 1:14,000-scale plates. Geodetic locations referred to Station "Astro" as located on 1:50,000-scale photomosaic sheet 9F, covering lat 18°15' to 18°30' N.; long 44°00' to 44°30' E. Location of "Astro", lat 18°24'41" N., long 44°13'13" E.]

Drill number	Approximate location		Approximate elevation (meters)	Direction	Inclination	Depth (meters)	Remarks
	latitude (north)	longitude (east)					
WS-1	18°24'06"	44°13'16"	1,203	S.67°E.	-45°	139.5	
WS-2	18°23'16"	44°13'32"	1,214	West	-45°	37.0	Aborted
WS-3	18°23'13"	44°13'34"	1,215	West	-45°	158.6	
WS-4	18°23'45"	44°13'27"	1,200	N.80°E.	-45°	129.9	
WS-5	18°24'04"	44°13'20"	1,201	S.72°E.	-60°	103.0	
WS-6	18°20'35"	44°12'43"	1,235	S.67°E.	-45°	91.5	
WS-7	18°21'20"	44°13'03"	1,225	N.65°W.	-45°	138.5	
WS-8	18°20'21"	44°12'18"	1,244	N.45°E.	-45°	152.6	Pyrrhotite
WS-9	18°21'16"	44°11'35"	1,265	N.75°W.	-45°	154.4	Pyrrhotite
						1,100.0	

B. *List of samples from drill holes*

[Zones are indicated on drill holes section, figure 6. Lithology: V-S, volcanic and sedimentary rocks; D sul, disseminated sulfides; M sul, massive sulfides; D + M sul, disseminated and massive sulfides. Areas shown on figure 2]

Depth (meters)	Sample numbers	Zones		Lithology
Area A				
WS-1				
0-30	107010-107012	1	0-30 m	Gossan + V-S
30-51	107013-017025		30-43	M sul
	107282-107286	2		
48.75-58	107214-107221		43-58	D sul
58-75	107222-107238	3	58-75	V-S
75-80	107239-107241			
80-83	107242-107244		75-86	D sul
83-101.4	107027-107052	4	86-109	M sul
101.4-113	107245-107256		109-113	D sul
113-132.6	107257-107,281	5	113-139	V-S
WS-5				
0-50	107413-107446	1	0-50	D sul
54-56.5	107159-107160			
54-70.1	107447-107461	2	50-73	D + M sul
70.1-78	107462-107470		73-83	M sul
73-89.4	107161-107169		83-90	D sul
90-103	107471-107482	3	90-103	V-S
Area C				
WS-3				
0-29.5	107287-107302			
29.5-37	107303-107309	1	0-47	V-S
37-47	107310-107314			
47-59	107057-107064			
59-79	107065-107084	2	47-94	M sul
62-67	107315-107318			
79.3-94	107085-107098			

B. *List of samples from drill holes* [continued]

Depth (meters)	Sample numbers		Zones	Lithology
WS-3 (cont.)				
94-96	107099-107100			
96-101	107319-107323		94-103	D sul
103-121	107101-107116	3	103-121	M sul
101-121	107324-107327		121-132	D sul
121-132	107328-107337			
133-153.6	107338-107356	4	132-153.6	V-S
Area B				
WS-4				
0-28	107357-107360	1	0-28	V-S
28-43	107361-107368			
28-43	107117-107121		28-39	M sul, V-S
43-56.4	107122-107134	2	39-61	M sul
55-64.9	107369-107375		61-74	D sul
64.4-74	107376-107383			
74-85.3	107384-107393			
85-95.5	107394-107401		74-87	D + M sul
92-94.5	107135-107146	3	87-117	M sul
95.5-117	107147-107158			
117-129.9	107402-107412	4	117-129.9	D sul
Area F				
WS-6				
0-35	107483-107499	1	0-35	V-S
35-63	107600-107613	2	35-63	M sul
63-91.5	107614-107625	3	63-91.5	D sul
Area E				
WS-7				
0-24	107626-107639	1	0-24	V-S
24-84	107640-107670		24-84	M sul
67-67.5	107212	2		
82-82.5	107213			
84-126	107671-107702	3	84-126	D + M sul
126-138.5	107703-107711	4	126-138.5	V-S

B. *List of samples from drill holes* [continued]

Depth (meters)	Sample numbers	Zones		Lithology
Area H				
WS-8				
0-38	107712-107722	1	0-38	V-S
39-44.3	107170-107174			
44.3-64	107175-107185			
44-65	107723-107728		38-82	M sul
70-71.4	107186	2		
65-74.9	107729-107735		82-87	M sul, V-S
74.9-87	107211 107736-107744			
85-87	107187-107188			
87-95	107745-107799	3	87-95	V-S
95-121	107750-107763	4	95-121	D + M sul
121-152.6	107764-107787	5	121-135	V-S
			135-152.6	D sul, V-S
Area I				
WS-9				
0-41	107788-107794	1	0-42	Gossan + V-S
41-42	107189			
42-52	107190-107197	2	42-53	M sul
44-45.5	107795-107797			
50-51.6				
52-53				
67-67.8	107198	3	53-128	Diorite
53-128	107798-107851			
130-141	107199-107210	4	128-142	M sul
128-129	107852-107853			
141-142				
142-154.4	107854-107863	5	142-154.4	Diorite

C. ANALYSES OF CORE SAMPLES

[See page 57 for description of geochemical data]

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107010	18 24 06N	44 13 16E	3.0000	33.0000	10.0000	1.1500	50.0000	23.0000	20.0000	20.0000N
107011	18 24 06N	44 13 16E	3.0000	36.0000	10.0000	0.9000	60.0000	35.0000	20.0000	20.0000N
107012	18 24 06N	44 13 16E	12.0000	69.0000	20.0000	0.2500	223.0000	67.0000	5.0000L	20.0000N
107013	18 24 06N	44 13 16E	14.0000	69.0000	19.0000	0.5000	195.0000	41.0000	5.0000L	20.0000N
107014	18 24 06N	44 13 16E	25.0000	43.0000	50.0000	0.4000	200.0000	78.0000	5.0000L	20.0000N
107015	18 24 06N	44 13 16E	29.0000	84.0000	45.0000	0.4000	145.0000	67.0000	5.0000L	20.0000N
107016	18 24 06N	44 13 16E	16.0000	69.0000	50.0000	0.4000	170.0000	67.0000	5.0000L	20.0000N
107017	18 24 06N	44 13 16E	18.0000	75.0000	50.0000	0.4000	108.0000	60.0000	5.0000	20.0000N
107018	18 24 06N	44 13 16E	18.0000	90.0000	60.0000	0.4000	183.0000	60.0000	5.0000L	20.0000N
107019	18 24 06N	44 13 16E	12.0000	90.0000	45.0000	0.4000	158.0000	60.0000	5.0000L	20.0000N
107020	18 24 06N	44 13 16E	18.0000	60.0000	51.0000	0.2500	165.0000	73.0000	5.0000L	20.0000N
107021	18 24 06N	44 13 16E	38.0000	69.0000	30.0000	0.1000N	185.0000	67.0000	5.0000L	20.0000N
107022	18 24 06N	44 13 16E	99.0000	69.0000	33.0000	0.4000	233.0000	60.0000	5.0000L	20.0000N
107023	18 24 06N	44 13 16E	150.0000	75.0000	38.0000	0.1000N	275.0000	94.0000	5.0000L	20.0000N
107024	18 24 06N	44 13 16E	29.0000	36.0000	40.0000	0.5000	68.0000	41.0000	5.0000L	20.0000N
107025	18 24 06N	44 13 16E	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B
107027	18 24 06N	44 13 16E	34.0000	36.0000	85.0000	0.2500	165.0000	73.0000	5.0000L	20.0000N
107028	18 24 06N	44 13 16E	28.0000	24.0000	77.0000	0.4000	120.0000	60.0000	5.0000L	20.0000N
107029	18 24 06N	44 13 16E	21.0000	69.0000	60.0000	0.1000N	145.0000	55.0000	5.0000L	20.0000N
107030	18 24 06N	44 13 16E	15.0000	84.0000	42.0000	0.4000	210.0000	67.0000	5.0000L	20.0000N
107031	18 24 06N	44 13 16E	25.0000	84.0000	73.0000	0.4000	158.0000	50.0000	5.0000L	20.0000N
107032	18 24 06N	44 13 16E	21.0000	110.0000	48.0000	0.4000	210.0000	73.0000	5.0000	20.0000N
107033	18 24 06N	44 13 16E	20.0000	126.0000	42.0000	0.5000	195.0000	73.0000	5.0000	20.0000N
107034	18 24 06N	44 13 16E	49.0000	110.0000	45.0000	0.5000	183.0000	64.0000	5.0000	20.0000N
107035	18 24 06N	44 13 16E	78.0000	69.0000	80.0000	0.5000	108.0000	73.0000	5.0000L	20.0000N
107036	18 24 06N	44 13 16E	70.0000	75.0000	80.0000	0.4000	133.0000	87.0000	5.0000	20.0000N
107037	18 24 06N	44 13 16E	19.0000	117.0000	57.0000	0.4000	183.0000	100.0000	10.0000	20.0000N
107038	18 24 06N	44 13 16E	15.0000	56.0000	40.0000	0.5000	210.0000	67.0000	5.0000L	20.0000N
107039	18 24 06N	44 13 16E	10.0000	100.0000	35.0000	0.7000	215.0000	67.0000	5.0000	20.0000N
107040	18 24 06N	44 13 16E	14.0000	80.0000	30.0000	0.6000	195.0000	87.0000	5.0000	20.0000N
107041	18 24 06N	44 13 16E	15.0000	90.0000	40.0000	0.4000	210.0000	55.0000	5.0000	20.0000N
107042	18 24 06N	44 13 16E	17.0000	92.0000	29.0000	0.7000	250.0000	80.0000	10.0000	20.0000N
107043	18 24 06N	44 13 16E	15.0000	110.0000	30.0000	0.4000	210.0000	60.0000	5.0000	20.0000N
107044	18 24 06N	44 13 16E	16.0000	110.0000	29.0000	0.5000	275.0000	80.0000	10.0000	20.0000N
107045	18 24 06N	44 13 16E	22.0000	92.0000	30.0000	0.4000	250.0000	80.0000	5.0000L	20.0000N
107046	18 24 06N	44 13 16E	16.0000	97.0000	43.0000	0.4000	210.0000	55.0000	5.0000L	20.0000N
107047	18 24 06N	44 13 16E	155.0000	92.0000	37.0000	0.4000	223.0000	73.0000	5.0000L	20.0000N
107048	18 24 06N	44 13 16E	28.0000	92.0000	32.0000	0.2500	215.0000	64.0000	5.0000L	20.0000N
107049	18 24 06N	44 13 16E	14.0000	92.0000	35.0000	0.4000	215.0000	64.0000	5.0000L	20.0000N
107050	18 24 06N	44 13 16E	12.0000	90.0000	24.0000	0.4000	233.0000	50.0000	5.0000L	20.0000N
107051	18 24 06N	44 13 16E	13.0000	90.0000	31.0000	0.5000	240.0000	67.0000	5.0000L	20.0000N
107052	18 24 06N	44 13 16E	12.0000	90.0000	33.0000	0.5000	210.0000	57.0000	5.0000L	20.0000N

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107010	18 24 06N	44 13 16E	8.0000
107011	18 24 06N	44 13 16E	9.0000
107012	18 24 06N	44 13 16E	2.0000
107013	18 24 06N	44 13 16E	22.0000
107014	18 24 06N	44 13 16E	560.0000
107015	18 24 06N	44 13 16E	850.0000
107016	18 24 06N	44 13 16E	850.0000
107017	18 24 06N	44 13 16E	1000.0000
107018	18 24 06N	44 13 16E	830.0000
107019	18 24 06N	44 13 16E	565.0000
107020	18 24 06N	44 13 16E	560.0000
107021	18 24 06N	44 13 16E	280.0000
107022	18 24 06N	44 13 16E	242.0000
107023	18 24 06N	44 13 16E	680.0000
107024	18 24 06N	44 13 16E	355.0000
107025	18 24 06N	44 13 16E	0.0000B
107027	18 24 06N	44 13 16E	500.0000
107028	18 24 06N	44 13 16E	430.0000
107029	18 24 06N	44 13 16E	430.0000
107030	18 24 06N	44 13 16E	145.0000
107031	18 24 06N	44 13 16E	680.0000
107032	18 24 06N	44 13 16E	280.0000
107033	18 24 06N	44 13 16E	245.0000
107034	18 24 06N	44 13 16E	322.0000
107035	18 24 06N	44 13 16E	970.0000
107036	18 24 06N	44 13 16E	830.0000
107037	18 24 06N	44 13 16E	312.0000
107038	18 24 06N	44 13 16E	192.0000
107039	18 24 06N	44 13 16E	182.0000
107040	18 24 06N	44 13 16E	155.0000
107041	18 24 06N	44 13 16E	245.0000
107042	18 24 06N	44 13 16E	312.0000
107043	18 24 06N	44 13 16E	312.0000
107044	18 24 06N	44 13 16E	210.0000
107045	18 24 06N	44 13 16E	245.0000
107046	18 24 06N	44 13 16E	150.0000
107047	18 24 06N	44 13 16E	355.0000
107048	18 24 06N	44 13 16E	185.0000
107049	18 24 06N	44 13 16E	430.0000
107050	18 24 06N	44 13 16E	375.0000
107051	18 24 06N	44 13 16E	265.0000
107052	18 24 06N	44 13 16E	312.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107057	18 23 13N	44 13 34E	12.0000	84.0000	16.0000	0.1000N	233.0000	67.0000	5.0000L	20.0000N
107058	18 23 13N	44 13 34E	12.0000	90.0000	18.0000	0.4000	240.0000	60.0000	5.0000L	20.0000N
107059	18 23 13N	44 13 34E	12.0000	80.0000	15.0000	0.4000	183.0000	60.0000	5.0000L	20.0000N
107060	18 23 13N	44 13 34E	21.0000	75.0000	24.0000	0.2000	233.0000	67.0000	5.0000L	20.0000N
107061	18 23 13N	44 13 34E	16.0000	84.0000	20.0000	0.1000N	215.0000	50.0000	5.0000L	20.0000N
107062	18 23 13N	44 13 34E	16.0000	75.0000	24.0000	0.1000N	223.0000	48.0000	5.0000L	20.0000N
107063	18 23 13N	44 13 34E	20.0000	75.0000	24.0000	0.1000N	263.0000	55.0000	5.0000L	20.0000N
107064	18 23 13N	44 13 34E	11.0000	84.0000	25.0000	0.1000N	190.0000	55.0000	5.0000L	20.0000N
107065	18 23 13N	44 13 34E	14.0000	92.0000	22.0000	0.2000	223.0000	64.0000	5.0000L	20.0000N
107066	18 23 13N	44 13 34E	12.0000	84.0000	24.0000	0.1000N	210.0000	48.0000	5.0000L	20.0000N
107067	18 23 13N	44 13 34E	34.0000	50.0000	130.0000	0.5000	73.0000	41.0000	5.0000L	20.0000N
107068	18 23 13N	44 13 34E	11.0000	100.0000	24.0000	0.4000	223.0000	57.0000	5.0000L	20.0000N
107069	18 23 13N	44 13 34E	12.0000	90.0000	32.0000	0.2000	190.0000	60.0000	5.0000L	20.0000N
107070	18 23 13N	44 13 34E	12.0000	69.0000	58.0000	0.2000	150.0000	57.0000	5.0000L	20.0000N
107071	18 23 13N	44 13 34E	12.0000	90.0000	33.0000	0.1000N	210.0000	55.0000	5.0000L	20.0000N
107072	18 23 13N	44 13 34E	20.0000	90.0000	35.0000	0.1000N	233.0000	50.0000	5.0000L	20.0000N
107073	18 23 13N	44 13 34E	14.0000	63.0000	27.0000	0.1000N	183.0000	55.0000	5.0000L	20.0000N
107074	18 23 13N	44 13 34E	16.0000	75.0000	31.0000	0.1000N	215.0000	67.0000	10.0000	20.0000N
107075	18 23 13N	44 13 34E	12.0000	117.0000	31.0000	0.4000	195.0000	64.0000	5.0000L	20.0000N
107076	18 23 13N	44 13 34E	11.0000	110.0000	33.0000	0.1000N	233.0000	55.0000	5.0000L	20.0000N
107077	18 23 13N	44 13 34E	9.0000	92.0000	27.0000	0.4000	195.0000	67.0000	5.0000L	20.0000N
107078	18 23 13N	44 13 34E	12.0000	110.0000	30.0000	0.4000	233.0000	78.0000	5.0000L	20.0000N
107079	18 23 13N	44 13 34E	12.0000	97.0000	31.0000	0.6000	210.0000	73.0000	5.0000	20.0000N
107080	18 23 13N	44 13 34E	10.0000	100.0000	24.0000	0.6000	210.0000	57.0000	10.0000	20.0000N
107081	18 23 13N	44 13 34E	10.0000	117.0000	29.0000	0.3000	190.0000	60.0000	5.0000	20.0000N
107082	18 23 13N	44 13 34E	11.0000	105.0000	38.0000	0.2500	210.0000	64.0000	5.0000L	20.0000N
107083	18 23 13N	44 13 34E	12.0000	110.0000	40.0000	0.4500	230.0000	67.0000	5.0000	20.0000N
107084	18 23 13N	44 13 34E	18.0000	114.0000	37.0000	0.3000	223.0000	70.0000	5.0000	20.0000N
107085	18 23 13N	44 13 34E	14.0000	105.0000	38.0000	0.3000	210.0000	70.0000	10.0000	20.0000N
107086	18 23 13N	44 13 34E	17.0000	105.0000	40.0000	0.3000	215.0000	73.0000	5.0000L	20.0000N
107087	18 23 13N	44 13 34E	15.0000	114.0000	33.0000	0.2000	210.0000	67.0000	5.0000L	20.0000N
107088	18 23 13N	44 13 34E	16.0000	110.0000	37.0000	0.3000	190.0000	55.0000	5.0000L	20.0000N
107089	18 23 13N	44 13 34E	18.0000	102.0000	38.0000	0.2000	233.0000	55.0000	5.0000L	20.0000N
107090	18 23 13N	44 13 34E	14.0000	92.0000	43.0000	0.2000	170.0000	67.0000	5.0000L	20.0000N
107091	18 23 13N	44 13 34E	15.0000	90.0000	44.0000	0.2500	145.0000	50.0000	5.0000L	20.0000N
107092	18 23 13N	44 13 34E	30.0000	92.0000	55.0000	0.4000	133.0000	67.0000	5.0000L	20.0000N
107093	18 23 13N	44 13 34E	29.0000	90.0000	45.0000	0.4000	133.0000	55.0000	5.0000L	20.0000N
107094	18 23 13N	44 13 34E	30.0000	90.0000	57.0000	0.4000	115.0000	55.0000	5.0000L	20.0000N
107095	18 23 13N	44 13 34E	31.0000	80.0000	58.0000	0.4000	145.0000	87.0000	5.0000L	20.0000N
107096	18 23 13N	44 13 34E	19.0000	100.0000	40.0000	0.4500	158.0000	67.0000	5.0000L	20.0000N
107097	18 23 13N	44 13 34E	21.0000	75.0000	64.0000	0.4000	128.0000	78.0000	5.0000L	20.0000N
107098	18 23 13N	44 13 34E	20.0000	110.0000	71.0000	0.5000	140.0000	70.0000	5.0000L	20.0000N

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107057	18 23 13N	44 13 34E	27.0000
107058	18 23 13N	44 13 34E	50.0000
107059	18 23 13N	44 13 34E	28.0000
107060	18 23 13N	44 13 34E	60.0000
107061	18 23 13N	44 13 34E	20.0000
107062	18 23 13N	44 13 34E	32.0000
107063	18 23 13N	44 13 34E	27.0000
107064	18 23 13N	44 13 34E	65.0000
107065	18 23 13N	44 13 34E	122.0000
107066	18 23 13N	44 13 34E	85.0000
107067	18 23 13N	44 13 34E	700.0000
107068	18 23 13N	44 13 34E	58.0000
107069	18 23 13N	44 13 34E	75.0000
107070	18 23 13N	44 13 34E	275.0000
107071	18 23 13N	44 13 34E	85.0000
107072	18 23 13N	44 13 34E	240.0000
107073	18 23 13N	44 13 34E	275.0000
107074	18 23 13N	44 13 34E	225.0000
107075	18 23 13N	44 13 34E	400.0000
107076	18 23 13N	44 13 34E	230.0000
107077	18 23 13N	44 13 34E	200.0000
107078	18 23 13N	44 13 34E	270.0000
107079	18 23 13N	44 13 34E	162.0000
107080	18 23 13N	44 13 34E	200.0000
107081	18 23 13N	44 13 34E	235.0000
107082	18 23 13N	44 13 34E	280.0000
107083	18 23 13N	44 13 34E	230.0000
107084	18 23 13N	44 13 34E	115.0000
107085	18 23 13N	44 13 34E	180.0000
107086	18 23 13N	44 13 34E	130.0000
107087	18 23 13N	44 13 34E	135.0000
107088	18 23 13N	44 13 34E	140.0000
107089	18 23 13N	44 13 34E	142.0000
107090	18 23 13N	44 13 34E	255.0000
107091	18 23 13N	44 13 34E	220.0000
107092	18 23 13N	44 13 34E	455.0000
107093	18 23 13N	44 13 34E	322.0000
107094	18 23 13N	44 13 34E	300.0000
107095	18 23 13N	44 13 34E	368.0000
107096	18 23 13N	44 13 34E	292.0000
107097	18 23 13N	44 13 34E	430.0000
107098	18 23 13N	44 13 34E	500.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107099	18 23 13N	44 13 34E	38.0000	117.0000	60.0000	0.2500	128.0000	64.0000	5.0000L	20.0000N
107100	18 23 13N	44 13 34E	34.0000	92.0000	73.0000	0.2500	98.0000	55.0000	5.0000L	20.0000N
107101	18 23 13N	44 13 34E	18.0000	126.0000	37.0000	0.4000	178.0000	50.0000	5.0000L	20.0000N
107102	18 23 13N	44 13 34E	16.0000	105.0000	29.0000	0.2000	158.0000	70.0000	5.0000L	20.0000N
107103	18 23 13N	44 13 34E	14.0000	105.0000	31.0000	0.2000	158.0000	55.0000	5.0000L	20.0000N
107104	18 23 13N	44 13 34E	12.0000	131.0000	25.0000	0.2500	170.0000	67.0000	5.0000L	20.0000N
107105	18 23 13N	44 13 34E	12.0000	84.0000	25.0000	0.3000	200.0000	87.0000	5.0000L	20.0000N
107106	18 23 13N	44 13 34E	12.0000	95.0000	26.0000	0.2500	210.0000	50.0000	5.0000L	20.0000N
107107	18 23 13N	44 13 34E	16.0000	117.0000	35.0000	0.2500	170.0000	50.0000	5.0000L	20.0000N
107108	18 23 13N	44 13 34E	16.0000	110.0000	55.0000	0.4000	170.0000	57.0000	5.0000L	20.0000N
107109	18 23 13N	44 13 34E	30.0000	113.0000	45.0000	0.4000	108.0000	60.0000	5.0000L	20.0000N
107110	18 23 13N	44 13 34E	29.0000	90.0000	40.0000	0.4000	165.0000	60.0000	5.0000L	20.0000N
107111	18 23 13N	44 13 34E	18.0000	100.0000	26.0000	0.2500	233.0000	60.0000	5.0000L	20.0000N
107112	18 23 13N	44 13 34E	25.0000	100.0000	45.0000	0.2500	165.0000	50.0000	5.0000L	20.0000N
107113	18 23 13N	44 13 34E	42.0000	84.0000	55.0000	0.2500	158.0000	55.0000	5.0000L	20.0000N
107114	18 23 13N	44 13 34E	32.0000	75.0000	45.0000	0.5000	145.0000	55.0000	5.0000L	20.0000N
107115	18 23 13N	44 13 34E	20.0000	84.0000	31.0000	0.2500	178.0000	60.0000	5.0000L	20.0000N
107116	18 23 13N	44 13 34E	44.0000	100.0000	30.0000	0.4000	183.0000	64.0000	5.0000L	20.0000N
107117	18 23 45N	44 13 34E	19.0000	25.0000	21.0000	1.7000	28.0000	78.0000	5.0000L	20.0000L
107118	18 23 45N	44 13 34E	29.0000	126.0000	22.0000	0.2500	230.0000	70.0000	5.0000	20.0000N
107119	18 23 45N	44 13 34E	80.0000	126.0000	28.0000	0.4000	195.0000	70.0000	10.0000	20.0000N
107120	18 23 45N	44 13 34E	32.0000	90.0000	26.0000	0.2000	183.0000	39.0000	5.0000	20.0000N
107121	18 23 45N	44 13 34E	21.0000	97.0000	25.0000	0.2000	195.0000	50.0000	5.0000L	20.0000N
107122	18 23 45N	44 13 34E	27.0000	97.0000	22.0000	0.1000N	183.0000	48.0000	5.0000	20.0000N
107123	18 23 45N	44 13 34E	22.0000	110.0000	26.0000	0.1000N	210.0000	60.0000	5.0000	20.0000N
107124	18 23 45N	44 13 34E	15.0000	110.0000	25.0000	0.2800	190.0000	60.0000	5.0000L	20.0000N
107125	18 23 45N	44 13 34E	24.0000	110.0000	28.0000	0.1000N	210.0000	78.0000	5.0000L	20.0000N
107126	18 23 45N	44 13 34E	34.0000	80.0000	80.0000	0.1000N	133.0000	70.0000	5.0000L	20.0000N
107127	18 23 45N	44 13 34E	16.0000	92.0000	26.0000	0.1000N	195.0000	60.0000	5.0000L	20.0000N
107128	18 23 45N	44 13 34E	16.0000	97.0000	57.0000	0.1000N	170.0000	64.0000	5.0000L	20.0000N
107129	18 23 45N	44 13 34E	30.0000	75.0000	57.0000	0.1000N	128.0000	60.0000	5.0000L	20.0000N
107130	18 23 45N	44 13 34E	44.0000	50.0000	45.0000	0.1000N	145.0000	73.0000	5.0000L	20.0000N
107131	18 23 45N	44 13 34E	26.0000	69.0000	45.0000	0.1000N	183.0000	60.0000	5.0000L	20.0000N
107132	18 23 45N	44 13 34E	24.0000	75.0000	90.0000	0.1000N	170.0000	67.0000	5.0000L	20.0000N
107133	18 23 45N	44 13 34E	31.0000	69.0000	35.0000	0.1000N	210.0000	64.0000	5.0000L	20.0000N
107134	18 23 45N	44 13 34E	27.0000	78.0000	45.0000	0.1000N	133.0000	70.0000	5.0000L	20.0000N
107135	18 23 45N	44 13 34E	16.0000	97.0000	35.0000	0.1000N	178.0000	78.0000	5.0000L	20.0000N
107136	18 23 45N	44 13 34E	14.0000	84.0000	52.0000	0.1000N	133.0000	60.0000	5.0000	20.0000N
107137	18 23 45N	44 13 34E	29.0000	92.0000	68.0000	0.1000N	120.0000	94.0000	5.0000	20.0000N
107138	18 23 45N	44 13 34E	19.0000	90.0000	44.0000	0.1000N	150.0000	80.0000	5.0000	20.0000N
107139	18 23 45N	44 13 34E	18.0000	84.0000	45.0000	0.1000N	183.0000	94.0000	10.0000	20.0000N
107140	18 23 45N	44 13 34E	21.0000	50.0000	57.0000	0.1000N	195.0000	87.0000	10.0000	20.0000N

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107099	18 23 13N	44 13 34E	850.0000
107100	18 23 13N	44 13 34E	455.0000
107101	18 23 13N	44 13 34E	250.0000
107102	18 23 13N	44 13 34E	275.0000
107103	18 23 13N	44 13 34E	375.0000
107104	18 23 13N	44 13 34E	285.0000
107105	18 23 13N	44 13 34E	260.0000
107106	18 23 13N	44 13 34E	245.0000
107107	18 23 13N	44 13 34E	275.0000
107108	18 23 13N	44 13 34E	220.0000
107109	18 23 13N	44 13 34E	680.0000
107110	18 23 13N	44 13 34E	425.0000
107111	18 23 13N	44 13 34E	368.0000
107112	18 23 13N	44 13 34E	355.0000
107113	18 23 13N	44 13 34E	430.0000
107114	18 23 13N	44 13 34E	455.0000
107115	18 23 13N	44 13 34E	255.0000
107116	18 23 13N	44 13 34E	182.0000
107117	18 23 45N	44 13 34E	22.0000
107118	18 23 45N	44 13 34E	170.0000
107119	18 23 45N	44 13 34E	238.0000
107120	18 23 45N	44 13 34E	172.0000
107121	18 23 45N	44 13 34E	205.0000
107122	18 23 45N	44 13 34E	245.0000
107123	18 23 45N	44 13 34E	355.0000
107124	18 23 45N	44 13 34E	220.0000
107125	18 23 45N	44 13 34E	298.0000
107126	18 23 45N	44 13 34E	462.0000
107127	18 23 45N	44 13 34E	172.0000
107128	18 23 45N	44 13 34E	192.0000
107129	18 23 45N	44 13 34E	322.0000
107130	18 23 45N	44 13 34E	560.0000
107131	18 23 45N	44 13 34E	338.0000
107132	18 23 45N	44 13 34E	215.0000
107133	18 23 45N	44 13 34E	325.0000
107134	18 23 45N	44 13 34E	242.0000
107135	18 23 45N	44 13 34E	125.0000
107136	18 23 45N	44 13 34E	125.0000
107137	18 23 45N	44 13 34E	230.0000
107138	18 23 45N	44 13 34E	145.0000
107139	18 23 45N	44 13 34E	135.0000
107140	18 23 45N	44 13 34E	172.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CH-MO	AA-CR-T
107141	18 23 45N	44 13 34E	14.0000	53.0000	48.0000	0.1000N	170.0000	100.0000	10.0000	20.0000N
107142	18 23 45N	44 13 34E	12.0000	60.0000	33.0000	0.1000N	170.0000	70.0000	5.0000	20.0000N
107143	18 23 45N	44 13 34E	19.0000	69.0000	28.0000	0.1000N	195.0000	64.0000	5.0000	20.0000N
107144	18 23 45N	44 13 34E	130.0000	43.0000	29.0000	0.1000N	150.0000	73.0000	5.0000	20.0000N
107145	18 23 45N	44 13 34E	70.0000	72.0000	26.0000	0.1000N	195.0000	55.0000	5.0000	20.0000N
107146	18 23 45N	44 13 34E	14.0000	69.0000	26.0000	0.1000N	183.0000	60.0000	5.0000	20.0000N
107147	18 23 45N	44 13 34E	8.0000	72.0000	29.0000	0.1000N	183.0000	57.0000	5.0000	20.0000N
107148	18 23 45N	44 13 34E	11.0000	92.0000	26.0000	0.1000N	170.0000	67.0000	5.0000	20.0000N
107149	18 23 45N	44 13 34E	14.0000	92.0000	24.0000	0.1000N	195.0000	60.0000	5.0000	20.0000N
107150	18 23 45N	44 13 34E	15.0000	117.0000	31.0000	0.1000N	210.0000	94.0000	10.0000	20.0000N
107151	18 23 45N	44 13 34E	10.0000	170.0000	37.0000	0.1000N	183.0000	73.0000	10.0000	20.0000N
107152	18 23 45N	44 13 34E	11.0000	84.0000	35.0000	0.1000N	183.0000	67.0000	5.0000	20.0000N
107153	18 23 45N	44 13 34E	12.0000	90.0000	31.0000	0.1000N	183.0000	80.0000	5.0000	20.0000N
107154	18 23 45N	44 13 34E	14.0000	75.0000	42.0000	0.1000N	183.0000	60.0000	10.0000	20.0000N
107155	18 23 45N	44 13 34E	19.0000	60.0000	40.0000	0.1000N	178.0000	80.0000	5.0000	20.0000N
107156	18 23 45N	44 13 34E	11.0000	60.0000	42.0000	0.1000N	183.0000	70.0000	5.0000	20.0000N
107157	18 23 45N	44 13 34E	16.0000	75.0000	37.0000	0.1400	190.0000	64.0000	5.0000	20.0000N
107158	18 23 45N	44 13 34E	21.0000	60.0000	35.0000	0.1000N	170.0000	67.0000	5.0000	20.0000N
107159	18 24 04N	44 13 34E	15.0000	75.0000	40.0000	0.1000N	170.0000	73.0000	5.0000	20.0000N
107160	18 24 04N	44 13 34E	29.0000	84.0000	45.0000	0.1000N	115.0000	73.0000	10.0000	20.0000N
107161	18 24 04N	44 13 34E	163.0000	69.0000	48.0000	0.3400	223.0000	145.0000	5.0000	20.0000N
107162	18 24 04N	44 13 34E	60.0000	92.0000	37.0000	0.1000N	195.0000	94.0000	5.0000	20.0000N
107163	18 24 04N	44 13 34E	19.0000	100.0000	31.0000	0.1400	165.0000	87.0000	5.0000	20.0000N
107164	18 24 04N	44 13 34E	15.0000	110.0000	64.0000	0.1000N	190.0000	67.0000	5.0000	20.0000N
107165	18 24 04N	44 13 34E	28.0000	92.0000	40.0000	0.1000N	223.0000	87.0000	10.0000	20.0000N
107166	18 24 04N	44 13 34E	19.0000	69.0000	42.0000	0.1000N	210.0000	80.0000	5.0000	20.0000N
107167	18 24 04N	44 13 34E	29.0000	50.0000	40.0000	0.2800	158.0000	80.0000	5.0000	20.0000N
107168	18 24 04N	44 13 34E	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B
107169	18 24 04N	44 13 34E	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B	0.0000B
107170	18 20 21N	44 12 18E	38.0000	60.0000	45.0000	0.6500	170.0000	55.0000	10.0000	20.0000N
107171	18 20 21N	44 12 18E	38.0000	50.0000	52.0000	0.5000	145.0000	55.0000	5.0000L	20.0000N
107172	18 20 21N	44 12 18E	68.0000	110.0000	31.0000	1.2000	215.0000	55.0000	5.0000L	20.0000N
107173	18 20 21N	44 12 18E	60.0000	110.0000	45.0000	0.6500	190.0000	55.0000	5.0000L	20.0000N
107174	18 20 21N	44 12 18E	43.0000	100.0000	58.0000	0.9000	158.0000	64.0000	5.0000L	20.0000N
107175	18 20 21N	44 12 18E	50.0000	100.0000	110.0000	1.5000	233.0000	73.0000	5.0000L	20.0000N
107176	18 20 21N	44 12 18E	73.0000	92.0000	55.0000	1.3000	230.0000	80.0000	5.0000L	20.0000N
107177	18 20 21N	44 12 18E	47.0000	84.0000	48.0000	1.4500	263.0000	90.0000	5.0000L	20.0000N
107178	18 20 21N	44 12 18E	59.0000	92.0000	60.0000	1.6000	223.0000	80.0000	5.0000L	20.0000N
107179	18 20 21N	44 12 18E	43.0000	90.0000	48.0000	0.9000	150.0000	60.0000	5.0000L	20.0000N
107180	18 20 21N	44 12 18E	50.0000	75.0000	76.0000	2.4500	255.0000	100.0000	5.0000L	20.0000N
107181	18 20 21N	44 12 18E	43.0000	56.0000	70.0000	2.8500	158.0000	78.0000	5.0000L	20.0000N
107182	18 20 21N	44 12 18E	47.0000	75.0000	53.0000	2.6000	215.0000	87.0000	5.0000L	20.0000N

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107141	18 23 45N	44 13 34E	120.0000
107142	18 23 45N	44 13 34E	130.0000
107143	18 23 45N	44 13 34E	192.0000
107144	18 23 45N	44 13 34E	215.0000
107145	18 23 45N	44 13 34E	100.0000
107146	18 23 45N	44 13 34E	172.0000
107147	18 23 45N	44 13 34E	290.0000
107148	18 23 45N	44 13 34E	168.0000
107149	18 23 45N	44 13 34E	82.0000
107150	18 23 45N	44 13 34E	305.0000
107151	18 23 45N	44 13 34E	275.0000
107152	18 23 45N	44 13 34E	275.0000
107153	18 23 45N	44 13 34E	342.0000
107154	18 23 45N	44 13 34E	188.0000
107155	18 23 45N	44 13 34E	182.0000
107156	18 23 45N	44 13 34E	168.0000
107157	18 23 45N	44 13 34E	150.0000
107158	18 23 45N	44 13 34E	155.0000
107159	18 24 04N	44 13 34E	242.0000
107160	18 24 04N	44 13 34E	180.0000
107161	18 24 04N	44 13 34E	435.0000
107162	18 24 04N	44 13 34E	110.0000
107163	18 24 04N	44 13 34E	172.0000
107164	18 24 04N	44 13 34E	68.0000
107165	18 24 04N	44 13 34E	105.0000
107166	18 24 04N	44 13 34E	160.0000
107167	18 24 04N	44 13 34E	220.0000
107168	18 24 04N	44 13 34E	0.0000B
107169	18 24 04N	44 13 34E	0.0000B
107170	18 20 21N	44 12 18E	208.0000
107171	18 20 21N	44 12 18E	290.0000
107172	18 20 21N	44 12 18E	220.0000
107173	18 20 21N	44 12 18E	270.0000
107174	18 20 21N	44 12 18E	580.0000
107175	18 20 21N	44 12 18E	290.0000
107176	18 20 21N	44 12 18E	315.0000
107177	18 20 21N	44 12 18E	348.0000
107178	18 20 21N	44 12 18E	265.0000
107179	18 20 21N	44 12 18E	322.0000
107180	18 20 21N	44 12 18E	265.0000
107181	18 20 21N	44 12 18E	322.0000
107182	18 20 21N	44 12 18E	318.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107183	18 20 21N	44 12 18E	45.0000	84.0000	43.0000	2.2500	190.0000	64.0000	5.0000L	20.0000N
107184	18 20 21N	44 12 18E	50.0000	82.0000	55.0000	2.1000	195.0000	64.0000	5.0000L	20.0000N
107185	18 20 21N	44 12 18E	50.0000	60.0000	50.0000	2.2500	215.0000	64.0000	5.0000L	20.0000N
107186	18 20 21N	44 12 18E	47.0000	110.0000	66.0000	2.0500	158.0000	60.0000	5.0000L	20.0000N
107187	18 20 21N	44 12 18E	50.0000	60.0000	50.0000	1.9500	170.0000	73.0000	5.0000L	20.0000N
107188	18 20 21N	44 12 18E	65.0000	69.0000	63.0000	2.6500	170.0000	73.0000	5.0000L	20.0000N
107189	18 21 16N	44 11 35E	82.0000	36.0000	35.0000	3.0500	210.0000	180.0000	5.0000L	20.0000N
107190	18 21 16N	44 11 35E	70.0000	36.0000	53.0000	2.4000	158.0000	87.0000	5.0000L	20.0000N
107191	18 21 16N	44 11 35E	78.0000	110.0000	43.0000	2.8000	190.0000	94.0000	5.0000L	20.0000N
107192	18 21 16N	44 11 35E	61.0000	92.0000	35.0000	2.6000	210.0000	67.0000	5.0000	20.0000N
107193	18 21 16N	44 11 35E	64.0000	97.0000	52.0000	2.6000	195.0000	73.0000	5.0000	20.0000N
107194	18 21 16N	44 11 35E	65.0000	80.0000	63.0000	2.4000	178.0000	80.0000	5.0000	20.0000N
107195	18 21 16N	44 11 35E	59.0000	75.0000	68.0000	2.2500	158.0000	73.0000	5.0000	20.0000N
107196	18 21 16N	44 11 35E	64.0000	84.0000	37.0000	2.1500	183.0000	67.0000	5.0000	20.0000N
107197	18 21 16N	44 11 35E	75.0000	100.0000	45.0000	2.6000	183.0000	94.0000	5.0000	20.0000N
107198	18 21 16N	44 11 35E	70.0000	105.0000	35.0000	1.9500	150.0000	73.0000	5.0000	20.0000N
107199	18 21 16N	44 11 35E	57.0000	100.0000	45.0000	2.4000	233.0000	80.0000	5.0000L	20.0000N
107200	18 21 16N	44 11 35E	50.0000	110.0000	48.0000	2.9500	183.0000	84.0000	5.0000L	20.0000N
107201	18 21 16N	44 11 35E	40.0000	92.0000	135.0000	2.9500	215.0000	87.0000	5.0000L	20.0000N
107202	18 21 16N	44 11 35E	36.0000	126.0000	90.0000	2.4000	190.0000	94.0000	5.0000L	20.0000N
107203	18 21 16N	44 11 35E	48.0000	153.0000	50.0000	2.6000	223.0000	64.0000	5.0000	20.0000N
107204	18 21 16N	44 11 35E	42.0000	75.0000	73.0000	2.1500	145.0000	67.0000	5.0000	20.0000N
107205	18 21 16N	44 11 35E	42.0000	69.0000	35.0000	2.9500	195.0000	67.0000	5.0000	20.0000N
107206	18 21 16N	44 11 35E	50.0000	80.0000	71.0000	2.8000	195.0000	90.0000	5.0000	20.0000N
107207	18 21 16N	44 11 35E	48.0000	84.0000	53.0000	2.6500	223.0000	73.0000	5.0000	20.0000N
107208	18 21 16N	44 11 35E	50.0000	82.0000	43.0000	2.8000	183.0000	60.0000	5.0000	20.0000N
107209	18 21 16N	44 11 35E	39.0000	105.0000	55.0000	2.4000	195.0000	87.0000	10.0000	20.0000N
107210	18 21 16N	44 11 35E	45.0000	84.0000	42.0000	2.4000	170.0000	84.0000	10.0000	20.0000N
107214	18 24 06N	44 13 16E	13.0000	27.0000	31.0000	2.1000	25.0000	23.0000	5.0000L	20.0000L
107215	18 24 06N	44 13 16E	15.0000	27.0000	40.0000	1.4000	33.0000	23.0000	5.0000L	80.0000
107216	18 24 06N	44 13 16E	20.0000	24.0000	28.0000	1.5000	37.0000	22.0000	5.0000L	20.0000L
107217	18 24 06N	44 13 16E	25.0000	24.0000	21.0000	1.6000	35.0000	21.0000	5.0000L	20.0000L
107218	18 24 06N	44 13 16E	17.0000	25.0000	27.0000	1.0000	33.0000	20.0000	5.0000L	20.0000L
107219	18 24 06N	44 13 16E	18.0000	17.0000	30.0000	1.5000	32.0000	22.0000	5.0000L	180.0000
107220	18 24 06N	44 13 16E	21.0000	17.0000	25.0000	1.3000	30.0000	23.0000	5.0000L	120.0000
107221	18 24 06N	44 13 16E	20.0000	18.0000	30.0000	1.8000	34.0000	23.0000	5.0000L	120.0000
107222	18 24 06N	44 13 16E	13.0000	19.0000	32.0000	1.6000	32.0000	25.0000	5.0000L	20.0000L
107223	18 24 06N	44 13 16E	23.0000	79.0000	22.0000	1.4000	29.0000	20.0000	5.0000L	85.0000
107224	18 24 06N	44 13 16E	22.0000	23.0000	43.0000	1.5000	27.0000	20.0000	5.0000L	170.0000
107225	18 24 06N	44 13 16E	31.0000	16.0000	23.0000	1.4000	31.0000	23.0000	5.0000L	20.0000L
107226	18 24 06N	44 13 16E	28.0000	45.0000	132.0000	1.7000	40.0000	15.0000	5.0000L	115.0000
107227	18 24 06N	44 13 16E	17.0000	17.0000	30.0000	1.4000	29.0000	22.0000	5.0000L	20.0000L

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107183	18 20 21N	44 12 18E	455.0000
107184	18 20 21N	44 12 18E	278.0000
107185	18 20 21N	44 12 18E	375.0000
107186	18 20 21N	44 12 18E	255.0000
107187	18 20 21N	44 12 18E	462.0000
107188	18 20 21N	44 12 18E	375.0000
107189	18 21 16N	44 11 35E	198.0000
107190	18 21 16N	44 11 35E	290.0000
107191	18 21 16N	44 11 35E	230.0000
107192	18 21 16N	44 11 35E	245.0000
107193	18 21 16N	44 11 35E	222.0000
107194	18 21 16N	44 11 35E	472.0000
107195	18 21 16N	44 11 35E	388.0000
107196	18 21 16N	44 11 35E	92.0000
107197	18 21 16N	44 11 35E	290.0000
107198	18 21 16N	44 11 35E	275.0000
107199	18 21 16N	44 11 35E	440.0000
107200	18 21 16N	44 11 35E	308.0000
107201	18 21 16N	44 11 35E	620.0000
107202	18 21 16N	44 11 35E	435.0000
107203	18 21 16N	44 11 35E	335.0000
107204	18 21 16N	44 11 35E	280.0000
107205	18 21 16N	44 11 35E	200.0000
107206	18 21 16N	44 11 35E	255.0000
107207	18 21 16N	44 11 35E	900.0000
107208	18 21 16N	44 11 35E	680.0000
107209	18 21 16N	44 11 35E	560.0000
107210	18 21 16N	44 11 35E	620.0000
107214	18 24 06N	44 13 16E	533.0000
107215	18 24 06N	44 13 16E	653.0000
107216	18 24 06N	44 13 16E	365.0000
107217	18 24 06N	44 13 16E	250.0000
107218	18 24 06N	44 13 16E	305.0000
107219	18 24 06N	44 13 16E	305.0000
107220	18 24 06N	44 13 16E	340.0000
107221	18 24 06N	44 13 16E	288.0000
107222	18 24 06N	44 13 16E	455.0000
107223	18 24 06N	44 13 16E	365.0000
107224	18 24 06N	44 13 16E	290.0000
107225	18 24 06N	44 13 16E	265.0000
107226	18 24 06N	44 13 16E	320.0000
107227	18 24 06N	44 13 16E	350.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CH-MO	AA-CR-T
107228	18 24 06N	44 13 16E	25.0000	25.0000	46.0000	3.3000	32.0000	12.0000	5.0000L	80.0000
107229	18 24 06N	44 13 16E	20.0000	14.0000	22.0000	1.5000	31.0000	23.0000	5.0000L	125.0000
107230	18 24 06N	44 13 16E	16.0000	13.0000	27.0000	1.5000	30.0000	17.0000	5.0000L	20.0000L
107231	18 24 06N	44 13 16E	15.0000	24.0000	43.0000	1.4000	27.0000	18.0000	5.0000L	170.0000
107232	18 24 06N	44 13 16E	16.0000	34.0000	110.0000	1.4000	26.0000	15.0000	5.0000L	20.0000L
107233	18 24 06N	44 13 16E	20.0000	78.0000	200.0000	1.3000	30.0000	17.0000	5.0000L	20.0000L
107234	18 24 06N	44 13 16E	26.0000	351.0000	540.0000	1.7000	30.0000	11.0000	5.0000L	40.0000
107235	18 24 06N	44 13 16E	45.0000	565.0000	1180.0000	1.6000	44.0000	16.0000	5.0000L	95.0000
107236	18 24 06N	44 13 16E	100.0000	360.0000	580.0000	1.1000	33.0000	21.0000	5.0000L	125.0000
107237	18 24 06N	44 13 16E	33.0000	179.0000	420.0000	1.6000	30.0000	18.0000	5.0000L	20.0000L
107238	18 24 06N	44 13 16E	22.0000	310.0000	610.0000	1.4000	33.0000	24.0000	5.0000L	95.0000
107239	18 24 06N	44 13 16E	36.0000	135.0000	264.0000	1.5000	50.0000	41.0000	5.0000L	45.0000
107240	18 24 06N	44 13 16E	38.0000	29.0000	71.0000	1.2000	31.0000	52.0000	5.0000L	20.0000L
107241	18 24 06N	44 13 16E	28.0000	30.0000	63.0000	1.2000	37.0000	59.0000	5.0000L	75.0000
107242	18 24 06N	44 13 16E	37.0000	32.0000	67.0000	1.1000	28.0000	54.0000	5.0000L	80.0000
107243	18 24 06N	44 13 16E	30.0000	24.0000	40.0000	1.4000	37.0000	72.0000	5.0000L	90.0000
107244	18 24 06N	44 13 16E	39.0000	31.0000	83.0000	0.9000	31.0000	55.0000	5.0000L	105.0000
107245	18 24 06N	44 13 16E	35.0000	46.0000	48.0000	1.1000	36.0000	30.0000	5.0000L	20.0000L
107246	18 24 06N	44 13 16E	25.0000	24.0000	50.0000	1.5000	37.0000	30.0000	5.0000L	20.0000L
107247	18 24 06N	44 13 16E	25.0000	19.0000	44.0000	1.1000	36.0000	51.0000	5.0000L	20.0000L
107248	18 24 06N	44 13 16E	24.0000	20.0000	110.0000	1.6000	54.0000	31.0000	5.0000L	20.0000L
107249	18 24 06N	44 13 16E	20.0000	38.0000	19.0000	1.4000	48.0000	60.0000	5.0000L	105.0000
107250	18 24 06N	44 13 16E	32.0000	23.0000	26.0000	1.5000	46.0000	149.0000	5.0000L	20.0000L
107251	18 24 06N	44 13 16E	42.0000	24.0000	36.0000	1.3000	48.0000	117.0000	5.0000L	675.0000
107252	18 24 06N	44 13 16E	25.0000	27.0000	26.0000	1.1000	45.0000	142.0000	5.0000L	80.0000
107253	18 24 06N	44 13 16E	43.0000	23.0000	36.0000	1.3000	46.0000	114.0000	5.0000L	110.0000
107254	18 24 06N	44 13 16E	73.0000	31.0000	28.0000	1.5000	54.0000	146.0000	5.0000L	280.0000
107255	18 24 06N	44 13 16E	96.0000	20.0000	18.0000	1.4000	51.0000	151.0000	5.0000L	445.0000
107256	18 24 06N	44 13 16E	22.0000	17.0000	33.0000	1.4000	36.0000	78.0000	5.0000L	235.0000
107257	18 24 06N	44 13 16E	102.0000	25.0000	94.0000	1.4000	51.0000	27.0000	5.0000L	60.0000
107258	18 24 06N	44 13 16E	117.0000	25.0000	99.0000	1.3000	47.0000	35.0000	5.0000L	20.0000L
107259	18 24 06N	44 13 16E	185.0000	23.0000	42.0000	1.3000	70.0000	45.0000	5.0000L	215.0000
107260	18 24 06N	44 13 16E	114.0000	25.0000	92.0000	1.4000	36.0000	40.0000	5.0000L	105.0000
107261	18 24 06N	44 13 16E	142.0000	24.0000	870.0000	1.3000	47.0000	46.0000	5.0000L	100.0000
107262	18 24 06N	44 13 16E	144.0000	21.0000	52.0000	1.1000	35.0000	39.0000	5.0000L	90.0000
107263	18 24 06N	44 13 16E	139.0000	25.0000	100.0000	1.2000	45.0000	34.0000	5.0000L	50.0000
107264	18 24 06N	44 13 16E	116.0000	26.0000	98.0000	1.2000	56.0000	36.0000	5.0000L	20.0000L
107265	18 24 06N	44 13 16E	141.0000	24.0000	74.0000	1.4000	51.0000	51.0000	5.0000L	20.0000L
107266	18 24 06N	44 13 16E	152.0000	24.0000	75.0000	1.7000	40.0000	44.0000	5.0000L	20.0000L
107267	18 24 06N	44 13 16E	147.0000	21.0000	56.0000	1.5000	35.0000	33.0000	5.0000L	80.0000
107268	18 24 06N	44 13 16E	150.0000	25.0000	45.0000	1.5000	42.0000	46.0000	5.0000L	300.0000
107269	18 24 06N	44 13 16E	160.0000	20.0000	65.0000	1.3000	35.0000	42.0000	5.0000L	100.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107228	18 24 06N	44 13 16E	535.0000
107229	18 24 06N	44 13 16E	220.0000
107230	18 24 06N	44 13 16E	350.0000
107231	18 24 06N	44 13 16E	288.0000
107232	18 24 06N	44 13 16E	250.0000
107233	18 24 06N	44 13 16E	470.0000
107234	18 24 06N	44 13 16E	740.0000
107235	18 24 06N	44 13 16E	276.0000
107236	18 24 06N	44 13 16E	425.0000
107237	18 24 06N	44 13 16E	500.0000
107238	18 24 06N	44 13 16E	625.0000
107239	18 24 06N	44 13 16E	1365.0000
107240	18 24 06N	44 13 16E	650.0000
107241	18 24 06N	44 13 16E	650.0000
107242	18 24 06N	44 13 16E	550.0000
107243	18 24 06N	44 13 16E	248.0000
107244	18 24 06N	44 13 16E	500.0000
107245	18 24 06N	44 13 16E	315.0000
107246	18 24 06N	44 13 16E	400.0000
107247	18 24 06N	44 13 16E	300.0000
107248	18 24 06N	44 13 16E	450.0000
107249	18 24 06N	44 13 16E	375.0000
107250	18 24 06N	44 13 16E	248.0000
107251	18 24 06N	44 13 16E	283.0000
107252	18 24 06N	44 13 16E	235.0000
107253	18 24 06N	44 13 16E	283.0000
107254	18 24 06N	44 13 16E	280.0000
107255	18 24 06N	44 13 16E	280.0000
107256	18 24 06N	44 13 16E	340.0000
107257	18 24 06N	44 13 16E	725.0000
107258	18 24 06N	44 13 16E	910.0000
107259	18 24 06N	44 13 16E	382.0000
107260	18 24 06N	44 13 16E	550.0000
107261	18 24 06N	44 13 16E	750.0000
107262	18 24 06N	44 13 16E	575.0000
107263	18 24 06N	44 13 16E	650.0000
107264	18 24 06N	44 13 16E	535.0000
107265	18 24 06N	44 13 16E	825.0000
107266	18 24 06N	44 13 16E	712.0000
107267	18 24 06N	44 13 16E	600.0000
107268	18 24 06N	44 13 16E	500.0000
107269	18 24 06N	44 13 16E	700.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107270	18 24 06N	44 13 16E	151.0000	10.0000L	28.0000	1.4000	29.0000	24.0000	5.0000L	20.0000L
107271	18 24 06N	44 13 16E	113.0000	11.0000	42.0000	0.9000	25.0000	23.0000	5.0000L	80.0000
107272	18 24 06N	44 13 16E	76.0000	19.0000	68.0000	1.1000	37.0000	27.0000	5.0000L	280.0000
107273	18 24 06N	44 13 16E	37.0000	23.0000	80.0000	1.2000	43.0000	55.0000	5.0000L	80.0000
107274	18 24 06N	44 13 16E	65.0000	30.0000	105.0000	1.5000	57.0000	36.0000	5.0000L	460.0000
107275	18 24 06N	44 13 16E	24.0000	20.0000	50.0000	1.8000	33.0000	25.0000	5.0000L	150.0000
107276	18 24 06N	44 13 16E	169.0000	13.0000	28.0000	1.0000	26.0000	32.0000	5.0000L	110.0000
107277	18 24 06N	44 13 16E	110.0000	17.0000	41.0000	1.0000	26.0000	45.0000	5.0000L	230.0000
107278	18 24 06N	44 13 16E	56.0000	23.0000	50.0000	1.5000	38.0000	21.0000	5.0000L	170.0000
107279	18 24 06N	44 13 16E	93.0000	35.0000	87.0000	1.9000	50.0000	32.0000	5.0000L	20.0000L
107280	18 24 06N	44 13 16E	169.0000	23.0000	87.0000	0.9000	32.0000	14.0000	5.0000L	35.0000
107281	18 24 06N	44 13 16E	129.0000	30.0000	74.0000	1.4000	50.0000	26.0000	5.0000L	50.0000
107282	18 24 06N	44 13 16E	15.0000	16.0000	29.0000	1.2000	22.0000	20.0000	5.0000L	175.0000
107283	18 24 06N	44 13 16E	19.0000	19.0000	31.0000	1.2000	20.0000	18.0000	5.0000L	390.0000
107284	18 24 06N	44 13 16E	19.0000	16.0000	34.0000	1.2000	25.0000	20.0000	5.0000L	560.0000
107285	18 24 06N	44 13 16E	22.0000	19.0000	30.0000	1.2000	28.0000	23.0000	5.0000L	750.0000
107286	18 24 06N	44 13 16E	23.0000	30.0000	90.0000	1.4000	37.0000	11.0000	5.0000L	65.0000
107287	18 23 13N	44 13 34E	21.0000	18.0000	47.0000	0.6000	10.0000	23.0000	5.0000L	165.0000
107288	18 23 13N	44 13 34E	9.0000	12.0000	57.0000	0.6000	10.0000L	11.0000	5.0000L	105.0000
107289	18 23 13N	44 13 34E	5.0000	14.0000	63.0000	0.5000	10.0000L	10.0000	5.0000L	70.0000
107290	18 23 13N	44 13 34E	8.0000	12.0000	50.0000	0.6000	10.0000L	10.0000L	5.0000L	190.0000
107291	18 23 13N	44 13 34E	6.0000	20.0000	70.0000	0.6000	15.0000	3.0000	5.0000L	130.0000
107292	18 23 13N	44 13 34E	7.0000	13.0000	58.0000	0.6000	10.0000L	12.0000	5.0000L	20.0000L
107293	18 23 13N	44 13 34E	17.0000	13.0000	54.0000	0.7000	10.0000L	12.0000	5.0000L	155.0000
107294	18 23 13N	44 13 34E	26.0000	14.0000	43.0000	0.7000	10.0000	10.0000	5.0000L	95.0000
107295	18 23 13N	44 13 34E	187.0000	26.0000	140.0000	1.5000	35.0000	37.0000	5.0000L	140.0000
107296	18 23 13N	44 13 34E	92.0000	16.0000	40.0000	0.8000	18.0000	21.0000	5.0000L	145.0000
107297	18 23 13N	44 13 34E	54.0000	17.0000	55.0000	0.9000	25.0000	22.0000	5.0000L	505.0000
107298	18 23 13N	44 13 34E	38.0000	20.0000	83.0000	1.3000	35.0000	22.0000	5.0000L	145.0000
107299	18 23 13N	44 13 34E	52.0000	30.0000	48.0000	1.5000	45.0000	12.0000	5.0000L	50.0000
107300	18 23 13N	44 13 34E	76.0000	30.0000	67.0000	1.4000	50.0000	11.0000	5.0000L	50.0000
107301	18 23 13N	44 13 34E	58.0000	22.0000	66.0000	1.1000	38.0000	43.0000	5.0000L	145.0000
107302	18 23 13N	44 13 34E	96.0000	22.0000	46.0000	1.3000	46.0000	117.0000	5.0000L	160.0000
107303	18 23 13N	44 13 34E	93.0000	24.0000	51.0000	1.4000	36.0000	83.0000	5.0000L	515.0000
107304	18 23 13N	44 13 34E	78.0000	56.0000	28.0000	0.9000	40.0000	371.0000	5.0000L	415.0000
107305	18 23 13N	44 13 34E	79.0000	19.0000	30.0000	1.2000	40.0000	123.0000	5.0000L	665.0000
107306	18 23 13N	44 13 34E	96.0000	41.0000	62.0000	0.1000	45.0000	94.0000	5.0000L	30.0000
107307	18 23 13N	44 13 34E	68.0000	16.0000	21.0000	0.9000	37.0000	128.0000	5.0000L	970.0000
107308	18 23 13N	44 13 34E	78.0000	22.0000	24.0000	0.9000	51.0000	122.0000	5.0000L	635.0000
107309	18 23 13N	44 13 34E	105.0000	25.0000	28.0000	1.1000	60.0000	126.0000	5.0000L	825.0000
107310	18 23 13N	44 13 34E	91.0000	36.0000	40.0000	1.5000	47.0000	133.0000	5.0000L	750.0000
107311	18 23 13N	44 13 34E	93.0000	24.0000	33.0000	1.3000	70.0000	157.0000	5.0000L	195.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107270	18 24 06N	44 13 16E	425.0000
107271	18 24 06N	44 13 16E	575.0000
107272	18 24 06N	44 13 16E	650.0000
107273	18 24 06N	44 13 16E	900.0000
107274	18 24 06N	44 13 16E	1200.0000
107275	18 24 06N	44 13 16E	650.0000
107276	18 24 06N	44 13 16E	427.0000
107277	18 24 06N	44 13 16E	625.0000
107278	18 24 06N	44 13 16E	575.0000
107279	18 24 06N	44 13 16E	1650.0000
107280	18 24 06N	44 13 16E	350.0000
107281	18 24 06N	44 13 16E	397.0000
107282	18 24 06N	44 13 16E	475.0000
107283	18 24 06N	44 13 16E	430.0000
107284	18 24 06N	44 13 16E	403.0000
107285	18 24 06N	44 13 16E	538.0000
107286	18 24 06N	44 13 16E	277.0000
107287	18 23 13N	44 13 34E	225.0000
107288	18 23 13N	44 13 34E	350.0000
107289	18 23 13N	44 13 34E	275.0000
107290	18 23 13N	44 13 34E	247.0000
107291	18 23 13N	44 13 34E	275.0000
107292	18 23 13N	44 13 34E	410.0000
107293	18 23 13N	44 13 34E	375.0000
107294	18 23 13N	44 13 34E	350.0000
107295	18 23 13N	44 13 34E	687.0000
107296	18 23 13N	44 13 34E	300.0000
107297	18 23 13N	44 13 34E	410.0000
107298	18 23 13N	44 13 34E	900.0000
107299	18 23 13N	44 13 34E	1100.0000
107300	18 23 13N	44 13 34E	900.0000
107301	18 23 13N	44 13 34E	750.0000
107302	18 23 13N	44 13 34E	575.0000
107303	18 23 13N	44 13 34E	500.0000
107304	18 23 13N	44 13 34E	287.0000
107305	18 23 13N	44 13 34E	427.0000
107306	18 23 13N	44 13 34E	262.0000
107307	18 23 13N	44 13 34E	300.0000
107308	18 23 13N	44 13 34E	392.0000
107309	18 23 13N	44 13 34E	500.0000
107310	18 23 13N	44 13 34E	600.0000
107311	18 23 13N	44 13 34E	500.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CH-MO	AA-CR-T
107312	18 23 13N	44 13 34E	81.0000	21.0000	50.0000	1.0000	52.0000	127.0000	5.0000L	720.0000
107313	18 23 13N	44 13 34E	83.0000	24.0000	65.0000	1.3000	65.0000	127.0000	5.0000L	600.0000
107314	18 23 13N	44 13 34E	35.0000	20.0000	20.0000	0.4000	24.0000	55.0000	5.0000L	240.0000
107315	18 23 13N	44 13 34E	15.0000	12.0000	88.0000	0.3000	40.0000	28.0000	5.0000L	95.0000
107316	18 23 13N	44 13 34E	21.0000	16.0000	108.0000	0.8000	45.0000	33.0000	5.0000L	100.0000
107317	18 23 13N	44 13 34E	15.0000	11.0000	106.0000	0.4000	69.0000	55.0000	5.0000L	20.0000L
107318	18 23 13N	44 13 34E	18.0000	11.0000	123.0000	0.6000	64.0000	55.0000	5.0000L	95.0000
107319	18 23 13N	44 13 34E	88.0000	31.0000	64.0000	0.9000	61.0000	65.0000	5.0000L	100.0000
107320	18 23 13N	44 13 34E	120.0000	38.0000	72.0000	1.5000	38.0000	45.0000	5.0000L	95.0000
107321	18 23 13N	44 13 34E	112.0000	30.0000	68.0000	1.3000	62.0000	56.0000	5.0000L	105.0000
107322	18 23 13N	44 13 34E	105.0000	38.0000	70.0000	1.2000	65.0000	70.0000	5.0000L	105.0000
107323	18 23 13N	44 13 34E	120.0000	30.0000	74.0000	1.2000	66.0000	64.0000	5.0000L	20.0000L
107324	18 23 13N	44 13 34E	101.0000	41.0000	86.0000	0.3000	50.0000	56.0000	5.0000L	25.0000
107325	18 23 13N	44 13 34E	83.0000	32.0000	65.0000	1.3000	78.0000	88.0000	5.0000L	60.0000
107326	18 23 13N	44 13 34E	105.0000	32.0000	87.0000	1.8000	35.0000	76.0000	5.0000L	125.0000
107327	18 23 13N	44 13 34E	150.0000	38.0000	67.0000	2.0000	38.0000	90.0000	5.0000L	105.0000
107328	18 23 13N	44 13 34E	140.0000	34.0000	61.0000	1.8000	43.0000	84.0000	5.0000L	115.0000
107329	18 23 13N	44 13 34E	55.0000	35.0000	60.0000	1.5000	39.0000	58.0000	5.0000L	85.0000
107330	18 23 13N	44 13 34E	75.0000	40.0000	85.0000	1.5000	31.0000	20.0000	5.0000L	95.0000
107331	18 23 13N	44 13 34E	52.0000	41.0000	68.0000	1.6000	31.0000	23.0000	5.0000L	20.0000L
107332	18 23 13N	44 13 34E	72.0000	30.0000	86.0000	0.5000	30.0000	21.0000	5.0000L	40.0000
107333	18 23 13N	44 13 34E	76.0000	33.0000	92.0000	1.8000	26.0000	12.0000	5.0000L	85.0000
107334	18 23 13N	44 13 34E	75.0000	30.0000	188.0000	1.7000	32.0000	18.0000	5.0000L	95.0000
107335	18 23 13N	44 13 34E	71.0000	25.0000	97.0000	0.5000	29.0000	29.0000	5.0000L	110.0000
107336	18 23 13N	44 13 34E	82.0000	36.0000	89.0000	1.5000	34.0000	21.0000	5.0000L	100.0000
107337	18 23 13N	44 13 34E	78.0000	27.0000	77.0000	1.8000	35.0000	18.0000	5.0000L	90.0000
107338	18 23 13N	44 13 34E	61.5000	26.0000	222.0000	2.1000	37.0000	21.0000	5.0000L	120.0000
107339	18 23 13N	44 13 34E	180.0000	20.0000	35.0000	1.8000	49.0000	84.0000	5.0000L	95.0000
107340	18 23 13N	44 13 34E	102.0000	17.5000	33.0000	1.6000	35.0000	29.0000	5.0000L	115.0000
107341	18 23 13N	44 13 34E	122.0000	20.0000	37.0000	1.8000	39.0000	46.0000	5.0000L	110.0000
107342	18 23 13N	44 13 34E	79.0000	21.5000	71.0000	2.0000	37.0000	21.0000	5.0000L	90.0000
107343	18 23 13N	44 13 34E	93.5000	22.0000	76.0000	2.2000	36.0000	25.0000	5.0000L	105.0000
107344	18 23 13N	44 13 34E	95.0000	20.0000	77.0000	2.2000	38.0000	23.0000	5.0000L	95.0000
107345	18 23 13N	44 13 34E	90.0000	20.5000	74.0000	2.4000	39.0000	25.0000	5.0000L	90.0000
107346	18 23 13N	44 13 34E	93.5000	21.0000	192.0000	2.2000	38.0000	22.0000	5.0000L	105.0000
107347	18 23 13N	44 13 34E	93.5000	22.5000	113.0000	2.0000	42.0000	26.0000	5.0000L	140.0000
107348	18 23 13N	44 13 34E	69.5000	25.0000	74.0000	2.3000	38.0000	22.0000	5.0000L	100.0000
107349	18 23 13N	44 13 34E	87.0000	30.0000	88.0000	2.3000	40.0000	24.0000	5.0000L	100.0000
107350	18 23 13N	44 13 34E	40.0000	30.0000	70.0000	2.6000	40.0000	25.0000	5.0000L	95.0000
107351	18 23 13N	44 13 34E	100.0000	27.5000	86.0000	2.4000	42.0000	29.0000	5.0000L	105.0000
107352	18 23 13N	44 13 34E	93.0000	23.5000	77.0000	2.4000	45.0000	27.0000	5.0000L	90.0000
107353	18 23 13N	44 13 34E	103.0000	25.0000	71.0000	2.2000	44.0000	26.0000	5.0000L	90.0000

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107312	18 23 13N	44 13 34E	2150.0000
107313	18 23 13N	44 13 34E	2420.0000
107314	18 23 13N	44 13 34E	21.0000
107315	18 23 13N	44 13 34E	655.0000
107316	18 23 13N	44 13 34E	850.0000
107317	18 23 13N	44 13 34E	435.0000
107318	18 23 13N	44 13 34E	1150.0000
107319	18 23 13N	44 13 34E	151.0000
107320	18 23 13N	44 13 34E	1000.0000
107321	18 23 13N	44 13 34E	858.0000
107322	18 23 13N	44 13 34E	1000.0000
107323	18 23 13N	44 13 34E	1050.0000
107324	18 23 13N	44 13 34E	785.0000
107325	18 23 13N	44 13 34E	888.0000
107326	18 23 13N	44 13 34E	1450.0000
107327	18 23 13N	44 13 34E	1150.0000
107328	18 23 13N	44 13 34E	700.0000
107329	18 23 13N	44 13 34E	460.0000
107330	18 23 13N	44 13 34E	950.0000
107331	18 23 13N	44 13 34E	830.0000
107332	18 23 13N	44 13 34E	1400.0000
107333	18 23 13N	44 13 34E	1630.0000
107334	18 23 13N	44 13 34E	1400.0000
107335	18 23 13N	44 13 34E	1350.0000
107336	18 23 13N	44 13 34E	900.0000
107337	18 23 13N	44 13 34E	1250.0000
107338	18 23 13N	44 13 34E	1000.0000
107339	18 23 13N	44 13 34E	625.0000
107340	18 23 13N	44 13 34E	440.0000
107341	18 23 13N	44 13 34E	550.0000
107342	18 23 13N	44 13 34E	1090.0000
107343	18 23 13N	44 13 34E	1250.0000
107344	18 23 13N	44 13 34E	1250.0000
107345	18 23 13N	44 13 34E	1300.0000
107346	18 23 13N	44 13 34E	1175.0000
107347	18 23 13N	44 13 34E	1260.0000
107348	18 23 13N	44 13 34E	1200.0000
107349	18 23 13N	44 13 34E	1500.0000
107350	18 23 13N	44 13 34E	1150.0000
107351	18 23 13N	44 13 34E	1200.0000
107352	18 23 13N	44 13 34E	1100.0000
107353	18 23 13N	44 13 34E	1100.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CH-MO	AA-CR-T
107354	18 23 13N	44 13 34E	97.0000	24.5000	75.0000	2.4000	48.0000	29.0000	5.0000L	90.0000
107355	18 23 13N	44 13 34E	86.0000	24.0000	78.0000	2.6000	45.0000	26.0000	5.0000L	120.0000
107356	18 23 13N	44 13 34E	111.0000	28.0000	89.0000	2.8000	50.0000	48.0000	5.0000L	515.0000
107357	18 23 45N	44 13 34E	54.0000	26.5000	76.0000	2.5000	47.0000	42.0000	5.0000L	600.0000
107358	18 23 45N	44 13 34E	77.0000	31.0000	65.0000	3.0000	50.0000	201.0000	5.0000L	805.0000
107359	18 23 45N	44 13 34E	82.0000	27.0000	202.0000	2.6000	53.0000	161.0000	5.0000L	400.0000
107360	18 23 45N	44 13 34E	109.0000	29.0000	46.0000	2.8000	58.0000	153.0000	5.0000L	375.0000
107361	18 23 45N	44 13 34E	125.0000	25.0000	36.0000	2.8000	61.0000	150.0000	5.0000L	235.0000
107362	18 23 45N	44 13 34E	17.0000	23.0000	12.0000	2.6000	38.0000	26.0000	5.0000L	80.0000
107363	18 23 45N	44 13 34E	22.0000	38.0000	18.0000	3.7000	98.0000	70.0000	5.0000L	20.0000L
107364	18 23 45N	44 13 34E	27.0000	33.0000	97.0000	1.2000	45.0000	32.0000	5.0000L	20.0000L
107365	18 23 45N	44 13 34E	53.0000	49.0000	1650.0000	2.7000	46.0000	17.0000	5.0000L	20.0000L
107366	18 23 45N	44 13 34E	24.0000	48.0000	35.0000	2.8000	92.0000	75.0000	20.0000	20.0000L
107367	18 23 45N	44 13 34E	28.0000	50.0000	28.0000	2.9000	103.0000	88.0000	40.0000	90.0000
107368	18 23 45N	44 13 34E	58.0000	62.0000	25.0000	2.7000	99.0000	78.0000	5.0000L	20.0000L
107369	18 23 45N	44 13 34E	68.0000	38.0000	37.0000	3.0000	82.0000	100.0000	5.0000L	20.0000L
107370	18 23 45N	44 13 34E	74.0000	26.0000	53.0000	0.4000	45.0000	63.0000	5.0000L	120.0000
107371	18 23 45N	44 13 34E	86.0000	42.0000	55.0000	2.8000	54.0000	52.0000	5.0000L	20.0000L
107372	18 23 45N	44 13 34E	14.0000	168.0000	64.0000	3.0000	54.0000	38.0000	5.0000L	70.0000
107373	18 23 45N	44 13 34E	120.0000	34.0000	90.0000	3.0000	60.0000	39.0000	5.0000L	85.0000
107374	18 23 45N	44 13 34E	118.0000	30.0000	77.0000	3.0000	75.0000	73.0000	5.0000L	50.0000
107375	18 23 45N	44 13 34E	116.0000	32.0000	54.0000	3.0000	57.0000	51.0000	5.0000L	60.0000
107376	18 23 45N	44 13 34E	68.0000	29.0000	58.0000	3.0000	74.0000	60.0000	5.0000L	90.0000
107377	18 23 45N	44 13 34E	94.0000	30.0000	63.0000	3.4000	61.0000	51.0000	5.0000L	75.0000
107378	18 23 45N	44 13 34E	127.0000	44.0000	65.0000	4.0000	56.0000	44.0000	5.0000L	85.0000
107379	18 23 45N	44 13 34E	105.0000	35.0000	81.0000	0.4000	37.0000	45.0000	5.0000L	110.0000
107380	18 23 45N	44 13 34E	105.0000	46.0000	56.0000	3.4000	77.0000	67.0000	5.0000L	80.0000
107381	18 23 45N	44 13 34E	119.0000	48.0000	87.0000	3.8000	79.0000	76.0000	5.0000L	105.0000
107382	18 23 45N	44 13 34E	95.0000	50.0000	60.0000	0.5000	88.0000	77.0000	5.0000L	85.0000
107383	18 23 45N	44 13 34E	93.0000	43.0000	47.0000	0.8000	80.0000	70.0000	5.0000L	70.0000
107384	18 23 45N	44 13 34E	111.0000	44.0000	64.0000	1.0000	78.0000	85.0000	5.0000L	50.0000
107385	18 23 45N	44 13 34E	47.0000	90.0000	72.0000	0.8000	50.0000	31.0000	5.0000L	70.0000
107386	18 23 45N	44 13 34E	22.0000	30.0000	89.0000	0.2000	35.0000	46.0000	5.0000L	20.0000L
107387	18 23 45N	44 13 34E	36.0000	40.0000	77.0000	0.7000	72.0000	70.0000	5.0000L	95.0000
107388	18 23 45N	44 13 34E	40.0000	44.0000	67.0000	1.0000	82.0000	70.0000	20.0000	20.0000L
107389	18 23 45N	44 13 34E	58.0000	23.0000	78.0000	1.1000	77.0000	77.0000	10.0000	60.0000
107390	18 23 45N	44 13 34E	47.0000	32.0000	74.0000	2.0000	86.0000	73.0000	10.0000	80.0000
107391	18 23 45N	44 13 34E	29.0000	31.0000	62.0000	0.4000	35.0000	36.0000	5.0000L	20.0000L
107392	18 23 45N	44 13 34E	35.0000	25.0000	46.0000	1.1000	57.0000	40.0000	5.0000L	45.0000
107393	18 23 45N	44 13 34E	51.0000	30.0000	52.0000	0.8000	53.0000	47.0000	10.0000	60.0000
107394	18 23 45N	44 13 34E	37.0000	30.0000	87.0000	0.7000	32.0000	44.0000	5.0000L	20.0000L
107395	18 23 45N	44 13 34E	45.0000	21.0000	67.0000	0.8000	77.0000	78.0000	5.0000	20.0000L

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107354	18 23 13N	44 13 34E	1150.0000
107355	18 23 13N	44 13 34E	1150.0000
107356	18 23 13N	44 13 34E	1370.0000
107357	18 23 45N	44 13 34E	450.0000
107358	18 23 45N	44 13 34E	600.0000
107359	18 23 45N	44 13 34E	350.0000
107360	18 23 45N	44 13 34E	445.0000
107361	18 23 45N	44 13 34E	200.0000
107362	18 23 45N	44 13 34E	80.0000
107363	18 23 45N	44 13 34E	16.0000
107364	18 23 45N	44 13 34E	162.0000
107365	18 23 45N	44 13 34E	410.0000
107366	18 23 45N	44 13 34E	335.0000
107367	18 23 45N	44 13 34E	470.0000
107368	18 23 45N	44 13 34E	270.0000
107369	18 23 45N	44 13 34E	365.0000
107370	18 23 45N	44 13 34E	550.0000
107371	18 23 45N	44 13 34E	675.0000
107372	18 23 45N	44 13 34E	730.0000
107373	18 23 45N	44 13 34E	630.0000
107374	18 23 45N	44 13 34E	650.0000
107375	18 23 45N	44 13 34E	625.0000
107376	18 23 45N	44 13 34E	688.0000
107377	18 23 45N	44 13 34E	775.0000
107378	18 23 45N	44 13 34E	750.0000
107379	18 23 45N	44 13 34E	900.0000
107380	18 23 45N	44 13 34E	710.0000
107381	18 23 45N	44 13 34E	875.0000
107382	18 23 45N	44 13 34E	595.0000
107383	18 23 45N	44 13 34E	452.0000
107384	18 23 45N	44 13 34E	645.0000
107385	18 23 45N	44 13 34E	500.0000
107386	18 23 45N	44 13 34E	630.0000
107387	18 23 45N	44 13 34E	618.0000
107388	18 23 45N	44 13 34E	673.0000
107389	18 23 45N	44 13 34E	773.0000
107390	18 23 45N	44 13 34E	775.0000
107391	18 23 45N	44 13 34E	500.0000
107392	18 23 45N	44 13 34E	378.0000
107393	18 23 45N	44 13 34E	565.0000
107394	18 23 45N	44 13 34E	587.0000
107395	18 23 45N	44 13 34E	424.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CH-MO	AA-CR-T
107396	18 23 45N	44 13 34E	32.0000	33.0000	62.0000	1.1000	96.0000	80.0000	5.0000	65.0000
107397	18 23 45N	44 13 34E	39.0000	44.0000	68.0000	0.8000	91.0000	73.0000	5.0000	20.0000L
107398	18 23 45N	44 13 34E	24.0000	39.0000	41.0000	1.1000	48.0000	36.0000	5.0000L	35.0000
107399	18 23 45N	44 13 34E	63.0000	30.0000	60.0000	1.5000	62.0000	34.0000	5.0000L	20.0000L
107400	18 23 45N	44 13 34E	104.0000	30.0000	72.0000	1.3000	62.0000	34.0000	5.0000L	20.0000L
107401	18 23 45N	44 13 34E	60.0000	30.0000	59.0000	1.1000	65.0000	57.0000	5.0000L	20.0000L
107402	18 23 45N	44 13 34E	60.0000	30.0000	26.0000	1.6000	66.0000	107.0000	5.0000L	20.0000L
107403	18 23 45N	44 13 34E	60.0000	30.0000	37.0000	1.1000	72.0000	140.0000	5.0000	180.0000
107404	18 23 45N	44 13 34E	62.0000	33.0000	28.0000	1.6000	72.0000	142.0000	5.0000	465.0000
107405	18 23 45N	44 13 34E	86.0000	28.0000	34.0000	1.5000	74.0000	129.0000	5.0000	785.0000
107406	18 23 45N	44 13 34E	86.0000	34.0000	42.0000	1.4000	74.0000	114.0000	5.0000	20.0000L
107407	18 23 45N	44 13 34E	60.0000	30.0000	57.0000	1.4000	73.0000	126.0000	5.0000L	235.0000
107408	18 23 45N	44 13 34E	67.0000	27.0000	25.0000	1.6000	75.0000	137.0000	5.0000L	200.0000
107409	18 23 45N	44 13 34E	66.0000	33.0000	50.0000	0.8000	50.0000	182.0000	5.0000L	20.0000L
107410	18 23 45N	44 13 34E	89.0000	35.0000	151.0000	0.7000	61.0000	155.0000	5.0000L	205.0000
107411	18 23 45N	44 13 34E	70.0000	20.0000	27.0000	1.3000	72.0000	152.0000	5.0000	395.0000
107412	18 23 45N	44 13 34E	75.0000	33.0000	25.0000	1.5000	69.0000	100.0000	5.0000	65.0000
107413	18 24 04N	44 13 34E	125.0000	15.0000	28.0000	1.0000	63.0000	123.0000	5.0000	20.0000L
107414	18 24 04N	44 13 34E	10.0000	15.0000	35.0000	0.4000	47.0000	167.0000	5.0000L	185.0000
107415	18 24 04N	44 13 34E	115.0000	15.0000	28.0000	0.3000	51.0000	161.0000	5.0000L	505.0000
107416	18 24 04N	44 13 34E	100.0000	110.0000	36.0000	0.3000	41.0000	134.0000	5.0000	360.0000
107417	18 24 04N	44 13 34E	93.0000	26.0000	55.0000	0.3000	45.0000	104.0000	5.0000L	360.0000
107418	18 24 04N	44 13 34E	95.0000	13.0000	43.0000	0.2000	43.0000	92.0000	5.0000L	55.0000
107419	18 24 04N	44 13 34E	110.0000	10.0000	49.0000	0.3000	40.0000	88.0000	5.0000L	50.0000
107420	18 24 04N	44 13 34E	120.0000	15.0000	40.0000	0.3000	47.0000	85.0000	5.0000L	65.0000
107421	18 24 04N	44 13 34E	105.0000	16.0000	50.0000	0.2000	26.0000	33.0000	5.0000L	20.0000L
107422	18 24 04N	44 13 34E	85.0000	20.0000	61.0000	0.2000	26.0000	31.0000	5.0000L	50.0000
107423	18 24 04N	44 13 34E	85.0000	21.0000	56.0000	0.4000	29.0000	35.0000	5.0000	20.0000L
107424	18 24 04N	44 13 34E	85.0000	12.0000	56.0000	0.3000	24.0000	31.0000	5.0000L	20.0000L
107425	18 24 04N	44 13 34E	130.0000	10.0000	68.0000	0.1000	22.0000	26.0000	5.0000L	20.0000L
107426	18 24 04N	44 13 34E	110.0000	15.0000	40.0000	0.2000	28.0000	27.0000	5.0000	20.0000L
107427	18 24 04N	44 13 34E	130.0000	20.0000	61.0000	0.2000	29.0000	28.0000	5.0000	20.0000L
107428	18 24 04N	44 13 34E	61.0000	28.0000	67.0000	0.3000	30.0000	13.0000	5.0000L	115.0000
107429	18 24 04N	44 13 20E	85.0000	18.0000	44.0000	0.2000	28.0000	28.0000	5.0000	25.0000
107430	18 24 04N	44 13 20E	70.0000	16.0000	43.0000	0.2000	27.0000	28.0000	5.0000L	20.0000L
107431	18 24 04N	44 13 20E	70.0000	18.0000	42.0000	0.2000	25.0000	27.0000	5.0000L	20.0000L
107432	18 24 04N	44 13 20E	70.0000	20.0000	60.0000	0.3000	29.0000	30.0000	5.0000L	20.0000L
107433	18 24 04N	44 13 20E	85.0000	18.0000	54.0000	0.2000	30.0000	30.0000	5.0000L	20.0000L
107434	18 24 04N	44 13 20E	80.0000	15.0000	44.0000	0.2000	30.0000	32.0000	5.0000L	45.0000
107435	18 24 04N	44 13 20E	85.0000	18.0000	56.0000	0.3000	28.0000	31.0000	5.0000L	45.0000
107436	18 24 04N	44 13 20E	90.0000	20.0000	62.0000	0.2000	29.0000	31.0000	5.0000L	20.0000L
107437	18 24 04N	44 13 20E	105.0000	25.0000	66.0000	0.3000	28.0000	33.0000	5.0000L	40.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107396	18 23 45N	44 13 34E	454.0000
107397	18 23 45N	44 13 34E	550.0000
107398	18 23 45N	44 13 34E	162.0000
107399	18 23 45N	44 13 34E	1060.0000
107400	18 23 45N	44 13 34E	775.0000
107401	18 23 45N	44 13 34E	600.0000
107402	18 23 45N	44 13 34E	285.0000
107403	18 23 45N	44 13 34E	290.0000
107404	18 23 45N	44 13 34E	310.0000
107405	18 23 45N	44 13 34E	340.0000
107406	18 23 45N	44 13 34E	387.0000
107407	18 23 45N	44 13 34E	231.0000
107408	18 23 45N	44 13 34E	180.0000
107409	18 23 45N	44 13 34E	378.0000
107410	18 23 45N	44 13 34E	385.0000
107411	18 23 45N	44 13 34E	213.0000
107412	18 23 45N	44 13 34E	273.0000
107413	18 24 04N	44 13 34E	245.0000
107414	18 24 04N	44 13 34E	445.0000
107415	18 24 04N	44 13 34E	350.0000
107416	18 24 04N	44 13 34E	365.0000
107417	18 24 04N	44 13 34E	249.0000
107418	18 24 04N	44 13 34E	435.0000
107419	18 24 04N	44 13 34E	530.0000
107420	18 24 04N	44 13 34E	665.0000
107421	18 24 04N	44 13 34E	600.0000
107422	18 24 04N	44 13 34E	745.0000
107423	18 24 04N	44 13 34E	1030.0000
107424	18 24 04N	44 13 34E	815.0000
107425	18 24 04N	44 13 34E	570.0000
107426	18 24 04N	44 13 34E	550.0000
107427	18 24 04N	44 13 34E	880.0000
107428	18 24 04N	44 13 34E	825.0000
107429	18 24 04N	44 13 20E	595.0000
107430	18 24 04N	44 13 20E	555.0000
107431	18 24 04N	44 13 20E	700.0000
107432	18 24 04N	44 13 20E	655.0000
107433	18 24 04N	44 13 20E	575.0000
107434	18 24 04N	44 13 20E	685.0000
107435	18 24 04N	44 13 20E	690.0000
107436	18 24 04N	44 13 20E	680.0000
107437	18 24 04N	44 13 20E	850.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CH-MO	AA-CR-T
107438	18 24 04N	44 13 20E	75.0000	15.0000	52.0000	0.3000	25.0000	30.0000	5.0000L	45.0000
107439	18 24 04N	44 13 20E	115.0000	16.0000	41.0000	0.2000	23.0000	30.0000	5.0000L	20.0000L
107440	18 24 04N	44 13 20E	100.0000	15.0000	41.0000	0.1000	20.0000	31.0000	5.0000L	65.0000
107441	18 24 04N	44 13 20E	115.0000	16.0000	43.0000	0.1000	20.0000	29.0000	5.0000L	70.0000
107442	18 24 04N	44 13 20E	87.0000	29.0000	71.0000	1.4000	25.0000	10.0000	5.0000L	55.0000
107443	18 24 04N	44 13 20E	105.0000	70.0000	49.0000	0.3000	25.0000	30.0000	5.0000L	45.0000
107444	18 24 04N	44 13 20E	84.0000	66.0000	58.0000	0.1000	26.0000	29.0000	5.0000L	20.0000L
107445	18 24 04N	44 13 20E	95.0000	71.0000	76.0000	0.4000	27.0000	30.0000	5.0000L	120.0000
107446	18 24 04N	44 13 20E	110.0000	73.0000	73.0000	0.3000	27.0000	30.0000	5.0000L	40.0000
107447	18 24 04N	44 13 20E	130.0000	20.0000	41.0000	0.2000	29.0000	30.0000	5.0000L	35.0000
107448	18 24 04N	44 13 20E	70.0000	20.0000	66.0000	0.3000	26.0000	30.0000	5.0000L	40.0000
107449	18 24 04N	44 13 20E	35.0000	30.0000	55.0000	0.4000	33.0000	78.0000	5.0000	90.0000
107450	18 24 04N	44 13 20E	55.0000	30.0000	90.0000	0.6000	36.0000	80.0000	5.0000L	30.0000
107451	18 24 04N	44 13 20E	39.0000	46.0000	65.0000	1.1000	35.0000	56.0000	5.0000L	20.0000L
107452	18 24 04N	44 13 20E	35.0000	35.0000	46.0000	0.8000	30.0000	78.0000	5.0000	45.0000
107453	18 24 04N	44 13 20E	42.0000	46.0000	70.0000	1.4000	37.0000	61.0000	5.0000L	20.0000L
107454	18 24 04N	44 13 20E	45.0000	30.0000	90.0000	0.4000	29.0000	70.0000	5.0000	80.0000
107455	18 24 04N	44 13 20E	50.0000	30.0000	90.0000	0.6000	30.0000	71.0000	5.0000	75.0000
107456	18 24 04N	44 13 20E	45.0000	20.0000	117.0000	0.8000	41.0000	62.0000	5.0000	50.0000
107457	18 24 04N	44 13 20E	10.0000	25.0000	90.0000	0.4000	36.0000	29.0000	5.0000	45.0000
107458	18 24 04N	44 13 20E	35.0000	30.0000	95.0000	0.4000	29.0000	46.0000	5.0000	130.0000
107459	18 24 04N	44 13 20E	35.0000	28.0000	44.0000	0.3000	38.0000	97.0000	10.0000	150.0000
107460	18 24 04N	44 13 20E	35.0000	32.0000	77.0000	0.5000	29.0000	59.0000	20.0000	80.0000
107461	18 24 04N	44 13 20E	40.0000	32.0000	45.0000	0.2000	35.0000	83.0000	10.0000	125.0000
107462	18 24 04N	44 13 20E	32.0000	25.0000	84.0000	1.4000	37.0000	25.0000	5.0000L	20.0000L
107463	18 24 04N	44 13 20E	25.0000	30.0000	150.0000	1.4000	35.0000	10.0000	5.0000L	20.0000L
107464	18 24 04N	44 13 20E	45.0000	35.0000	37.0000	0.6000	38.0000	76.0000	10.0000	95.0000
107465	18 24 04N	44 13 20E	45.0000	35.0000	35.0000	0.6000	45.0000	86.0000	10.0000	35.0000
107466	18 24 04N	44 13 20E	40.0000	28.0000	60.0000	0.9000	46.0000	140.0000	5.0000	420.0000
107467	18 24 04N	44 13 20E	55.0000	35.0000	69.0000	1.0000	39.0000	98.0000	5.0000	420.0000
107468	18 24 04N	44 13 20E	90.0000	25.0000	50.0000	0.6000	29.0000	50.0000	5.0000	175.0000
107469	18 24 04N	44 13 20E	95.0000	23.0000	850.0000	1.2000	30.0000	10.0000	5.0000L	90.0000
107470	18 24 04N	44 13 20E	45.0000	15.0000	82.0000	0.6000	29.0000	50.0000	5.0000L	135.0000
107471	18 24 04N	44 13 20E	30.0000	18.0000	103.0000	0.3000	30.0000	28.0000	5.0000L	95.0000
107472	18 24 04N	44 13 20E	26.0000	29.0000	108.0000	1.4000	30.0000	9.0000	5.0000L	20.0000L
107473	18 24 04N	44 13 20E	35.0000	23.0000	108.0000	0.5000	33.0000	30.0000	5.0000L	160.0000
107474	18 24 04N	44 13 20E	52.0000	32.0000	146.0000	1.4000	35.0000	16.0000	5.0000L	65.0000
107475	18 24 04N	44 13 20E	35.0000	18.0000	115.0000	0.3000	32.0000	30.0000	5.0000L	110.0000
107476	18 24 04N	44 13 20E	45.0000	20.0000	103.0000	0.7000	35.0000	35.0000	5.0000L	60.0000
107477	18 24 04N	44 13 20E	40.0000	20.0000	85.0000	0.6000	31.0000	31.0000	5.0000L	90.0000
107478	18 24 04N	44 13 20E	41.0000	25.0000	95.0000	1.0000	30.0000	20.0000	5.0000L	20.0000L
107479	18 24 04N	44 13 20E	50.0000	18.0000	65.0000	0.4000	29.0000	35.0000	5.0000L	145.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107438	18 24 04N	44 13 20E	650.0000
107439	18 24 04N	44 13 20E	425.0000
107440	18 24 04N	44 13 20E	450.0000
107441	18 24 04N	44 13 20E	1180.0000
107442	18 24 04N	44 13 20E	805.0000
107443	18 24 04N	44 13 20E	675.0000
107444	18 24 04N	44 13 20E	770.0000
107445	18 24 04N	44 13 20E	1080.0000
107446	18 24 04N	44 13 20E	1040.0000
107447	18 24 04N	44 13 20E	810.0000
107448	18 24 04N	44 13 20E	930.0000
107449	18 24 04N	44 13 20E	380.0000
107450	18 24 04N	44 13 20E	765.0000
107451	18 24 04N	44 13 20E	354.0000
107452	18 24 04N	44 13 20E	250.0000
107453	18 24 04N	44 13 20E	369.0000
107454	18 24 04N	44 13 20E	400.0000
107455	18 24 04N	44 13 20E	365.0000
107456	18 24 04N	44 13 20E	940.0000
107457	18 24 04N	44 13 20E	1000.0000
107458	18 24 04N	44 13 20E	790.0000
107459	18 24 04N	44 13 20E	230.0000
107460	18 24 04N	44 13 20E	645.0000
107461	18 24 04N	44 13 20E	295.0000
107462	18 24 04N	44 13 20E	1050.0000
107463	18 24 04N	44 13 20E	1225.0000
107464	18 24 04N	44 13 20E	185.0000
107465	18 24 04N	44 13 20E	285.0000
107466	18 24 04N	44 13 20E	1100.0000
107467	18 24 04N	44 13 20E	1200.0000
107468	18 24 04N	44 13 20E	900.0000
107469	18 24 04N	44 13 20E	785.0000
107470	18 24 04N	44 13 20E	785.0000
107471	18 24 04N	44 13 20E	855.0000
107472	18 24 04N	44 13 20E	1000.0000
107473	18 24 04N	44 13 20E	970.0000
107474	18 24 04N	44 13 20E	1180.0000
107475	18 24 04N	44 13 20E	1140.0000
107476	18 24 04N	44 13 20E	1220.0000
107477	18 24 04N	44 13 20E	990.0000
107478	18 24 04N	44 13 20E	725.0000
107479	18 24 04N	44 13 20E	600.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107480	18 24 04N	44 13 20E	55.0000	18.0000	54.0000	0.3000	32.0000	38.0000	5.0000L	80.0000
107481	18 24 04N	44 13 20E	45.0000	20.0000	95.0000	0.4000	29.0000	33.0000	5.0000L	130.0000
107482	18 24 04N	44 13 20E	45.0000	20.0000	80.0000	0.4000	30.0000	48.0000	5.0000L	165.0000
107483	18 20 35N	44 12 43E	95.0000	20.0000	33.0000	0.6000	43.0000	54.0000	5.0000L	130.0000
107484	18 20 35N	44 12 43E	40.0000	18.0000	18.0000	0.3000	45.0000	97.0000	5.0000L	70.0000
107485	18 20 35N	44 12 43E	38.0000	30.0000	45.0000	2.2000	44.0000	25.0000	5.0000L	20.0000L
107486	18 20 35N	44 12 43E	25.0000	25.0000	37.0000	0.6000	33.0000	63.0000	5.0000L	135.0000
107487	18 20 35N	44 12 43E	18.0000	30.0000	30.0000	1.2000	40.0000	15.0000	5.0000L	20.0000L
107488	18 20 35N	44 12 43E	20.0000	28.0000	33.0000	0.9000	31.0000	68.0000	5.0000L	30.0000
107489	18 20 35N	44 12 43E	15.0000	28.0000	31.0000	1.0000	27.0000	55.0000	5.0000L	30.0000
107490	18 20 35N	44 12 43E	15.0000	25.0000	34.0000	0.1000	29.0000	52.0000	5.0000L	495.0000
107491	18 20 35N	44 12 43E	25.0000	28.0000	24.0000	1.4000	32.0000	63.0000	5.0000L	20.0000L
107492	18 20 35N	44 12 43E	20.0000	30.0000	33.0000	0.3000	33.0000	60.0000	5.0000L	20.0000L
107493	18 20 35N	44 12 43E	15.0000	28.0000	29.0000	0.4000	30.0000	55.0000	5.0000L	20.0000L
107494	18 20 35N	44 12 43E	15.0000	35.0000	29.0000	2.0000	37.0000	23.0000	5.0000L	20.0000L
107495	18 20 35N	44 12 43E	15.0000	35.0000	34.0000	2.4000	40.0000	23.0000	5.0000L	20.0000L
107496	18 20 35N	44 12 43E	15.0000	33.0000	26.0000	0.8000	30.0000	56.0000	5.0000L	20.0000L
107497	18 20 35N	44 12 43E	20.0000	30.0000	30.0000	0.1000	18.0000	67.0000	5.0000L	20.0000L
107498	18 20 35N	44 12 43E	35.0000	26.0000	48.0000	0.4000	21.0000	81.0000	5.0000L	235.0000
107499	18 20 35N	44 12 43E	55.0000	20.0000	47.0000	1.1000	21.0000	75.0000	5.0000L	215.0000
107600	18 20 35N	44 12 43E	25.0000	38.0000	54.0000	0.7000	19.0000	75.0000	5.0000L	20.0000L
107601	18 20 35N	44 12 43E	20.0000	33.0000	28.0000	1.3000	47.0000	66.0000	5.0000L	20.0000L
107602	18 20 35N	44 12 43E	19.0000	38.0000	26.0000	2.1000	35.0000	44.0000	5.0000L	20.0000L
107603	18 20 35N	44 12 43E	100.0000	20.0000	41.0000	0.6000	18.0000	160.0000	5.0000L	620.0000
107604	18 20 35N	44 12 43E	87.0000	20.0000	67.0000	1.4000	40.0000	119.0000	5.0000L	415.0000
107605	18 20 35N	44 12 43E	95.0000	23.0000	39.0000	0.6000	32.0000	145.0000	5.0000L	900.0000
107606	18 20 35N	44 12 43E	35.0000	18.0000	47.0000	0.7000	48.0000	185.0000	5.0000L	495.0000
107607	18 20 35N	44 12 43E	140.0000	20.0000	53.0000	0.8000	27.0000	150.0000	5.0000L	390.0000
107608	18 20 35N	44 12 43E	140.0000	23.0000	45.0000	0.5000	39.0000	140.0000	5.0000L	20.0000L
107609	18 20 35N	44 12 43E	140.0000	16.0000	45.0000	0.8000	31.0000	106.0000	5.0000L	600.0000
107610	18 20 35N	44 12 43E	145.0000	20.0000	30.0000	0.9000	35.0000	130.0000	5.0000L	835.0000
107611	18 20 35N	44 12 43E	85.0000	26.0000	52.0000	1.6000	55.0000	109.0000	5.0000L	20.0000L
107612	18 20 35N	44 12 43E	100.0000	20.0000	34.0000	0.8000	34.0000	115.0000	5.0000L	415.0000
107613	18 20 35N	44 12 43E	90.0000	15.0000	40.0000	0.6000	33.0000	120.0000	5.0000L	390.0000
107614	18 20 35N	44 12 43E	95.0000	15.0000	35.0000	0.4000	44.0000	140.0000	5.0000	295.0000
107615	18 20 35N	44 12 43E	84.0000	17.5000	35.0000	0.5000	35.0000	125.0000	5.0000L	565.0000
107616	18 20 35N	44 12 43E	86.0000	18.0000	37.0000	0.7000	32.0000	120.0000	5.0000L	440.0000
107617	18 20 35N	44 12 43E	92.0000	20.0000	40.0000	0.8000	38.0000	115.0000	5.0000L	385.0000
107618	18 20 35N	44 12 43E	106.0000	19.0000	25.0000	0.7000	51.0000	135.0000	5.0000L	385.0000
107619	18 20 35N	44 12 43E	65.0000	17.0000	33.0000	0.4000	38.0000	113.0000	5.0000L	485.0000
107620	18 20 35N	44 12 43E	82.0000	16.0000	23.0000	0.5000	43.0000	120.0000	5.0000L	20.0000L
107621	18 20 35N	44 12 43E	98.0000	20.0000	34.0000	0.5000	40.0000	116.0000	5.0000L	205.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107480	18 24 04N	44 13 20E	570.0000
107481	18 24 04N	44 13 20E	670.0000
107482	18 24 04N	44 13 20E	600.0000
107483	18 20 35N	44 12 43E	85.0000
107484	18 20 35N	44 12 43E	15.0000
107485	18 20 35N	44 12 43E	270.0000
107486	18 20 35N	44 12 43E	235.0000
107487	18 20 35N	44 12 43E	126.0000
107488	18 20 35N	44 12 43E	180.0000
107489	18 20 35N	44 12 43E	90.0000
107490	18 20 35N	44 12 43E	60.0000
107491	18 20 35N	44 12 43E	85.0000
107492	18 20 35N	44 12 43E	130.0000
107493	18 20 35N	44 12 43E	100.0000
107494	18 20 35N	44 12 43E	70.0000
107495	18 20 35N	44 12 43E	105.0000
107496	18 20 35N	44 12 43E	25.0000
107497	18 20 35N	44 12 43E	80.0000
107498	18 20 35N	44 12 43E	155.0000
107499	18 20 35N	44 12 43E	110.0000
107600	18 20 35N	44 12 43E	250.0000
107601	18 20 35N	44 12 43E	325.0000
107602	18 20 35N	44 12 43E	435.0000
107603	18 20 35N	44 12 43E	410.0000
107604	18 20 35N	44 12 43E	740.0000
107605	18 20 35N	44 12 43E	420.0000
107606	18 20 35N	44 12 43E	320.0000
107607	18 20 35N	44 12 43E	460.0000
107608	18 20 35N	44 12 43E	475.0000
107609	18 20 35N	44 12 43E	660.0000
107610	18 20 35N	44 12 43E	300.0000
107611	18 20 35N	44 12 43E	580.0000
107612	18 20 35N	44 12 43E	285.0000
107613	18 20 35N	44 12 43E	300.0000
107614	18 20 35N	44 12 43E	232.0000
107615	18 20 35N	44 12 43E	236.0000
107616	18 20 35N	44 12 43E	339.0000
107617	18 20 35N	44 12 43E	307.0000
107618	18 20 35N	44 12 43E	251.0000
107619	18 20 35N	44 12 43E	275.0000
107620	18 20 35N	44 12 43E	276.0000
107621	18 20 35N	44 12 43E	314.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107622	18 20 35N	44 12 43E	95.0000	21.0000	40.0000	0.6000	48.0000	150.0000	5.0000L	475.0000
107623	18 20 35N	44 12 43E	87.5000	22.0000	33.0000	0.5000	37.0000	115.0000	5.0000L	475.0000
107624	18 20 35N	44 12 43E	80.0000	30.0000	35.0000	0.3000	39.0000	131.0000	5.0000	320.0000
107625	18 20 35N	44 12 43E	95.0000	30.0000	28.0000	0.1000	55.0000	155.0000	5.0000	360.0000
107626	18 21 20N	44 13 03E	64.0000	26.0000	34.0000	2.7000	90.0000	210.0000	5.0000L	20.0000L
107627	18 21 20N	44 13 03E	18.0000	31.0000	28.0000	2.7000	44.0000	34.0000	5.0000L	20.0000L
107628	18 21 20N	44 13 03E	12.5000	46.0000	21.0000	0.0000N	17.0000	73.0000	5.0000	20.0000L
107629	18 21 20N	44 13 03E	11.0000	30.0000	25.0000	0.3000	19.0000	72.0000	5.0000	20.0000L
107630	18 21 20N	44 13 03E	15.0000	29.0000	23.0000	0.1000	17.0000	77.0000	5.0000	20.0000L
107631	18 21 20N	44 13 03E	26.5000	27.0000	46.0000	0.1000	21.0000	79.0000	5.0000	20.0000L
107632	18 21 20N	44 13 03E	34.0000	30.0000	35.0000	0.1000	22.0000	86.0000	5.0000	20.0000L
107633	18 21 20N	44 13 03E	19.0000	30.0000	44.0000	0.3000	21.0000	83.0000	5.0000	20.0000L
107634	18 21 20N	44 13 03E	45.0000	26.5000	67.0000	0.6000	22.0000	71.0000	5.0000L	20.0000L
107635	18 21 20N	44 13 03E	39.0000	26.5000	50.0000	0.3000	26.0000	88.0000	5.0000	20.0000L
107636	18 21 20N	44 13 03E	22.5000	31.0000	34.0000	0.5000	21.0000	83.0000	5.0000	20.0000L
107637	18 21 20N	44 13 03E	16.0000	42.0000	35.0000	0.2000	20.0000	81.0000	5.0000	20.0000L
107638	18 21 20N	44 13 03E	52.5000	40.0000	55.0000	0.2000	20.0000	80.0000	20.0000	20.0000L
107639	18 21 20N	44 13 03E	18.0000	35.0000	54.0000	0.2000	22.0000	86.0000	5.0000L	20.0000L
107640	18 21 20N	44 13 03E	18.0000	30.0000	27.0000	0.2000	18.0000	88.0000	5.0000	20.0000L
107641	18 21 20N	44 13 03E	24.0000	25.0000	51.0000	0.2000	21.0000	84.0000	5.0000L	20.0000L
107642	18 21 20N	44 13 03E	22.0000	30.0000	35.0000	0.1000	19.0000	88.0000	5.0000	20.0000L
107643	18 21 20N	44 13 03E	16.5000	30.0000	33.0000	0.4000	22.0000	33.0000	5.0000	20.0000L
107644	18 21 20N	44 13 03E	31.5000	30.0000	54.0000	0.3000	20.0000	99.0000	5.0000	20.0000L
107645	18 21 20N	44 13 03E	16.5000	30.0000	85.0000	0.1000	21.0000	82.0000	5.0000	20.0000L
107646	18 21 20N	44 13 03E	16.5000	27.5000	70.0000	0.1000	21.0000	79.0000	5.0000	20.0000L
107647	18 21 20N	44 13 03E	15.5000	32.5000	40.0000	0.1000	12.0000	78.0000	5.0000	20.0000L
107648	18 21 20N	44 13 03E	16.0000	35.0000	35.0000	0.2000	23.0000	83.0000	5.0000	20.0000L
107649	18 21 20N	44 13 03E	20.0000	30.0000	48.0000	0.1000	23.0000	81.0000	5.0000L	20.0000L
107650	18 21 20N	44 13 03E	25.0000	30.0000	38.0000	0.1000	19.0000	83.0000	5.0000	20.0000L
107651	18 21 20N	44 13 03E	18.5000	35.0000	34.0000	0.3000	21.0000	85.0000	5.0000	20.0000L
107652	18 21 20N	44 13 03E	14.0000	40.0000	27.0000	0.9000	19.0000	78.0000	5.0000	20.0000L
107653	18 21 20N	44 13 03E	44.0000	45.0000	38.0000	0.2000	20.0000	83.0000	5.0000	20.0000L
107654	18 21 20N	44 13 03E	21.5000	27.5000	65.0000	0.2000	22.0000	75.0000	5.0000	20.0000L
107655	18 21 20N	44 13 03E	20.0000	30.0000	39.0000	0.1000	22.0000	84.0000	5.0000	20.0000L
107656	18 21 20N	44 13 03E	34.0000	30.0000	43.0000	0.2000	22.0000	78.0000	5.0000L	20.0000L
107657	18 21 20N	44 13 03E	45.0000	25.0000	59.0000	0.4000	24.0000	76.0000	5.0000	20.0000L
107658	18 21 20N	44 13 03E	50.0000	30.0000	62.0000	0.2000	23.0000	80.0000	5.0000	20.0000L
107659	18 21 20N	44 13 03E	47.5000	25.0000	48.0000	0.1000	21.0000	69.0000	5.0000	20.0000L
107660	18 21 20N	44 13 03E	27.5000	35.0000	39.0000	0.1000	22.0000	73.0000	5.0000L	20.0000L
107661	18 21 20N	44 13 03E	33.0000	43.0000	49.0000	0.1000	23.0000	79.0000	5.0000	20.0000L
107662	18 21 20N	44 13 03E	25.0000	20.0000	55.0000	0.1000	23.0000	65.0000	5.0000L	20.0000L
107663	18 21 20N	44 13 03E	19.0000	27.5000	35.0000	0.1000	22.0000	74.0000	5.0000L	20.0000L

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107622	18 20 35N	44 12 43E	202.0000
107623	18 20 35N	44 12 43E	265.0000
107624	18 20 35N	44 12 43E	185.0000
107625	18 20 35N	44 12 43E	190.0000
107626	18 21 20N	44 13 03E	165.0000
107627	18 21 20N	44 13 03E	22.0000
107628	18 21 20N	44 13 03E	16.0000
107629	18 21 20N	44 13 03E	27.0000
107630	18 21 20N	44 13 03E	56.0000
107631	18 21 20N	44 13 03E	217.0000
107632	18 21 20N	44 13 03E	388.0000
107633	18 21 20N	44 13 03E	398.0000
107634	18 21 20N	44 13 03E	850.0000
107635	18 21 20N	44 13 03E	315.0000
107636	18 21 20N	44 13 03E	394.0000
107637	18 21 20N	44 13 03E	173.0000
107638	18 21 20N	44 13 03E	316.0000
107639	18 21 20N	44 13 03E	327.0000
107640	18 21 20N	44 13 03E	332.0000
107641	18 21 20N	44 13 03E	430.0000
107642	18 21 20N	44 13 03E	404.0000
107643	18 21 20N	44 13 03E	486.0000
107644	18 21 20N	44 13 03E	565.0000
107645	18 21 20N	44 13 03E	250.0000
107646	18 21 20N	44 13 03E	400.0000
107647	18 21 20N	44 13 03E	210.0000
107648	18 21 20N	44 13 03E	159.0000
107649	18 21 20N	44 13 03E	271.0000
107650	18 21 20N	44 13 03E	355.0000
107651	18 21 20N	44 13 03E	245.0000
107652	18 21 20N	44 13 03E	279.0000
107653	18 21 20N	44 13 03E	289.0000
107654	18 21 20N	44 13 03E	425.0000
107655	18 21 20N	44 13 03E	330.0000
107656	18 21 20N	44 13 03E	260.0000
107657	18 21 20N	44 13 03E	683.0000
107658	18 21 20N	44 13 03E	865.0000
107659	18 21 20N	44 13 03E	765.0000
107660	18 21 20N	44 13 03E	371.0000
107661	18 21 20N	44 13 03E	452.0000
107662	18 21 20N	44 13 03E	478.0000
107663	18 21 20N	44 13 03E	325.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107664	18 21 20N	44 13 03E	17.5000	25.0000	29.0000	0.1000	24.0000	75.0000	5.0000	20.0000
107665	18 21 20N	44 13 03E	16.0000	27.0000	37.0000	0.1000	24.0000	73.0000	5.0000L	20.0000L
107666	18 21 20N	44 13 03E	38.0000	24.0000	58.0000	0.2000	22.0000	67.0000	5.0000	20.0000L
107667	18 21 20N	44 13 03E	39.0000	25.0000	59.0000	0.2000	23.0000	74.0000	5.0000	20.0000L
107668	18 21 20N	44 13 03E	25.0000	30.0000	53.0000	0.2000	23.0000	79.0000	5.0000L	65.0000
107669	18 21 20N	44 13 03E	56.0000	37.0000	61.0000	0.1000	22.0000	73.0000	5.0000L	20.0000L
107670	18 21 20N	44 13 03E	52.5000	35.0000	40.0000	0.2000	24.0000	77.0000	5.0000L	20.0000L
107671	18 21 20N	44 13 03E	20.0000	30.0000	45.0000	0.1000	24.0000	73.0000	5.0000L	20.0000L
107672	18 21 20N	44 13 03E	30.0000	25.0000	84.0000	0.2000	23.0000	65.0000	5.0000L	20.0000L
107673	18 21 20N	44 13 03E	33.5000	30.0000	47.0000	0.1000	24.0000	76.0000	5.0000L	20.0000L
107674	18 21 20N	44 13 03E	26.0000	35.0000	34.0000	0.2000	26.0000	83.0000	5.0000L	20.0000L
107675	18 21 20N	44 13 03E	21.0000	40.0000	40.0000	0.6000	24.0000	79.0000	5.0000L	20.0000L
107676	18 21 20N	44 13 03E	34.0000	30.0000	42.0000	0.6000	25.0000	85.0000	5.0000L	20.0000L
107677	18 21 20N	44 13 03E	34.0000	25.0000	47.0000	0.5000	26.0000	83.0000	5.0000L	20.0000L
107678	18 21 20N	44 13 03E	48.0000	20.0000	56.0000	0.6000	25.0000	70.0000	5.0000L	20.0000L
107679	18 21 20N	44 13 03E	70.5000	15.0000	85.0000	0.5000	25.0000	64.0000	5.0000L	155.0000
107680	18 21 20N	44 13 03E	70.5000	15.0000	85.0000	0.6000	17.0000	42.0000	5.0000L	125.0000
107681	18 21 20N	44 13 03E	55.0000	20.0000	64.0000	0.5000	23.0000	66.0000	5.0000L	100.0000
107682	18 21 20N	44 13 03E	45.0000	20.0000	77.0000	0.7000	23.0000	74.0000	5.0000L	100.0000
107683	18 21 20N	44 13 03E	31.5000	17.5000	53.0000	0.6000	24.0000	67.0000	5.0000L	60.0000
107684	18 21 20N	44 13 03E	35.0000	20.0000	56.0000	0.5000	24.0000	65.0000	5.0000L	90.0000
107685	18 21 20N	44 13 03E	60.5000	20.0000	68.0000	0.7000	30.0000	63.0000	5.0000L	65.0000
107686	18 21 20N	44 13 03E	63.0000	20.0000	79.0000	0.9000	27.0000	73.0000	5.0000L	20.0000L
107687	18 21 20N	44 13 03E	61.0000	17.5000	81.0000	0.6000	26.0000	60.0000	5.0000L	20.0000L
107688	18 21 20N	44 13 03E	50.0000	20.0000	61.0000	0.7000	26.0000	67.0000	5.0000L	20.0000L
107689	18 21 20N	44 13 03E	59.0000	20.0000	79.0000	0.6000	24.0000	71.0000	5.0000L	60.0000
107690	18 21 20N	44 13 03E	37.5000	20.0000	63.0000	0.6000	23.0000	63.0000	5.0000L	55.0000
107691	18 21 20N	44 13 03E	46.5000	20.0000	65.0000	0.9000	27.0000	65.0000	5.0000L	95.0000
107692	18 21 20N	44 13 03E	61.5000	20.0000	83.0000	0.1000	26.0000	45.0000	5.0000	75.0000
107693	18 21 20N	44 13 03E	37.0000	25.0000	66.0000	1.1000	26.0000	77.0000	5.0000	20.0000L
107694	18 21 20N	44 13 03E	59.0000	25.0000	65.0000	0.9000	30.0000	75.0000	5.0000	50.0000
107695	18 21 20N	44 13 03E	40.0000	20.0000	49.0000	0.8000	25.0000	92.0000	5.0000L	105.0000
107696	18 21 20N	44 13 03E	80.0000	25.0000	61.0000	0.8000	32.0000	94.0000	5.0000L	20.0000L
107697	18 21 20N	44 13 03E	83.0000	20.0000	520.0000	1.0000	23.0000	80.0000	5.0000	75.0000
107698	18 21 20N	44 13 03E	40.0000	15.0000	61.0000	0.9000	25.0000	124.0000	5.0000L	40.0000
107699	18 21 20N	44 13 03E	31.5000	25.0000	56.0000	1.1000	29.0000	139.0000	5.0000L	20.0000L
107700	18 21 20N	44 13 03E	31.0000	25.0000	54.0000	1.3000	35.0000	91.0000	5.0000	20.0000L
107701	18 21 20N	44 13 03E	67.0000	25.0000	55.0000	1.0000	37.0000	132.0000	5.0000	20.0000L
107702	18 21 20N	44 13 03E	53.5000	20.0000	430.0000	1.3000	23.0000	55.0000	5.0000	55.0000
107703	18 21 20N	44 13 03E	69.5000	25.0000	58.0000	1.4000	21.0000	36.0000	5.0000L	65.0000
107704	18 21 20N	44 13 03E	17.5000	15.0000	92.0000	1.1000	40.0000	29.0000	5.0000L	20.0000L
107705	18 21 20N	44 13 03E	48.0000	20.0000	76.0000	1.3000	23.0000	41.0000	5.0000L	50.0000

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107664	18 21 20N	44 13 03E	213.0000
107665	18 21 20N	44 13 03E	310.0000
107666	18 21 20N	44 13 03E	640.0000
107667	18 21 20N	44 13 03E	568.0000
107668	18 21 20N	44 13 03E	465.0000
107669	18 21 20N	44 13 03E	590.0000
107670	18 21 20N	44 13 03E	375.0000
107671	18 21 20N	44 13 03E	285.0000
107672	18 21 20N	44 13 03E	470.0000
107673	18 21 20N	44 13 03E	330.0000
107674	18 21 20N	44 13 03E	462.0000
107675	18 21 20N	44 13 03E	292.0000
107676	18 21 20N	44 13 03E	500.0000
107677	18 21 20N	44 13 03E	402.0000
107678	18 21 20N	44 13 03E	588.0000
107679	18 21 20N	44 13 03E	813.0000
107680	18 21 20N	44 13 03E	835.0000
107681	18 21 20N	44 13 03E	690.0000
107682	18 21 20N	44 13 03E	610.0000
107683	18 21 20N	44 13 03E	500.0000
107684	18 21 20N	44 13 03E	451.0000
107685	18 21 20N	44 13 03E	675.0000
107686	18 21 20N	44 13 03E	715.0000
107687	18 21 20N	44 13 03E	740.0000
107688	18 21 20N	44 13 03E	635.0000
107689	18 21 20N	44 13 03E	720.0000
107690	18 21 20N	44 13 03E	525.0000
107691	18 21 20N	44 13 03E	590.0000
107692	18 21 20N	44 13 03E	670.0000
107693	18 21 20N	44 13 03E	625.0000
107694	18 21 20N	44 13 03E	568.0000
107695	18 21 20N	44 13 03E	608.0000
107696	18 21 20N	44 13 03E	725.0000
107697	18 21 20N	44 13 03E	788.0000
107698	18 21 20N	44 13 03E	388.0000
107699	18 21 20N	44 13 03E	188.0000
107700	18 21 20N	44 13 03E	317.0000
107701	18 21 20N	44 13 03E	388.0000
107702	18 21 20N	44 13 03E	1135.0000
107703	18 21 20N	44 13 03E	650.0000
107704	18 21 20N	44 13 03E	390.0000
107705	18 21 20N	44 13 03E	563.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107706	18 21 20N	44 13 03E	68.0000	20.0000	47.0000	1.5000	21.0000	54.0000	5.0000L	95.0000
107707	18 21 20N	44 13 03E	61.0000	15.0000	45.0000	1.1000	22.0000	70.0000	5.0000L	70.0000
107708	18 21 20N	44 13 03E	43.0000	20.0000	44.0000	1.4000	24.0000	64.0000	5.0000L	70.0000
107709	18 21 20N	44 13 03E	55.0000	20.0000	53.0000	1.3000	25.0000	74.0000	5.0000L	95.0000
107710	18 21 20N	44 13 03E	55.5000	20.0000	150.0000	1.3000	22.0000	70.0000	5.0000L	95.0000
107711	18 21 20N	44 13 03E	50.5000	25.0000	51.0000	1.6000	28.0000	141.0000	5.0000L	60.0000
107712	18 20 21N	44 12 18E	20.0000	12.0000	16.0000	0.8000	15.0000	18.0000	5.0000	123.0000
107713	18 20 21N	44 12 18E	25.0000	10.0000L	10.0000	0.6000	21.0000	15.0000	5.0000	150.0000
107714	18 20 21N	44 12 18E	15.0000	16.0000	53.0000	0.9000	25.0000	17.0000	5.0000	135.0000
107715	18 20 21N	44 12 18E	28.0000	18.0000	50.0000	0.5000	25.0000	21.0000	5.0000	310.0000
107716	18 20 21N	44 12 18E	14.0000	13.0000	79.0000	0.5000	14.0000	15.0000	5.0000	330.0000
107717	18 20 21N	44 12 18E	22.0000	14.0000	60.0000	0.5000	25.0000	17.0000	5.0000	80.0000
107718	18 20 21N	44 12 18E	19.0000	25.0000	68.0000	0.7000	25.0000	22.0000	5.0000	80.0000
107719	18 20 21N	44 12 18E	36.0000	17.0000	63.0000	0.5000	35.0000	101.0000	5.0000	215.0000
107720	18 20 21N	44 12 18E	71.0000	17.0000	58.0000	0.5000	40.0000	139.0000	5.0000	310.0000
107721	18 20 21N	44 12 18E	81.0000	22.0000	48.0000	0.8000	40.0000	89.0000	5.0000	115.0000
107722	18 20 21N	44 12 18E	39.0000	21.0000	66.0000	0.5000	35.0000	31.0000	5.0000	30.0000
107723	18 20 21N	44 12 18E	37.0000	27.0000	38.0000	0.5000	55.0000	55.0000	5.0000	15.0000
107724	18 20 21N	44 12 18E	49.0000	31.0000	62.0000	0.4000	70.0000	49.0000	10.0000	15.0000
107725	18 20 21N	44 12 18E	44.0000	29.0000	55.0000	0.3000	65.0000	49.0000	10.0000	15.0000
107726	18 20 21N	44 12 18E	24.0000	18.0000	53.0000	2.1000	40.0000	26.0000	5.0000	85.0000
107727	18 20 21N	44 12 18E	23.0000	19.0000	34.0000	0.4000	40.0000	24.0000	5.0000	20.0000
107728	18 20 21N	44 12 18E	27.0000	20.0000	47.0000	0.3000	40.0000	24.0000	5.0000	70.0000
107729	18 20 21N	44 12 18E	19.0000	18.0000	46.0000	0.4000	35.0000	18.0000	5.0000	100.0000
107730	18 20 21N	44 12 18E	15.0000	20.0000	45.0000	0.5000	35.0000	20.0000	5.0000	20.0000
107731	18 20 21N	44 12 18E	22.0000	25.0000	62.0000	0.5000	60.0000	27.0000	5.0000	105.0000
107732	18 20 21N	44 12 18E	23.0000	25.0000	65.0000	0.6000	38.0000	25.0000	5.0000	130.0000
107733	18 20 21N	44 12 18E	37.0000	25.0000	60.0000	0.6000	53.0000	32.0000	5.0000	20.0000
107734	18 20 21N	44 12 18E	42.0000	28.0000	35.0000	1.3000	60.0000	37.0000	5.0000	20.0000
107735	18 20 21N	44 12 18E	45.0000	32.0000	74.0000	0.4000	68.0000	48.0000	5.0000	15.0000
107736	18 20 21N	44 12 18E	42.0000	27.0000	41.0000	0.2000	59.0000	44.0000	5.0000	15.0000
107737	18 20 21N	44 12 18E	51.0000	30.0000	46.0000	0.3000	60.0000	50.0000	5.0000	15.0000
107738	18 20 21N	44 12 18E	55.0000	30.0000	57.0000	0.2000	65.0000	46.0000	5.0000	155.0000
107739	18 20 21N	44 12 18E	58.0000	35.0000	44.0000	0.3000	75.0000	59.0000	5.0000	15.0000
107740	18 20 21N	44 12 18E	49.0000	25.0000	46.0000	0.2000	63.0000	36.0000	5.0000	20.0000
107741	18 20 21N	44 12 18E	35.0000	25.0000	39.0000	0.2000	75.0000	33.0000	5.0000	15.0000
107742	18 20 21N	44 12 18E	40.0000	27.0000	61.0000	0.3000	45.0000	36.0000	5.0000	20.0000
107743	18 20 21N	44 12 18E	18.0000	20.0000	62.0000	0.3000	30.0000	19.0000	5.0000	220.0000
107744	18 20 21N	44 12 18E	47.0000	20.0000	42.0000	0.4000	35.0000	77.0000	5.0000	305.0000
107745	18 20 21N	44 12 18E	70.0000	16.0000	52.0000	0.7000	35.0000	100.0000	5.0000	270.0000
107746	18 20 21N	44 12 18E	57.0000	15.0000	45.0000	0.6000	28.0000	90.0000	5.0000	350.0000
107747	18 20 21N	44 12 18E	60.0000	15.0000	41.0000	0.4000	35.0000	75.0000	5.0000	190.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107706	18 21 20N	44 13 03E	683.0000
107707	18 21 20N	44 13 03E	508.0000
107708	18 21 20N	44 13 03E	675.0000
107709	18 21 20N	44 13 03E	685.0000
107710	18 21 20N	44 13 03E	640.0000
107711	18 21 20N	44 13 03E	720.0000
107712	18 20 21N	44 12 18E	69.0000
107713	18 20 21N	44 12 18E	28.0000
107714	18 20 21N	44 12 18E	10.0000L
107715	18 20 21N	44 12 18E	10.0000L
107716	18 20 21N	44 12 18E	485.0000
107717	18 20 21N	44 12 18E	570.0000
107718	18 20 21N	44 12 18E	640.0000
107719	18 20 21N	44 12 18E	550.0000
107720	18 20 21N	44 12 18E	520.0000
107721	18 20 21N	44 12 18E	320.0000
107722	18 20 21N	44 12 18E	645.0000
107723	18 20 21N	44 12 18E	590.0000
107724	18 20 21N	44 12 18E	425.0000
107725	18 20 21N	44 12 18E	305.0000
107726	18 20 21N	44 12 18E	420.0000
107727	18 20 21N	44 12 18E	410.0000
107728	18 20 21N	44 12 18E	635.0000
107729	18 20 21N	44 12 18E	515.0000
107730	18 20 21N	44 12 18E	450.0000
107731	18 20 21N	44 12 18E	580.0000
107732	18 20 21N	44 12 18E	590.0000
107733	18 20 21N	44 12 18E	1135.0000
107734	18 20 21N	44 12 18E	585.0000
107735	18 20 21N	44 12 18E	655.0000
107736	18 20 21N	44 12 18E	800.0000
107737	18 20 21N	44 12 18E	425.0000
107738	18 20 21N	44 12 18E	480.0000
107739	18 20 21N	44 12 18E	330.0000
107740	18 20 21N	44 12 18E	445.0000
107741	18 20 21N	44 12 18E	460.0000
107742	18 20 21N	44 12 18E	655.0000
107743	18 20 21N	44 12 18E	800.0000
107744	18 20 21N	44 12 18E	550.0000
107745	18 20 21N	44 12 18E	600.0000
107746	18 20 21N	44 12 18E	545.0000
107747	18 20 21N	44 12 18E	420.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107748	18 20 21N	44 12 18E	73.0000	10.0000	34.0000	0.4000	38.0000	92.0000	5.0000	200.0000
107749	18 20 21N	44 12 18E	78.0000	15.0000	76.0000	0.6000	38.0000	50.0000	5.0000	85.0000
107750	18 20 21N	44 12 18E	45.0000	17.0000	65.0000	0.4000	40.0000	47.0000	5.0000	85.0000
107751	18 20 21N	44 12 18E	19.0000	17.0000	37.0000	0.6000	25.0000	29.0000	5.0000	200.0000
107752	18 20 21N	44 12 18E	27.0000	14.0000	32.0000	0.4000	30.0000	33.0000	5.0000	115.0000
107753	18 20 21N	44 12 18E	60.0000	22.0000	41.0000	0.9000	33.0000	72.0000	5.0000	210.0000
107754	18 20 21N	44 12 18E	80.0000	20.0000	38.0000	0.6000	30.0000	124.0000	5.0000	240.0000
107755	18 20 21N	44 12 18E	36.0000	18.0000	46.0000	0.8000	33.0000	65.0000	5.0000	250.0000
107756	18 20 21N	44 12 18E	34.0000	22.0000	55.0000	0.2000	45.0000	16.0000	5.0000	45.0000
107757	18 20 21N	44 12 18E	22.0000	24.0000	139.0000	0.7000	53.0000	21.0000	5.0000	20.0000L
107758	18 20 21N	44 12 18E	18.0000	22.0000	93.0000	0.9000	35.0000	36.0000	5.0000	130.0000
107759	18 20 21N	44 12 18E	78.0000	19.0000	68.0000	0.4000	68.0000	48.0000	5.0000	70.0000
107760	18 20 21N	44 12 18E	69.0000	20.0000	44.0000	0.5000	60.0000	37.0000	5.0000	20.0000L
107761	18 20 21N	44 12 18E	97.0000	22.0000	52.0000	0.6000	34.0000	54.0000	5.0000	85.0000
107762	18 20 21N	44 12 18E	48.0000	20.0000	66.0000	0.4000	35.0000	70.0000	5.0000L	95.0000
107763	18 20 21N	44 12 18E	39.0000	19.0000	52.0000	0.4000	25.0000	186.0000	5.0000L	60.0000
107764	18 20 21N	44 12 18E	68.0000	14.0000	40.0000	0.4000	28.0000	60.0000	5.0000L	150.0000
107765	18 20 21N	44 12 18E	31.0000	19.0000	75.0000	0.9000	24.0000	31.0000	5.0000L	140.0000
107766	18 20 21N	44 12 18E	118.0000	16.0000	42.0000	0.5000	25.0000	188.0000	5.0000L	470.0000
107767	18 20 21N	44 12 18E	79.0000	17.0000	37.0000	0.5000	25.0000	193.0000	5.0000L	900.0000
107768	18 20 21N	44 12 18E	73.0000	18.0000	44.0000	0.5000	25.0000	190.0000	5.0000L	545.0000
107769	18 20 21N	44 12 18E	103.0000	20.0000	49.0000	0.7000	23.0000	173.0000	5.0000L	460.0000
107770	18 20 21N	44 12 18E	85.0000	19.0000	54.0000	0.8000	23.0000	100.0000	5.0000L	230.0000
107771	18 20 21N	44 12 18E	41.0000	19.0000	78.0000	0.4000	20.0000	34.0000	5.0000L	115.0000
107772	18 20 21N	44 12 18E	36.0000	17.0000	63.0000	0.5000	18.0000	49.0000	5.0000L	245.0000
107773	18 20 21N	44 12 18E	90.0000	20.0000	47.0000	0.5000	35.0000	122.0000	5.0000L	340.0000
107774	18 20 21N	44 12 18E	54.0000	20.0000	65.0000	0.6000	28.0000	133.0000	5.0000L	545.0000
107775	18 20 21N	44 12 18E	134.0000	20.0000	51.0000	0.4000	60.0000	118.0000	5.0000L	200.0000
107776	18 20 21N	44 12 18E	57.0000	20.0000	51.0000	0.9000	28.0000	180.0000	5.0000L	110.0000
107777	18 20 21N	44 12 18E	66.0000	15.0000	51.0000	0.4000	23.0000	93.0000	5.0000L	135.0000
107778	18 20 21N	44 12 18E	75.0000	18.0000	47.0000	0.3000	30.0000	95.0000	5.0000L	435.0000
107779	18 20 21N	44 12 18E	38.0000	17.0000	45.0000	0.4000	23.0000	56.0000	5.0000L	250.0000
107780	18 20 21N	44 12 18E	35.0000	17.0000	34.0000	0.3000	35.0000	31.0000	5.0000L	285.0000
107781	18 20 21N	44 12 18E	91.0000	24.0000	55.0000	0.3000	65.0000	56.0000	5.0000L	265.0000
107782	18 20 21N	44 12 18E	32.0000	17.0000	52.0000	0.3000	20.0000	104.0000	5.0000L	415.0000
107783	18 20 21N	44 12 18E	46.0000	15.0000	51.0000	0.4000	25.0000	124.0000	5.0000L	245.0000
107784	18 20 21N	44 12 18E	80.0000	20.0000	49.0000	0.3000	38.0000	105.0000	5.0000L	150.0000
107785	18 20 21N	44 12 18E	50.0000	19.0000	41.0000	0.5000	38.0000	86.0000	5.0000L	340.0000
107786	18 20 21N	44 12 18E	66.0000	14.0000	41.0000	0.5000	20.0000	74.0000	5.0000L	405.0000
107787	18 20 21N	44 12 18E	35.0000	14.0000	41.0000	0.6000	20.0000	48.0000	5.0000L	200.0000
107788	18 21 16N	44 11 35E	38.0000	0.0000N	80.0000	0.0000N	25.0000	360.0000	5.0000L	225.0000
107789	18 21 16N	44 11 35E	36.0000	0.0000N	37.0000	0.0000N	25.0000	320.0000	5.0000L	520.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107748	18 20 21N	44 12 18E	320.0000
107749	18 20 21N	44 12 18E	135.0000
107750	18 20 21N	44 12 18E	585.0000
107751	18 20 21N	44 12 18E	470.0000
107752	18 20 21N	44 12 18E	320.0000
107753	18 20 21N	44 12 18E	380.0000
107754	18 20 21N	44 12 18E	440.0000
107755	18 20 21N	44 12 18E	450.0000
107756	18 20 21N	44 12 18E	730.0000
107757	18 20 21N	44 12 18E	525.0000
107758	18 20 21N	44 12 18E	640.0000
107759	18 20 21N	44 12 18E	520.0000
107760	18 20 21N	44 12 18E	475.0000
107761	18 20 21N	44 12 18E	705.0000
107762	18 20 21N	44 12 18E	585.0000
107763	18 20 21N	44 12 18E	425.0000
107764	18 20 21N	44 12 18E	480.0000
107765	18 20 21N	44 12 18E	635.0000
107766	18 20 21N	44 12 18E	350.0000
107767	18 20 21N	44 12 18E	375.0000
107768	18 20 21N	44 12 18E	380.0000
107769	18 20 21N	44 12 18E	495.0000
107770	18 20 21N	44 12 18E	540.0000
107771	18 20 21N	44 12 18E	470.0000
107772	18 20 21N	44 12 18E	430.0000
107773	18 20 21N	44 12 18E	395.0000
107774	18 20 21N	44 12 18E	430.0000
107775	18 20 21N	44 12 18E	485.0000
107776	18 20 21N	44 12 18E	395.0000
107777	18 20 21N	44 12 18E	380.0000
107778	18 20 21N	44 12 18E	400.0000
107779	18 20 21N	44 12 18E	405.0000
107780	18 20 21N	44 12 18E	435.0000
107781	18 20 21N	44 12 18E	335.0000
107782	18 20 21N	44 12 18E	470.0000
107783	18 20 21N	44 12 18E	425.0000
107784	18 20 21N	44 12 18E	380.0000
107785	18 20 21N	44 12 18E	385.0000
107786	18 20 21N	44 12 18E	340.0000
107787	18 20 21N	44 12 18E	450.0000
107788	18 21 16N	44 11 35E	240.0000
107789	18 21 16N	44 11 35E	225.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CH-MO	AA-CR-T
107790	18 21 16N	44 11 35E	48.0000	0.0000N	34.0000	0.0000N	50.0000	420.0000	5.0000L	580.0000
107791	18 21 16N	44 11 35E	30.0000	0.0000N	40.0000	0.0000N	35.0000	223.0000	5.0000L	235.0000
107792	18 21 16N	44 11 35E	23.0000	0.0000N	36.0000	0.0000N	21.0000	43.0000	5.0000L	680.0000
107793	18 21 16N	44 11 35E	19.0000	0.0000N	44.0000	0.0000N	25.0000	83.0000	5.0000L	540.0000
107794	18 21 16N	44 11 35E	7.0000	0.0000N	46.0000	0.0000N	18.0000	19.0000	5.0000L	45.0000
107795	18 21 16N	44 11 35E	12.0000	0.0000N	51.0000	0.2000	25.0000	37.0000	5.0000L	600.0000
107796	18 21 16N	44 11 35E	26.0000	0.0000N	85.0000	0.1000	21.0000	33.0000	5.0000L	85.0000
107797	18 21 16N	44 11 35E	28.0000	25.0000	24.0000	0.1000	25.0000	38.0000	5.0000L	100.0000
107798	18 21 16N	44 11 35E	5.0000	30.0000	89.0000	0.8000	23.0000	21.0000	5.0000L	85.0000
107799	18 21 16N	44 11 35E	8.0000	30.0000	54.0000	0.4000	25.0000	21.0000	5.0000L	85.0000
107800	18 21 16N	44 11 35E	9.0000	25.0000	49.0000	0.4000	20.0000	17.0000	5.0000L	45.0000
107801	18 21 16N	44 11 35E	13.0000	20.0000	43.0000	0.4000	23.0000	20.0000	5.0000L	165.0000
107802	18 21 16N	44 11 35E	10.0000	30.0000	52.0000	0.5000	19.0000	15.0000	5.0000L	125.0000
107803	18 21 16N	44 11 35E	19.0000	20.0000	46.0000	0.4000	23.0000	15.0000	5.0000L	175.0000
107804	18 21 16N	44 11 35E	15.0000	25.0000	52.0000	0.4000	22.0000	32.0000	5.0000L	200.0000
107805	18 21 16N	44 11 35E	9.0000	30.0000	52.0000	0.5000	25.0000	18.0000	5.0000L	140.0000
107806	18 21 16N	44 11 35E	5.0000	20.0000	52.0000	0.5000	23.0000	17.0000	5.0000L	105.0000
107807	18 21 16N	44 11 35E	5.0000	20.0000	39.0000	0.4000	17.0000	18.0000	5.0000L	155.0000
107808	18 21 16N	44 11 35E	5.0000	15.0000	45.0000	0.3000	18.0000	16.0000	5.0000L	210.0000
107809	18 21 16N	44 11 35E	20.0000	30.0000	41.0000	0.7000	26.0000	40.0000	5.0000L	175.0000
107810	18 21 16N	44 11 35E	44.0000	20.0000	44.0000	0.5000	38.0000	250.0000	5.0000L	535.0000
107811	18 21 16N	44 11 35E	30.0000	85.0000	350.0000	0.7000	23.0000	80.0000	5.0000L	225.0000
107812	18 21 16N	44 11 35E	10.0000	135.0000	240.0000	0.3000	15.0000	21.0000	5.0000L	520.0000
107813	18 21 16N	44 11 35E	34.0000	185.0000	470.0000	0.6000	31.0000	98.0000	5.0000L	405.0000
107814	18 21 16N	44 11 35E	112.0000	20.0000	28.0000	0.1000	42.0000	160.0000	5.0000L	510.0000
107815	18 21 16N	44 11 35E	126.0000	20.0000	23.0000	0.1000	37.0000	160.0000	5.0000L	670.0000
107816	18 21 16N	44 11 35E	77.0000	20.0000	30.0000	0.2000	35.0000	70.0000	5.0000L	730.0000
107817	18 21 16N	44 11 35E	13.0000	15.0000	26.0000	0.2000	18.0000	16.0000	5.0000L	20.0000L
107818	18 21 16N	44 11 35E	9.0000	10.0000	30.0000	0.5000	20.0000	15.0000	5.0000L	100.0000
107819	18 21 16N	44 11 35E	31.0000	15.0000	45.0000	0.3000	28.0000	90.0000	5.0000L	150.0000
107820	18 21 16N	44 11 35E	36.0000	20.0000	42.0000	0.3000	26.0000	105.0000	5.0000L	465.0000
107821	18 21 16N	44 11 35E	96.0000	25.0000	43.0000	0.4000	51.0000	350.0000	5.0000L	480.0000
107822	18 21 16N	44 11 35E	122.0000	20.0000	41.0000	0.3000	48.0000	270.0000	5.0000L	280.0000
107823	18 21 16N	44 11 35E	123.0000	20.0000	36.0000	0.3000	51.0000	360.0000	5.0000L	455.0000
107824	18 21 16N	44 11 35E	103.0000	25.0000	30.0000	0.5000	48.0000	300.0000	5.0000L	20.0000L
107825	18 21 16N	44 11 35E	79.0000	25.0000	35.0000	0.5000	41.0000	250.0000	5.0000L	445.0000
107826	18 21 16N	44 11 35E	5.0000	10.0000	29.0000	0.3000	30.0000	14.0000	5.0000L	215.0000
107827	18 21 16N	44 11 35E	6.0000	20.0000	32.0000	0.3000	28.0000	180.0000	5.0000L	1020.0000
107828	18 21 16N	44 11 35E	22.0000	20.0000	42.0000	0.2000	21.0000	47.0000	5.0000L	800.0000
107829	18 21 16N	44 11 35E	80.0000	20.0000	30.0000	0.4000	32.0000	75.0000	5.0000L	1100.0000
107830	18 21 16N	44 11 35E	74.0000	30.0000	25.0000	0.7000	38.0000	170.0000	5.0000L	375.0000
107831	18 21 16N	44 11 35E	103.0000	25.0000	27.0000	0.4000	34.0000	91.0000	5.0000L	535.0000

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107790	18 21 16N	44 11 35E	200.0000
107791	18 21 16N	44 11 35E	353.0000
107792	18 21 16N	44 11 35E	288.0000
107793	18 21 16N	44 11 35E	490.0000
107794	18 21 16N	44 11 35E	440.0000
107795	18 21 16N	44 11 35E	675.0000
107796	18 21 16N	44 11 35E	755.0000
107797	18 21 16N	44 11 35E	216.0000
107798	18 21 16N	44 11 35E	725.0000
107799	18 21 16N	44 11 35E	4125.0000
107800	18 21 16N	44 11 35E	400.0000
107801	18 21 16N	44 11 35E	330.0000
107802	18 21 16N	44 11 35E	395.0000
107803	18 21 16N	44 11 35E	298.0000
107804	18 21 16N	44 11 35E	1070.0000
107805	18 21 16N	44 11 35E	420.0000
107806	18 21 16N	44 11 35E	445.0000
107807	18 21 16N	44 11 35E	420.0000
107808	18 21 16N	44 11 35E	460.0000
107809	18 21 16N	44 11 35E	485.0000
107810	18 21 16N	44 11 35E	520.0000
107811	18 21 16N	44 11 35E	560.0000
107812	18 21 16N	44 11 35E	565.0000
107813	18 21 16N	44 11 35E	625.0000
107814	18 21 16N	44 11 35E	241.0000
107815	18 21 16N	44 11 35E	184.0000
107816	18 21 16N	44 11 35E	268.0000
107817	18 21 16N	44 11 35E	460.0000
107818	18 21 16N	44 11 35E	420.0000
107819	18 21 16N	44 11 35E	430.0000
107820	18 21 16N	44 11 35E	385.0000
107821	18 21 16N	44 11 35E	280.0000
107822	18 21 16N	44 11 35E	265.0000
107823	18 21 16N	44 11 35E	210.0000
107824	18 21 16N	44 11 35E	300.0000
107825	18 21 16N	44 11 35E	370.0000
107826	18 21 16N	44 11 35E	388.0000
107827	18 21 16N	44 11 35E	230.0000
107828	18 21 16N	44 11 35E	305.0000
107829	18 21 16N	44 11 35E	420.0000
107830	18 21 16N	44 11 35E	640.0000
107831	18 21 16N	44 11 35E	445.0000

ANALYSIS OF CORE SAMPLES (CONTINUED)

SAMPLE	LATITUDE	LONGITUD	AA-CU-P	AA-PB-P	AA-ZN-P	AA-AG-P	AA-CO-P	AA-NI-P	CM-MO	AA-CR-T
107832	18 21 16N	44 11 35E	120.0000	15.0000	30.0000	0.4000	30.0000	90.0000	5.0000L	395.0000
107833	18 21 16N	44 11 35E	114.0000	0.0000N	39.0000	0.6000	34.0000	86.0000	5.0000L	860.0000
107834	18 21 16N	44 11 35E	65.0000	15.0000	55.0000	0.5000	30.0000	53.0000	5.0000L	20.0000L
107835	18 21 16N	44 11 35E	20.0000	50.0000	128.0000	0.4000	20.0000	16.0000	5.0000L	215.0000
107836	18 21 16N	44 11 35E	15.0000	25.0000	63.0000	0.4000	20.0000	18.0000	5.0000L	800.0000
107837	18 21 16N	44 11 35E	14.0000	30.0000	77.0000	0.8000	23.0000	24.0000	5.0000L	155.0000
107838	18 21 16N	44 11 35E	35.0000	20.0000	32.0000	0.3000	25.0000	77.0000	5.0000L	280.0000
107839	18 21 16N	44 11 35E	70.0000	35.0000	35.0000	1.5000	35.0000	180.0000	5.0000L	565.0000
107840	18 21 16N	44 11 35E	40.0000	30.0000	37.0000	1.4000	34.0000	160.0000	5.0000L	715.0000
107841	18 21 16N	44 11 35E	34.0000	35.0000	47.0000	1.2000	41.0000	200.0000	5.0000L	20.0000L
107842	18 21 16N	44 11 35E	25.0000	30.0000	94.0000	1.3000	30.0000	62.0000	5.0000L	620.0000
107843	18 21 16N	44 11 35E	29.0000	30.0000	46.0000	1.1000	23.0000	28.0000	5.0000L	20.0000L
107844	18 21 16N	44 11 35E	28.0000	30.0000	60.0000	0.8000	25.0000	35.0000	5.0000L	455.0000
107845	18 21 16N	44 11 35E	14.0000	20.0000	33.0000	0.6000	18.0000	22.0000	5.0000L	325.0000
107846	18 21 16N	44 11 35E	9.0000	20.0000	49.0000	1.2000	20.0000	30.0000	5.0000L	260.0000
107847	18 21 16N	44 11 35E	12.0000	35.0000	140.0000	0.9000	20.0000	28.0000	5.0000L	430.0000
107848	18 21 16N	44 11 35E	12.0000	15.0000	50.0000	0.3000	16.0000	15.0000	5.0000L	275.0000
107849	18 21 16N	44 11 35E	11.0000	0.0000N	34.0000	0.2000	12.0000	12.0000	5.0000L	415.0000
107850	18 21 16N	44 11 35E	14.0000	10.0000	36.0000	0.2000	13.0000	13.0000	5.0000L	295.0000
107851	18 21 16N	44 11 35E	31.0000	0.0000N	53.0000	0.3000	19.0000	21.0000	5.0000L	105.0000
107852	18 21 16N	44 11 35E	22.0000	15.0000	22.0000	1.0000	33.0000	51.0000	5.0000L	265.0000
107853	18 21 16N	44 11 35E	23.0000	10.0000	49.0000	0.5000	26.0000	43.0000	5.0000L	780.0000
107854	18 21 16N	44 11 35E	60.0000	0.0000N	37.0000	0.1000	26.0000	160.0000	5.0000L	615.0000
107855	18 21 16N	44 11 35E	151.0000	15.0000	41.0000	0.4000	32.0000	170.0000	5.0000L	385.0000
107856	18 21 16N	44 11 35E	88.0000	20.0000	48.0000	0.3000	24.0000	175.0000	5.0000L	550.0000
107857	18 21 16N	44 11 35E	76.0000	10.0000	26.0000	0.7000	27.0000	195.0000	5.0000L	1040.0000
107858	18 21 16N	44 11 35E	106.0000	25.0000	29.0000	0.7000	26.0000	200.0000	5.0000L	565.0000
107859	18 21 16N	44 11 35E	70.0000	15.0000	22.0000	0.3000	20.0000	165.0000	5.0000L	625.0000
107860	18 21 16N	44 11 35E	99.0000	15.0000	24.0000	0.5000	28.0000	225.0000	5.0000L	980.0000
107861	18 21 16N	44 11 35E	102.0000	15.0000	28.0000	0.5000	31.0000	205.0000	5.0000L	695.0000
107862	18 21 16N	44 11 35E	110.0000	15.0000	24.0000	0.3000	26.0000	190.0000	5.0000L	705.0000
107863	18 21 16N	44 11 35E	66.0000	20.0000	30.0000	0.4000	30.0000	185.0000	5.0000L	565.0000

SAMPLE	LATITUDE	LONGITUD	AA-MN-P
107832	18 21 16N	44 11 35E	430.0000
107833	18 21 16N	44 11 35E	605.0000
107834	18 21 16N	44 11 35E	535.0000
107835	18 21 16N	44 11 35E	325.0000
107836	18 21 16N	44 11 35E	520.0000
107837	18 21 16N	44 11 35E	585.0000
107838	18 21 16N	44 11 35E	480.0000
107839	18 21 16N	44 11 35E	950.0000
107840	18 21 16N	44 11 35E	1360.0000
107841	18 21 16N	44 11 35E	885.0000
107842	18 21 16N	44 11 35E	1550.0000
107843	18 21 16N	44 11 35E	705.0000
107844	18 21 16N	44 11 35E	1045.0000
107845	18 21 16N	44 11 35E	605.0000
107846	18 21 16N	44 11 35E	965.0000
107847	18 21 16N	44 11 35E	815.0000
107848	18 21 16N	44 11 35E	435.0000
107849	18 21 16N	44 11 35E	265.0000
107850	18 21 16N	44 11 35E	343.0000
107851	18 21 16N	44 11 35E	680.0000
107852	18 21 16N	44 11 35E	635.0000
107853	18 21 16N	44 11 35E	975.0000
107854	18 21 16N	44 11 35E	205.0000
107855	18 21 16N	44 11 35E	315.0000
107856	18 21 16N	44 11 35E	235.0000
107857	18 21 16N	44 11 35E	310.0000
107858	18 21 16N	44 11 35E	305.0000
107859	18 21 16N	44 11 35E	213.0000
107860	18 21 16N	44 11 35E	215.0000
107861	18 21 16N	44 11 35E	225.0000
107862	18 21 16N	44 11 35E	250.0000
107863	18 21 16N	44 11 35E	230.0000