

OULMES (Sn-W) (MASSIF HERCYNIEN CENTRAL, MAROC)

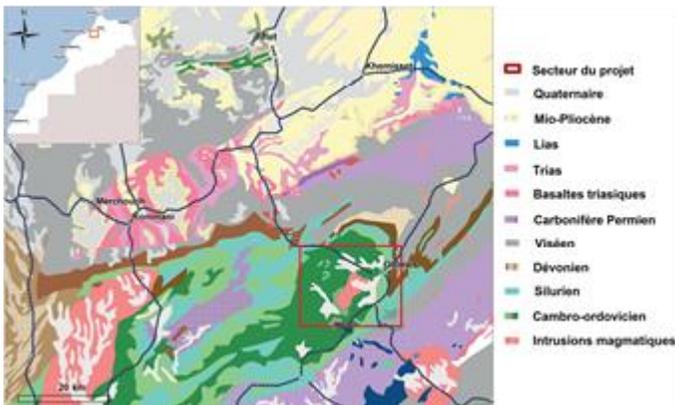
Overview :

The Oulmes Area is located in the central hercynian massif of Morocco, near to the granite of Oulmes which is a potential area for mineralization of tin and tungsten in quartz veins and placers. Interesting average contents of tin and tungsten are observed in the area. In addition, the area has an easy access near the road linking Oulmes to Rabat and Khénifra.

Target name	Oulmes
Type of mineralization	Veins and placer
Licence coverage	6 mining licences (covering 88Km ²)
Available data	Geological data/ Rock samples
Size	Hectometric to kilometric
Grades	0,6% Sn(El Karit), 0,76% WO ₃ (Zguit) et 219 g/t Sn (Aklay)
Ressources	622.750 t @ 0,60% Sn (El Karit), 13.680 t @ 0,76% WO ₃ (Zguit) et 1.663.356t @ 219 g/t Sn (Aklay)
Infrastructures	Road, Electrical network.

Geological setting and location:

The Oulmes prospect is located about 10 kilometers west to the Oulmes city. It is accessible from Rabat through the road linking Tiflet, Mâaziz and Tiddas over 150 km. The hercynian Oulmes Granite, outcrop as a dome (9 km x 4 km) within the schist, quartzite and sandstones of the Ordovician and is part of the khouribga- Oulmes anticlinorium.

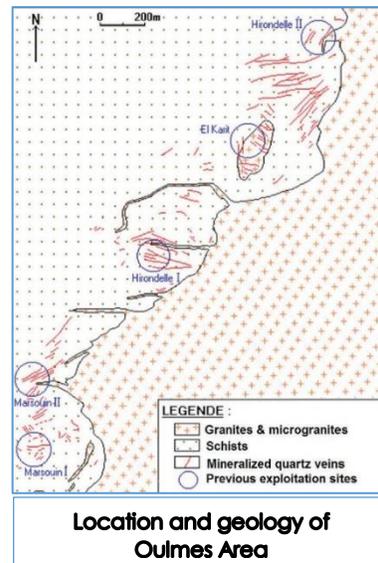


Location and geology of Oulmes Area

Mineralization

The Oulmes granite is known for its tin and tungsten mineralization. The mineralization consists of cassiterite and wolframite, generally hosted in quartz veins. The main vein fields that have been the subject of exploitation in the middle of the last century are those of El Karit (Sn) and Zguit (W). But other veins or placers occurrences are known in the area.

Achieved work and results:



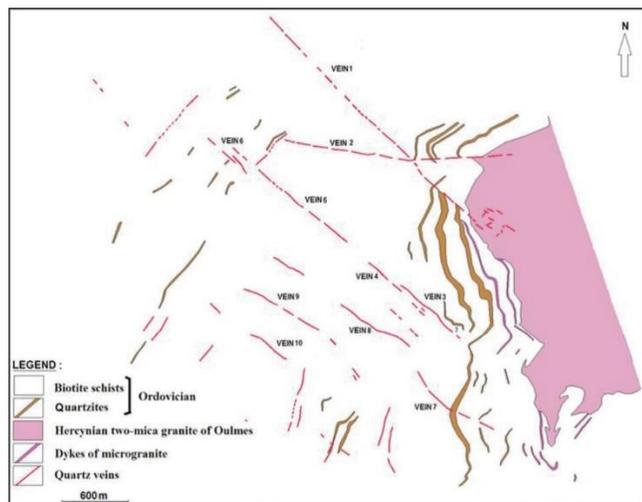
El Karit tin deposit: In this vein field, a work program was carried out in 1980 and 2000 with trenches, core drilling and galleries. This tin deposit is represented by quartz veins in the west contact of Oulmes granite, over an area of 200 to 300 m wide and 2 km of extension. The tin mineralization related to Oulmes granite, is represented by cassiterite localized in veins that have undergone a kind of greisenisation with mostly muscovite, feldspar and beryl. Cassiterite crystals

are observed as inclusions in quartz mass in the middle of the vein. On wall rock schist veins, a tourmaline development is characteristic of the metasomatism in the schist.

Research work by trenches, small galleries and drill holes were carried out. At Marsouin II, three vein structures oriented NE were followed by galleries. The three structures, considered together, have an average thickness of 0.53 m with an average grade of 0.40% Sn. At Irondale I, two vein structures oriented ESE and named H1 and H2 were followed by galleries. The average thickness and grade are respectively 0.74 m and 0.88% Sn. Finally, at Irondale I, 3 diamond drilling were performed, they intersected a vein field over a width of 52.7 m. The cumulative thickness of the quartz veins in this field is estimated to 4.7 m, with an average grade of 0.25% Sn.

Two other coredrills, executed respectively at Marsouin II and Hironnelle II, have intersected two exceptional grades of 20.7% Sn over 10 cm and 8.7% over 10 cm.

Zguit tungsten deposit: The Zguit plateau is located south-west of the Oulmes Hercynian granite. It consists of Ordovician "flagstone schist" formation, composed of alternating argillaceous siltstones, mudstones with silt laminae and sandstones. It contains multi metric bars of quartz sandstone. A bundle of quartz veins mineralized with wolfram with a northwest direction, intersects the shale and sandstone formation.

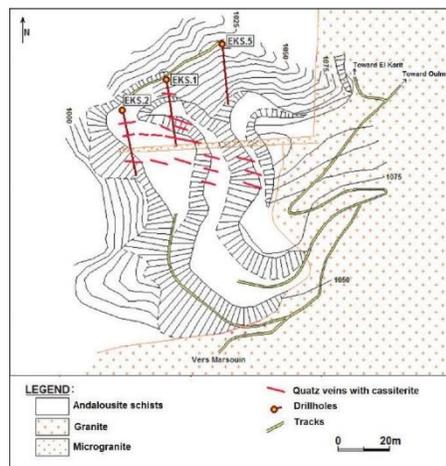


Geological map of the Zguit vein field

The vein number 5 has been the subject of a great amount of work. It consists of two distinct parts. The first part in the southeast has an extension of 300 m with a thickness of 40 cm with a grade of 0.25% WO₃. Mineralization consists of wolframite and scheelite. The second part or "west lode" is the most important. It follows discontinuously south-east to north-west direction over 850 meters and has a thickness of approximately 40 cm and a dip of 70-80° toward the southwest. The mineralization is characterized by the appearance of more and more scheelite to north-west.

The carried out work on Zguit started in 1949, when the company Wolfram Zguit exploited a panel representing a vein volume of 460 m³ where it was removed 7.3 tons of wolfram oxides, which corresponds to a recovered grade of 0.6% WO₃. From 1961 to 1962, ONHYM rehabilitated the shaft n°3 and made an underground and surface sampling, results were positive. In 1969, ONHYM performed the sinking 50 m of the shaft n°3 and 90 m of tracing in the level - 80. In 1980, ONHYM performed 4 drillholes in order to reach the zone leached below the water table at a depth of 140 m. These drill holes have highlighted the vertical discontinuity of veins. The only work done in 1961-1962 and 1969 show some resources on the "west lode" section of the vein N° 5, evaluated to 13 680t with an average grade of 0.76% WO₃.

Tafer El Haj Stanniferous occurrence : This occurrence is in the form of a swarm of quartz veins, embedded in the northern part of the granite. The veins are rectilinear with NE trend dipping to the SE. Cassiterite occurs as inclusions in quartz. Some NS veins intersect the NE veins and are therefore posterior to them. Their filling is not different from the other veins. There are several trenches that follow most of the major veins. The ground is covered with topsoil and granitic arena with an abundance of white quartz pieces, all dotted with millimetric fragments of cassiterite.



Drill holes Location in the Hironnelle I site

Aklay stanniferous placers: In the 1980s, ONHYM performed 1745 small wells with a 40m square mesh on the Aklay stanniferous placer. This place is located in the granite of Oulmes, 4.5 km east of the old tin mine of El Karit. North of Aklay, other research carried out during the years 2011 and 2012 have delimited two other stanniferous placers (Moufaroua and Assouel). The evaluation of the resources of these placers gave the following result:

PLACERS	Tonnage	Thickness	Grades
AKLAY	1.362.935 t	1,16m	187 g/t
MOUMOUFAROUA	229.685 t	0,73 m	379 g/t
ASSOUEL	70.736 t	0,43 m	305 g/t
TOT.et MOY.	1.663.356 t	1,07 m	219 g/t

Outlook:

For further research, exploration has to be continued especially in the vein field of Zguit where several veins favorable to the tungsten mineralization require further work. To the north, other tin placers could be developed such as Aklay prospect, as well as quartz veins with cassiterite detected in the wadis.

For more information, please contact Ms.

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