وزارة الصناعة
والثروة المعدنية
Ministry of Industry and Mineral Resources

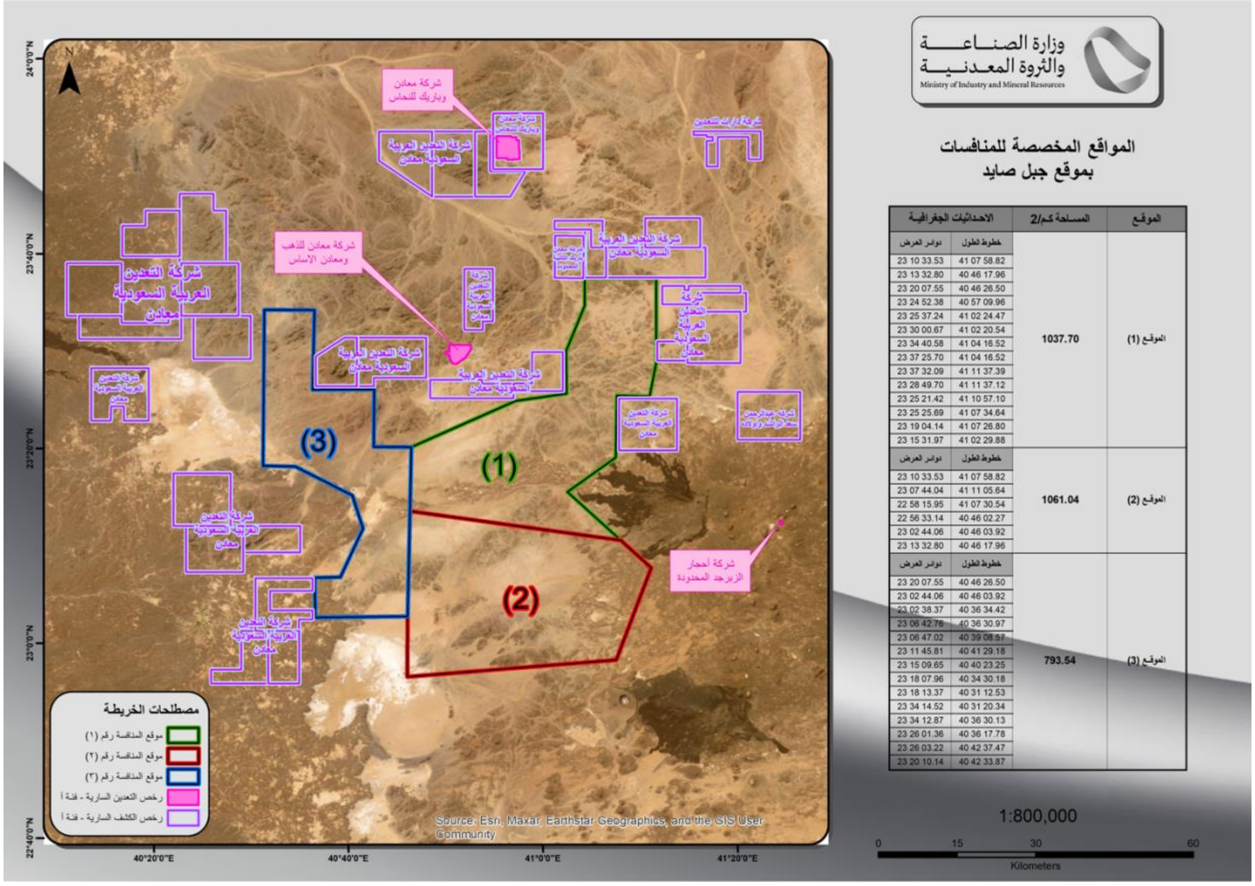
Jabal Sayid Mineralized Belt

Abstract

This document details the technical information Jabal Sayid (Volcanogenic Massive Sulfide) mineralized belt, including its location, a map of the area, active exploration areas, resource classification, local geology, mineralization, nearby occurrences (including the Umm ad Damar deposit and the prospectivity) and exploration data collection.

Contents

1. Site location and map



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

المواقع المخصصة للمنافسات
بموقع جبل صايد

الموقع	المساحة كم/2	الاحداثيات الجغرافية	
		خطوط الطول	دوائر العرض
الموقع (1)	1037.70	41 07 58.82	23 10 33.53
		40 46 17.96	23 13 32.80
		40 46 26.50	23 20 07.55
		40 57 09.96	23 24 52.38
		41 02 24.47	23 25 37.24
		41 02 20.54	23 30 00.67
		41 04 16.52	23 34 40.58
		41 04 16.52	23 37 25.70
		41 11 37.39	23 37 32.09
		41 11 37.12	23 28 49.70
		41 10 57.10	23 25 21.42
		41 07 34.64	23 25 25.69
		41 07 26.80	23 19 04.14
		41 02 29.88	23 15 31.97
		خطوط الطول	دوائر العرض
الموقع (2)	1061.04	41 07 58.82	23 10 33.53
		41 11 05.64	23 07 44.04
		41 07 30.54	22 58 15.95
		40 46 02.27	22 56 33.14
		40 46 03.92	23 02 44.06
		40 46 17.96	23 13 32.80
		خطوط الطول	دوائر العرض
الموقع (3)	793.54	40 46 26.50	23 20 07.55
		40 46 03.92	23 02 44.06
		40 36 34.42	23 02 38.37
		40 36 30.97	23 06 42.76
		40 39 08.57	23 06 47.02
		40 41 29.18	23 11 45.81
		40 40 23.25	23 15 09.65
		40 34 30.18	23 18 07.96
		40 31 12.53	23 18 13.37
		40 31 20.34	23 34 14.52
		40 36 30.13	23 34 12.87
		40 36 17.78	23 26 01.36
		40 42 37.47	23 26 03.22
		40 42 33.87	23 20 10.14

The Jabal Sayid Mineralized Belt, located within the northern sector of the Jeddah Terrane, encompasses an area of approximately 9,579 km². The current licensing round focuses on three distinct license areas within the belt:

- **License 1:** 1,037.70 km²
- **License 2:** 1,061.04 km²
- **License 3:** 793.54 km²

The total area available for licensing in this round is 2,892.28 km². The map (provided) illustrates the boundaries of the Jabal Sayid mineralized belt and the location of the three license areas, along with their respective coordinates. The map also shows the active mining and exploration licences around these three areas.

2. Highlights

The Jabal Sayid belt contain one known VMS copper deposit, the Jabal Sayid Mine, as well as an emerging VMS discovery at Umm ad Damar.

The Jabal Sayid belt also includes the Mahd adh Dhahab gold mine, the Bari intrusion-related advanced exploration gold target, and the Lahuf epithermal-gold exploration target. Nine mineral occurrences are currently known in this underexplored belt. Historical information summarising the occurrences is presented in Table 1.

Table 1
Summary of Occurrences in the Jabal Sayid VMS Belt

MODS	Name New	Name Old	Main Commodity	Longitude	Latitude	Nearest Town	Potential Ranking	Geometry
0001	Jabal Sayid	Jabal Sayid	Cu	40.9361670	23.8426110	Al Mahd	Very high	bx, ms
0017	Jibal Umm Ad Damar-N	Umm Ad Damar-N	Cu	41.0532780	23.6752500	Al Mahd	Medium	lenses
0361	Wadi Al Juraysiyah	Wadi Jurayssiyah-E	Cu	40.8467220	23.5686110	Al Mahd	Low	dd
0362	Wadi Juraysiyah-W	Wadi Juraysiyah-W	Cu	40.8166670	23.5527780	Al Mahd	Very low	dd
0712	Jabal Sayid-S2	Jabal Sayid-S2	Cu	40.9401110	23.8487780	Al Mahd	High	stratiform, stockwork v
1185	Jibal As Sufrah	Jabel As Sofra	Cu	40.9151110	23.4590000	Al Mahd	Medium	dd
1414	Umm Safiyah	Umm Safiyah	Cu	40.9625830	23.8509170	Al Mahd	Medium	dd
2215	Jibal Umm Ad Damar	Umm Ad Damar-SE	Cu	41.0481110	23.6647500	Al Mahd	Medium	dd, lenses, stratiform
2216	Jibal Umm Ad Damar	Umm Ad Damar-SE	Cu	41.0581940	23.6550560	Al Mahd	Medium	dd, stratiform
2282	Wadi As Sayilah	Jabal Ad Daba	Cu	40.7235830	23.3430830	Al Mahd	Low	dd
4821	Jibal Lahaf	Lahuf prospect	Au	40.7710830	23.4752500	Al Mahd	Medium	veins
2016	Jibal Hidan	Jabal Hadhn-E	Fe	40.9967220	23.0249440	Al Mahd	Undefined	lenses
2283	Jjibal Hidan-NW	Jabal Ihdan-E	Fe	40.9935560	23.0277500	Al Mahd		undefined

NOTES: 1) ranking according to MODS 2) v=veins, dd = disseminated; bx = breccia; ms = massive
* classified as VMS based on limited descriptions – no resource estimates available

Aside from the producing Jabal Sayid Mine the most prospective occurrence is at Umm Ad Damar. The mineralization is hosted by the Arj Group of volcanic and associated rocks near the margin of a paleo-horst at the intersection of two depositional troughs filled with felsic to intermediate lavas and associated pyroclastic rocks (Beziat and others, 1989).

Volcanogenic massive sulphide (“**VMS**”) deposits are accumulations of polymetallic massive, stringer and disseminated sulphides that form at or near the seafloor in submarine volcanic environments and in extensional environments. They form by focussed discharge of metalliferous hydrothermal solutions into ocean floor seawater. Originally it was thought that the deposits formed by exhalative processes but more recently, replacement has been recognized as an important factor so that many deposits may be formed by a combination of both processes (Piercey, 2015). A generalized section of a typical VMS deposit is shown in Figure 1.

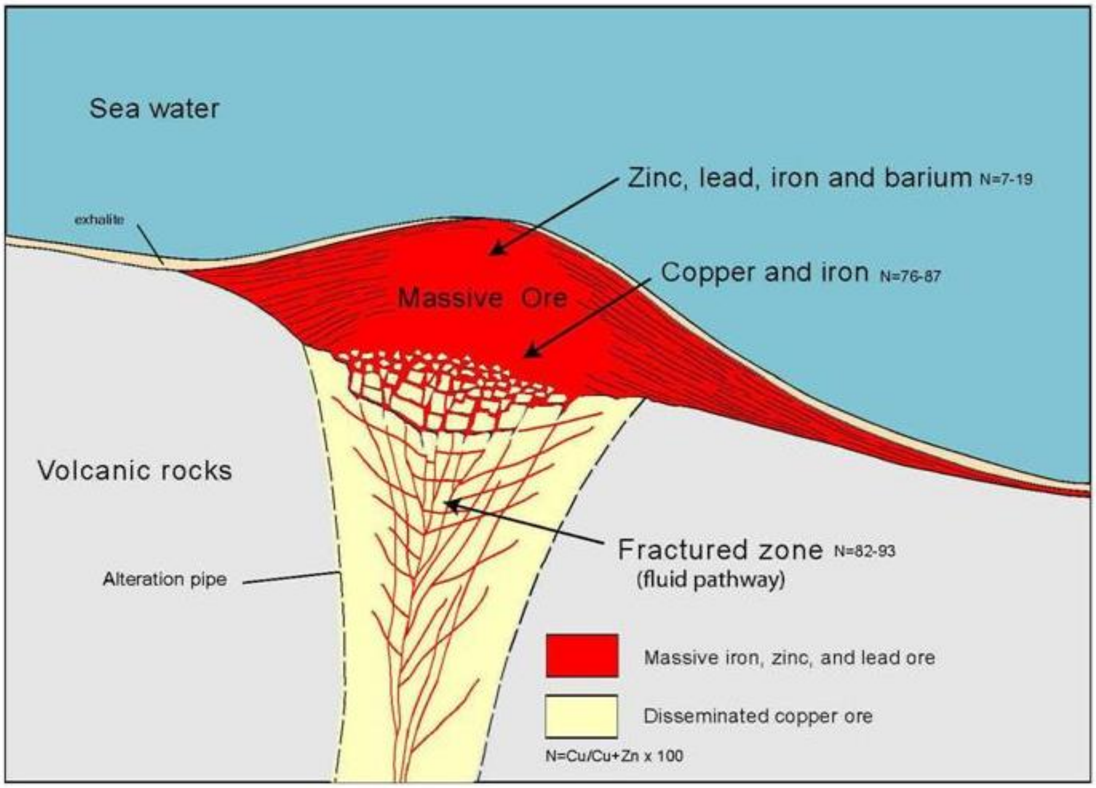


Figure 1: Schematic Section Through a VMS Deposit

Typically, VMS deposits collectively form districts containing deposit clusters possibly derived from a common heat source, and are underlain by a discordant stringer/alteration zone (proximal) that may be related to more extensive sub-conformable alteration zones. Distal deposits may form without a discernible alteration zone directly below. They have been classified into six divisions (Franklin et al 2005) according to host rock lithology; however, the most common in the Arabian shield are the Bimodal-Felsic and the Felsic-Siliclastic varieties. The generalized character of each type along with the average size and grade of comparable deposits in Canada is shown in Figure 2.

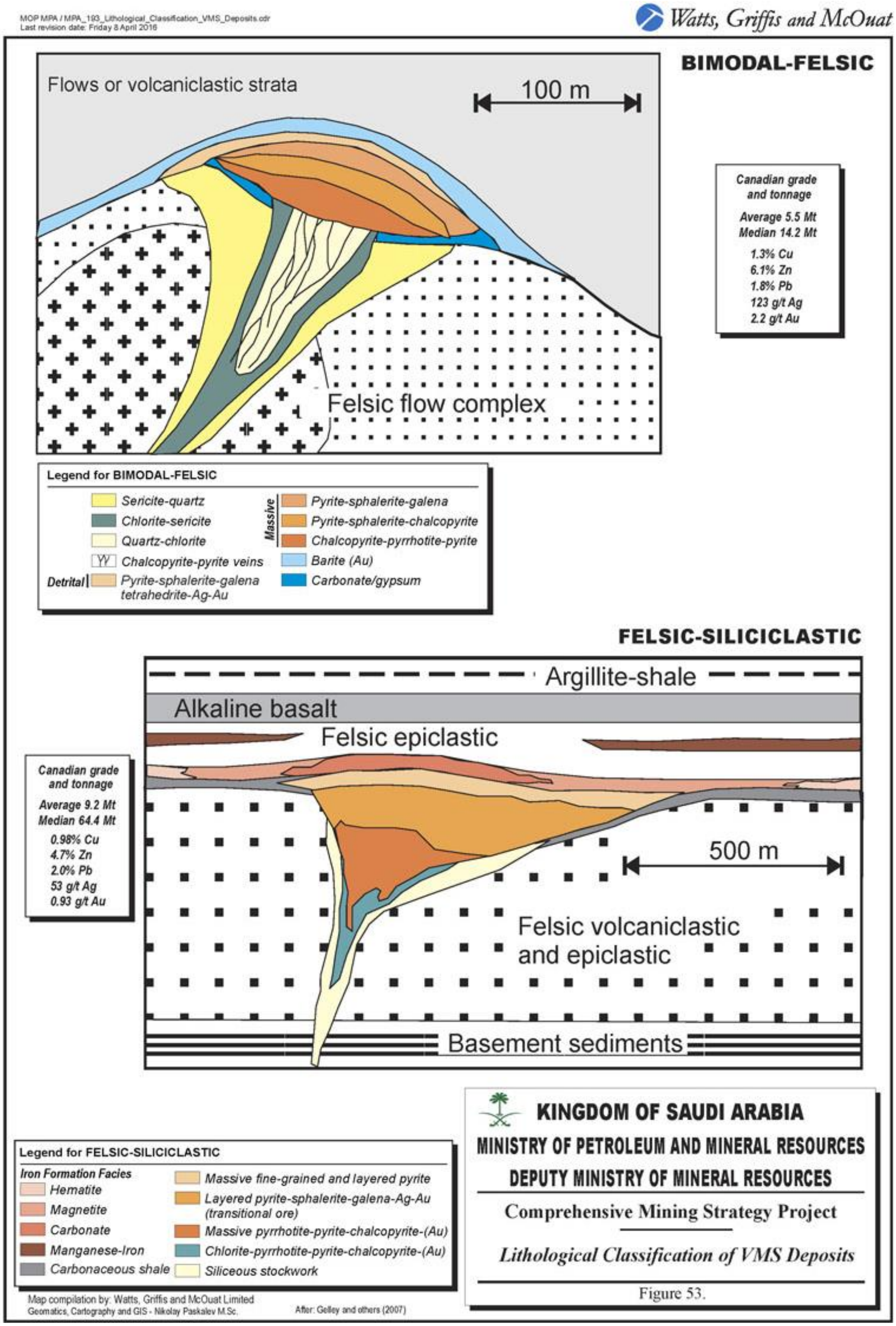


Figure 2: Lithological Classification of VMS Deposits (modified after Gelley and others, 2007)

3. Location

The Jabal Sayid mineral belt is located in the northern sector of the Jiddah Terrane and it comprises a bimodal sequence of mafic to felsic volcanics, volcaniclastics and sediments (including black shales) belonging to the Mahd Group (~775 Ma) plus mafic to felsic volcanics of the Arj Group (~785 Ma). This belt is covered to the west and southeast by the Quaternary basalt flows of Harrats Rahat and Kishib respectively. The belt is limited to the north, east and south by older intrusive rocks belonging to the Dhukhr complex (816-803 Ma). It covers an area of approximately 9,579 km^2 as shown in Figure 3.

4. Active Exploration Areas within the Jabal Sayid Mineralized Belt

4.1 Jabal Sayid

The Jabal Sayid belt was first identified as having mineralization potential following waste dump sampling of the ancient mines at Umm ad Damar (1954). An estimated 108,000 short tons of slag were found to contain 0.85% Cu, 17.14 g Ag/t and trace amounts of gold (Goudarzi, 1954). Test pits in ancient dumps averaged 1.87% to 2.10% Cu and 96 stope samples averaged 0.72% Cu (Schaffner, 1954a). In 1959, a reconnaissance survey of the ancient workings was completed, a magnetometer survey was carried out and 1:100 scale sketches of the workings were created (MacLean, 1959).

Exploration by the BRGM which included drill-testing of Lodes 1 and 2 and the discovery of the shallow levels of Lode 4 concluded with the identification of multiple additional VMS targets generated through historical geophysical surveys. Ma'aden completed four diamond drillholes and then relinquished the ground. Citadel Resources, an Australian junior exploration company, successfully discovered multiple high-grade copper extensions including Lode 4 Deeps, and successfully converted Jabal Sayid into a Reserve. Citadel Resources was acquired by Equinox Minerals Ltd which then was acquired by Barrick Gold. In 2014 Barrick formed a 50:50 joint venture with Ma'aden under MBCC. Production of copper commenced in July 2016. The decision to bring the deposit into production was based on the February, 2009 resource estimate by Citadel as follows:

Resource Classification	**Type**	**Tonnes (millions)**	**Copper (%)**	**Tonnes Copper (x1,000)**	**Zinc (%)**	**Tonnes Zinc (x1,000)**
Indicated	Massive Sulphide	6.4	1.21	77	1.67	106
	Stockwork	24.8	1.62	403	0.17	42
	Oxide	0	n/a	0		0
	All	**31.2**	**1.54**	**480**	**0.47**	**148**
Inferred	Massive Sulphide	15	0.8	114	1.9	279
	Stockwork	52	1.2	613	0.3	144

	Oxide	.5	1.6	7	0.3	1
	All	**67**	**1/1**	**735**	**0.6**	**425**
Total	Massive Sulphide	21	0.9	192	1.8	385
	Stockwork	77	1.3	1,016	0.2	186
	Oxide	.5	1.6	7	0.3	1
Grand Total		**99**	**1.2**	**1,215**	**0.6**	**572**

Multiple new discoveries have been successfully advanced in recent years, including high-grade copper at Lode 1 Deeps and new copper away from the known lodes at Janob. MBCC continues to advance its Exploration program.

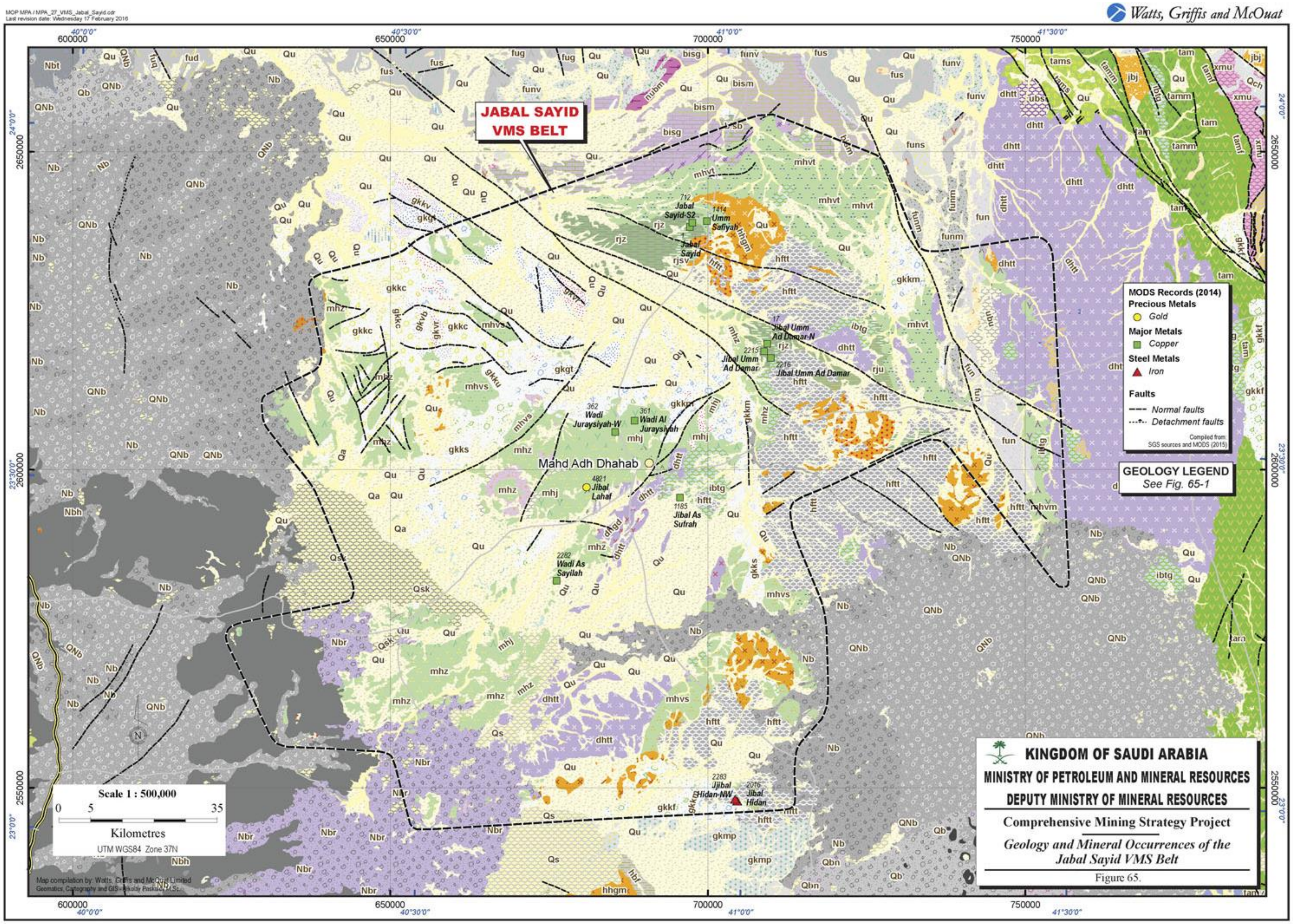


Figure 3: Geology of the Jabal Sayid VMS Belt

Of the total estimated resources[1] of 99 Mt averaging 1.2% Cu at a 0.2% Cu cut-off grade, the mine plan involves the mining of 32.2 Mt using a 1% copper grade as the cut-off for copper ore blocks. The underground and open cut mining of the deposit has been extensively studied, and the mine plan involved staged development as follows:

Ore Body 1	Open-cut mining was carried out on a resource of 1.35 Mt grading 1.3 g Au/t in oxidized gold mineralisation out-cropping at surface together with approximately 0.5 Mt of copper ore averaging 1.6% Cu.
Ore Body 2 and 4	The existing decline for underground access was enlarged to handle larger underground haul trucks that can haul up to 100 t for production. Conventional large scale open stopes were planned for extraction of ore, with selective stope development to optimise grade over the life of the project. A transition to shaft hoisting in later years was also planned.

The ore to be mined from Lode 2 and 4 underground and delivered to the concentrator over the 11-year life of mine will total 30.4 Mt with an average copper grade of 2.26% and average gold and silver grades of 0.14 g/t and 8.11 g/t, respectively, however it is expected that overall precious metal grades will increase. The production rate is expected to average 2.8 Mt per year.

Note 1: For the latest information on resources and mine plans, investors are encouraged to consult Barrick 's 2023 Annual Report.

4.2 Umm ad Damar

The Umm ad Damar area was over-flown in 1962 as part of a regional (3,930 km^2) magnetometer-scintillometer survey conducted by Hunting Survey Corporation. Turam, SP, magnetic, IP-resistivity, gravity and mise-a-la-masse were subsequently completed (ARGAS, 1975). Turam anomalies reflected zones of faulted and weathered bedrock. SP anomalies indicated a series of conductors that were confirmed by the IP survey. Graphitic shale resulted in local gravity lows. In early 1963, additional airborne magnetic surveys were carried out in addition to 26.3 line-kilometres of ground magnetometer, EM, resistivity and seismic surveys. Copper mineralization was found to occur on the flanks of isolated magnetic anomalies and to be marked by EM anomalies and zones of low resistivity (Agocs, 1963a). Other magnetic and EM anomalies occur away from known mineralization. Additional EM conductors up to 2,133 m long and 2-3 times stronger than anomalies affiliated with the main areas of mineralization were detected (Agocs, 1963b). On the basis of these results, further ground magnetometer surveying and 1,661 m of drilling were recommended. In 1964, three diamond drill holes (DDH 1, 2 and 3) totalling 259 m were completed on the south prospect (Bhutta, 1966). Two of these holes intersected chalcopyrite stringers and broader zones of intense pyritization. The best intersection, obtained in hole DDH-3, assayed 4.8% Cu, 1.2% Zn and 57.2 g Au/t over 1.52 m (Bhutta). Two gold-bearing sections grading 6.9 g/t over 0.30 m and 2.4 g/t over 0.46 m were detected. Drill core recoveries were poor, generally ranging from 10% to 50%. Four additional diamond drill holes numbered DDH-4 to DDH-7 totalling 982 m were completed on the north prospect. Hole DDH-4 intersected a 10.7 m thick section averaging 0.8% Cu, 0.72% Zn, 9.2 g Ag/t and traces of gold.

Over the next few years, the BRGM carried out additional geophysical surveys and in 1968 completed three diamond drill holes (DA1, DA2, DDH3a) totalling 456.4 m on the south workings (Ransom, 1982). Drill hole DDH-3A, sited 70 m to the northeast of known sulphide mineralization, did not intersect economically significant mineralization. Between then and 1984, successive exploration programs of mapping, geophysical surveying and diamond drilling (12 holes totalling 2554.65 m) the discovery of new gossans, intersections ranged from 1 to 5 m assaying 1.03 to 2.04% Cu. Interestingly, the drilling carried out by Serem-US Steel was all down-dip. One hole intersected a 9 m section grading 2.3% Cu and 27.5 g Ag/t. Serem-U.S. Steel estimated that mineralization at Umm ad Damar South totalled approximately 1 Mt grading 2% Cu and 1.0% to 2.5% Zn with a small precious-metal content (Ransom, 1984).

Riofinex began an evaluation of the Umm ad Damar prospect in 1979 commencing with detailed mapping as well as ground magnetometer and IP surveying. The 4/6 Gossan about 1.2 km northwest of the south workings, was discovered during the 1982-83 field season. Follow-up work included detailed mapping trenching, IP surveying and percussion drilling. Riofinex extended the area of exploration west and southeast of the ancient workings, and alluvium in the new areas were geochemically sampled from a depth of 2-3 m by augering, but results were compromised by local supergene mineralization within calcrete at approximately 2.5 m depth. The IP surveys on 100 m lines indicated that mineralized zones, extended westerly for 200 m beyond previously defined limits. Anomalies in the Southeast extension area were drill-tested and found to contain no mineralization. Riofinex collected weathered bedrock samples from 448 auger holes at stations 10 to 20 m apart, along survey lines spaced at 50 to 100 m over the 4/6 Gossan and approximately 5.8 line-kilometres of IP surveying was carried out. A strong chargeability anomaly was detected, and 14 trenches totalling 644 m were excavated across this anomaly. Channel samples assayed across lenticular bodies of hydrothermal alteration in pyritic rhyodacite contained as much as 3.2% Cu and 6.5% Zn over unspecified distances. Two percussion holes, UAD-13 and UAD-14 totalling 137 m were completed. In the first hole, a 9 m section graded 0.88% Cu, 1.95% Zn, 0.5 g Au/t and 7.2 g Ag/t. A 4.2 m intersection in the second hole averaged 1.15% Cu, 0.25% Zn, 1.02% Pb, 16.1 g Au/t and 449.8 g Ag/t. A single follow-up hole was recommended to undercut hole UAD-14. Riofinex concluded that mineralization in the South and Southeast Zones was stratabound, but that the exact geological relationship of mineralized areas or zones was unclear. Strike extensions were limited or interrupted by faults and intrusive rocks, and further work was recommended. Riofinex considered the presence of a large tonnage copper deposit to be remote, and suggested a maximum deposit size of 1 Mt grading 2% Cu, 2% Zn, and 30 g Ag/t to a depth of 200 m. Additional detailed geological mapping and IP surveying was recommended. During 1984, Ransom's re-evaluation of the drilling led to the conclusions that the drill holes on the North Prospect did not adequately test the known mineralized zones and IP conductors. Two additional diamond/percussion holes (UAD-11, UAD-12) were drilled and hole UAD-11, drilled to a depth of 150 m of which the upper 40 m was percussion drilled, intersected a 16 m thick (true) zone averaging 0.66% Cu, 0.12% Zn and 12.9 g Ag/t within which a 2.7 m section assayed 1.87% Cu (Howes, 1984).

5. Local Geology

The gold, silver and base-metal mineralised gossans that occur in the Jabal Sayid area have been mined since pre-historic times. Jabal Sayid is a copper-rich, volcanic-hosted sulphide deposit, hosted by felsic volcanic rocks that include extrusive, intrusive and fragmental rhyolites (Figure 4). The host rocks are NE-trending and dip almost vertically. They have been interpreted as forming the northern limb of a localised anticline that is formed around a core of intrusive rhyolite, associated with parallel NW-trending axial plane shears and faults. The overlying sedimentary sequence to the east may also have been folded into a similar antiform structure, broadly related to the folding within the underlying rhyolitic sequence.

Aside from the producing Jabal Sayid Mine the most prospective occurrence is at Umm Ad Damar. The mineralization is hosted by the Arj Group of volcanic and associated rocks near the margin of a paleo-horst at the intersection of two depositional troughs filled with felsic to intermediate lavas and associated pyroclastic rocks (Beziat and others, 1989).

6. Mineralization

6.1 The Jabal Sayid Deposit

The mineralisation occurs as stockworks of sulphide-bearing veinlets that are capped by lenses of massive pyrite, chert, jasper and carbonate (limestone) within an uppermost black shale unit containing pyrite and graphite.

The main outcropping gossan (No.1 Orebody) consists of a 30 m thick, 500 m long and 200 m wide outcrop of massive chert-limonite gossan which gives way at depths of 30-60 m to massive sulphides that dip steeply to the southeast. At the north-eastern end, this orebody is offset about 300 m to the east by the "Eastern Valley Fault" to form the No. 2 Orebody. The small No.3 Orebody and the large No.4 Orebody are

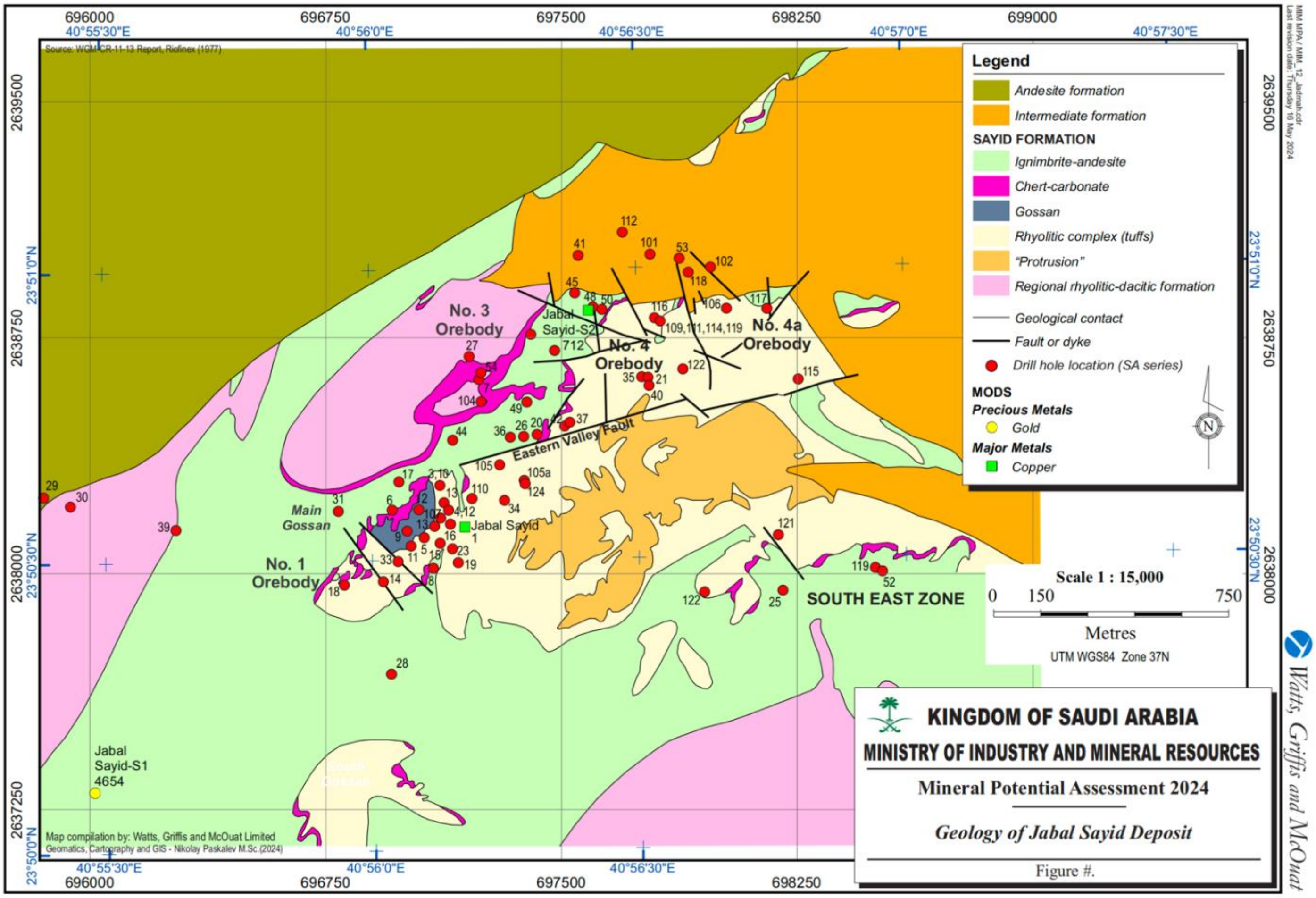


Figure 4: Geology of the Jabal Sayid Deposit

located just north-east of No.2, but their structural relationships are complex. The mineralisation originally formed a massive pyrite lens about 1,000 m in length and up to 50 m thick that is underlain in the No.1, No.2 and No.4 deposits, by a widespread stockwork of sulphide bearing veins. To the northwest, the copper-zinc sulphide body is bordered by a bed of chert or jasper, and several thin (< 5 m) beds of limestone that form the hanging wall. The deposit extends down-dip to the southeast to a depth of at least 550 m. The No. 3 Orebody is the most northerly of the deposits and does not outcrop; it was discovered at a depth of 200 m below the surface, and mineralisation extends to a depth of at least 700 m. The No. 4 Orebody is the largest of the Jabal Sayid deposits and has the most economic potential. It consists of a vertical stockwork of pyrite and chalcopyrite veinlets associated with disseminated sulphides in a sub-volcanic dome of porphyritic quartz rhyolite. About 300 m below the surface, the stockwork mineralization is stratigraphically overlain by a 22 m thick jasper horizon and a 10 m thick lens of massive pyrite and pyrrhotite that exhibits obvious clastic textures. The massive sulphide and jasper were evidently deposited under subaqueous conditions, as were the succeeding rhyolitic tuffs. The No. 4 Orebody extends over a vertical interval of 600 m and is open at depth (Leveque, 1985).

6.2 The Umm ad Damar Prospect

The mineralization at the Umm ad Damar North prospect occurs at the top of a felsic volcanosedimentary unit which rests on dacitic to andesitic volcanic rocks. The mineralization is overlain by mafic to intermediate volcanic rocks (Figure 5). In the vicinity of the mineralization, fragmental lithologies resulting from explosive volcanic activity predominate (Ransom, 1982). In this sense, the setting is classic Kuroko-type volcanism. The top of the host unit is marked by thin and discontinuous chert, jasper and carbonate beds together with an associated pyrite-rich graphitic zone (Howes, 1984). Mineralization is spatially associated with the intersection of north and northeast-trending features. These structures overprint easterly striking fractures and north-easterly trending penetrative schistosities. Continuity is broken by later north-south faults, northeast-trending shears, and northwest-striking Najd faults. At the south prospect, south-dipping mineralization is subparallel to bedding in the host rhyodacite fragmental unit, and is spatially associated with sheared sericite-chlorite schist and chlorite-amphibole rock. Sulphide is commonly laminated within a schistose chloritic groundmass. Anastamosing pyrite veinlets are common along the margins of the zone and define a banding thought to be a result of deformation. The host sequence may be a large, deformed breccia zone (Ransom, 1982).

Following this further geophysical surveying was recommended in the form of a blanket IP survey across all zones to unify the model and to fill gaps in the knowledge base. During 1986, the BRGM undertook an evaluation of the Jabal Sayid - Umm ad Damar - Mahd adh Dhahab region, and concluded that Umm ad Damar was unlikely to contain massive sulfide mineralization of the Jabal Sayid type. Nevertheless, the BRGM remapped and resampled the ancient workings and the Riofinex trenches, unfortunately using the MIBK analytical extraction method for gold and silver which mostly failed to detect significant precious metal values. During 1988, the DGMR carried out detailed mapping and the collection of 245 bedrock samples for geochemical analysis. No statistically significant enrichment was found in areas of sodic or potassic alteration. Since that time, the Umm ad Damar prospect has been located on an exploration licence owned by Ma'aden and no further reports on exploration activities have been made available. This situation involving confidential assessment reports also applies to other deposits in the Jabal Sayid belt including the Jibal Lahaf (Lahuf) epithermal gold occurrence.

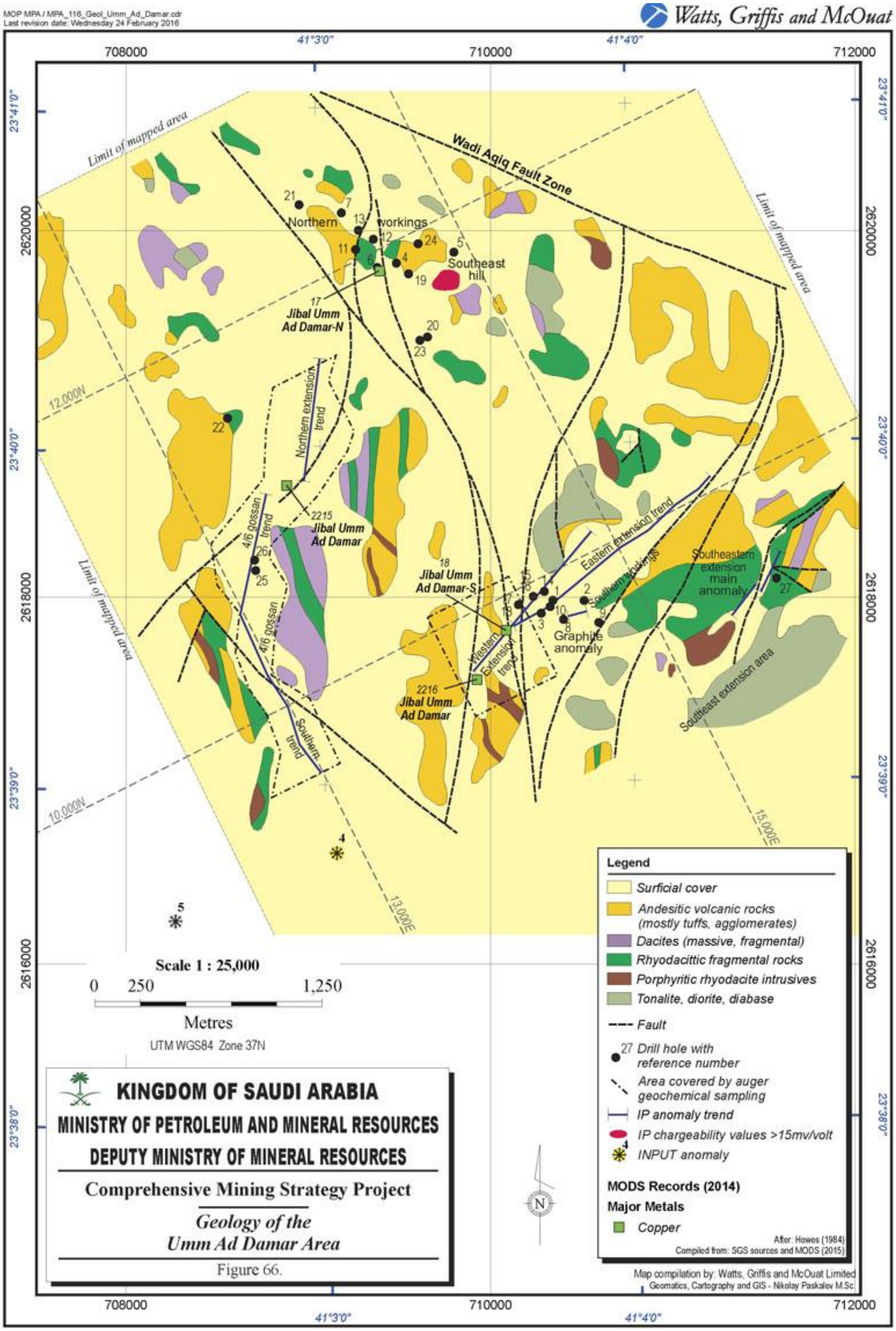


Figure 5: Geology of the Umm ad Damar Area.

7. Nearby Occurrences

The only significant prospect with similar geology is the Umm ad Damar deposit which is described herein. The immediate area also contains the Jabal Sa'id uranium-REE deposit (MODS 1184) as well as several other nearby records in the mineral occurrence database which are fluorite occurrences that were historically named Jabal Sayid and which have now been renamed Jibal ash Sharar NE (2280), Jibal ash Sharar NE1 (2281) and Jibal ash Sharar S (2279), as well as two Jabal Sayid niobium occurrences renamed Jibal ash Sharar SE (0358) and Jibal ash Sharar W (0356). These can be confused with the Jabal Sayid copper-gold mine (MODS 0001 and 0712) which is the subject of this document and located only a short distance (3 km) to the northwest. These sites might also be confused with the granite occurrence named Jabal Sayid (MODS 4847) located in the same general area. Confusion still remains due to the similarity in names as pronounced by those unfamiliar with Arabic. Jabal Sa'id is a radioactive aplite-pegmatite body (apogranite) in the northern margin of an alkali microgranite that is a component of the Jabal Hadb ash Sharar granitic complex. Based on four drill holes, the upper, higher grading portion of the apogranite was estimated to contain a resource of 23 Mt averaging >1.7% Zr, 4,151 ppm Y, 1,290 ppm Nb, 1,301 ppm Ce, 834 ppm Th, 587 ppm La, 199 ppm Sn, 134 ppm U and 82 ppm Ta. The lower (inner) portion of the apogranite was estimated to contain 35 Mt averaging >1.9% Zr, 2,656 ppm Y, 904 ppm Nb, 829 ppm Ce, 461 ppm Th, 339 ppm La, 149 ppm Sn, 49 ppm U and 66 ppm Ta (Hackett, 1986)[1]. This deposit is not genetically related to the VMS deposit being mined at Jabal Sayid.

7.1 Bari Ancient Mine

The northern part of the gold belt has not been well explored, largely we believe due to the extensive cover of Harat Kishb. The most advanced prospect in the north is the Al Bari gold-silver-zinc prospect (MODS 0452). Ancient mines are clustered in a group of more than 132 individual workings along a series of subparallel, easterly-striking shear zones which have been traced over strike length of 1,400 m in a zone about 1,000 m wide. Variable degrees of gold, silver, zinc and lead mineralization are fracture related within a suite of calc-alkaline plutonic rocks including diorite, granodiorite and quartz diorite (Coulombeau and others, 1977). Gold mineralization is localized in conjugate fracture and shear systems which are ENE to E-striking and ESE-striking. Hydrothermal alteration (silicification, bleaching) is pervasive along fracture margins penetrating a metre or more into the surrounding rock, even where the amount of introduced quartz is minor. Fractures and alteration are equally developed in all lithologies. Two principal areas of mineralization are recognized in the Old Village area and in the area around Trench-13. Channel samples from these areas have assayed as high as 6.5 g Au/t, 36.9 g Ag/t, 3.2% Zn, 1.1% Pb and 0.28% Cu (Cassard and Gelot, 1987). A third extensive area of alteration is situated one kilometre north of the Old Village area - it contains two conductors with an aggregate east-west extent of 2.5 km.

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[1] This estimate does not meet the requirements of any currently accepted international code for the estimation of Mineral Resources, however at the time, this would not have been treated as indicative of anything more than exploration potential.

The initial work in the area was during 1954 by SAM and commenced with the analysis of three samples taken from ancient mine dumps. These carried as much as 9.26 g Au/t, 3.25 g Ag/t and 0.3% Cu. Ten years later, the USGS surveyed the site and collected additional dump and soil geochemical samples. One diamond drill hole was completed south of the ancient mine's village but the results of this hole are unknown. Exploration continued under the management of the BRGM consisting of reconnaissance-scale geochemical sampling at a density of 1 sample/km^2, additional dump, slag and bedrock channel sampling. Dump samples contained a maximum of 8 g Au/t, 37 g Ag/t, 2.35% Pb and 1.3% Zn. Channel samples across mineralized sections carried lower values (Cassard and Gelot, 1987). During 1968, the Bari region was mapped geologically at 1:100,000 scale. During the 1973-74, more detailed mapping at 1:50,000 and 1:10,000 was carried out at the Bari Prospect, and soil geochemical sampling on a 200 m x 200 m grid was completed over a 20 km^{2}area. Several low-level Pb and Zn anomalies were found. During the 1980s, 1:5,000-scale geological mapping was completed and 455 rock chip, grab, dump and channel samples were analyzed for Au and Ag by AA, as well as for an indicator element suite by ICP. Sample lengths were typically one metre except in alteration zones where 50 cm samples were collected. Anomalous gold contents extended up to 3 m from fracture zones which were shown to be the conduits for mineralizing fluids. Because pyrite and pyrrhotite are widespread at Bari, follow-up IP, mise-a-la-masse and VLF-EM surveys were used to trace mineralized zones which were reflected by shallow and deep IP-indicated conductors striking easterly across the Bari prospect.

The BRGM carried out three programs of shallow percussion drilling at Bari (32 holes and 3,319.85 m) which were compromised by equipment problems. In four holes, a total of 236.55 m was drilled with coring equipment. Typical intersections included:

- 1.0 m averaging 3.8 g Au/t, 60 g Ag/t and 1.3% Pb (Old Village Area)
- 5.0 m averaging 1.6 g Au/t, 74 g Ag/t, 0.7% Zn and 0.5% Pb (Old Village Area)
- 3.0 m averaging 1.0 g Au/t, 13.8 g Ag/t, 0.34% Zn and 0.42% Pb (Trench 12)
- 39.0 m averaging 7.3 g Au/t, 12.9 g Ag/t and 1.2% Zn (Trench 13)
- 84.0 m averaging 6.8 g Au/t and 5.1 g Ag/t (Trench 13)
- 3.0 m averaging 0.05 g Au/t, 3.0 g Ag/t and >2% Zn (P-20 Area)

Although hole P-10 intersected an 84 m section that carried 6.75 g Au/t and 5.1 g Ag/t, including a 48-metre interval averaging 10.15 g Au/t, follow-up drilling in this area failed to extend the zone. The geophysical surveying detected strong conductors estimated at more than 100 m below surface, somewhat at or beyond the drilling rigs capabilities at the time.

8. Prospectivity

The Jabal Sayid mineralized belt hosts the largest currently known VMS deposit in Saudi Arabia. It ranks as a large deposit even by worldwide standards. An airborne EM and Mag (and possibly gravity) survey is recommended for this belt using modern equipment. Any resulting anomalies should be followed up by a combination of prospecting, sampling and drilling. The use of down-hole EM has already been employed at the Jabal Sayid deposit and the potential to expand the presently known resource is considered to be excellent.

Grade and tonnage models were compiled by the USGS for various types of deposits including the VMS (volcanogenic massive sulphide) type that is the subject of this section. Singer (2007) after conducting a sensitivity analysis, concluded that selection of the proper grade and tonnage model is more critical to the final assessment that small errors in estimates of the number of deposits.

Sangster (1980) calculated that the total metal content per volcanic centre (mineral belt) was 4.6 Mt with an average grade of about 6% combined base metal (copper, zinc, lead).

Globally, the deposits in volcanogenic belts can be summarized according to subtype and used to model what might be expected to occur in the Arabian Shield. For this purpose, however, it is important to ensure that the appropriate models include local examples to for the purpose of providing context and to ensure that the super-deposits of the world are not overtly represented. In addition, deposits from a mature (from an exploration perspective) mineral belt with the requisite geological characteristics were included. This modified model was used as a guide insofar as the prospectivity of the Jabal Sayid Belt.

Empirical observations regarding VMS deposit sizes, grades and mineral belt areas by Sangster (1980) and Boldy were used as a generalized guide in evaluating the results. Sangster (1980) made a quantitative study of Archean and Proterozoic VMS mineral belts, and he concluded that the mineral belts have an average diameter of 32 km, containing an average of 12 deposits (density = .016 deposits/km^2) (Figure 6). In order to test the validity of the EMINERS output the results were compared to these studies based on Canadian and worldwide mineral belts with a long production history. These studies outlined the following additional characteristics for a mature VMS mineral belt:

- a mineral belt contained 4 to 20 deposits with an average of 12;
- the average base metal content per belt was 4.6 Mt with a coefficient of variation of 32% (range 3.1-6.1 Mt);
- 78% to 80% of the deposits occupy the size range between 0.1 and 10 Mt, and half of these are less than 1 Mt;
- 40% of the VMS deposits in a mineral belt will be about 0.4 Mt of ore;

- the median deposit size in a mineral belt is 1.4 Mt, while the median size of a producing mine is 1.8 Mt;
- the distribution of the total base metal content among the 5 largest deposits will be 67%, 13%, 7.8%, 4.9% and 3.5%, meaning that the largest deposit will contain 67% of the total resources of the belt, and the second largest deposit will contain 13% of the total resources, and so on….;
- the average metal grade for a VMS deposit will be about 6% (Cu+Zn+Pb); and,
- a frequency distribution curve for VMS deposits indicates that a median sized deposit will only occur with a frequency of 15%

The largest mineral deposit in a typical mineral belt would contain about 3.1 Mt of base metals which would be approximately equivalent to Boldy's (1977) upper mid-decile deposit containing 50 Mt grading 1.94% Cu, 4.82% Zn, 1.03 g Au/t and 62.4 g Ag/t. These deposits occur with a frequency of 4%. The second largest deposit would contain 0.598 Mt of base metals which would be approximately equivalent to Boldy's arithmetic average deposit containing 8.9 Mt grading 1.95% Cu, 4.51% Zn, 1.03 g Au/t and 52.8 g Ag/t. These deposits occur with a frequency of 7.5%.

WGM is not aware of any more recent studies that have statistically evaluated VMS deposits on a mineral belt basis even though it is widely recognized that VMS deposits tend to form clusters. Most recent studies have evaluated VMS deposits based on the subclass that they belong to rather than on their spatial distribution in a mineral belt. However, some recent studies of VMS deposits by the USGS (Mosier, 2009) on a worldwide basis have provided some data to substantiate the relevancy to modern times of the earlier studies by Boldy and Sangster. These recent studies have shown that the median size for all VMS classes is about 2.1 Mt and that approximately 72% of all VMS deposits fall in the range 0.1 to 10 Mt. These data, which include more recent discoveries, are not significantly different from the older calculations suggesting the continuing relevancy of the previous studies. However, none of the VMS mineral belts in the KSA can be considered as mature either from an exploration or production standpoint, therefore some variance is to be expected. Three examples bear this out:

1) AMAK continues to slowly enlarge the Al Masane deposit so the ultimate size is still an unknown;
2) substantial parts of all VMS belts remain largely unexplored due to explorers like Ma'aden favouring gold exploration over base metals; and,
3) significant deposits like Nuqrah and Shaib Lamisah are only shallowly explored, with little focused work to enlarge the area of interest beyond that which is currently tested.

Table 2
Representative Deposits Comprising WGM's EMINERS Model for VMS Deposits in the KSA

Deposit / Mine	Country	Tonnes	Copper (%)	Zinc (%)	Lead (%)	Silver (g/t)	Gold (g/t)
Woodlawn	Australia -	11.00	1.77	9.34	3.54	78.0	0.00
Mt. Chalmers	Australia -	4.29	1.64	3.51	1.01	42.0	2.05
Que River	Australia –	6.00	0.40	12.50	7.00	171.0	3.40
Golden Grove	Australia – Western	39.20	1.84	4.50	0.15	41.6	0.42
HW	Canada – British	11.74	2.20	5.10	0.40	1.0	0.07
Myra Falls-Lynx	Canada – British	5.18	1.50	7.60	1.00	99.0	2.10
Silver Queen	Canada – British	0.36	0.76	6.00	2.10	275.0	3.10
Mamie	Canada – British	0.06	0.70	7.60	0.00	0.0	11.00
Ruttan	Canada – Manitoba	40.80	1.53	1.43	0.00	5.0	0.20
Fox	Canada – Manitoba	13.00	1.88	1.95	0.00	5.2	0.18
Heath Steele (B)	Canada – New	40.42	1.11	4.71	1.61	63.8	0.93
Murray Brook	Canada – New	21.50	0.44	1.95	0.86	31.2	0.00
HeathSteele(ACD)	Canada – New	4.78	1.00	5.34	1.31	56.6	1.03
Nepisiguit	Canada – New	2.64	0.28	2.30	0.54	10.3	0.00
Heath Steele(EF)	Canada – New	1.40	1.51	4.39	2.01	79.9	1.03
HalfMileLake(SG)	Canada – New	0.91	0.44	6.01	0.79	1.7	0.00
Rambler-Ming	Canada –	4.47	1.71	0.14	0.00	9.9	1.03
Izok Lake	Canada – Nunavut	10.90	2.82	13.70	1.42	70.0	0.00
High Lake	Canada – Nunavut	4.72	3.53	2.46	0.00	0.0	0.50
Mattabi	Canada – Ontario	11.67	0.91	7.67	0.84	107.0	0.24
Kam Kotia	Canada – Ontario	5.84	1.11	1.21	0.00	3.5	0.03
Lyon Lake	Canada – Ontario	3.70	1.15	6.66	0.63	116.0	0.34
Sturgeon Lake	Canada – Ontario	2.09	2.80	10.19	1.42	181.8	0.65
Uchi	Canada – Ontario	1.59	1.84	11.40	0.00	72.7	0.00
Mattagami Lake	Canada – Quebec	25.20	0.63	9.17	0.10	32.6	0.45
East Sullivan	Canada – Quebec	14.95	0.94	0.49	0.00	7.2	0.24
Normetal	Canada – Quebec	10.10	2.15	5.12	0.00	45.0	0.55
Lake Dufault	Canada – Quebec	4.09	3.20	5.60	0.00	44.2	0.79
Millenbach	Canada – Quebec	3.21	3.43	4.23	0.00	52.0	0.89
Mobrun	Canada – Quebec	2.72	0.69	2.18	0.00	21.3	1.78
Dumagami	Canada – Quebec	2.13	0.14	0.00	0.00	9.3	3.26
Joutel	Canada – Quebec	1.72	1.65	2.01	0.00	3.5	0.00
Emba Derho	Eritrea	85.03	0.67	1.29	0.00	8.6	0.23
Bisha	Eritrea	49.19	1.28	3.92	0.00	33.1	0.52
Adi Rassi	Eritrea	15.77	0.54	0.00	0.00	1.5	0.33
Debarwa	Eritrea	3.99	2.42	1.00	0.00	26.6	1.65
Adi Nefas	Eritrea	1.84	1.78	10.05	0.00	115.0	3.31
Terakimti	Ethiopia	6.05	1.25	1.57	0.00	17.5	1.30
Pyhasalmi	Finland	31.10	0.75	2.43	0.06	17.0	0.20
Metsamonttu	Finland	1.51	0.10	4.60	0.10	6.3	0.35
Paronen	Finland	1.50	1.00	0.00	0.00	0.0	0.00
Khnaiguiyah	Saudi Arabia	30.00	0.40	3.30	0.00	0.0	0.00
Jabal Sayid	Saudi Arabia	10.80	1.55	1.21	0.00	35.0	0.30
Wadi Kutam	Saudi Arabia	8.00	1.83	0.95	0.00	6.1	0.31
Al Masane	Saudi Arabia	7.21	1.42	5.31	0.00	40.2	1.19
Al Hajar S & N	Saudi Arabia	6.40	1.20	0.97	0.00	0.0	0.00
Jabal Bitran	Saudi Arabia	6.00	0.00	0.30	0.00	0.0	0.00
Shaib at Tayr	Saudi Arabia	4.00	0.37	0.50	0.00	0.0	0.00
Al Amar	Saudi Arabia	3.36	0.89	5.74	0.00	19.1	10.68
Ar Ridanyah	Saudi Arabia	3.00	0.00	3.00	0.00	0.0	0.00
Al Halahila	Saudi Arabia	2.10	0.34	2.74	0.03	19.7	0.30
Jabal Rabdhan	Saudi Arabia	2.10	2.50	0.50	0.00	1.5	1.20
Ash Shiab	Saudi Arabia	1.70	0.30	6.00	0.00	0.0	0.00
As Shizm	Saudi Arabia	1.60	2.90	0.75	0.00	18.0	0.00
Jadmah	Saudi Arabia	1.60	1.83	1.37	0.00	18.3	0.00
La Joya	Spain	2.88	0.50	0.60	0.65	0.0	0.00
Anaytk-	Turkey	83.14	0.76	0.03	0.00	3.7	0.05
Madenkoy	Turkey	30.00	2.88	4.34	0.11	0.0	0.00
Kizilkaya	Turkey	9.07	0.80	0.50	0.00	0.0	0.00
Kalkanli	Turkey	0.15	2.27	0.00	0.00	0.0	0.00
Greens Creek	United States –	3.63	0.50	9.00	2.50	343.0	3.40
Jerome	United States –	29.00	5.00	0.20	0.00	49.7	1.37

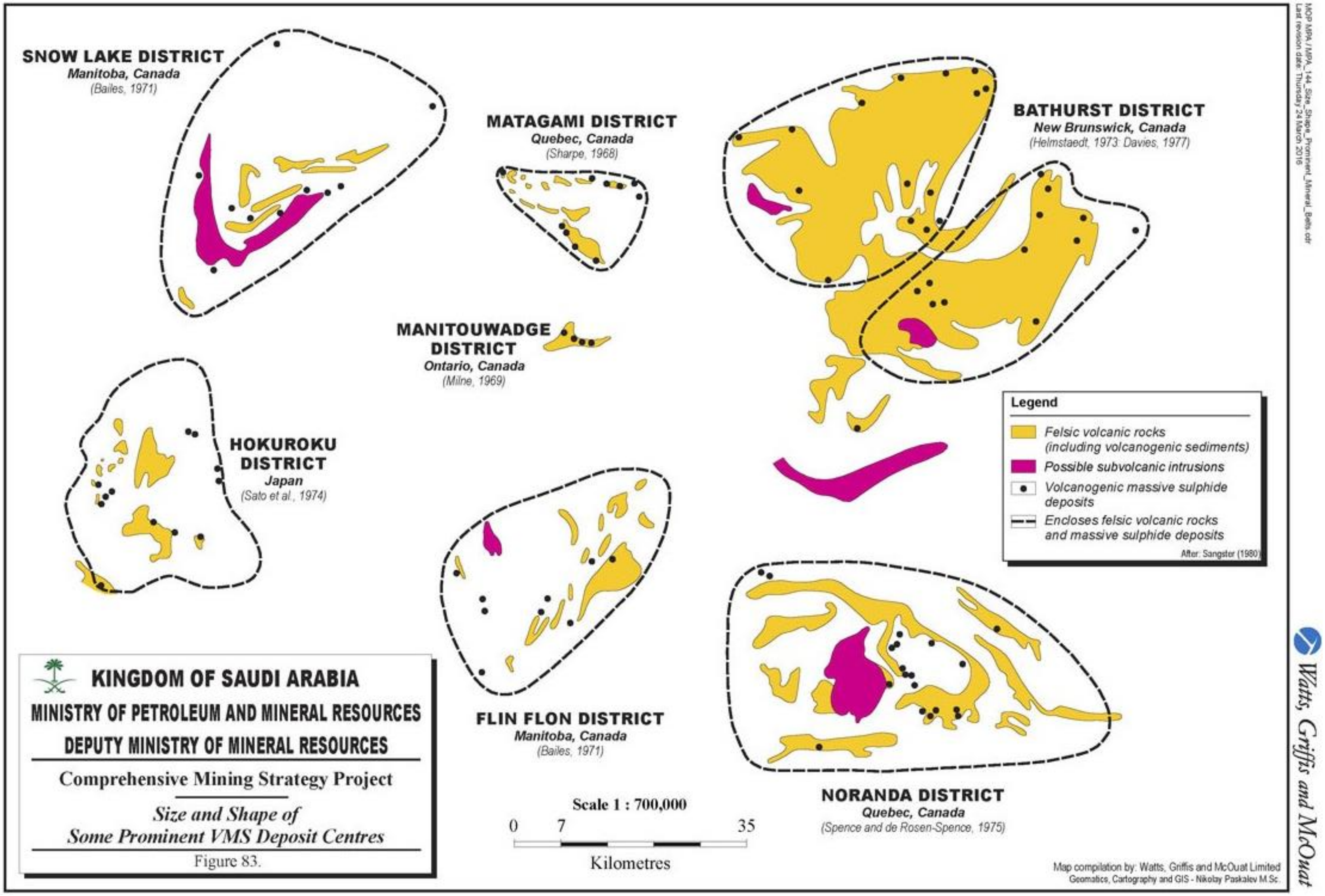

Figure 6: Size and Shape of Some Prominent Mineral Belts.

9. Similar Deposits

The Jabal Sayid deposit which is a bi-modal VMS deposit, are not unlike other exhalative volcanogenic massive sulphide deposits elsewhere in the world, which span an extraordinary age range from the early Archean to Recent.

As stated in the foregoing section, volcanogenic massive sulphide ("**VMS**") deposits are typically found in favourable rock sequences that are commonly referred to as "belts". Mineral belts are tracts of land or zones within which geological factors combine to favour the occurrence of undiscovered deposits of the specified type (Singer, 2007). Belts may overlap in which case the specific area where they merge may have potential for several different types of deposits. For example, a structural zone that is favourable for orogenic (mesothermal) gold deposits may cut across stratigraphy that is favourable for stratabound deposits. In this case however, the subject the concerns the series of layered rocks that define a depositional environment favourable for VMS deposits. Mineral deposit models are used to provide the links between permissive geological settings and the deposit type.

VMS deposits are often confined to narrow, time-stratigraphic horizons and may be capped by a horizon that is rich in one or all of chert, ironstone, carbonate and/or barite. This horizon can extend for considerable distances within a mineral belt and form a marker horizon that can be used to guide exploration towards permissive stratigraphic intervals. (e.g. Wadi Bidah Mineral Belt).

VMS deposits are by definition accumulations of massive sulphides. They are amenable to discovery by a number of exploration techniques. These deposits typically form clusters that are restricted to linear rifts or calderas where extension has taken place, a good recent example being the Atlantis II depth in the Red Sea Rift. The stratiform or district-scale alteration zones can have strike lengths of 5 km to 50 km and thicknesses of 1 to 3 km (Galley et al., 2007). Permissive terranes are characterized by bimodal volcanism. The felsic volcanic rocks within them are characterized by low Zr/Y (<7) and low (La/Yb) (<6) ratios as well as high Zr (>200 ppm) and Y (>30 ppm), and elevated LREE and HREE (Galley et al. 2007).

The geological model for a mineral belt will become more refined over time as exploration programs are undertaken and new scientific studies add valuable understanding to the data base. On-going compilation and assessment of the data may result in additional discoveries as exploration programs become better informed and more focussed on prospective localities. Therefore, one of the most effective techniques for successful exploration in a mineral belt is persistence over long periods of time. This trait cannot be overemphasized as the accompanying table of VMS discoveries for the prolific Noranda VMS camp (mineral belt) in Canada shows (Table 3).

Table 3
Summary of Selected VMS Deposit Discoveries in the Noranda VMS Mining Centre

Deposit name	Discovery Date	Depth (m)	Discovery Method	Size (Mt)	Cu (%)	Zn (%)	Au (g/t)	Ag (g/t)
Horne	1923	surface	Prospecting	54.3	2.22	----	6.1	13.0
Aldermac	1925	9	Geophysics, Prospecting	2.86	1.54	4.12	0.48	31.2
Amulet A	1925	surface	Prospecting	0.19	2.37	6.12	2.0	46.0
Amulet C	1925	surface	Prospecting, Geology	0.57	2.2	8.5	0.6	86.7
Old Waite	1925	surface	Prospecting	1.12	4.7	2.98	1.1	22.0
Amulet F	1929	38	Geology	0.27	3.4	8.6	0.3	46.3
Amulet A Lower	1938	213	Geology	4.69	5.14	5.28	1.43	44.1
Gallen	1944	7	Geophysics	8.1	0.08	3.36	0.06	2.4
Quemont	1945	61	Geophysics	16.65	1.2	1.8	5.5	18.0
Bedford	1945	surface	Prospecting	0.9	0.89	----	----	----
Deldona	1947	152	Geology	0.09	0.3	5.0	4.1	26.0
Mobrun	1956	9	Geophysics	1.35	0.7	2.51	2.27	27.67
Vauze	1957	7	Geology	0.35	2.9	0.94	0.70	24.0
Norbec	1961	335	Geology	4.47	2.75	4.75	0.91	44.3
Delbridge	1965	91	Geology	0.36	0.55	8.6	2.4	68.6
Millenbach	1966	700	Geology	3.56	3.46	4.33	1.0	56.2
Magusi river	1972	15	Geophysics	3.73	1.2	3.56	1.1	31.2
New Insco	1973	15	Geophysics	0.89	2.59	----	0.9	20.57
Corbet	1974	700	Geology-Geochemistry	2.78	2.92	1.62	1.0	21.0
Ansil	1980	1280	Geology	1.58	7.22	0.94	1.6	26.5
Bouchard-Herbert	1988	??	Geology	11.5	0.77	5.42	1.48	36.9
West Ansil	2003	250	Geology-Computer Modelling	n.a.	n.a.	n.a.	n.a.	n.a.
Montbray	2004	110	Geophysics	n.a.	n.a.	n.a.	n.a.	n.a.
Pinkos 3	2007	??	Geology	n.a.	n.a.	n.a.	n.a.	n.a.
Lac Herve	2014	400	Geophysics	n.a.	n.a.	n.a.	n.a.	n.a.

A total of fifteen (15) VMS mineral belts have been identified as a result of historic (BRGM, Riofinex, USGS) exploration in the Arabian Shield for copper, gold, silver, and/or zinc mineralization, and their locations are shown on Figure 7. The outline of the various belts has been delineated on the basis of permissive lithologies and metallogenic contents. For the most part, the 1:250,000 geological compilation maps were used and supplemented where available by more detailed maps at various scales. VMS mineral belts in Canada are circular to oval in shape and average about 32 km in diameter (Sangster 1980). Most of the belts in the Arabian Shield are elongate and much larger than their Canadian analogues due to the tectonostratigraphic history of the shield and the level of detail available on the compilation maps. The size and shapes of the belts would likely change significantly as additional mapping is carried out and more detailed district compilations become available.

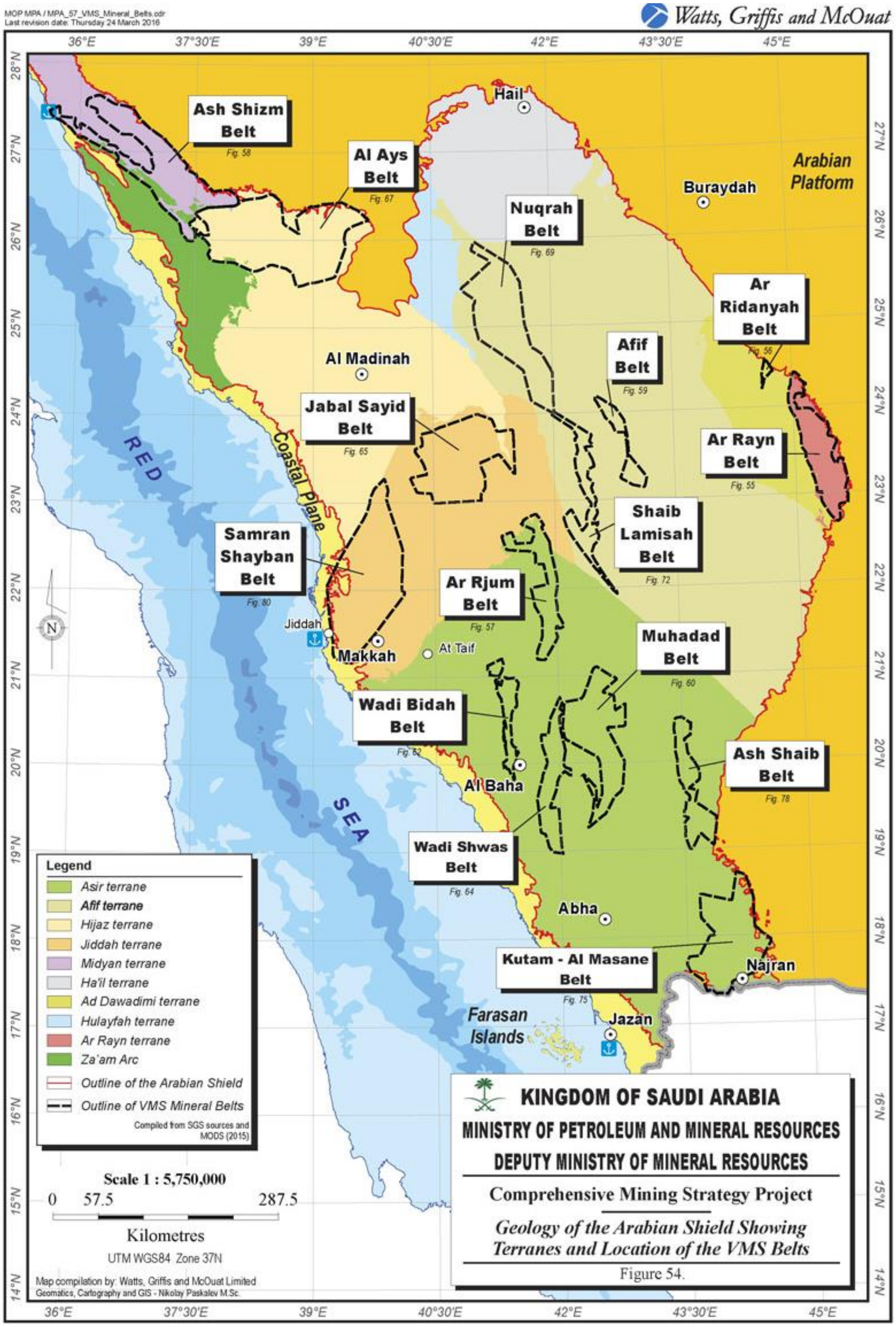

Figure 7: Basic Geology of the Arabian Shield Showing Terranes and Location of the VMS Belts.

Based on WGM's modelling, it was estimated that the Jabal Sayid Belt would yield 9 new deposits at a 10% confidence level and these would total 120 Mt grading 1.0% Cu, 4.2% Zn, 0.02% Pb, 0.54g Au/t and 43.1 g Ag/t. Based on a 50% level of confidence, the belt would yield 4 new mines totalling 18 Mt averaging 1.2% Cu, 6.3% Zn, 0.01% Pb, 0.33 g Au/t and 48.3 g Ag/t. At a 90% level of confidence there would be only 1 new deposit discovered and it would have no significant resources. From this, WGM selected the 50% case as the most likely outcome.

10. Exploration Data Collection

Multi-element geochemical analyses are used to differentiate permissive felsic assemblages from barren assemblages in a mineral belt. VMS mineral belts have associated regional and proximal alteration zones that exhibit increases in Ca-Si, Ca-Si-Fe, Na or K-Mg. Proximal alteration zones are discordant to stratigraphy, underlie the sulphide deposits and are strongly depleted in Na and Ca. Major oxides analyses can detect these alteration zones and help vector exploration efforts. If the mineralized zone is outcropping and the data is correctly processed, the alteration signatures of VMS deposits are commonly detectable using high-resolution remote sensing imagery although freely available moderate-resolution ASTER imagery is also useful. This can be used along selected VMS belts as an initial filter; however, a failure to detect typical VMS anomalies may simply mean that too little of the mineralized zone is outcropping.

Geophysical methods are commonly used in exploring for VMS deposits, and the most effective include electromagnetic and magnetic methods. Airborne variants are commonly employed to cover large areas in a cost-effective manner. The borders of many mineral belts in Saudi Arabia are covered by harrats or unconsolidated Quaternary cover, and geophysics is the best option for looking through these cover materials to permissive stratigraphy below. Recent advances in airborne electromagnetic surveys permit the accurate imaging of a conductive source in 2D and 3D space such that drilling of targets is possible without the use of follow-up ground surveys. Large VMS deposits can respond to gravity surveys, and airborne tensor gravimetry and magnetics can detect these deposits at depths of 1-2 km (Ford et al. 2007).

Rapid and cost-effective age-dating techniques have been developed that are very useful in delineating the chrono-stratigraphy of a mineral belt. This can outline prospective horizons for VMS accumulation as the deposits tend to form during relatively narrow time intervals.

The use of drone technology has increased dramatically in many disciplines in recent years and the minerals industry is no exception. Magnetometer surveys using drones are now a reality such that detailed magnetic maps are a cost-effective tool for exploration at the prospect scale. In addition, reasonably accurate DEM and DTM models can be constructed using drone based photogrammetry combined with commercially available photo modelling software to provide up to date base maps for prospect scale work.

Geophysical methods may often outline a large number of prospective targets in a mineral belt and surface geochemical methods can be used sort through the anomalies to select targets with the highest potential. These techniques include spatiotemporal geochemical hydrocarbons (**SGH**) and organo-sulphur geochemistry (**OSG**) as well as selective leach geochemistry commonly referred to as enzyme leach extractions (**ESE**) or mobile metallic ion analysis (**MMI**). It is very important that orientation surveys are conducted prior to using one of these methods in order to determine which are most effective.

Hand held XRF analytical units and NIR spectrometer mineralogical identification instrumentation have recently been developed that provide immediate, accurate and relatively low-cost results that can be employed to good advantage in all stages in exploration from grassroots to drilling.

There is no reason to repeat previous exploration surveys at Umm ad Damar, however there is good reason to compile the work done to date and to determine to what extent anomalies have been adequately tested. Exploration is more than a simple task of drilling anomalies as shallowly as possible. Our ability to use geophysical surveying to detect mineralization at depth is limited. Combined with a desire to constrain exploration costs, this tends to limit how deeply we test favourable geological environments. Even when our metallogenic model remains valid to significantly greater depths, prospects and targets have been denied and down-graded based only on shallow drill holes. The conclusions of the BRGM are an excellent example of this approach. When exploration models remain open and untested at depth, we must account for the potential for a deposit to be deeper than we have explored. If no conclusive information is available, then that possibility cannot be ignored.

The top of the No. 3 Orebody at Jabal Sayid occurs at a depth of 200 m. How can Umm ad Damar be dismissed as uneconomic when most of the drilling has tested zones above 150 m. The exploration programs known to WGM at this time have focused on testing anomalies without a clear appreciation of the overall geological environment. Following a thorough compilation of the exploration data, a 3D model should be constructed of the paleo-geological volcanic environment and the associated seafloor terrain to identify possible locations of mineralization based on conventional metallogenic models. Within this context, and while recognizing the need for deeper, systematic drilling, further exploration is recommended to test several airborne geophysical anomalies which may be indicative of stratabound volcanogenic Cu-Zn-Ag mineralization within felsic volcanic rocks southwest of Umm ad Damar. Work initiated by Riofinex on the south and southeast zones should be continued to the south and west along the felsic volcanic units. The airborne INPUT map of the area shows two untested anomalies within this sector (anomalies 4 and 5) and thematic anomaly maps of the area have detected a gossan near the contact with the Mahd Formation (Bobillier, 1979). The anomalies should be located on the ground by approximately 20 km of HLEM and ground magnetic surveys. Resultant ground electromagnetic anomalies should be tested by trenching or diamond drilling keeping in mind the physical size of a significant orebody, and the need to space drill holes according – that is, open up the grid and increase the horizontal and vertical spacing of drill holes.

An airborne EM and Mag (and possibly gravity) survey is recommended for the entire mineral belt using modern equipment and all anomalies should be followed up by prospecting, sampling and drilling.